St. Modwen Developments Limited

Coed Darcy

Crymlyn Tip - Environmental Monitoring Annual Report

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1 Introduction

1.1 Overview

This report has been prepared to satisfy Condition 4.2.2 (a) of Environmental Permit Crymlyn Tip Environmental Permit EPR/AP3990LR and subsequent variations (the Permit), which states:

'4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency [now Natural Resources Wales] by 31 January (or other date agreed in writing by [NRW] each year. The report(s) shall include as a minimum:

a) A review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the risk assessments submitted in relation to this site and any agreed amendments thereto.'

This report covers monitoring period January 1st, 2019 to December 31st, 2019.

1.2 Background

St Modwen Developments Limited (St Modwen) acquired responsibility of the Tip area in 2008, when they purchased the site from former site owners BP. For the Tip area to enter 'definitive' closure NRW must be satisfied that a Closure and Aftercare Management Plan has been produced.

In January 2018 Atkins were appointed, by St Modwen, to undertake an environmental monitoring programme in line with the requirements of the above permit and to assist in the production of the Closure and Aftercare Management Plan.

1.3 Summary of Works

The environmental monitoring programme was initially undertaken by Atkins between January 2018 and March 2019. As of April 2019, PJA took over responsibilities for the monitoring and reporting of the findings.

GeoEnvironmental Applications Ltd (GAL) have been contracted to manage the recovery of local free phase oil within the Tip area and its peripheries. Alongside the oil recovery, GAL carry out groundwater monitoring within boreholes/sumps and obtain monthly gas readings from available boreholes within/surrounding the Tip area as part of the monitoring programme. The oil recovery and monitoring works carried out by GAL are overseen by PJA, who also collect groundwater and surface water samples on a monthly basis as part of the monitoring programme.

1.4 Supporting Documents

A PJA technical note was issued to NRW in November 2019, documenting works undertaken between April and September 2019. Details regarding the technical note can be seen below:

- Coed Darcy – Crymlyn Tip Factual Summary Report, April – September 2019. Ref: 4020-PJA-19-XX TN-R-005. Dated 22/10/2019.

Additional information relating to the history, operation, previous assessments and risk assessments of the Tip area are presented in the following reports:

- Atkins (2013) Coed Darcy – Hydrogeological Risk Assessment Crymlyn Tip.
- Atkins (2013) – Coed Darcy – Landfill Gas Risk Assessment and Gas Management Plan.
- Atkins (2017)- Coed Darcy Crymlyn Tip- Partial Surrender of Coed Darcy Wetlands. EPR/AP3990LR/S003 Site Condition Report. Ref 5041216-RAP-RPT-0001788
- Atkins (2019) – Coed Darcy Crymlyn Tip – Environmental Permit Monitoring. Ref: 5041216. Dated: 31/01/2019.
- Natural Resources Wales (2019) – Compliance Assessment Report. Ref: CAR_NRW0034811. Dated: 13/03/2019.

It is assumed the reader has access to the above documentation and is familiar with previous assessments undertaken. This report is not intended to repeat or reproduce findings of previous assessments in any great detail.

1.5 Limitations

This report has been prepared by PJA, on behalf of St Modwen, for submission to NRW. This report shall not be relied upon or transferred to any other parties. If an unauthorised third party comes into possession of this report, they rely on its contents at their own risk.

The findings within the report are based upon information gained from a variety of sources and field measurements as detailed within this report and which PJA believes are reliable. Nevertheless, PJA cannot guarantee the authenticity or reliability of third-party information.

The conclusions made within this report are based on the guidance available at the time of writing.

2 Site Setting

2.1 Site Location and Description

The Tip is located within the historic 'Containment Area' in the western section of the wider Coed Darcy development., The 'Containment Area' includes the licenced landfill and the lagoons and wetlands. The containment area is shown in Appendix A on PJA drawing 04020-A-0110-P1: Notable Areas & NRW Discharge Consent Points.

The Permitted area to which this report relates is shown on drawing 04020-A-SK201-P1 and consists of the 'lower tip' in the west and the 'main tip' in the east. To the north is the Crymlyn Bog SSSI and to the south of the permitted area is the 'Coed Darcy wetlands' which were removed from the permitted area in 2017.

2.2 Brief Site History

When the refinery opened in the early 1920s the 'Containment Area' comprised a series of lagoons and wetlands, congruent with Crymlyn Bog. The lagoons were initially constructed during the operational years of the refinery and were intended to intercept oil, preventing it from entering Crymlyn Bog. There are three lagoons within the Containment Area: Crymlyn Bog Lagoon (approx. 10,500m^3), South Bay (approx. 4,450m^3) and West Bay (approx. 1,500m^3).

Prior to the Second World War an ash bund was constructed around the Containment Area to provide a containment area for oil, which may have flowed into Crymlyn Bog, if the area had been struck by bombs during the war. The ash bund also contained drainage systems, serving the southern half of the former refinery.

In 1977 a waste disposal license was granted for the Containment Area. The permit granted the deposition of refinery waste, including both inert and potentially hazardous materials. Waste was filled in the 'Tip Areas' north of the wetlands. No waste has been accepted since 1999 and the landfill has been non-operational since July 2001.

Remedial works have taken place within the wetland lagoons (South Bay, West Bay and Crymlyn Bog Lagoon) between 2011 and 2015. These works were summarised as part of the submission for the partial surrender of the waterbodies form the permitted area. The partial surrender report (Atkins report reference- 5041216-RAP-RPT-0001788) was submitted to NRW and the Coed Darcy wetlands removed from the permitted area in 2017:

The remaining permitted area is shown on 04020-A-SK201.

3 Environmental Setting

3.1 Geology

The British Geological Survey (BGS) record the Tip area to be underlain by Peat in the northern and central section and Devensian Till in the southern area. Peat and Devensian Till overlie Pennant Sandstone Formation.

Based on historic borehole logs Made Ground/waste depths are variable but extend to depths in excess of 12mbgl locally. Made Ground generally comprises grey, brown and black sandy, gravelly clay, with sand, gravels and cobbles consisting of bricks, concrete, timber, metal, and ash. Much of the infill material is consistent with waste derived from refinery operations. There are areas where asbestos waste is known to have been deposited as well as tank sludges, other industrial waste by-products, oil and tar residues.

Available borehole logs are presented in Appendix B.

3.2 Hydrogeology

Superficial deposits (Peat and Devensian Till) are classified as Unproductive Strata and bedrock beneath is classified as a Secondary A Aquifer.

Following a site wide investigation, URS produced Groundwater Contour Maps for the bedrock and superficial hydrogeology for the wider Coed Darcy development site (URS Report: 39991-044-785: Final Factual Report Whole Site Investigation BP LLANDARCY REFINERY 12th August 2005). These maps indicate groundwater in the bedrock beneath the tip flows from south to north across the Permitted area. Artesian and sub-artesian conditions in the bedrock may be present around the at the border between the site and Crymlyn Bog. Monitoring of shallow groundwater beneath the tip indicates possible local radial flow although this may be distorted by the presence of oil residues.

For reference these groundwater maps have been taken from the original URS document and are presented in Appendix C.

3.3 Hydrology

A peripheral trench separates the Permitted area from Crymlyn Bog SSI to the north. This is a narrow channel that intercepts the groundwater flowing north from the tip into the bog. A plywood wall in the trench prevents the flow of free phase oil into the bog. Oil is collected from the trench (and from sumps and boreholes within the tip) and sent for offsite disposal.

As mentioned in section 2.1 above there are three water bodies within the Containment area but were removed from the Permitted area in 2017: South Bay, West Bay and Crymlyn Bog Lagoon.

3.3.1 South Bay

South Bay is approximately 4,450m^3 and is located south of the former landfill area. The water body was originally installed uncontrolled discharge of free product from the refinery entering Crymlyn Bog.

3.3.2 West Bay

West Bay is approximately 1,500m^3 and lies to the south west of the former landfill area. Similar to South Bay, West Bay was installed to intercept uncontrolled discharge of free product from the western section of southern tank farm from entering Crymlyn Bog.

3.3.3 Crymlyn Bog Lagoon

Outfalls from both South Bay and West Bay enter the Crymlyn Bog Lagoon prior to discharging into Crymlyn Bog. Discharge to the Bog is via a siphon valve and a historical oil-water interceptor located within the ash bund. This valve is an NRW discharge consent point, W3 (BP0279201) held by SMD.

4 Ongoing Sampling / Monitoring

4.1 Sampling Locations

Positions currently sampled and monitored are shown on PJA drawing: PJA drawing: 04020-A-SK201-P1 in Appendix A and summarised in Table 1.

Table 1: Summary of Sampling/Monitoring Locations

Location	Monitoring type	Added to Monitoring in 2019	Response zone
MSMW27	Gas & groundwater		Glacial Till
MSMW155D	Gas & groundwater		Coal Measures
MSMW155S	Gas & groundwater		Glacial Till
CARW008	Gas & groundwater		Made Ground
CARW009	Gas & groundwater		Made Ground
CARW034	Gas & groundwater		Coal Measures
BHXI	Groundwater	✓	*TBC N.B added in December 2019
BH20	Gas & groundwater		Made Ground
BH30	Groundwater	✓	Made Ground
BH32	Gas		Made Ground
BH49	Gas		Made Ground
BH51	Gas & groundwater		Made Ground
BH52	Gas & Groundwater		Made Ground
BH57	Gas & groundwater		Made Ground
BH62	groundwater		*TBC N.B added in December 2019
SW1 –S W6	Surface water		Surface water
Sumps 14 – 21 & 23-28	Oil recovery	✓	Made Ground
BH23	groundwater	✓	*TBC N.B added in Oct 2019
BH19	groundwater	✓	*TBC N.B added in Oct 2019
BH13	groundwater	✓	*TBC N.B added in Nov 2019
BH2	groundwater	✓	*TBC N.B added in Nov 2019
BH31	groundwater	✓	*TBC N.B added in April 2019
BH48	groundwater	✓	*TBC N.B added in November 2019
BH64	groundwater	✓	*TBC N.B added in December 2019
BH46	groundwater	✓	*TBC N.B added in November 2019
BH29	groundwater	✓	*TBC N.B added in April 2019

GAL carry out field measurements, monitoring of the groundwater levels and taking gas readings from locations installed with a gas bung and tap. PJA carry out groundwater and surface water sampling once a month.

Groundwater and surface water samples are scheduled for the following laboratory analysis:

- Ammoniacal Nitrogen as N
- Dissolved metals
- Total Petroleum Hydrocarbons (TPHs)
- BTEX compounds (Benzene, Toluene, Ethylbenzene and Xylenes)
- Polyaromatic Hydrocarbons (PAHs)

Table 2 shows when each of the groundwater locations have been monitored over the course of the year. A '×' illustrates when a sample was unobtainable, either due to a lack of water in the ground (1), technical difficulty with the equipment(2), interference from free phase oil (3) or no access/blocked (4), mis-sampled (5), not sampled (6). A '✓' shows where a sample was successfully taken.

Table 2: Groundwater Sampling

Sampling location	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
CARW008	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CARW009	×6	×6	×6	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH20	×6	×6	×6	×1	✓	✓	✓	✓	✓	✓	✓	✓
BH32	×6	×6	×6	×3	×3	×3	×3	×3	×3	✓	✓	×3
BH51	×6	×3	×3	×3	✓	✓	✓	×3	×3	✓	✓	×3
BH52	×6	×6	×6	✓	×3	×3	✓	×3	✓	✓	✓	✓
BH57	×6	×6	×6	✓	✓	✓	✓	✓	✓	✓	✓	✓
MSMW155S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MSMW27	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×5
MSMW155D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CARW034	×6	×6	×6	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH30	×6	×4	×4	×4	×4	×4	×4	×4	×3	×4	×4	✓
BHXI	6	×6	×6	✓	✓	✓	✓	✓	✓	✓	✓	✓

The findings from the field data and lab data from the sampling are discussed in the following sections.

5 Groundwater Monitoring Results

A total of 22 borehole locations were monitored over the last year as part of the current monitoring programme. Some of these borehole locations were found during the course of the year so monitoring data for these locations is partial for 2019. A plan showing all monitoring locations (PJA drawing: 04020-A-SK201-P1) is presented in Appendix A.

Borehole logs have been reviewed to identify response zones for each of the monitoring locations, with logs presented in Appendix B. Response zones lie within waste material, superficial deposits and bedrock A summary of the groundwater levels recorded over the year 2019 are provided in Table 3 below.

5.1 Groundwater Levels

Table 3: Groundwater Levels

Monitoring Locations	Response Zone	Minimum		Maximum		Average	Variability
		Depth	Month	Depth	Month		
CARW008	Waste/Made Ground	0.53mbgl 10.55mAOD	June	0.42mbgl 10.65mAOD	September	0.50mbgl 10.58mAOD	0.11m
CARW009	Waste/Made Ground	0.16mbgl 10.43mAOD	October	0.00mbgl 10.59mAOD	November	0.09mbgl 10.50mAOD	0.16m
BH2	Waste/Made Ground	2.92mbgl 10.38mAOD	November	2.62mbgl 10.68mAOD	December	2.77mbgl 10.53mAOD	0.30m
BH13	Waste/Made Ground	9.11mbgl 5.59mAOD	September	6.91mbgl 8.08mAOD	November	7.68mbgl 7.31mAOD	2.20m
BH19	Waste/Made Ground	8.59mbgl 7.00mAOD	October	6.90mbgl 8.69mAOD	November	7.63mbgl 7.69mAOD	1.69m
BH20	Waste/Made Ground	7.01mbgl 8.31mAOD	July	5.75mbgl 9.57mAOD	December	6.36mbgl 8.96mAOD	1.26m
BH23	Waste/Made Ground	5.12mbgl 9.48mAOD	November	4.71mbgl 9.89mAOD	December	4.86mbgl 9.74mAOD	0.41m
BH29	Waste/Made Ground	6.77mbgl 7.75mAOD	September	5.64mbgl 8.88mAOD	December	6.14mbgl 8.38mAOD	1.13m
BH30	Waste/Made Ground	5.54mbgl 9.01mAOD	September	4.50m 10.05mAOD	December	4.98mbgl 9.57mAOD	1.04m
BH31	Waste/Made Ground	3.96mbgl 10.35mAOD	November	3.93mbgl 10.38mAOD	December	3.94mbgl 10.37mAOD	0.03m
BH32	Waste/Made Ground	9.71mbgl 6.52mAOD	April	7.97mbgl 8.26mAOD	December	8.79mbgl 7.44mAOD	1.74m
BH49	Waste/Made Ground	2.57mbgl 11.23mAOD	December	2.57mbgl 11.23mAOD	December	2.57mbgl 11.23mAOD	-
BH51	Waste/Made Ground	7.65mbgl	September	5.55mbgl	October	6.52mbgl	2.1m

Monitoring Locations	Response Zone	Minimum		Maximum		Average	Variability
		6.99mAOD		9.09mAOD		8.12mAOD	
BH52	Waste/Made Ground	6.46mbgl 8.37mAOD	February	1.12mbgl 13.71mAOD	November	4.05mbgl 10.79mAOD	5.34m
BH57	Waste/Made Ground	7.15mbgl 8.54mAOD	June	5.76mbgl 9.93mAOD	December	6.54mbgl 9.15mAO	1.39m
MSMW155S	Drift Deposits	0.72mbgl 8.30mAOD	July	0.18mbgl 8.84mAOD	December	0.55mbgl 8.47mAOD	0.54m
MSMW27	Drift Deposits	2.22mbgl 7.12mAOD	June	0.87mbgl 8.47mAOD	December	1.53mbgl 7.81mAOD	1.35
MSMW155D	Bedrock	0.56mbgl 8.66mAO	December	0.20mbgl 9.02mAOD	February	0.34mbgl 8.88mAOD	0.36
CARW034	CARW034	0.56mbgl 10.60mAOD	July	0.00mbgl 11.15mAOD	October – December	0.06mbgl 11.09mAOD	0.55m
BH48	TBC	2.57mbgl 11.24mAOD	December	2.57mbgl 11.24mAOD	December	2.57mbgl 11.24mAOD	*only data for Dec 19
BH29	TBC	5.97mbgl 7.75mAOD	September	7.1mbgl 8.88mAOD	December	6.47mbgl 8.83mAOD	1.13m

5.2 Non-Aqueous Phase Liquid Levels (NAPL)

Both light and dense non-aqueous phase liquids (LNAPLs & DNAPLs) have been detected in all borehole locations and within some sumps at least once during the monitoring period. LNAPL and DNAPL thicknesses recorded in boreholes are presented in Table 4 & Table 5 Respectively. LNAPL thicknesses detected in sumps are presented in Table 6 below. Plans visually displaying 'snapshots' of product thickness for months, January, March., June, September and December are provided in Appendix D.

Table 4: LNAPL Thickness in boreholes

Borehole ID	Response Zone	Number of occurrences	LNAPL thickness		Average thickness
			Minimum	Maximum (date)	
CARW008	Waste/Made Ground	3/12	0.00m	0.03m (September 2019)	0.003m
CARW009	Waste/Made Ground	5/12	0.00m	0.03m (September 2019)	0.005m
BH20	Waste/Made Ground	4/12	0.00m	0.68m (June 2019)	0.27m
BH32	Waste/Made Ground	12/12	0.07m	2.41m (March 2019)	0.78m
BH51	Waste/Made Ground	12/12	0.10m	0.59m (October 2019)	0.22m
BH52	Waste/Made Ground	8/9	0.00m	1.73m (March 2019))	0.36m
BH57	Waste/Made Ground	3/12	0.00m	0.12m (September 2019)	0.68m
MSMW155S	Drift Deposits	1/11	0.00m	0.002m (August 2019)	0.00m
MSMW27	Drift Deposits	4/10	0.00m	0.05m (June 2019)	0.06m
MSMW155D	Bedrock	3/11	0.00m	0.02m (June & December 2019)	0.00m
CARW034	Bedrock	2/12	0.00m	0.002m (July & August)	0.28m
BH29* partial data due to oil recovery from well Aug/Sept/Oct	Unknown	6/6	0.62 (July 2019)	0.86m (May 2019)	0.69m
BH30* as Above	Unknown	3/3	0.05 (December 2019)	0.62 (July)	0.29m
BH31* As above	Unknown	5/6	0.00m	0.19 (April)	0.1m
BH49	Unknown	12/12	0.16 (august 2019)	1.02 (April 2019)	0.49m

Borehole ID	Response Zone	Number of occurrences	LNAPL thickness		Average thickness
			Minimum	Maximum (date)	
BH19	Unknown	3/3	0.4 (December 2019	0.88 (October 2019)	0.56m
BH2	Unknown	2/2	0.3 December 2019	0.4 (November)	0.35m
BH13	Unknown	2/2	0.25 (November)	0.65 December	0.45m
BH46	Unknown	2/2	0.2 December	0.32 (November)	0.26m
BH48	Unknown	2/2	0.29 December	0.46 November	0.38m

Table 5: DNAPL Thickness in boreholes

Borehole ID	Response Zone	Number of occurrences	DNAPL thickness		Average thickness
			Minimum	Maximum (date)	
CARW008	Waste/Made Ground	3/12	0.00m	0.89m (March 2019)	0.003m
CARW009	Waste/Made Ground	3/12	0.00m	0.1.4m (Jan 2019)	0.005m
BH20	Waste/Made Ground	3/12	0.00m	0.86m (Jan 2019)	0.27m
BH57	Waste/Made Ground	3/12	0.00m	2.99m (January 2019)	0.68m
CARW034	Bedrock	3/12	0.00m	1.59m (January 2019)	0.28m

Table 6: NAPL Thickness in sumps

Sump ID	Response Zone	Number of occurrences	NAPL thickness		Average thickness
			Minimum	Maximum (date)	
18	Waste/Made Ground	6/9	0.00m	0.41m (November)	0.13m
19	Waste/Made Ground	8/9	0.00m	0.37m (July 2019)	0.13m
20	Waste/Made Ground	5/9	0.00m	0.44m (September/ October)	0.14m
21	Waste/Made Ground	9/9	0.09m (April 2019)	0.75m (September)	0.17m
23	Waste/Made Ground	2/2	0.24 (June 2019	0.26 (may)	0.25m
24	Waste/Made Ground	2/9	0.00m	1.15m (July)	0.10m

Sump ID	Response Zone	Number of occurrences	NAPL thickness		Average thickness
			Minimum	Maximum (date)	
25	Waste/Made Ground	8/9	0.00m	1.26m (September)	0.24m
27	Waste/Made Ground	7/9	0.00m	0.32m (November)	0.12m
28	Waste/Made Ground	1/9	0.00m	0.11m (October)	0.01m

Only sumps where NAPL was detected are shown in the above table.

5.3 Groundwater and NAPL Levels Discussion

5.3.1 Groundwater Levels

The average level of groundwater recorded over the year is shown on PJA drawing: 04020-A-SK202-P1: Crymlyn Tip Monitoring: Ground Water Contours. Although the contours are restricted by the spread of available data, the drawing suggests the shallow groundwater follows the topography, generally as indicated by historic URS data.

As expected along the northern extent of the data set, the contours indicate a radial flow in shallow groundwater towards the various waterbodies within/surrounding Crymlyn Tip. This isn't shown on the URS maps, although the recently collected data is likely to be more detailed than those used to produce the URS plans. It is also worth noting that this interpretation is made from a relatively limited data set with restricted distribution.

Looking over groundwater level data collected over the last 12 months, generally the lowest levels were recorded between months April to September, and the highest levels between October and February. This would be expected from the change in the amount of precipitation between the summer months and the winter months.

There is an average variability of 1.36m between the lowest and highest recorded water level in any one location.

Borehole BH52 has the largest variability in ground water levels, where there was a 5.34m difference between the highest and lowest recorded water levels. Note: this well is located in the central area of the tip where it would be expected that there would be a high degree of local heterogeneity in material properties. Borehole CARW008 has the smallest variability in recorded groundwater levels of just 0.1m. This location is on the southern margin of the landfill and outside the 'waste' proper and in an area where saturated ash deposits are prevalent.

5.3.2 Non Aqueous Phase Liquid (NAPL) Levels and Distribution

Light NAPL have been detected in all but two borehole locations BH 23 and 64- (both of these locations were found towards the end of 2019 and so limited monitoring data available).

Locations BH32 and BH51 have LNAPL recorded most consistently, where it has been detected during all 12 monitoring rounds. The LNAPL is recorded thickest in those wells installed in the Waste/ Made ground (CARW008, CARW009, BH20, BH32, BH51, BH52, & BH57). In these locations the average thickness of LNAPL across the year was 0.33m. By contrast, the wells installed in drift deposits and bedrock, (MSMW155S, MSMW155D, MSMW27, CARW034), have LNAPL detected infrequently at an average thickness of 0.027m.

Suspected Dense NAPLs have been recorded in CARW008, CARW009, BH20, BH57, CARW034. All of these locations are installed in Waste/Made Ground, with the exception of CARW 034 which is installed in the bedrock. DNAPL was detected in all these locations during 3 monitoring rounds (January, February & March 2019). Thickness in these locations have been recorded to range from nil, to 2.99m (BH57 Jan 2019). Within BH57 suspected DNAPL was measured on three occasions out of 12. The other readings were 2.47m (February 2019) and 2.53m (March 2019) indicating variability or measurement error. This could be down to a difference in the equipment or the operational use of the equipment, or errors made during data recording. Clarification of DNAPL presence and distribution will continue in future monitoring rounds.

Further assessment of DNAPLs is proposed as the differentiation during measurement was difficult to achieve therefore the values should be viewed with caution at present.

The NAPL records for January, March, September and December are plotted on the site plan in Appendix D. This visually shows the spatial distribution and thickness of the LNAPL across the site. The eastern area of the tip (main tip area) is most impacted by LNAPL. The sumps and boreholes in the western half, (the lower tip) record lower thicknesses, and more infrequent levels of LNAPL.

6 Groundwater and Surface Water Quality Assessment

6.1 Threshold Values

Laboratory results from groundwater and surface water samples obtained during 2019 have been screened against Environmental Quality Standards (EQS), Natural Resources Wales (NRW) threshold values, and World Health Organisation (WHO) water quality standards. NRW threshold values have been obtained from NRW discharge permit EPR/LB3293HN, which relates to water discharges from NRW sampling locations W2 and W3 within/around the Tip. Screened laboratory results are presented in Appendix E.

Based on laboratory results, the number of exceedances recorded appears to decline during wetter winter months. This is likely due to a dilution factor as a result of increased rainfall. Screened laboratory results are presented in Appendix E.

Over the twelve-month monitoring period 12 metal exceedances were recorded, 15 TPH exceedances and 48 PAH exceedances. Sampling point W1 was recorded as having the highest number of exceedances (31) and sampling location W2 recorded the lowest number of exceedances (1).

As hydrocarbons are the major contaminants within the Tip area and to attempt to identify trends, graphs 1 - 4 in Appendix E show total TPH concentrations within groundwater and surface water against average monthly rainfall and average monthly temperatures. Total TPH concentrations have been compared with threshold value reported in NRW discharge permit EPR/LB3293HN, relating to 'visible oil and grease' which is 5,000µg/l.

6.2 Groundwater

Graphs 1 & 2 in Appendix E shows TPH concentrations in boreholes. It should be noted that results from BH51 in May (3,820,000µg/l) and October (2,540,000µg/l), and BH 30 in December (172000 µg/l) have been omitted from the graph to improve visual representation of the other data.

Overall, TPH concentrations in most locations are relatively stable and generally less than 20,000 ug/l. The data from wells, CARW008, CARW009, BH20, BH51, BH52 is sporadic, with concentrations of TPH fluctuating over time. Based on the data set to date, there appears to be no obvious correlation between TPH concentration and rainfall/temperature data. All three of these locations are screened in waste / Made Ground.

Data from CARW034 (screened in the bedrock) is also variable but shows some correlation between rainfall data and TPH concentrations whereby the TPH concentrations drop with increased rainfall and vice versa. This could suggest that water may be entering the monitoring well from the surface.

This is verified by the engineers notes which indicate the headworks are damaged at that monitoring location.

However, in BH20 the opposite effect appears to be happening, where TPH concentrations appear to increase with increased rainfall.

Note: in some sample's interference through cross contamination with oily residues cannot be ruled out. Ruling out this error will be a focus of future works.

6.3 Surface Waters

Over the past year, two instances where concentrations of TPH were recorded in excess of the NRW Discharge Permit threshold of 5,000µg/l. Both instances occurred at SW1 in May (10,200µg/l) and July (21,300µg/l).

Graphs 3 & 4 in Appendix E show TPH concentrations against average monthly rainfall and average monthly temperature data. An increase in TPH concentrations at sampling location SW1 occurred in warmer temperatures during drier periods and a decrease during periods of increased rainfall.

7 Landfill Gas

7.1 Landfill Gas Monitoring

Landfill gas monitoring was undertaken at 12 locations within and around the Tip area, using a GA5000 gas analyser. Of the 12 locations monitored 8 lie within the former landfill and 4 lie outside the former landfill area to the south-east and south-west, as shown in Table 7.

Table 7: Landfill Gas Monitoring Location Information

Monitoring locations within the former landfill area	Monitoring locations outside the former landfill area
CARWOO8	CARW034
CARW009	MSMW155S
BH20	MSMW155D
BH32	MSMW027
BH49	
BH51	
BH52	
BH57	

7.2 Landfill Gas Concentrations

Landfill gas readings were recorded by Atkins from January – March 2019 and from April 2019 GAL have undertaken landfill gas monitoring. The minimum atmospheric pressure reading was recorded as 982mb in November 2019, whilst the highest atmospheric pressure was recorded as 1035 in March 2019.

Methane (CH4)

Based on the graphs below (figures 1&2), methane concentrations appear to show some variability. Generally, methane concentrations within the tip are below 20%. The highest methane concentration for every monitoring round was detected in BH20, with concentrations ranging between 42.9% (February) and 71.2% (October). The lowest methane concentration (<0.1%), within the former landfill area, was recorded across several monitoring locations throughout the year.

Outside the former landfill area, the maximum CH4 concentration (7.2%) was detected in MSMW155S (screened in Glacial Till) in March. The minimum CH4 concentration (0%), outside the former landfill area was detected across all three monitoring locations during multiple monitoring rounds.

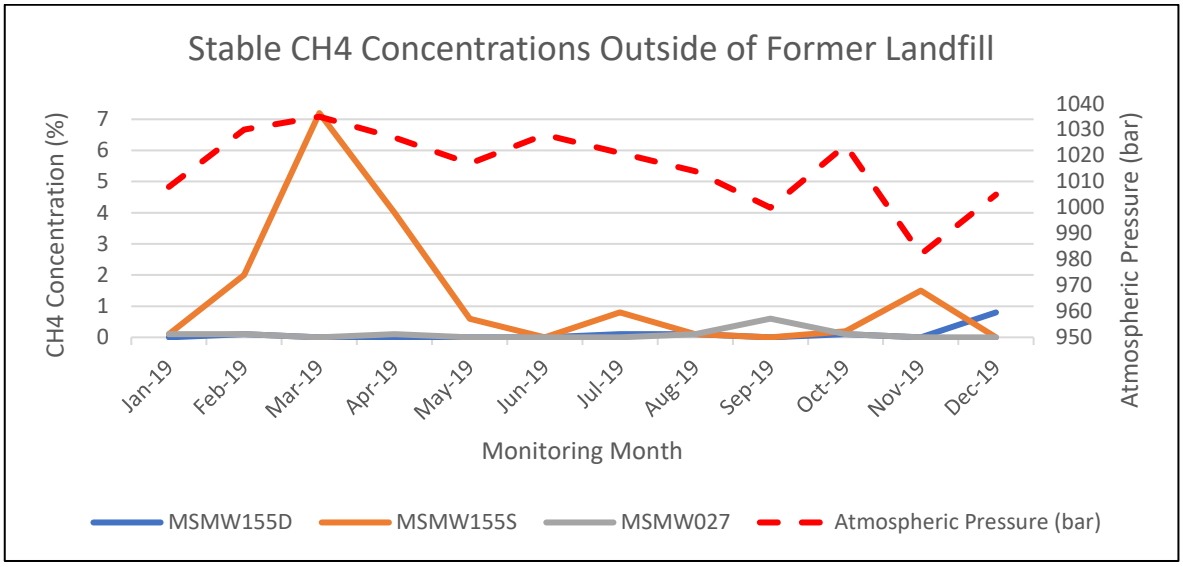


Figure 1: Methane Concentrations in boreholes outside the landfill

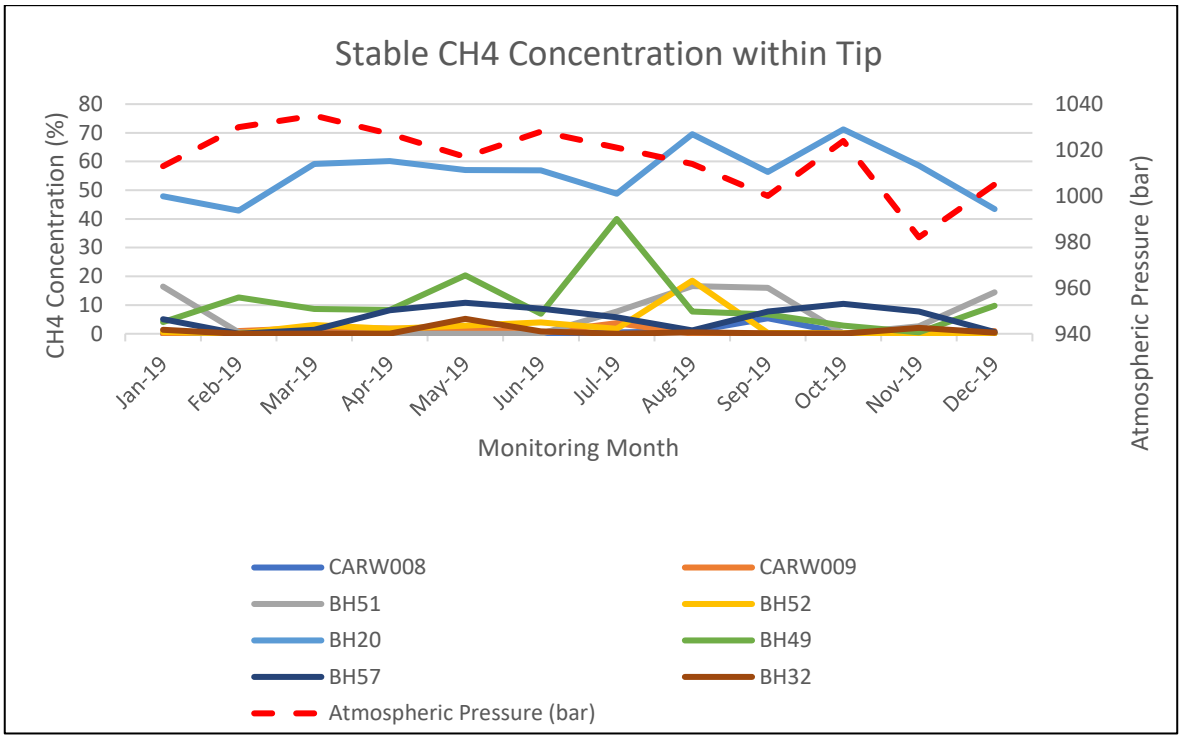


Figure 2: Methane concentrations in boreholes within the landfill

Carbon Dioxide (CO_2)

Based on monitoring data presented in the graphs below (figures 3 &4) stable CO2 concentrations within the former landfill area range between <0.1% and 13.6%. The maximum concentration (13.6%), was detected in BH20 in August and the lowest concentration (0%) detected in BH51 across April – June.

The maximum CO2 concentration (13.4%) recorded outside of the former landfill area was detected in MSMW27 (screened in drift deposits) in July and the lowest concentrations recorded (0.1%) in MSMW155S and MSMW27 during January and August respectively.

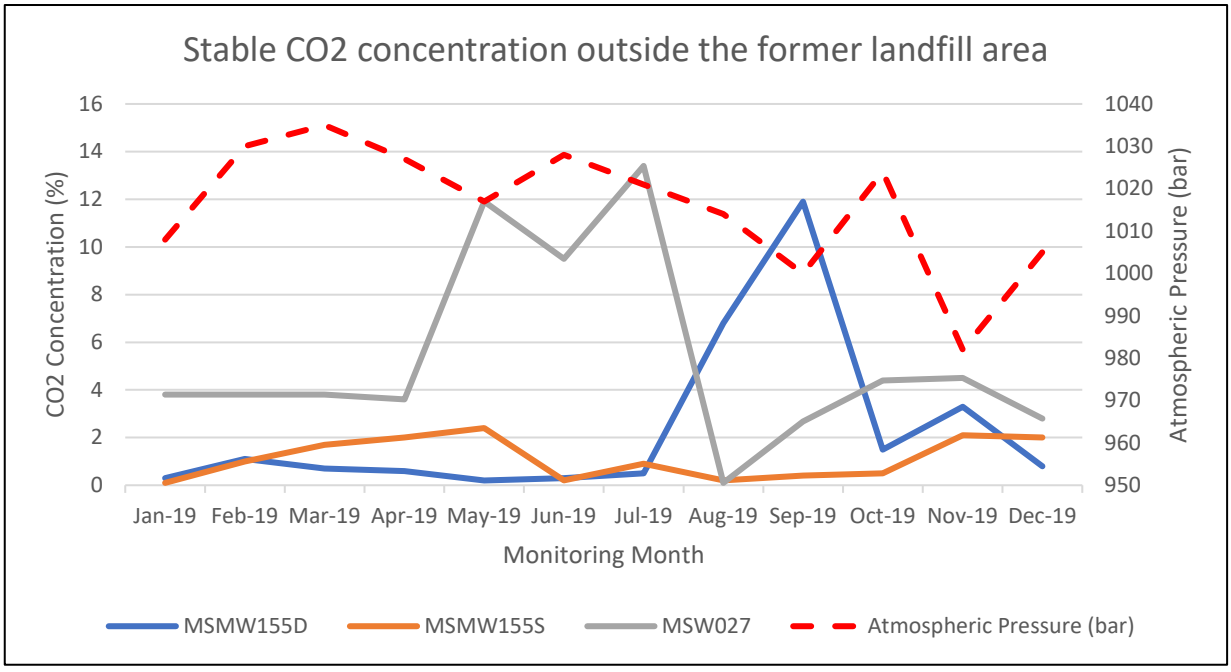


Figure 3: Carbon Dioxide concentrations outside landfill area

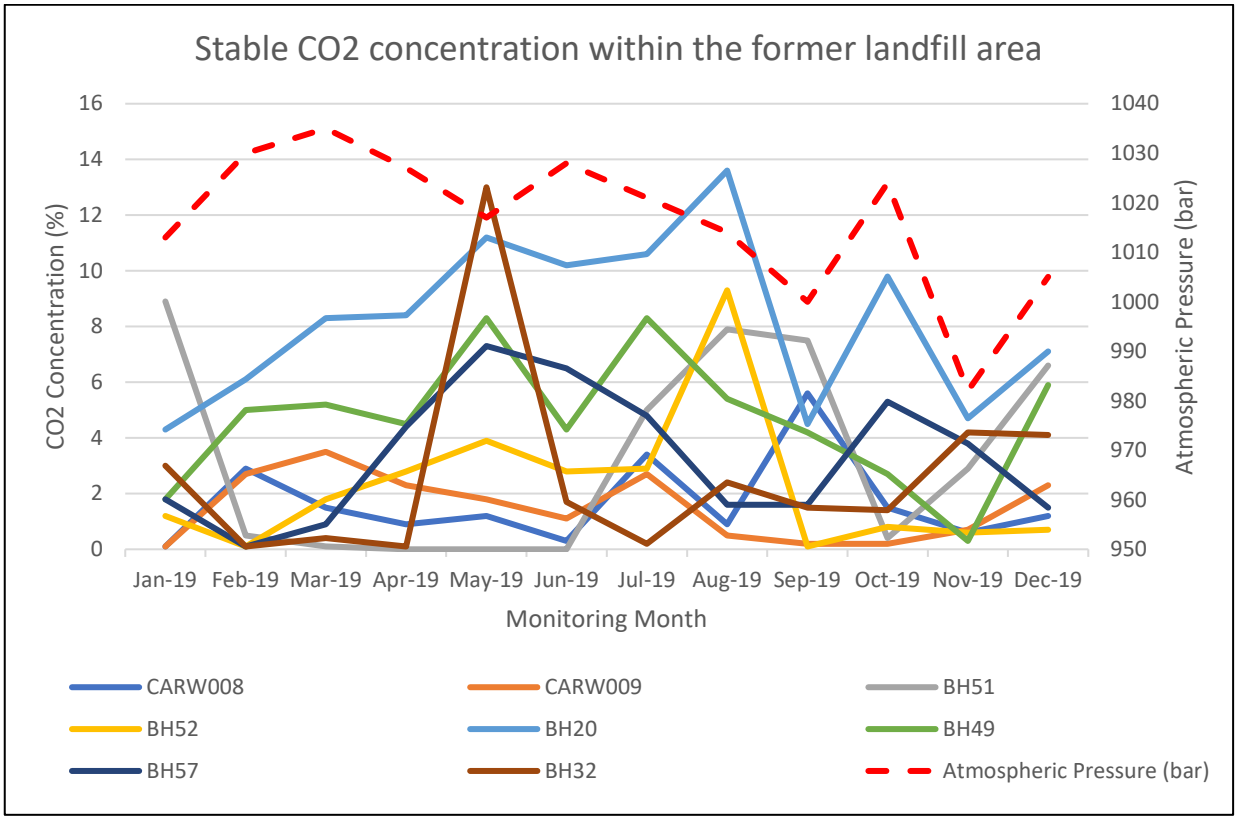


Figure 4: Carbon dioxide concentrations within the landfill

Oxygen (O2)

O2 concentrations (shown on figures 5 & 6) within the former landfill area range between 0.1% and 22.3%, with the lowest concentration recorded in BH20 during May and the maximum detected in CARW009 during January. Oxygen concentrations are stable in BH20, consistently below 1%.

Outside of the former landfill area O2 concentrations range between 4% and 21.2%. The minimum concentration (4%) was recorded in MSMW027 in July and the maximum concentration (21.2%) recorded in MSMW155D in January.

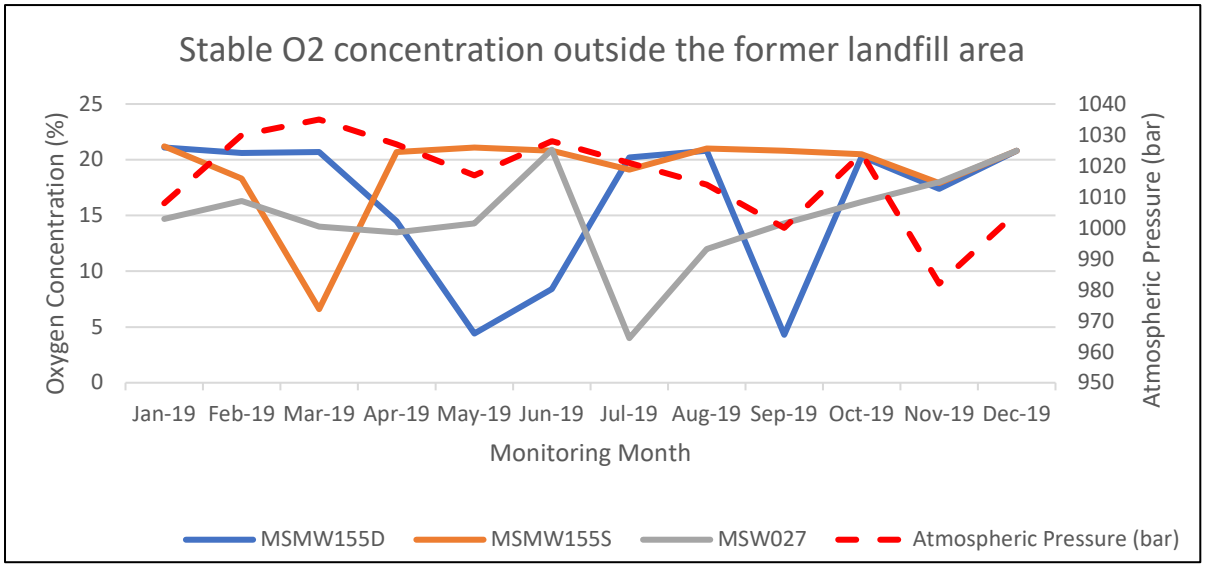


Figure 5: Oxygen concentrations in boreholes outside the landfill

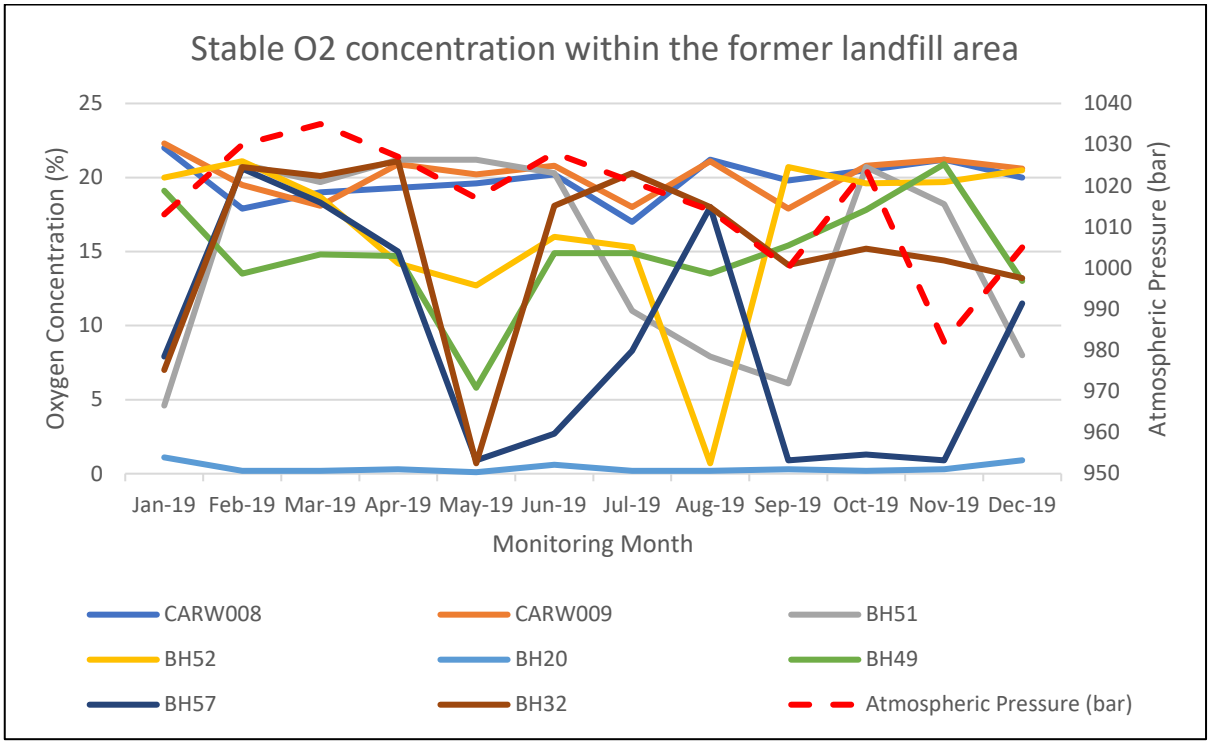


Figure 6: Oxygen concentrations in boreholes within the landfill

Landfill gas monitoring results recorded between January 1st – December 31st, 2019 are summarised in Table 8 below.

Based on the data collected during 2019, there does not appear to be an obvious link between boreholes with greater thicknesses of product and elevated gas concentrations. Monitoring locations where elevated gas concentrations were detected generally have none to minor amounts of oil present.

Table 8: Landfill Gas Concentration Summary

Monitoring location	Location	Methane (%)		Carbon dioxide (%)		Oxygen (%)	
		Min	Max	Min	Max	Min	Max
CARW008	In waste on SE boundary	<0.1	5.4	0.1	5.6	17.0	22
CARW009	In waste on SE boundary	<0.1	3.7	0.1	3.5	17.9	22.3
BH20	In waste within central section	42.9	71.2	4.3	13.6	0.1	1.1
BH32	In waste within central section	<0.1	5.2	0.1	13	0.7	21.1
BH49	In waste within central section	0.5	40	0.3	8.3	5.8	20.9
BH51	In waste within central section	<0.1	16.6	<0.1	8.9	4.6	21.2
BH52	In waste within central section	0.1	18.5	0.1	9.3	0.7	21.1
BH57	In waste within central section	<0.1	10.8	0.1	7.3	0.9	20.6
MSMW155S	Beyond W boundary of landfill area	<0.1	7.2	0.1	2.4	6.6	21.2
MSMW27	Beyond W boundary of landfill area	<0.1	0.6	0.1	13.4	4	20.9
MSMW155D	Beyond W boundary of landfill area	<0.1	0.8	0.2	11.9	4.3	21.1

8 Commentary

LNAPL continues to be monitored within boreholes and sumps within the tip. Generally, more consistent and thicker instances of LNAPL appear at the eastern part of the tip, the areas to the west (the lower tip) has fewer recorded instances of LNAPL in boreholes and sumps.

Suspected DNAPL was measured locally during January, February and March 2019, during the time Atkins were responsible for collecting the data. Since GAL took over the monitoring, there have been no records of DNAPL in any of the locations. This could be down to a difference in the equipment or the operational use of the equipment, or errors made during data recording. GAL have been audited on their use of the equipment and reading of NAPL and groundwater levels remain relatively consistent. Clarification of DNAPL presence and distribution will continue in future monitoring rounds.

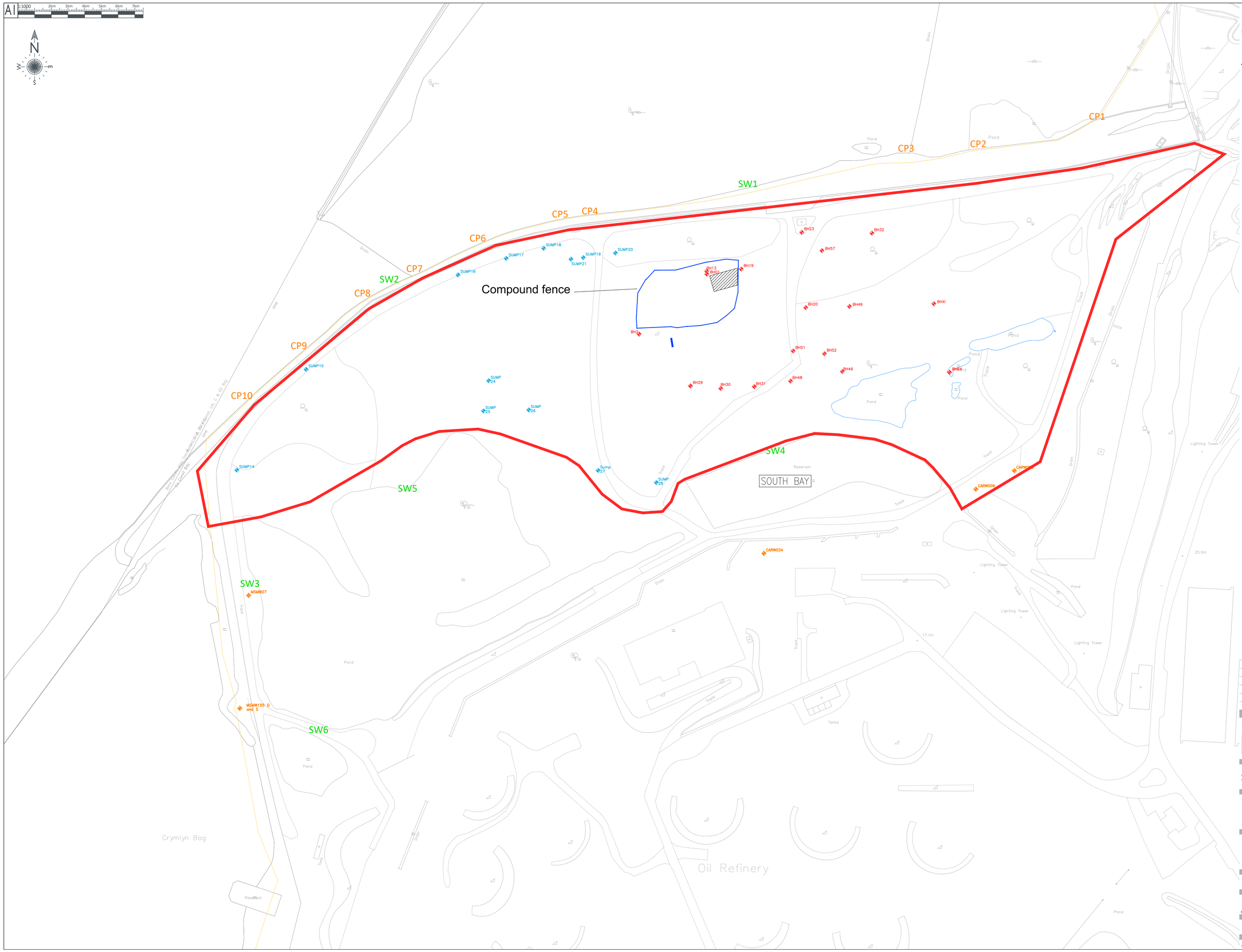
The groundwater levels in the shallow aquifer are broadly in line with what would be expected, i.e. following topography. However, the groundwater plot produced as part of this report is limited due to the spread of available boreholes. Eleven additional boreholes are proposed and are shown on PJA drawing 04020-1006-P0- Proposed Boreholes. These will provide more information to better understand model groundwater flow in the tip and provide a more evenly distributed monitoring network.

During 2018 and early 2019 there was only a sampling success of 19% from 9 monitoring locations screened in the Made Ground, this has increased over 2019 to 56% from 9 monitoring wells screened in the Made Ground. A number of additional wells have been 'found' during the course of the year, and where possible these have been monitored. Locating, identify and assessing the condition of historic wells is an ongoing process and it is planned to take additional samples from these recently found wells in the coming year.

Oil recovery will continue from the external trench and become more consistent from sumps and wells where LNAPL is repeatedly detected. Continued monitoring will show what impact this is having on the NAPL distribution and thickness.

Monitoring will continue into 2020 to build up the data set to determine compliance and control limits to be used in the production of a closure and aftercare management plan.

Appendix A - Site Plans



NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY
P1	13:02:20	Added more boreholes to location plan	JP

PJA
Seven House - High Street
Longbridge - Birmingham
B31 2UQ - Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	- A -	SK201 -	P1

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	30.10.19

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Appendix B - Borehole Logs

Celtic
Design and Construct Remediation

Borehole Number: CBH2

Date: 27 Jan 2009 | Easting: 270302.000

Project No: C1296 | Engineer: MS | Northing: 195534.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.50 - 10.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
3.50m					MADE GROUND: Waste Tip Fill.			
					Continued next sheet			

Comments:

CBH2

Celtic
Design and Construct Remediation

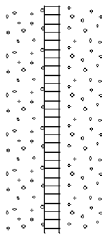
Borehole Number: CBH2

Date: 27 Jan 2009 | Easting: 270302.000

Project No: C1296 | Engineer: MS | Northing: 195534.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.50 - 10.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					PEAT:	10.20		
					End of Borehole	10.50		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH13

Date: 29 Jan 2009 | Easting: 270343.000

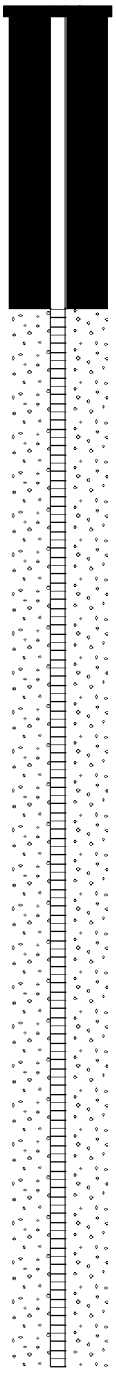
Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH13

Celtic
Design and Construct Remediation

Borehole Number: CBH13

Date: 29 Jan 2009 | Easting: 270343.000

Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
▽ 9.50m					MADE GROUND: Waste Tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH13

Celtic
Design and Construct Remediation

Borehole Number: CBH19

Date: 29 Jan 2009 | Easting: 270362.000

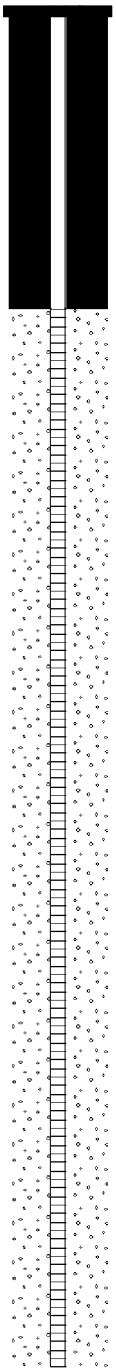
Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH19

Date: 29 Jan 2009 | Easting: 270362.000

Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
9.00m					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH19

Celtic
Design and Construct Remediation

Borehole Number: CBH20

Date: 27 Jan 2009 | Easting: 270832.000

Project No: C1296 | Engineer: MS | Northing: 195553.000

Site Location: BP Former Llandarcy | Method: CP | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 0.80 - 7.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: mixture of compacted grey to black clay, gravels and cobbles (up to 10 cm)			
					MADE GROUND: Mixture of black ash, brick fragments, gravel and brown clay.	2.50		
					End of Borehole	7.50		

0 1 2 3 4 5 6 7 8 9

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH29

Date: 6 Feb 2009 | Easting: 270421.000

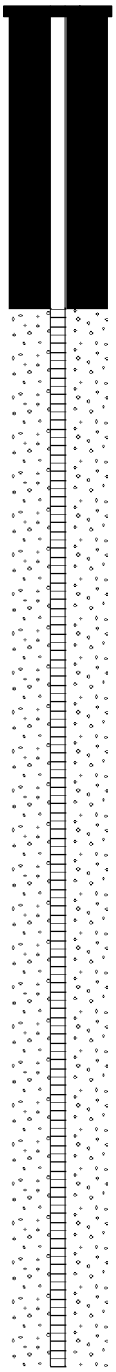
Project No: C1296 | Engineer: MS | Northing: 195573.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH29

Date: 6 Feb 2009 | Easting: 270421.000

Project No: C1296 | Engineer: MS | Northing: 195573.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
9.00m					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH29

Celtic
Design and Construct Remediation

Borehole Number: CBH30

Date: 30 Jan 2009 | Easting: 270422.000

Project No: C1296 | Engineer: MS | Northing: 195553.000

Site Location: BP Former Llandarcy | Method: CP | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.80 - 9.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Brown gravely clay			
					MADE GROUND: Grey gravely clay with bricks fragments	0.60		
					MADE GROUND: Brown gravely clay with bricks fragments	3.50		
					MADE GROUND: Concrete fragments	4.00		
					MADE GROUND: Black clay with bricks and timbers fragments. Very hard object at the bottom of the hole	4.50		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9

▽ 7.00m

Comments:

CBH30

Celtic
Design and Construct Remediation

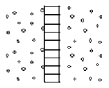
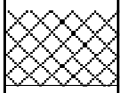
Borehole Number: CBH30

Date: 30 Jan 2009 | Easting: 270422.000

Project No: C1296 | Engineer: MS | Northing: 195553.000

Site Location: BP Former Llandarcy | Method: CP | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.80 - 9.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Black clay with bricks and timbers fragments. Very hard object at the bottom of the hole	9.50		
					End of Borehole			

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Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH31

Date: 30 Jan 2009 | Easting: 270422.000

Project No: C1296 | Engineer: MS | Northing: 195533.000

Site Location: BP Former Llandarcy | Method: CP | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.80 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Clay with bricks and concrete fragments			
					MADE GROUND: Soft grey to brown clay with bricks fragments	2.30		
					MADE GROUND: Clayay peat with ash, bricks, steel and timbers fragments.	8.30		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9

Comments:

Celtic
Design and Construct Remediation

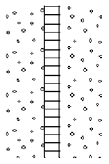
Borehole Number: CBH31

Date: 30 Jan 2009 | Easting: 270422.000

Project No: C1296 | Engineer: MS | Northing: 195533.000

Site Location: BP Former Llandarcy | Method: CP | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.80 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Clayay peat with ash, bricks, steel and timbers fragments.			
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH32

Date: 4 Feb 0009 | Easting: 270442.000

Project No: C1296 | Engineer: MS | Northing: 195595.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
1.50m					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

Comments:

CBH32

Celtic
Design and Construct Remediation

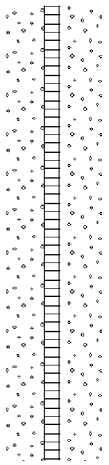
Borehole Number: CBH32

Date: 4 Feb 0009
Easting: 270442.000

Project No: C1296
Engineer: MS
Northing: 195595.000

Site Location: BP Former Llandarcy
Method: ODEX
Datum: -

Client: St. Modwen
Hole Diameter: 200mm
Screen Position: 1.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

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Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH48

Date: 23 Jul 2009 | Easting: 270394.000

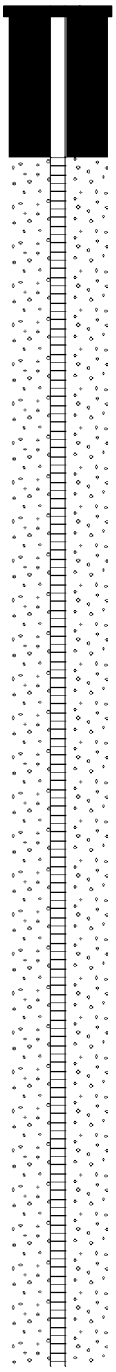
Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
						8.80		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH48

Celtic
Design and Construct Remediation

Borehole Number: CBH48

Date: 23 Jul 2009 | Easting: 270394.000

Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

CBH48

Celtic
Design and Construct Remediation

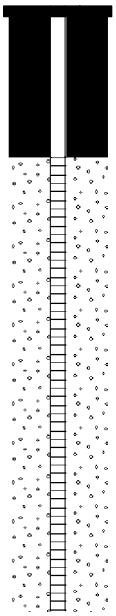
Borehole Number: CBH49

Date: 23 Jul 2009 | Easting: 270415.000

Project No: C1296 | Engineer: MS | Northing: 195501.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 4.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill. Obstruction at 4 metres			
					End of Borehole	4.00		

0 1 2 3 4 5 6 7 8 9

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH51

Date: 22 Jul 2009 | Easting: 270393.000

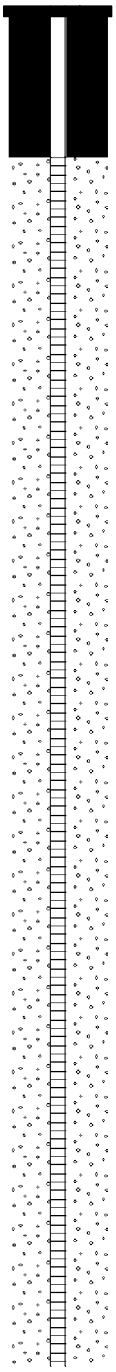
Project No: C1296 | Engineer: MS | Northing: 195523.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH51

Celtic
Design and Construct Remediation

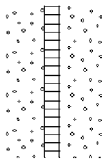
Borehole Number: CBH51

Date: 22 Jul 2009 | Easting: 270393.000

Project No: C1296 | Engineer: MS | Northing: 195523.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH52

Date: 22 Jul 2009 | Easting: 270415.000

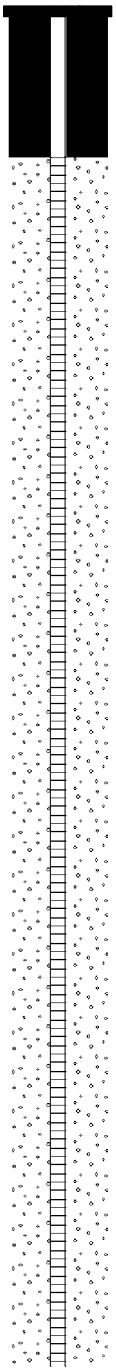
Project No: C1296 | Engineer: MS | Northing: 195525.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
						8.70		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH52

Celtic
Design and Construct Remediation

Borehole Number: CBH52

Date: 22 Jul 2009 | Easting: 270415.000

Project No: C1296 | Engineer: MS | Northing: 195525.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH57

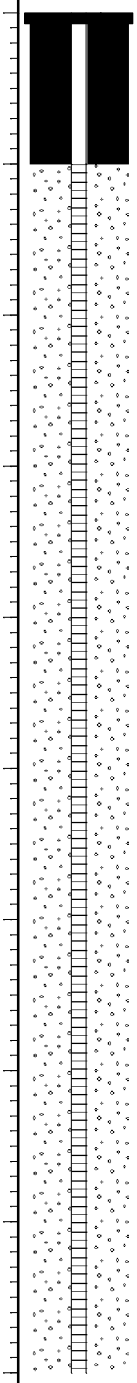
Date: 24 Jul 2009 | Easting: 270410.000

Project No: C1296 | Engineer: MS | Northing: 195585.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					Continued next sheet			



Comments:

CBH57

Celtic
Design and Construct Remediation

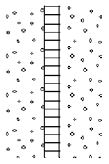
Borehole Number: CBH57

Date: 24 Jul 2009 | Easting: 270410.000

Project No: C1296 | Engineer: MS | Northing: 195585.000

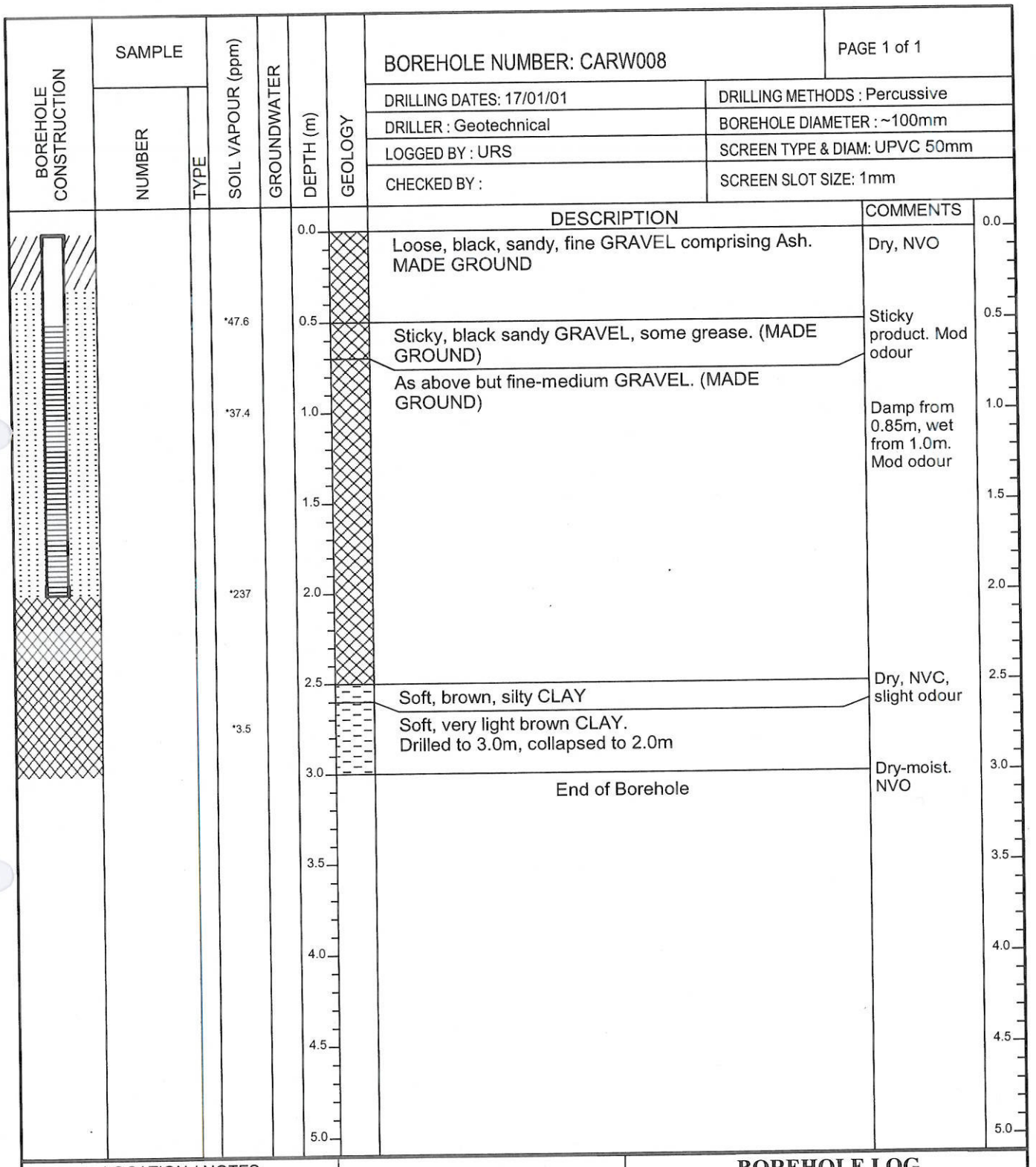
Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					PEAT:	9.60		
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:



LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

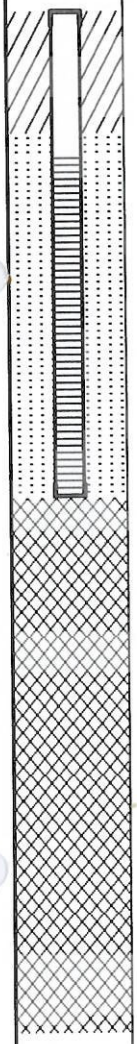
URS

App'd:	Date: 05/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: CARW009

PAGE 1 of 1

DRILLING DATES: 09/01/01 - 10/01/01	DRILLING METHODS :
DRILLER : Geotechnical	BOREHOLE DIAMETER :
LOGGED BY : SC	SCREEN TYPE & DIAM:
CHECKED BY :	SCREEN SLOT SIZE:



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
				0.0		Soft-loose, black, fine-coarse GRAVEL with patches of sandy silt. Grades into gravelly, silty SAND from 0.6m. Lump of sticky grease at 0.65m MADE GROUND	Wet, slight odour
		*4.2		0.5			
		*3.4				Soft, med brown, slightly clayey, slightly sandy SILT with occasional gravels and cobbles. (MADE GROUND)	Wet. Manure-like odour
		*3.5		1.0		Med-soft grey/black clayey SILT.	Damp. Manure odour, some staining
		*14.5		1.5		Very soft, brown/grey/black, slightly gravelly, clayey, sandy SILT. More clayey at 2.0m, but remains soft. Becomes sandier and firmer (compressed) from 2.3m	Very damp, slight odour, some staining. Odour decreases with depth
		*2.2		2.0			
		*1.5		2.5			
		*1.3		3.0		Firm, grey (with some orange streaks), clayey, very sandy SILT. Becoming more clayey from 3.2m	Moist. NVO. Some chicken wire
		*0.5		3.5		Loose, med brown, gravelly SAND. Very gravelly from 3.5m	
				4.0		Med-dense, med brown, gravelly, very sandy SILT	
						End of Borehole	
				4.5			
				5.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

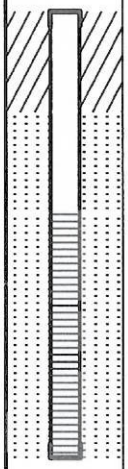
URS

App'd:	Date: 05/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: CARW034

PAGE 1 of 1

DRILLING DATES: 20/06/01	DRILLING METHODS : Percussive
DRILLER : Geotechnical	BOREHOLE DIAMETER : ~100mm
LOGGED BY : NL	SCREEN TYPE & DIAM: UPVC 50mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm



BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
					0.0		Soft, brown, silty PEAT	Strong odour
					0.5		SAMPLE LOST DUE TO HIGH WATER CONTENT	
					1.0			
					1.5		Mottled orange/grey sandy SILT with some clay and occasional gravel. Gravel concentration increasing with depth, resulting in harder drilling.	Sheen and odour. Some free phase product. Heavy staining throughout.
					2.0			
					2.5		End of Borehole	
					3.0			
					3.5			
					4.0			
					4.5			
					5.0			
					5.5			
					6.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

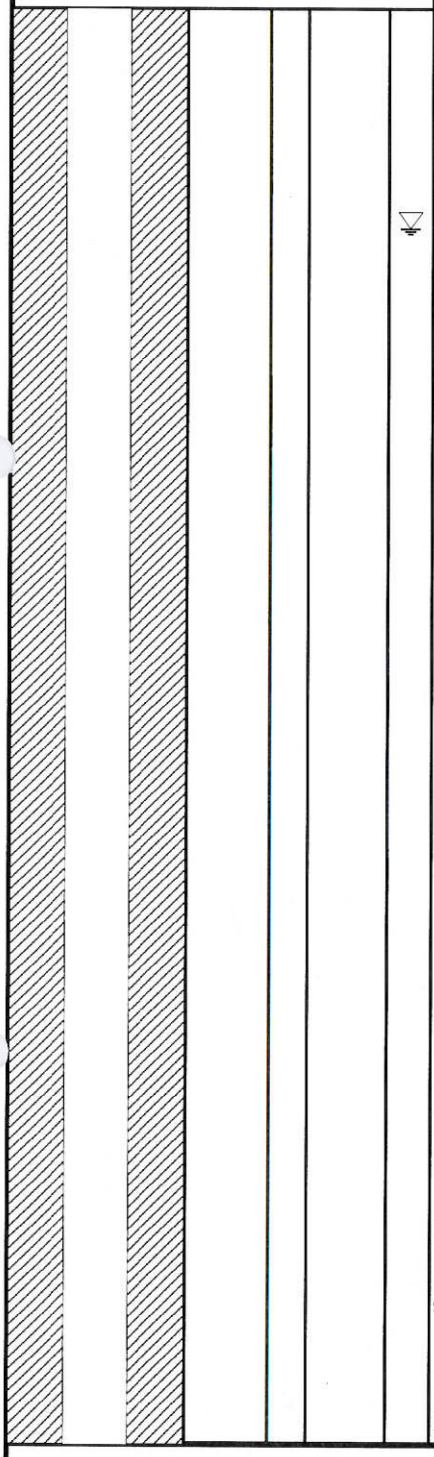
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: **MSMW27d**	PAGE 1 of 2
START DATE: 05/06/98	DRILLING METHOD: Cable Percussion
FINISH DATE: 08/06/98	BOREHOLE DIAMETER: 200/150mm
DRILLER: CP1	SCREEN TYPE & DIAMETER: HDPE 50mm
LOGGED BY: SG APPRD BY:	SCREEN SLOT SIZE: 0.5mm



DESCRIPTION	COMMENTS
Loose red-brown and grey COBBLES with sand and fine to coarse gravel with some concrete (MADE GROUND)	
Loose black / dark brown coarse SAND with ash, clinker, burnt coal and brick (MADE GROUND)	Moderate hydrocarbon odour
becoming coarse sand and gravel at 2.5m	Oily sheen on water surface
blowing ash at 4m	
Spongy light yellow-brown PEAT	No odour
becomes dark brown at 9.7 mbgl	No odour

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. Water strike at 2.0m

LEGEND

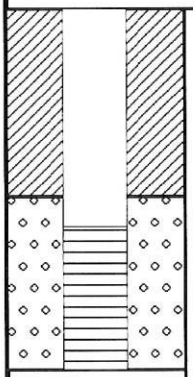
- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY
Appd	DRAFT
Ref.	MC/CR/BRS
Date	JUL 98
Job No.	39991-001-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW27d**		PAGE 2 of 2
START DATE: 05/06/98		DRILLING METHOD: Cable Percussion
FINISH DATE: 08/06/98		BOREHOLE DIAMETER: 200/150mm
DRILLER: CP1		SCREEN TYPE & DIAMETER: HDPE 50mm
LOGGED BY: SG	APPRD BY:	SCREEN SLOT SIZE: 0.5mm



DESCRIPTION	COMMENTS
Spongy dark brown PEAT	No dour
Soft grey-brown slightly silty and sandy CLAY	No odour
Soft to very soft light grey silty and sandy CLAY	No odour
Dense blue-grey GRAVEL with fragments of angular blue-grey medium grained sandstone	No odour
Borehole terminated at 12.5 mbgl	

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. 200mm casing sealed and bentonited and boring reduced to 150 mm at 11.5 mbgl

LEGEND

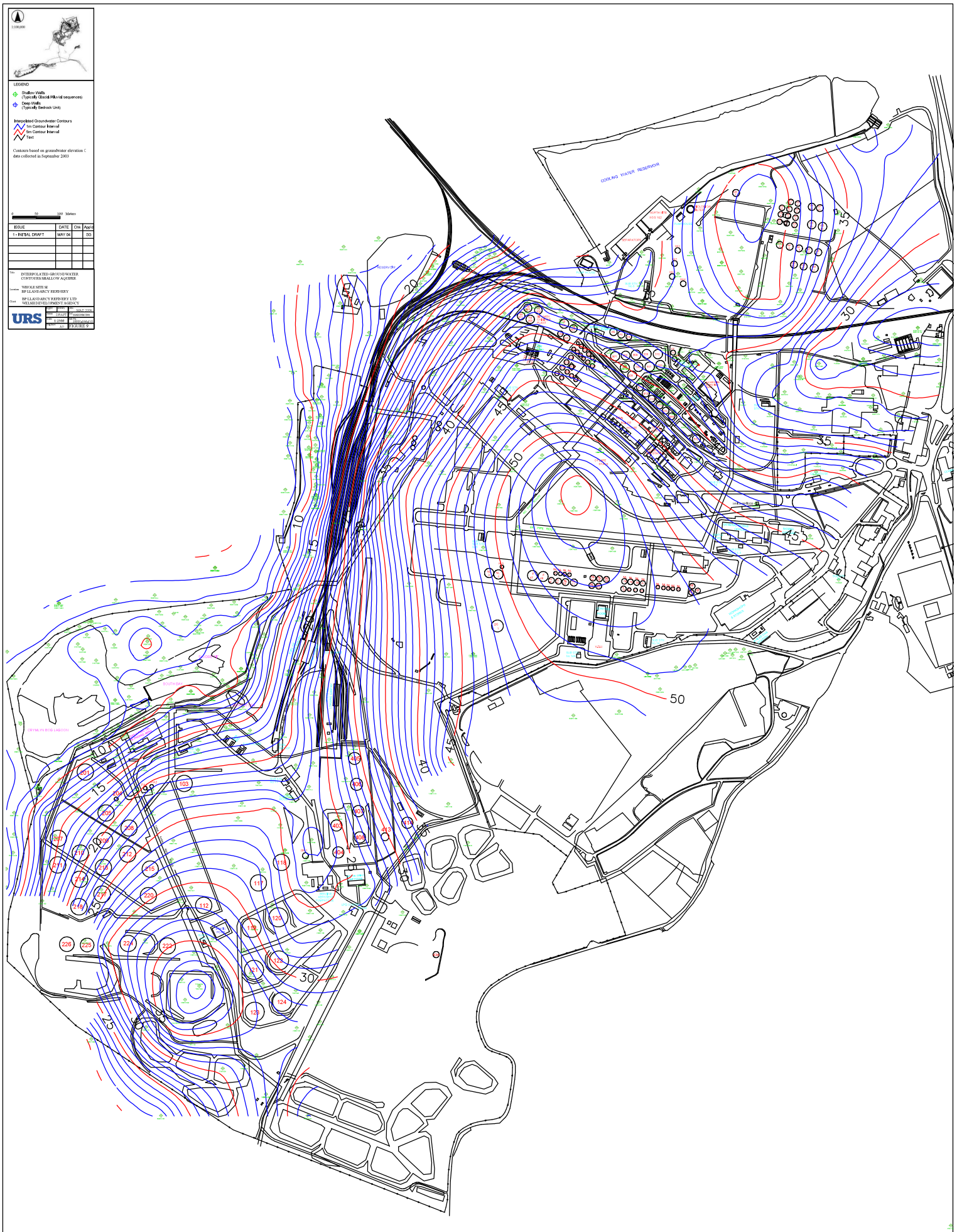
- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

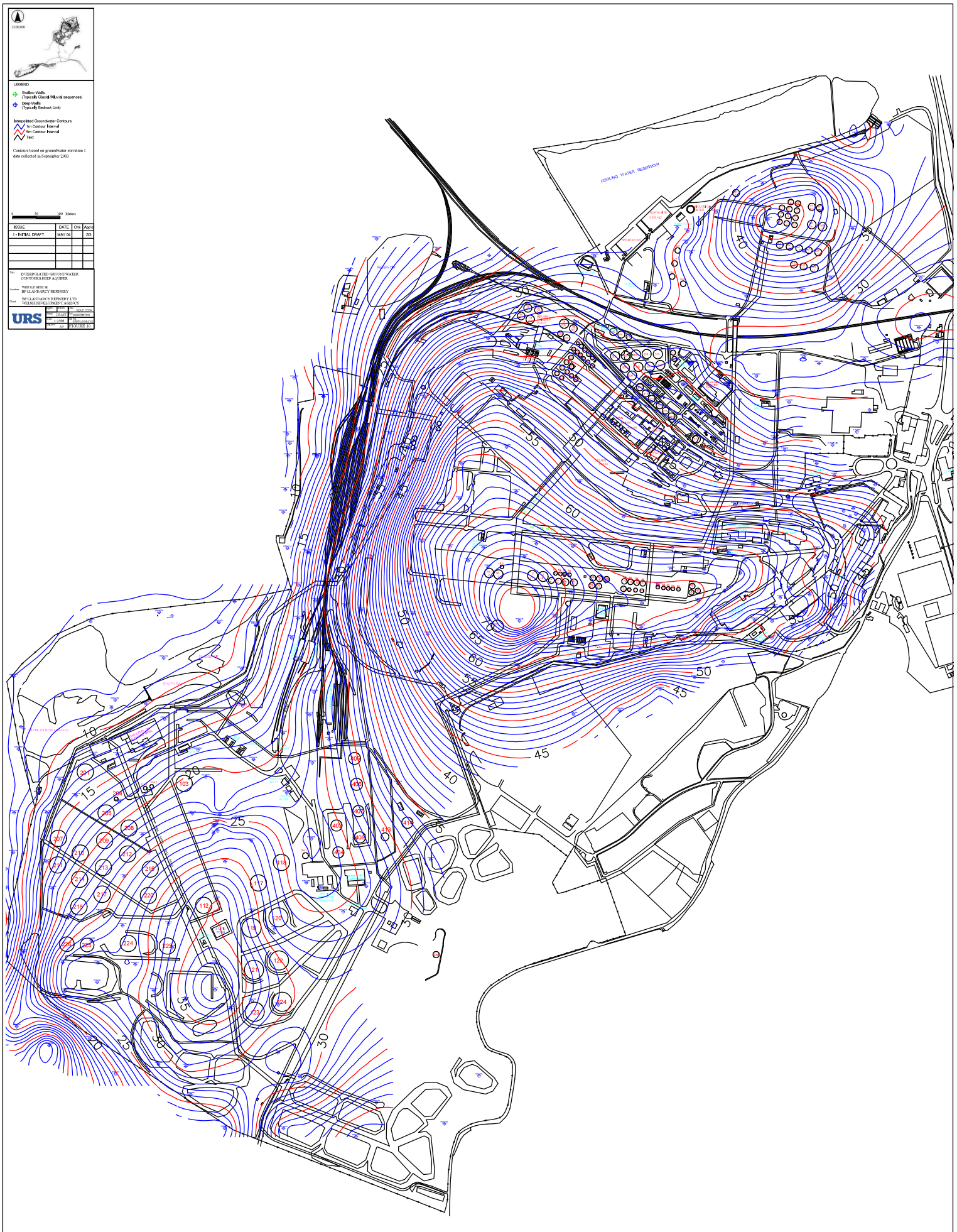
BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY
Appd	DRAFT
Ref.	MC/CR/BRS
Date	JUL 98
Job No.	39991-001-401

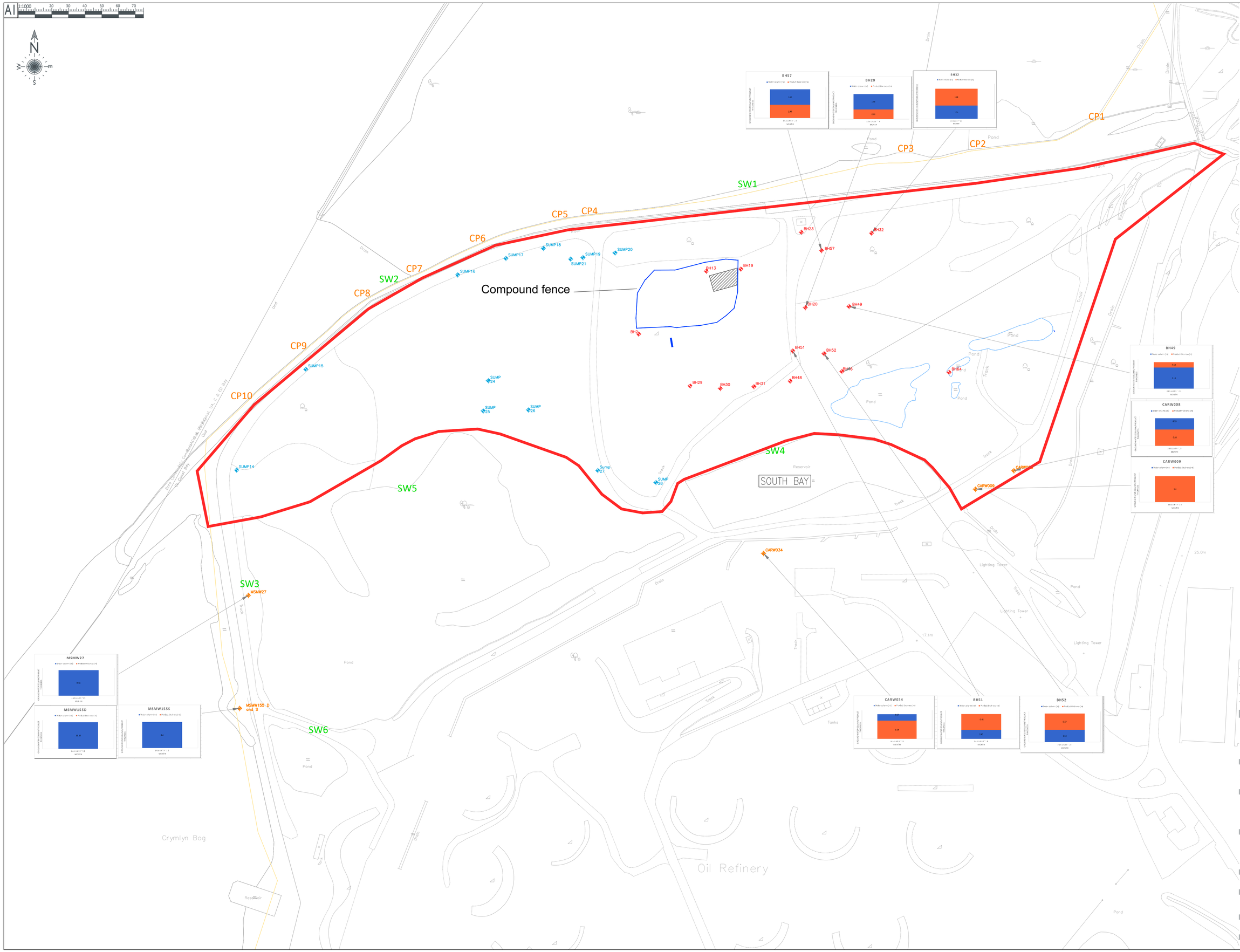
DCM GROUP DAMES & MOORE

Appendix C - URS groundwater drawings


LEGEND
Shallow Wells
(Typically Glacial/Alluvial sequences)
Deep Wells
(Typically Bedrock Unit)
Interpolated Groundwater Contours
1m Contour Interval
5m Contour Interval
Text
Contours based on groundwater elevation d
data collected in September 2003
0 50 100 Meters
ISSUE | DATE | Chk | Appd
1 - INITIAL DRAFT | MAY 04 | | SG
INTERPOLATED GROUNDWATER CONTOURS SHALLOW AQUIFER
WHOLE SITE SI
BP LLANDARCY REFINERY
BP LLANDARCY REFINERY LTD
WELSH DEVELOPMENT AGENCY
URS
FIGURE 9
COOLING WATER RESERVOIR
CRYMLYN BOG LAGOON
SOUTH BAY


1:100,000
LEGEND
Shallow Wells
(Typically Glacial/Alluvial sequences)
Deep Wells
(Typically Bedrock Unit)
Interpolated Groundwater Contours
1m Contour Interval
5m Contour Interval
Text
Contours based on groundwater elevation C
data collected in September 2003
0 50 100 Meters
ISSUE | DATE | Chk | Appd
1 - INITIAL DRAFT | MAY 04 | | SG
Title INTERPOLATED GROUNDWATER CONTOURS DEEP AQUIFER
Location WHOLE SITE SE BP LLANDARCY REFINERY
Client BP LLANDARCY REFINERY LTD WELSH DEVELOPMENT AGENCY
URS
DRAWN MAY 2005
CHECKED DRAFT
SCALE 1:2500
DRAWING NO. FIGURE 10
COOLING WATER RESERVOIR
SEPARATOR
SOUTH DOCK
SOUTH BASIN
CAYMAN BOG LAGOON

Appendix D - NAPL thickness and distribution



NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA

Seven House - High Street
Longbridge - Birmingham
B31 2UQ - Tel: 0121 475 0234

Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
January

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK205	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	03.02.20

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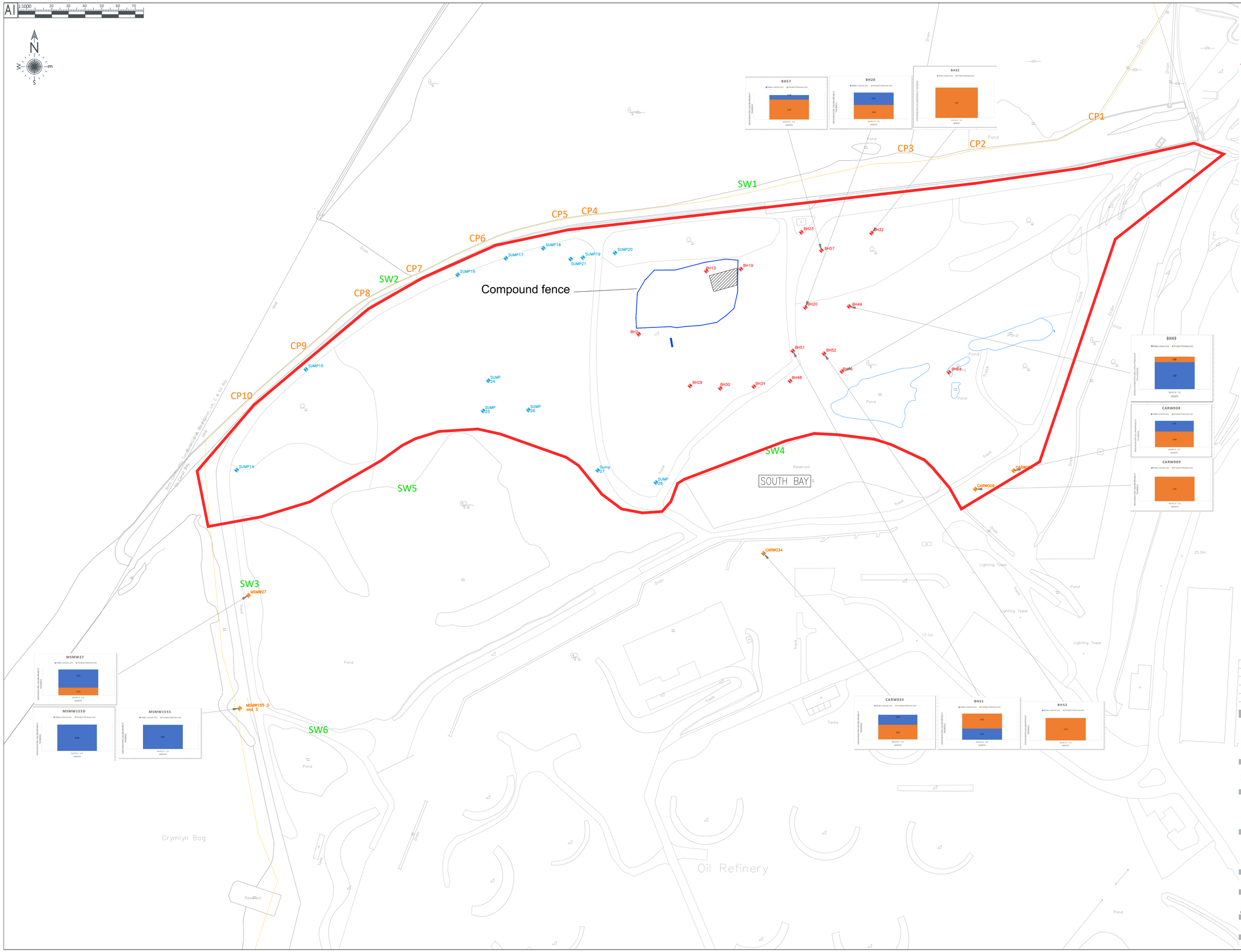

NOTES

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KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA
Seven House - High Street
Longbridge - Birmingham
B31 2UQ - Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
March

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK206	P0

Revision Letter : P = Prelim / A = Approval / T = Tender / C = Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	03.02.20

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A1 1:1000

NOTES

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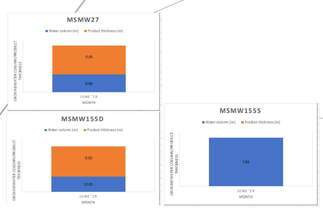
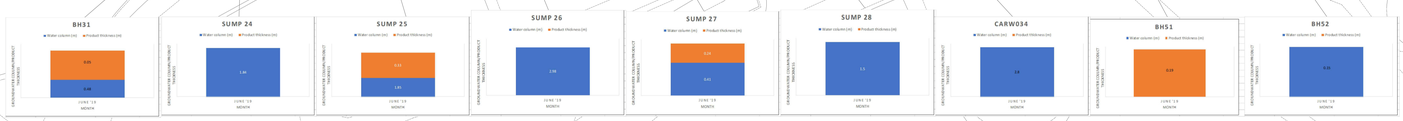
KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point





Compound fence

CP1 CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SW1 SW2 SW3 SW4 SW5 SW6

SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP15 SUMP14 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

BH13 BH19 BH23 BH57 BH32 BH20 BH49 BH51 BH52 BH46 BH64 BH48 BH29 BH30 BH31

CARW034 CARW008 CARW009

MSMW27 MSMW15S_D and_S

SOUTH BAY

Reservoir

Oil Refinery

Crymlyn Bog

Pond Track Drain Lighting Tower 25.0m 17.1m

REV	DATE	REVISION NOTE	BY

PJA
Seven House · High Street
Longbridge · Birmingham
B31 2UQ · Tel: 0121 475 0234
Birmingham · Bristol
Exeter · London · Reading
pja.co.uk

CLIENT
St Modwen Development Ltd

PROJECT
Coed Darcy

DRAWING TITLE
Crymlyn Tip
Monitoring Location Plan
June

DRAWING ISSUE STATUS
INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK207	P0

Revision Letter : P = Prelim / A = Approval / T = Tender / C = Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	04.02.20

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A1 1:1000 20 30 40 50 60 70

N W E S

NOTES

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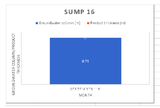
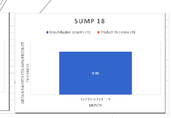
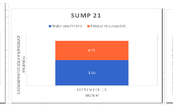
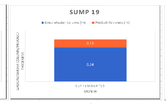
KEY

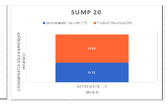
- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

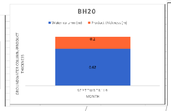


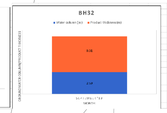


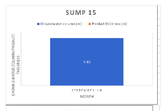


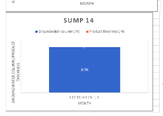


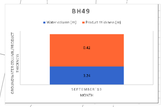


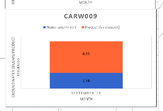












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PROJECT
Coed Darcy

DRAWING TITLE
Crymlyn Tip
Monitoring Location Plan
September

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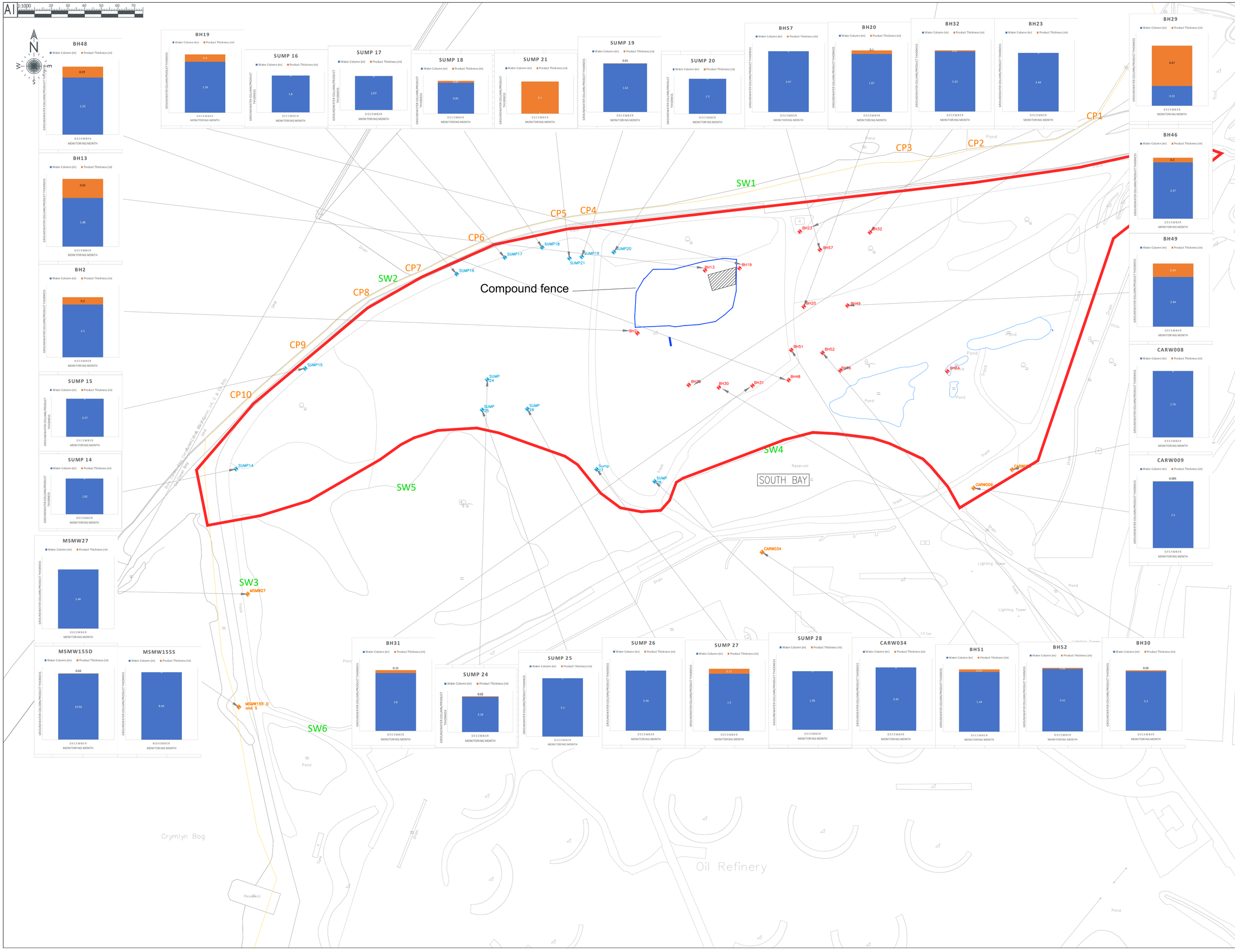

NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

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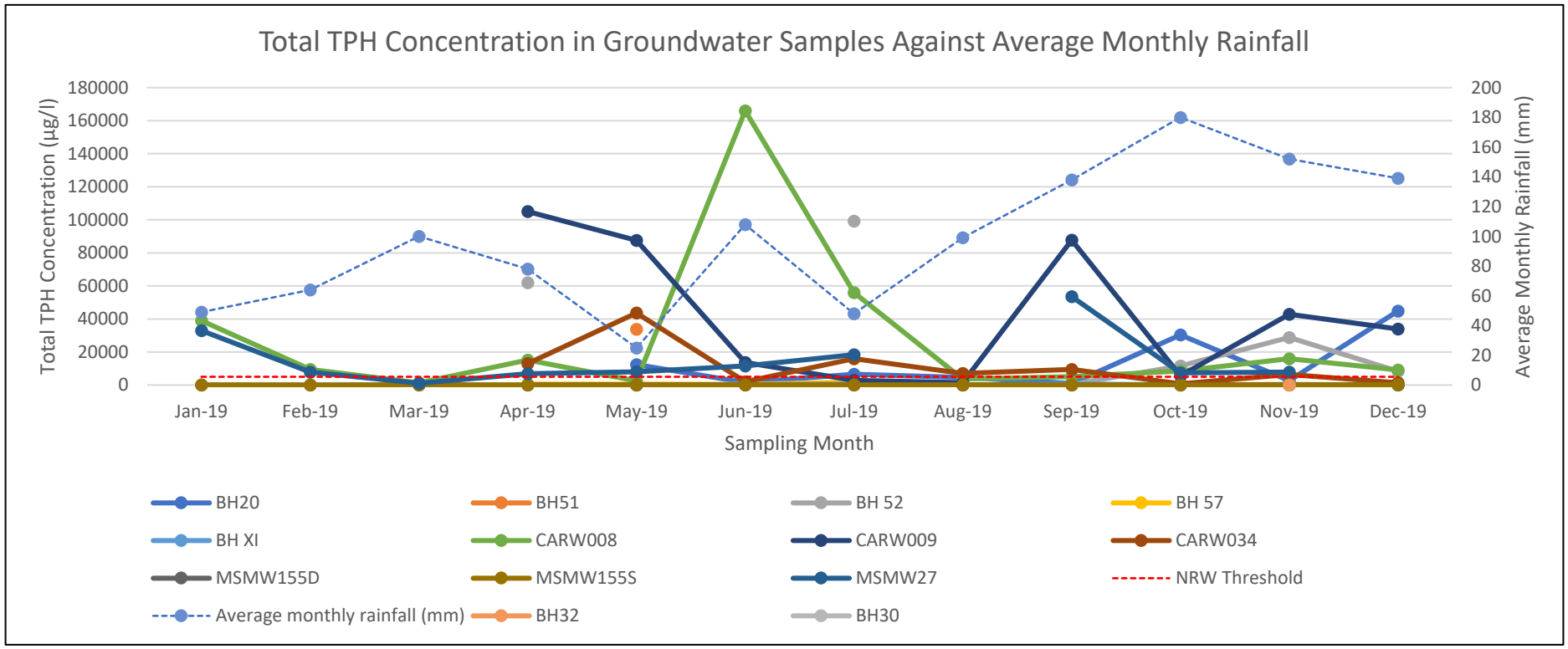
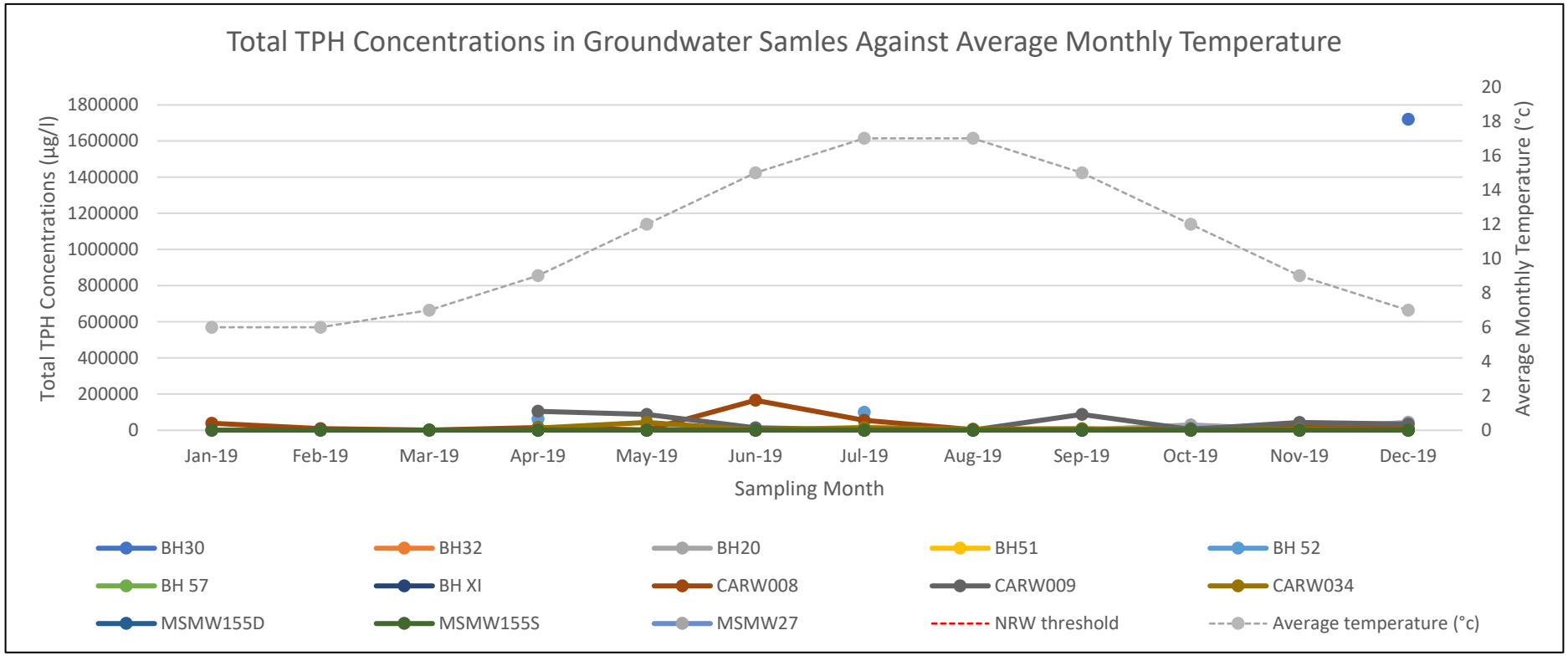
Appendix E - Groundwater & Surface Water Laboratory Results

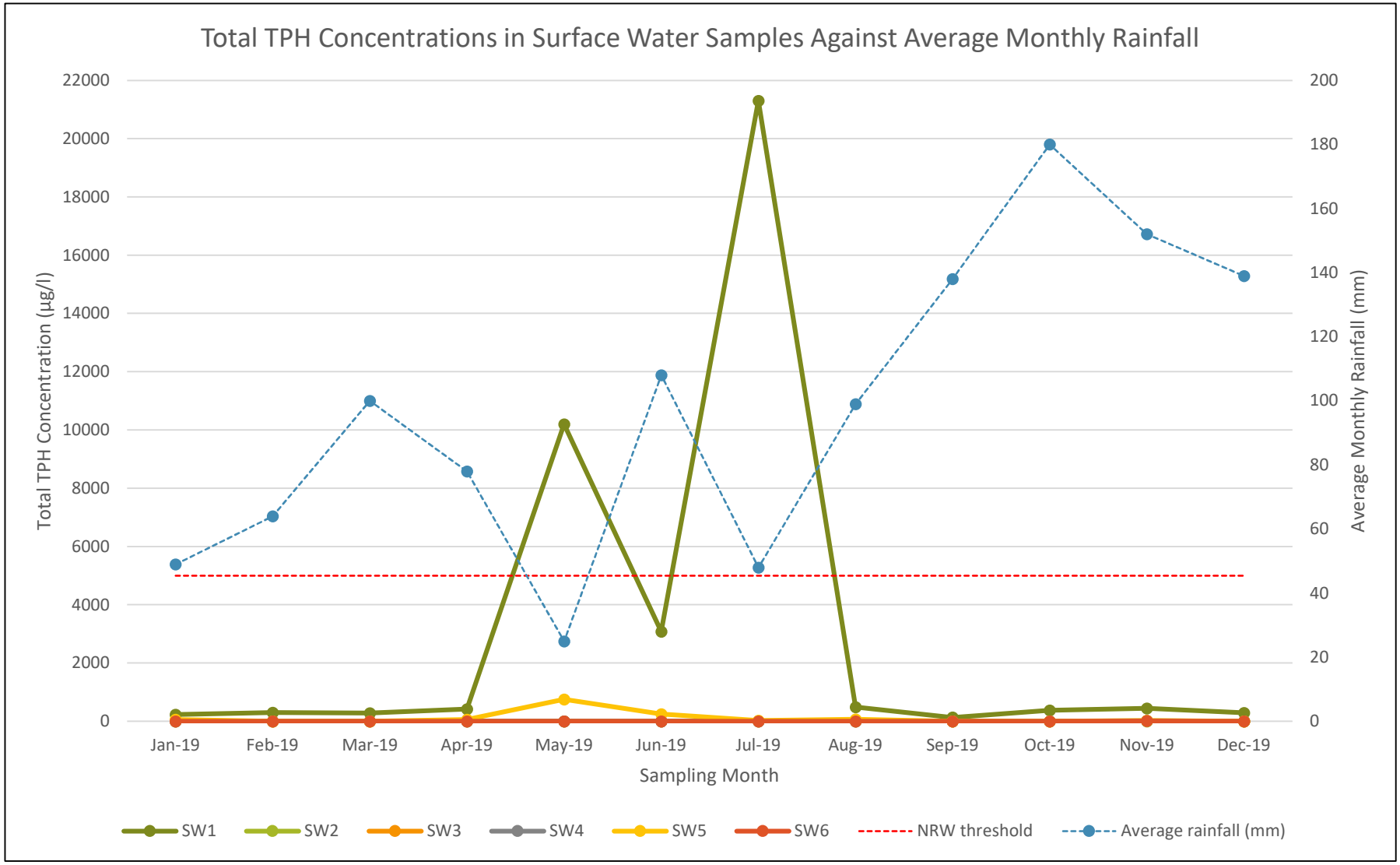
Graph 1


Total TPH Concentration in Groundwater Samples Against Average Monthly Rainfall
Total TPH Concentration (µg/l)
Average Monthly Rainfall (mm)
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
200
180
160
140
120
100
80
60
40
20
0
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Sampling Month
BH20
BH51
BH 52
BH 57
BH XI
CARW008
CARW009
CARW034
MSMW155D
MSMW155S
MSMW27
NRW Threshold
Average monthly rainfall (mm)
BH32
BH30

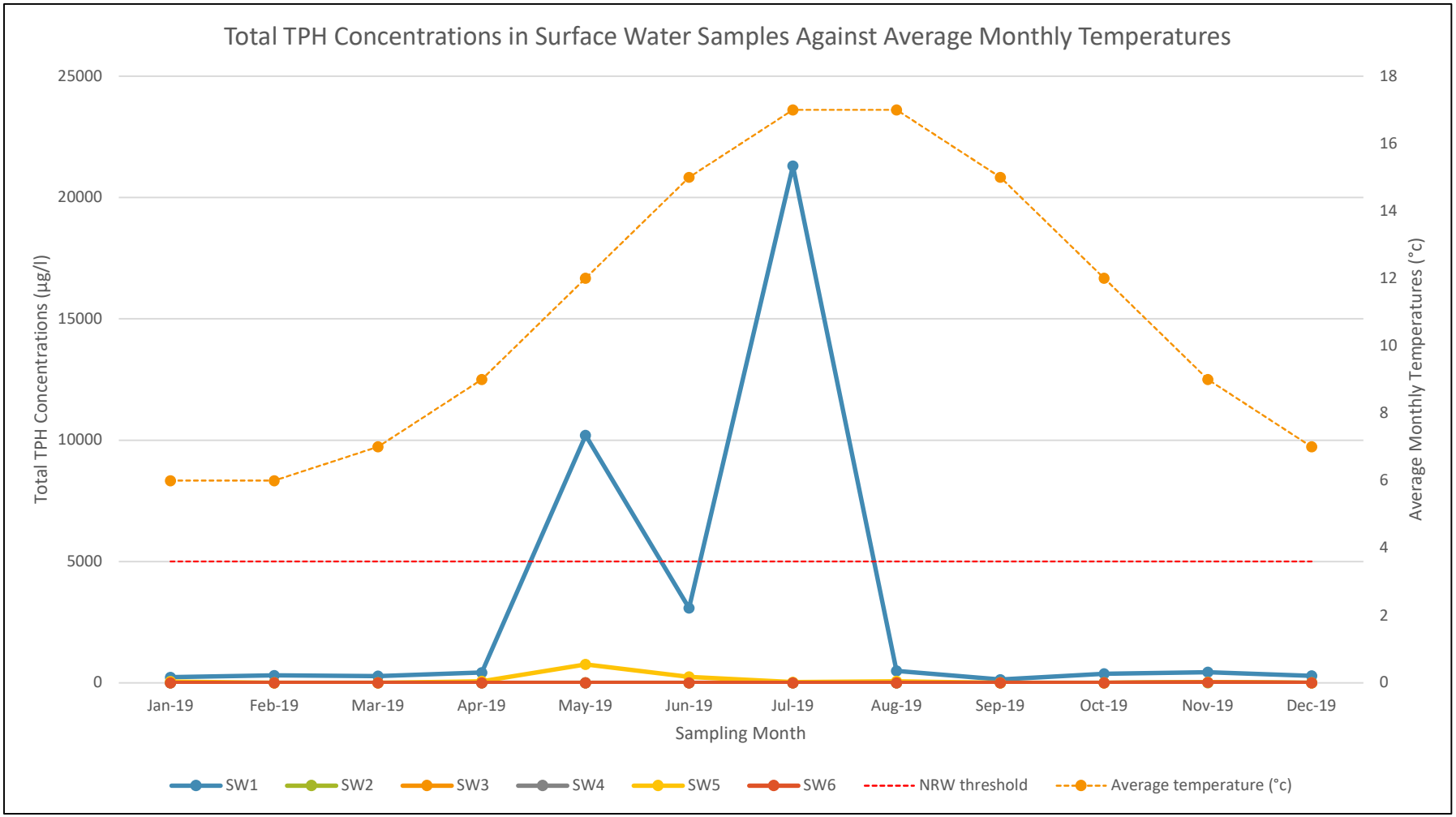
Graph 2


Total TPH Concentrations in Groundwater Samles Against Average Monthly Temperature
Total TPH Concentrations (µg/l)
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
Average Monthly Temperature (°c)
20
18
16
14
12
10
8
6
4
2
0
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Sampling Month
BH30
BH32
BH20
BH51
BH 52
BH 57
BH XI
CARW008
CARW009
CARW034
MSMW155D
MSMW155S
MSMW27
NRW threshold
Average temperature (°c)

GRAPH 3


Total TPH Concentrations in Surface Water Samples Against Average Monthly Rainfall
Total TPH Concentration (µg/l)
Average Monthly Rainfall (mm)
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
200
180
160
140
120
100
80
60
40
20
0
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Sampling Month
SW1
SW2
SW3
SW4
SW5
SW6
NRW threshold
Average rainfall (mm)

GRAPH 4


Total TPH Concentrations in Surface Water Samples Against Average Monthly Temperatures
Total TPH Concentrations (µg/l)
Average Monthly Temperatures (°c)
25000
20000
15000
10000
5000
0
18
16
14
12
10
8
6
4
2
0
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Sampling Month
SW1
SW2
SW3
SW4
SW5
SW6
NRW threshold
Average temperature (°c)

Appendix F - Proposed Borehole Location Plan

A1 1:1000 20m 30m 40m 50m 60m 70m

N W E S

BH507S
BH507D
BH503
BH506S
BH506D
BH502
BH501
BH508
BH504
BH110
BH509
BH511

Pond
Drain
Track
Level Crossing
Lighting Tower
Reservoir
Tanks
Oil Refinery
Crymlyn Bog
25.0m
17.1m

NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Site Ownership Boundary
- Environmental permit boundary
- Proposed boreholes

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St. Modwen Developments Limited

Coed Darcy

Crymlyn Tip - Environmental Monitoring Annual Report

February 2021

Project Code: 04020

Document Reference: 4020-PJA-20-XX-RP-R-0045

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1 Introduction

1.1 Overview

This report has been prepared to satisfy Condition 4.2.2 (a) of Crymlyn Tip Environmental Permit EPR/AP3990LR and subsequent variations (the Permit), which states:

'4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency [now Natural Resources Wales] by 31 January (or other date agreed in writing by [NRW] each year. The report(s) shall include as a minimum:

a) A review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the risk assessments submitted in relation to this site and any agreed amendments thereto.'

This report covers the monitoring period January 1st 2020 to December 31st 2020.

1.2 Background

St. Modwen Developments Limited (St. Modwen) acquired responsibility for Crymlyn Tip (the Tip) in 2008, when they purchased the former Llandarcy Oil Refinery from BP. For the Tip to enter 'definitive' closure NRW must be satisfied that a Closure and Aftercare Management Plan has been produced.

In January 2018 Atkins were appointed by St. Modwen to undertake an environmental monitoring programme in line with the requirements of the Permit and to assist in the production of the Closure and Aftercare Management Plan.

1.3 Summary of Works

The environmental monitoring programme was initially undertaken by Atkins up until March 2019. As of April 2019, PJA took over responsibilities for elements of the monitoring and reporting of the findings on behalf of St. Modwen.

GeoEnvironmental Applications Ltd (GAL) have been contracted by St. Modwen to manage the recovery of local free phase oil within the Tip and its peripheries. Alongside the oil recovery, GAL carry out groundwater monitoring within boreholes/sumps and obtain monthly gas readings from available boreholes within/surrounding the Tip as part of the monitoring programme. The oil recovery and monitoring works carried out by GAL are overseen by PJA, who also collect groundwater and surface water samples on a monthly basis as part of the monitoring programme.

1.4 Supporting Documents

The last annual monitoring report covering the year 2019 was produced by PJA and submitted to NRW in April 2020:

- Coed Darcy – Crymlyn Tip Environmental Monitoring Annual Report, April 2020 –Ref: 4020/OUT/0027. Dated 08/04/2020.

A technical note was issued by PJA to NRW in November 2019, documenting works undertaken between April and September 2019:

- Coed Darcy – Crymlyn Tip Factual Summary Report, April – September 2019. Ref: 4020-PJA-19-XX TN-R-005. Dated 22/10/2019.

Additional information relating to the history, operation, previous assessments and risk assessments of the Tip are presented in the following reports:

- Atkins (2013) Coed Darcy – Hydrogeological Risk Assessment Crymlyn Tip;
- Atkins (2013) – Coed Darcy – Landfill Gas Risk Assessment and Gas Management Plan;
- Atkins (2017) – Coed Darcy Crymlyn Tip- Partial Surrender of Coed Darcy Wetlands. EPR/AP3990LR/S003 Site Condition Report. Ref 5041216-RAP-RPT-0001788;
- Atkins (2019) – Coed Darcy Crymlyn Tip – Environmental Permit Monitoring. Ref: 5041216. Dated: 31/01/2019;
- Natural Resources Wales (2019) – Compliance Assessment Report. Ref: CAR_NRW0034811. Dated: 13/03/2019; and
- PJA – Crymlyn Tip – Environmental Monitoring Annual Report. Ref: 04020/OUT/0027. Dated April 2020.

It is assumed that the reader has access to the above documentation and is familiar with previous assessments undertaken. This report is not intended to repeat or reproduce findings of previous assessments in any great detail.

1.5 Limitations

This report has been prepared by PJA, on behalf of St. Modwen, for submission to NRW. This report shall not be relied upon or transferred to any other parties. If an unauthorised third party comes into possession of this report, they rely on its contents at their own risk.

The findings within this report are based upon information gained from a variety of sources and field measurements as detailed within this report which PJA believes are reliable. Nevertheless, PJA cannot guarantee the authenticity or reliability of third-party information.

The conclusions made within this report are based on the guidance available at the time of writing.

2 Site Setting

2.1 Site Location and Description

The Tip is located in the historical 'Containment Area' in the western section of the wider Coed Darcy development at the former Llandarcy Oil Refinery. The 'Containment Area' also includes the a series of lagoons and wetlands. The containment area is shown in Appendix A on PJA drawing 04020-A-0110-P1: Notable Areas & NRW Discharge Consent Points.

The area covered by the Permit, and to which this report relates, is shown on drawing 04020-A-SK201-P2 and consists of the 'lower tip' in the west and the 'main tip' in the centre and east. To the north is Crymlyn Bog and to the south of the permitted area are the wetlands which were surrendered from the Permit in 2017.

2.2 Brief Site History

When the refinery opened in the early 1920s the 'Containment Area' comprised a series of lagoons and wetlands, congruent with Crymlyn Bog. The lagoons were initially constructed during the operational years of the refinery and were intended to intercept oil, preventing it from entering Crymlyn Bog. There are three lagoons within the Containment Area: Crymlyn Bog Lagoon (approx. 10,500m^3), South Bay (approx. 4,450m^3) and West Bay (approx. 1,500m^3).

Prior to the Second World War an ash bund was constructed around the Containment Area to provide a containment area for oil, which may have otherwise flowed into Crymlyn Bog if the tank farm area had been struck by bombs during the war. The ash bund also contained drainage systems, serving the southern half of the former refinery.

In 1977 a waste disposal license was granted for the Containment Area. The license granted the deposition of refinery waste, including both inert and potentially hazardous materials. Waste was filled in the area north of the wetlands. No waste has been accepted since 1999 and the landfill has been non-operational since July 2001.

Remedial works have taken place within the wetlands (South Bay, West Bay and Crymlyn Bog Lagoon) between 2011 and 2015. These works were summarised as part of the submission for the partial surrender of the waterbodies form the permitted area. The partial surrender report (Atkins report reference- 5041216-RAP-RPT-0001788) was submitted to NRW and the Coed Darcy wetlands removed from the permitted area in 2017:

The remaining permitted area is outlined in red on drawing 04020-A-SK201-P2.

3 Environmental Setting

3.1 Geology

Published British Geological Survey records indicate superficial deposits at the Tip to predominantly comprise Peat underlain by Devensian Till; however Peat is absent from the eastern portion of the Tip. Bedrock of the Pennant Sandstone Formation underlies the superficial deposits.

Based on historical borehole logs Made Ground/waste thicknesses are variable but extend to depths in excess of 17mbgl locally. Made Ground generally comprises grey, brown and black sandy, gravelly clay, with sand, gravels and cobbles consisting of bricks, concrete, timber, metal, and ash. Much of the infill material is consistent with waste derived from refinery operations. There are areas where asbestos waste is reported to have been deposited as well as tank sludges, other industrial waste by-products, oil and tar residues.

Available borehole logs are presented in Appendix B.

3.2 Hydrogeology

Peat is classified as Unproductive Strata and Till is classified as a Secondary (Undifferentiated) Aquifer. The underlying bedrock is classified as a Secondary A Aquifer.

Following an investigation across the wider Llandarcy Oil Refinery, including the Tip, URS produced groundwater contour plots for the bedrock and superficial aquifers (URS Report: 39991-044-785: Final Factual Report Whole Site Investigation BP LLANDARCY REFINERY 12th August 2005). These plots indicate groundwater in the bedrock beneath the Tip flows from south to north across the permitted area. Artesian and sub-artesian conditions may be present in the bedrock around the boundary between the Tip and Crymlyn Bog. Monitoring of shallow groundwater beneath the Tip indicates possible local radial flow although this may be distorted by the presence of residual oil and by the heterogeneous nature of the waste material.

For reference the groundwater contour plots taken from the original URS report are presented in Appendix C.

3.3 Hydrology

A ‘peripheral trench’ separating the Tip from Crymlyn Bog to the north is a narrow channel that intercepts groundwater flowing to the north from the Tip. A plywood wall in the trench traps free phase oil, whilst allowing groundwater to flow underneath the plywood into the bog. Oil is periodically collected from the trench (and from sumps and boreholes within the Tip) and sent for offsite processing.

Three water bodies located in the south of the wider Containment Area, namely South Bay, West Bay and Crymlyn Bog Lagoon, were surrendered from the Permit in 2017.

3.3.1 South Bay

South Bay has a capacity of approximately 4,450m^3 and is located to the south of the Tip. The waterbody was originally created to intercept uncontrolled discharge of free product from the refinery and prevent it from entering Crymlyn Bog.

3.3.2 West Bay

West Bay is approximately 1,500m^3 in capacity and lies to the south west of the Tip. Similar to South Bay, West Bay was installed to intercept uncontrolled discharge of free product from the western section of southern tank farm and prevent it from entering Crymlyn Bog.

3.3.3 Crymlyn Bog Lagoon

Located to the south of the Tip, Crymlyn Bog Lagoon receives inputs from both South Bay and West Bay, prior to discharging into Crymlyn Bog. Discharge to the bog from Crymlyn Bog Lagoon is via a siphon valve and a historical oil-water interceptor located within the ash bund. The outfall from the siphon valve is a NRW consented discharge point, W3, under Environmental Permit EPR/ LB3293HN which is held by St. Modwen.

4 Surface Water and Groundwater Monitoring and Sampling

4.1 Monitoring and Sampling Locations

Current and proposed future monitoring and sampling locations are shown on PJA drawing 04020-A-SK201-P2 in Appendix A and are summarised in Table 1. The first two columns of Table 1 show nomenclature changes made during 2020 to ensure consistency with historical borehole logs. Laboratory analytical results for sampling undertaken during 2020 will reference the 'previous location ID' shown in the second column of the table.

Table 1: Summary of Monitoring and Sampling Locations

Corrected Location ID	Previous Location ID	Monitoring type	Response zone
SW1 –SW6	N/A	Surface water	Surface water
Sumps 14 – 21 & 24-28	N/A	Oil recovery	Made Ground
CBH2	BH2	Groundwater	Made Ground
CBH13	BH13/ BH01	Groundwater	Made Ground
CBH16	BH30	Groundwater	Made Ground
CBH19	BH19	Groundwater	Made Ground
CBH20	BH20	Gas & groundwater	Made Ground
CBH23	BH23	Gas & groundwater	Made Ground
CBH25	N/A	*will be monitored from January 2021	Made Ground
CBH32	BH32	Gas & groundwater	Made Ground
CBH39	N/A	*will be monitored from January 2021	Made Ground
CBH46	BH46	Gas & groundwater	No borehole log
CBH47	BH31	Groundwater	Made Ground
CBH48	N/A	*will be monitored from January 2021	Made Ground
CBH51	BH51	Gas & groundwater	Made Ground
CBH52	BH52	Gas & Groundwater	Made Ground
CBH54	N/A	*will be monitored from January 2021	Made Ground
CBH57	BH57	Gas & groundwater	Made Ground
CBH64	BHXI	Groundwater	Made Ground
CARW008	N/A	Gas & groundwater	Made Ground
CARW009	N/A	Gas & groundwater	Made Ground & Silt
CARW034	N/A	Groundwater	Made Ground & Silt
MSMW034D	N/A	*will be monitored from January 2021	Mudstone (Coal Measures)
MSMW034S	N/A	*will be monitored from January 2021	Gravel (Glacial Deposits)
MSMW91	MSMW027	Gas & groundwater	Gravel (Glacial Deposits)
MSMW155D	N/A	Gas & groundwater	No borehole log (presumed bedrock)
MSMW155S	N/A	Gas & groundwater	No borehole log (presumed superficial deposits)
MSMW231	BH49	Gas & groundwater	Made Ground
MSMW238	BH29	Groundwater	Made Ground

GAL carry out field measurements, monitoring of the groundwater levels and taking gas readings from locations installed with a gas bung and tap using a GA5000 gas analyser. PJA carry out monthly groundwater and surface water sampling. Sampling is carried out using a peristaltic pump where possible or bailer where excessive groundwater depth or the presence of free phase prevent the use of the pump.

4.2 Laboratory Analysis

A total of 125 groundwater samples and 66 surface water samples were scheduled for the following suite of laboratory analysis during 2020:

- Ammoniacal Nitrogen as N;
- Chloride;
- Dissolved metals;
- Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG);
- BTEX compounds (Benzene, Toluene, Ethylbenzene and Xylenes); and
- Polycyclic Aromatic Hydrocarbons (PAH) (aqueous).

4.3 Surface Water Sampling Regime

The six surface water locations, SW1 to SW6, were all sampled on a monthly basis throughout 2020, with the exception of during April 2020 because of the Covid-19 pandemic.

4.4 Groundwater Sampling Regime

Table 2 shows when each of the groundwater locations have been sampled over the course of 2020. During each sampling visit, collection of groundwater samples is attempted from a number of locations within and surrounding the Tip to provide good spatial distribution. During some sampling rounds it may not have been possible to obtain a sample because of any one or a combination of the following factors:

- simultaneous oil recovery from a particular location by GAL (either pumped or vacuum tanker);
- difficulty in obtaining a sample due to the presence of free phase hydrocarbons;
- sampling equipment error; or
- time constraints.

Groundwater sampling was not carried out in any location in April 2020 because of the Covid-19 pandemic.

Table 2: Groundwater Sampling Regime

Sampling location	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
CBH 2	Ongoing oil recovery using skimmer pump											
CBH13	Ongoing oil recovery using skimmer pump											
CBH16	✓	✓	✓	-	×	×	×	×	×	×	×	×
CBH20	✓	✓	✓	-	×	✓*	✓	×	×	×	×	✓
CBH23	×	×	✓	-	✓	×	✓	×	✓**	✓	✓	✓
CBH25	Newly located and not sampled in 2020											
CBH32	×	×	×	-	×	×	×	×	×	✓	×	×
CBH46	×	×	×	-	✓	✓	✓	✓	✓	✓	✓	✓
CBH47	Ongoing oil recovery via submersible pump											
CBH51	×	✓	×	-	×	✓	×	×	×	×	×	×
CBH52	✓	✓	✓	-	✓	✓	×	×	✓	✓	✓	✓
CBH57	✓	✓	✓	-	×	✓	✓	✓	✓	✓	✓	✓
CBH64	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
CARW008	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
CARW009	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	×	✓
CARW034	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
MSMW034s	Found in December 2020											✓***
MSMW034d	Found in December 2020											✓***
MSMW91	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
MSMW155s	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
MSMW155d	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
MSMW231	×	×	×	-	✓	×	×	×	×	×	×	×
MSMW238	Ongoing oil recovery via submersible pump											
CBH48	Newly located and not sampled in 2020											
CBH39	Newly located and not sampled in 2020											
CBH54	Newly located and not sampled in 2020											

*Incorrectly labelled as BH24 in laboratory analytical results

**Incorrectly labelled as BH21 in laboratory analytical results

***Incorrectly labelled as BH34s and BH34d in laboratory analytical results

5 Groundwater and Non-aqueous Phase Liquid Monitoring Results

5.1 Introduction

Groundwater level and non-aqueous phase liquid (NAPL) monitoring was undertaken in boreholes and sumps at the Tip during 2020. Some of the boreholes were found during the course of the year so monitoring data for these locations is partial for 2020. Drawing 04020-A-SK201-P2 showing all monitoring locations is presented in Appendix A.

Available borehole logs, presented in Appendix B, have been reviewed to identify response zones for each of the monitoring locations. Response zones are constructed within either waste material, superficial deposits, or bedrock.

5.2 Groundwater Level Monitoring

Groundwater level monitoring was carried out in a total of 19 boreholes locations during 2020. A summary of the groundwater levels recorded during 2020 are provided in Table 3.

5.3 Non-Aqueous Phase Liquid Levels (NAPL)

Light non-aqueous phase liquids (LNAPL) and dense non-aqueous phase liquids (DNAPL) have been recorded in boreholes and/or sumps during 2020. A summary of LNAPL recorded in boreholes is presented in Table 4. LNAPL and DNAPL thicknesses recorded in sumps are presented in Table 5 and Table 6 respectively.

Plans visually displaying 'snapshots' of recorded NAPL thicknesses for months January, March, June, September and December 2020 are presented in Appendix D.

Table 3: Summary of Recorded Groundwater Levels in Boreholes

Monitoring Locations	Response Zone	Minimum		Maximum		Average	Variability
		Depth	Month	Depth	Month		
CBH2	Waste/Made Ground	2.22mbgl 11.26mAOD	March	9.05mbgl 4.43mAOD	April	3.80mbgl 9.68mAOD	6.83m
CBH13	Waste/Made Ground	2.84mbgl 12.153mAOD	April	9.3mbgl 5.69mAOD	September	6.83mbgl 8.16mAOD	6.46m
CBH16	Waste/Made Ground	3.95mbgl 10.60mAOD	March	7.14mbgl 7.41mAOD	April	5.46mbgl 9.09mAOD	3.19m
CBH19	Waste/Made Ground	7.03mbgl 8.56mAOD	March	8.56mbgl 7.03mAOD	April	7.78mbgl 7.82mAOD	1.53m
CBH20	Waste/Made Ground	5.55mbgl 9.76mAOD	August	6.82mbgl 8.47mAOD	March	6.50mbgl 8.82mAOD	1.27m
CBH23	Waste/Made Ground	4.83mbgl 9.77mAOD	February	8.31mbgl 6.29mAOD	April	5.71mbgl 8.9mAOD	3.48m
CBH32	Waste/Made Ground	6.57mbgl 9.66mAOD	April	8.83mbgl 7.40mAOD	October	8.76mbgl 7.46mAOD	2.26m
CBH47	Waste/Made Ground	3.11mbgl 11.19mAOD	August	6.09mbgl 8.22mAOD	July	5.17mbgl 9.13mAOD	2.98m
CBH48	Waste/Made Ground	1.28mbgl 11.99mAOD	October	2.29mbgl 10.98mAOD	September	2.32mbgl 10.95mAOD	1.01m
CBH51	Waste/Made Ground	3.78mbgl 10.86mAOD	April	6.77mbgl 7.87mAOD	October	6.22mbgl 8.42mAOD	2.99m
CBH52	Waste/Made Ground	+0.098mbgl 14.93mAOD	October	6.15mbgl 8.64mAOD	February	2.81mbgl 12.03mAO	6.25m
CBH57	Waste/Made Ground	5.815mbgl 9.87mAOD	February	8.18mbgl 7.505mAOD	March	6.84mbgl 8.85mAOP	2.37m
CARW008	Waste/Made Ground	+0.22mbgl 11.30mAOD	October	0.56mbgl 10.52mAOD	April	0.41mbgl 10.67mAOD	0.78m
CARW009	Waste/Made Ground	+0.49mbgl 11.08mAOD	September	0.15mbgl 10.44mAOD	April/May	0.02mbgl 10.57mAOD	0.64m

Monitoring Locations	Response Zone	Minimum		Maximum		Average	Variability
		Depth	Month	Depth	Month		
MSMW91	Gravel (Glacial Deposits)	+0.14mbgl 9.48mAOD	December	2.11mbgl 7.23mAOD	May	2.05mbgl 7.29mAOD	2.25m
MSMW155s	Presumed Superficial Deposits	0.18mbgl 8.83mAOD	February	0.71mbgl 8.31mAOD	May	0.71mbgl 8.31mAOD	0.53m
MSMW155d	Presumed Bedrock	0.1mbgl 9.12mAO	November	1.38mbgl 7.83mAOD	March	0.63mbgl 8.60mAOD	1.28m
MSMW231	Waste/Made Ground	6.46mbgl 8.10mAOD	February	7.64mbgl 6.92mAOD	May	7.62mbgl	1.18m
MSMW238	Waste/Made Ground	2.41mbgl 12.107mAOD	March	7.64mbgl 6.86mAOD	December	5.83mbgl 8.69mAOD	5.24m

Table 4: Summary of Recorded LNAPL in Boreholes

Borehole ID	Response Zone	Number of occurrences	LNAPL thickness		Average thickness
			Minimum (date)	Maximum (date)	
CBH2	Waste/Made Ground	7/12	0.00m (Jan, Feb Aug & Oct 2020)	0.35m (March 2020)	0.13m
CBH13	Waste/Made Ground	10/12	Skimmer Pump blocking access in July & Aug	1.9m (September 2020)	0.78m
CBH16	Waste/Made Ground	7/7	0.35m (February 2020) Pump in well for 5 months.	0.83m (May 2020)	0.55m
CBH19	Waste/Made Ground	5/12	Blocked pipe from June 2020	1.36m (January 2020)	0.42m
CBH20	Waste/Made Ground	1/12	0.00m (all excl. Jan 2020)	0.018m (January 2020)	0.00m
CBH32	Waste/Made Ground	12/12	0.002m (February 2020)	1.6m (November 2020)	0.40m
CBH46	Waste/Made Ground	11/12	0.01 (May 2020) (No record for Sept)	1.3m (November 2020)	0.38m
CBH47	Waste/Made Ground	3/12	0.00m (Dry Apr-Jun & Sept-Nov)	0.34m (March 2020)	0.26m

Borehole ID	Response Zone	Number of occurrences	LNAPL thickness		Average thickness
			Minimum (date)	Maximum (date)	
CBH48	Waste/Made Ground	1/4	0.00 (Sept, Oct & Nov 2020)	0.24 (December 2020)	N/A
CBH51	Waste/Made Ground	10/12	0.00m (November & April 2020)	0.195m (June 2020)	0.12m
CBH52	Waste/Made Ground	12/12	0.005m (June 2020)	0.51m (April 2020)	0.12m
CBH57	Waste/Made Ground	2/12	0.00m (all except Mar & June 2020)	0.048m (March 2020)	0.025m
CARW008	Made Ground	1/12	0.00m (all excl. Feb 2020)	0.003m (Feb 2020)	0.00m
CARW009	Made Ground	5/12	0.00m (Mar, May, Aug, Sept, Oct, Nov, Dec 2020)	0.012m (July 2020)	0.006m
MSMW231	Waste/Made Ground	10/12	0.00m (all exc Jan & Nov 2020))	0.48m (August 2020)	0.32m
MSMW238	Waste/Made Ground	6/12	0.00 (No reading in Jan & pumped from July-Dec 2020)	0.95m (May 2020)	0. 42m

Table 5: Summary of Recorded LNAPL in Sumps

Sump ID	Response Zone	Number of occurrences	NAPL thickness		Average thickness
			Minimum	Maximum (date)	
18	Waste/Made Ground	11/12	0.00m (Jan 2020)	3.22m (May 2020)	0.44m
19	Waste/Made Ground	7/12	0.00m (Jan, Feb, Mar, Jun, Jul 2020)	2.42m (May2020)	0.53m
20	Waste/Made Ground	10/12	0.00m (April & May 2020)	0.45m (December 2020)	0.16m
21	Waste/Made Ground	10/12	0.00m (Nov & Dec 2020)	0.27m (April 2020)	0.13m
24	Waste/Made Ground	7/12	0.00m (Jan, Apr, May, Sept, Oct 2020)	0.16m (December 2020)	0.097m
25	Waste/Made Ground	4/12	0.00m (Feb, Mar, Jun, Jul, Aug, Sept, Nov Dec 2020)	0.57m (October 2020)	0.20m

Sump ID	Response Zone	Number of occurrences	NAPL thickness		Average thickness
			Minimum	Maximum (date)	
27	Waste/Made Ground	10/12	0.00m (Jan & Oct 2020)	0.16m (June 2020)	0.11m

N.B. Only sumps where NAPL was detected are shown in the Table 5.

Table 6: Summary of Recorded DNAPL in Sumps

Borehole ID	Response Zone	Number of occurrences			Minimum thickness
			DNAPL depth	Depth to Base of sump	
18	Waste/Made Ground	1/12	3.30m (May 2020)	3.71m	0.41m
19	Waste/Made Ground	1/12	2.50m (May 2020)	3.67m	1.47m

5.4 Groundwater and NAPL Levels Discussion

5.4.1 Groundwater Levels

A review of groundwater level monitoring data collected over the last 12 months shows that generally the lowest levels were recorded in April and May 2020, and the highest levels between February and March 2020. This is in line with the rainfall data (shown on Graph 1 in Appendix E) which shows that precipitation was at its lowest in April and May 2020.

There is an average variability of 2.7m between the lowest and highest recorded groundwater level in any location which is similar to the degree of variability in groundwater levels reported in 2019.

Boreholes CBH2, CBH13 and CBH52 have the greatest variability in groundwater levels, where differences between the highest and lowest recorded water levels were in excess of 6m. These boreholes are all located in the central area of the Tip where a high degree of local heterogeneity would be expected in the waste material. Furthermore, these wells are used periodically for oil recovery, which will exert influence over groundwater levels.

Boreholes MSMW155s, CARW008 and CARW009 recorded the smallest variability in groundwater levels of 0.53m, 0.78m and 0.64m respectively. These boreholes are all located to the south of the landfilled area and in an area where saturated ash deposits are prevalent.

5.4.2 Non-Aqueous Phase Liquid (NAPL) Levels and Distribution

LNAPL has been detected in all but five borehole locations during 2020: MSMW91, MSMW155s, MSMW155d, CARW034 and CBH23. With the exception of CBH23 these boreholes are installed outside the main landfilled area in Made Ground, superficial deposits and bedrock.

The greatest LNAPL thickness of 1.9m was recorded CBH13 in September 2020. In locations CBH32 and CBH52 LNAPL was recorded most consistently, where it was present during all monitoring rounds. The least LNAPL was recorded in boreholes CBH20, CARW008 and CARW009. The 'CARW' boreholes are located to the south east of the landfilled area. CBH20 is located centrally in the Tip and the relatively small amount of free product in this location may be a result of the heterogenous nature of the waste materials and oil distribution.

Suspected DNAPL was recorded in Sumps 18 and 19 in May 2020 at thicknesses of 0.41m and 1.47m respectively. These sumps are installed in Waste/Made Ground and are located near the northern boundary between the 'lower Tip' and the central area of the Tip. DNAPL was not recorded on any other monitoring round in 2020.

NAPL monitoring records for January, March, September, and December are presented on drawings in Appendix D. These drawings show the spatial distribution and thickness of the LNAPL across the Tip. The central and eastern areas of the Tip are most impacted by LNAPL. The sumps and boreholes in the western half, (the 'lower Tip') record lesser thicknesses, and the presence of LNAPL is less frequent.

6 Groundwater and Surface Water Quality Assessment

6.1 Assessment Criteria

Results from laboratory analysis of groundwater and surface water samples obtained during 2020 have been screened against relevant Water Quality Standards.

Groundwater data have been screened against threshold concentrations in The Water Supply (Water Quality) Regulations 2018 and against Environmental Quality Standards (EQS) in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. The threshold concentrations in The Water Supply (Water Quality) Regulations 2018 (referred to as DWS) have been used to give a broad indication of overall groundwater quality, however they are considered to be overly conservative in this instance because groundwater is not abstracted from the Tip for water supply purposes. EQS have been used because groundwater recharges Crymlyn Bog.

Surface water data have been screened against EQS in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015, and the specified emission limits in EPR/LB3293HN for the site drainage from Coed Darcy. Whilst the emission limits are not strictly applicable to the SW1-SW6 surface water monitoring locations, they have been used to identify the presence of elevated concentrations of contaminants in surface waters in proximity to Crymlyn Bog. The Permit emission limit for 'visible oil and grease' of 5,000 µg/l has been used to assess total petroleum hydrocarbons in the absence of an EQS.

Laboratory analytical data screening is presented in Appendix E.

6.2 Groundwater

During 2020, 97 annual average EQS exceedances for metals were recorded in 52 groundwater samples. Where maximum allowable concentration (MAC) EQS are available, these were exceeded in two samples for cadmium and in two samples for lead. The recorded exceedances for copper, nickel and zinc do not take account of the bioavailability of the metals and the screening is therefore overly conservative. Laboratory analysis for pH, calcium and dissolved organic carbon will be included in future to enable the metals-bioavailability assessment tool to be used.

The DWS for arsenic was exceeded in 17 samples and the DWS for lead was exceeded in two samples.

The annual average EQS and DWS for benzene were exceeded in nine samples, and the MAC-EQS was exceeded in five of these samples. Annual average EQS for PAH compounds were recorded in 106 groundwater samples and DWS for benzo(a)pyrene and the sum of 4 PAH compounds were exceeded in 80 groundwater samples.

Graphs 1 and 2 in Appendix E show TPH concentrations recorded in groundwater samples taken from boreholes, plotted against average rainfall and average temperature respectively. It should be noted that TPH results from CBH16 in January (1,240,000µg/l) and CBH32 in October (1,680,000µg/l), and CBH52 in September (603,000µg/l) have been omitted from the graph to improve visual representation of the other data.

Overall, TPH concentrations in groundwater were relatively stable in most locations and generally less than 20,000 ug/l throughout 2020. The data from boreholes CARW008, CBH46, CBH16, CBH32 and CBH52 suggests that TPH concentrations appear to fluctuate more, with concentrations of TPH peaking over 20,000ug/l. However, for these boreholes the datasets are less complete than for other locations.

Based on the dataset from 2020, there appears to be no clear relationship between TPH concentration in groundwater and either average rainfall or temperature data.

6.3 Surface Waters

Over the twelve-month monitoring period 38 individual metals annual average EQS exceedances were recorded (for cadmium, chromium, copper, lead and zinc), and 32 individual annual average EQS PAH exceedances were recorded (for benzo(a)pyrene and fluoranthene) in the surface water samples. The recorded exceedances for copper and zinc, which were generally marginal, do not take account of the bioavailability of the metals and the screening is therefore overly conservative. Laboratory analysis for pH, calcium and dissolved organic carbon will be included in future to allow the metals-bioavailability assessment tool to be used. Sampling point W5 was recorded as having the highest number of exceedances (19) and sampling location W2 recorded the lowest number of exceedances (1).

During 2020 a single concentration of TPH was recorded above the wider Coed Darcy drainage emission limit of 5,000µg/l for oil and grease. This occurred at SW1 in May and the TPH concentration was recorded as 12,300µg/l.

Graphs 3 and 4 in Appendix E show TPH concentrations recorded in surface water samples against average monthly rainfall and average monthly temperature data respectively. The elevated TPH concentration at sampling location SW1 occurred in May 2020 in warmer temperatures following a period of dry weather. This may indicate that reduced rainfall resulted in a lack of dilution of TPH, while rising temperatures may have increased mobility of the free phase hydrocarbons. However, a similar trend was not seen in other surface water sampling locations.

An alternative explanation could be that during the gap in oil recovery as a result of the Covid-19 pandemic, free phase hydrocarbons accumulated in the peripheral trench around the location of SW1 which resulted in measurably higher dissolved phase concentrations in surface water. Concentrations of dissolved phase TPH were consistently low across the remainder of 2020 when oil recovery works were taking place.

7 Landfill Gas

7.1 Landfill Gas Monitoring

Landfill gas monitoring was undertaken at 14 boreholes in the Permit area and its surroundings, using a GA5000 gas analyser. Due to the age of the boreholes, a number of headworks are damaged and the boreholes therefore cannot be monitored for gas. Of the 14 boreholes that were monitored during 2020, eleven are located in the Permit Area, and three are located outside of the Permit boundary to the south and south west, as summarised in Table 7.

Table 7: Landfill Gas Monitoring Location Information

Monitoring locations in the Tip	Monitoring locations outside the Tip
CBH16	MSMW155S (located to the south west)
CBH20	MSMW155D (located to the south west)
CBH23	MSMW091 (located to the south west)
CBH32	
CBH46	
CBH51	
CBH52	
CBH57	
CARW008 (located outside fill area)	
CARW009 (located outside fill area)	
MSMW231	

7.2 Landfill Gas Concentrations

Landfill gas monitoring was undertaken by GAL during the periods January to February 2020 and April to December 2020. The minimum atmospheric pressure reading was recorded as 995mb in October 2020, whilst the highest atmospheric pressure was recorded as 1038 in May 2020. Monitoring rounds carried out in February, April, July and September were carried out during falling atmospheric pressure events, which represent conditions when positive flow of landfill gas is most likely to be recorded. Landfill gas monitoring data is presented in Appendix F.

Methane (CH_4)

Based on the graphs for boreholes outside of the Tip and boreholes in the Tip presented as Figure 1 and Figure 2 respectively, methane concentrations during 2020 appear to show some variability. Generally, methane concentrations within the Tip were below 10% with the exception of CBH20 in which recorded concentrations ranged from 94.6% (August) to 34.1% (December). The lowest methane concentration of <0.1% was recorded across several monitoring locations in the Tip throughout the year.

Outside the Permit area, the maximum methane concentration of 4.3% was detected in MSMW155d (assumed to be screened with a response zone in bedrock) in February 2020. The minimum methane concentration of <0.1% was recorded outside the former landfill area in all three monitoring locations on multiple monitoring rounds.

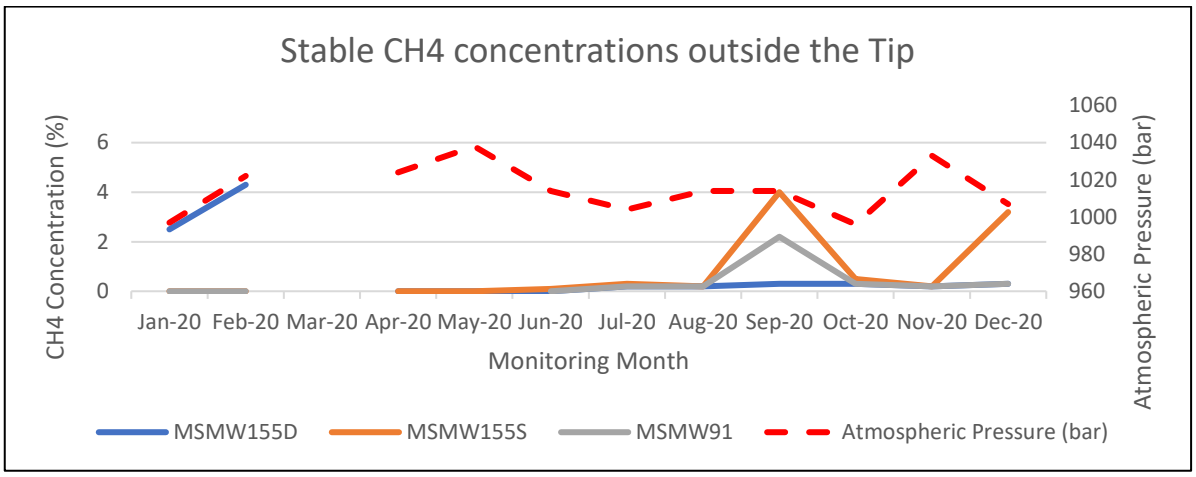


Figure 1: Methane Concentrations in Boreholes Outside the Tip

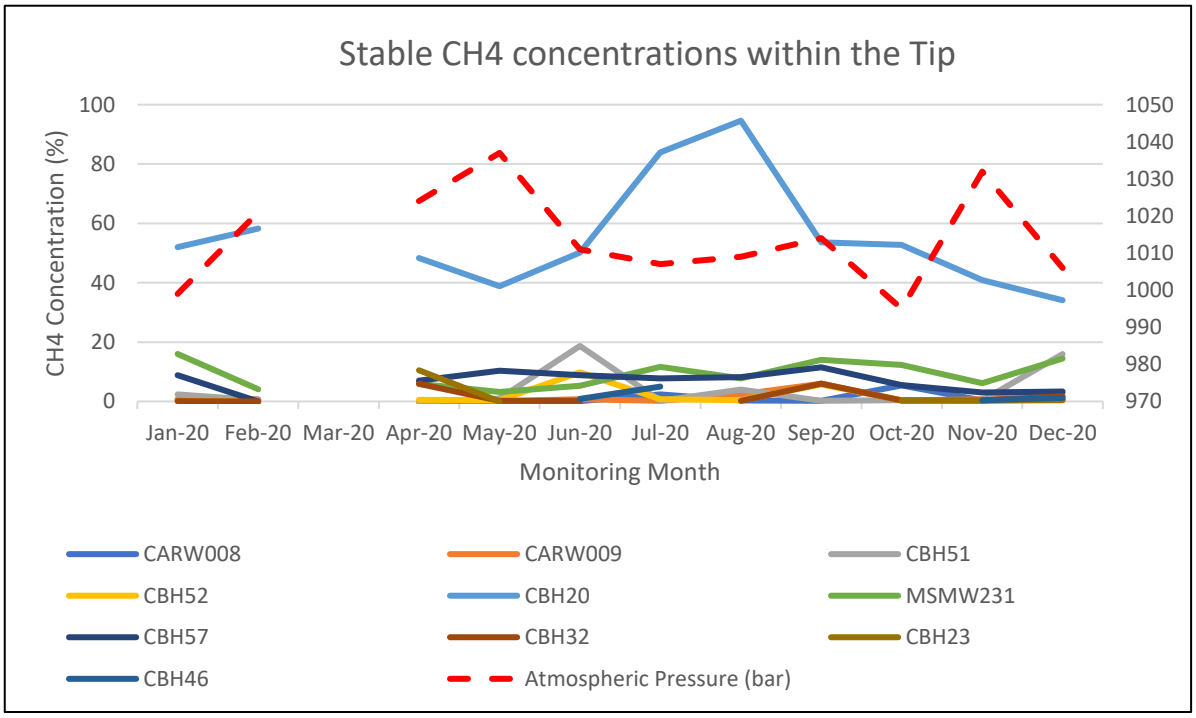


Figure 2: Methane Concentrations in Boreholes within the Tip

Carbon Dioxide (CO_2)

Based on monitoring data presented in the graphs below (Figure 3 and Figure 4) stable carbon dioxide concentrations in the Tip ranged from <0.1% to 12.3%. The maximum carbon dioxide concentration of 21.1% was detected in BH32 in April and the lowest concentration (<0.1%) detected in BH51 in April.

The maximum carbon dioxide concentration of 17.1% recorded outside of the Tip was in MSMW91 (screened in superficial deposits) in August 2020 and the lowest concentration of <0.1% was recorded in MSMW155d (screened in bedrock) in April, July and August.

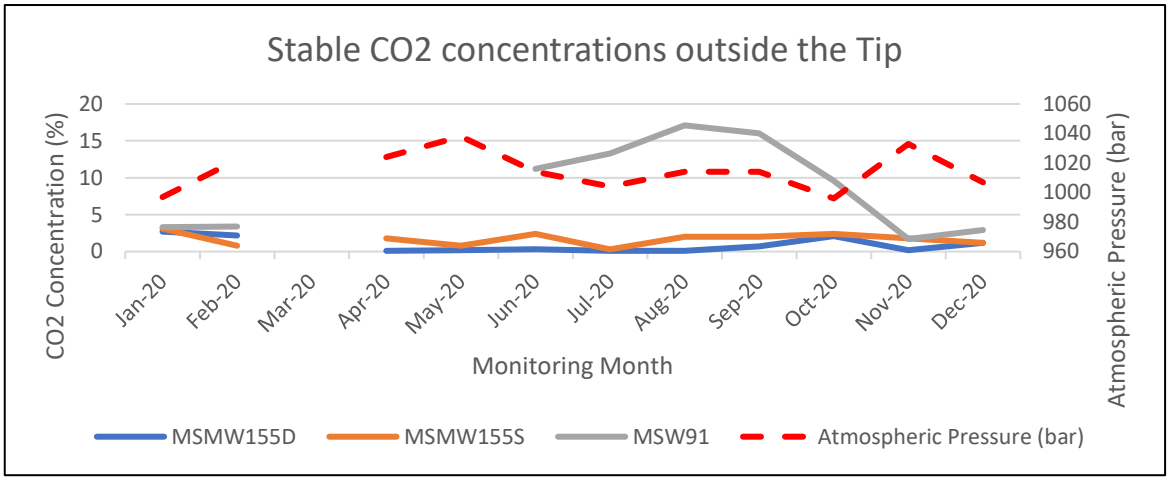


Figure 3: Carbon Dioxide Concentrations in Boreholes Outside the Tip

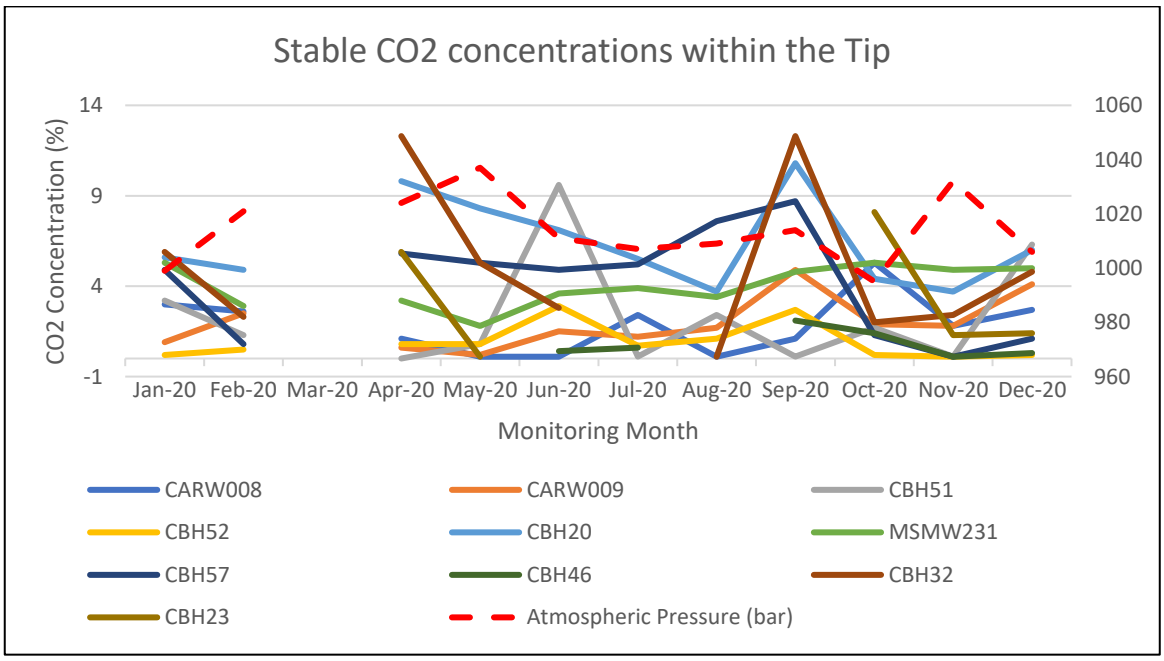


Figure 4: Carbon Dioxide Concentrations in Boreholes in the Tip

Oxygen (O_2)

Oxygen concentrations shown on the graphs presented as Figure 5 and Figure 6 in the Tip range from 0.1% to 21.4%, with the lowest concentration recorded in BH20 during September and the maximum concentration detected in BH52 during December.

Outside of the Tip oxygen concentrations ranged from 1.4% to 21.6%. The minimum concentration of 1.4% was recorded in MSMW91 in September and the maximum concentration of 21.6% was recorded in MSMW155d in April.

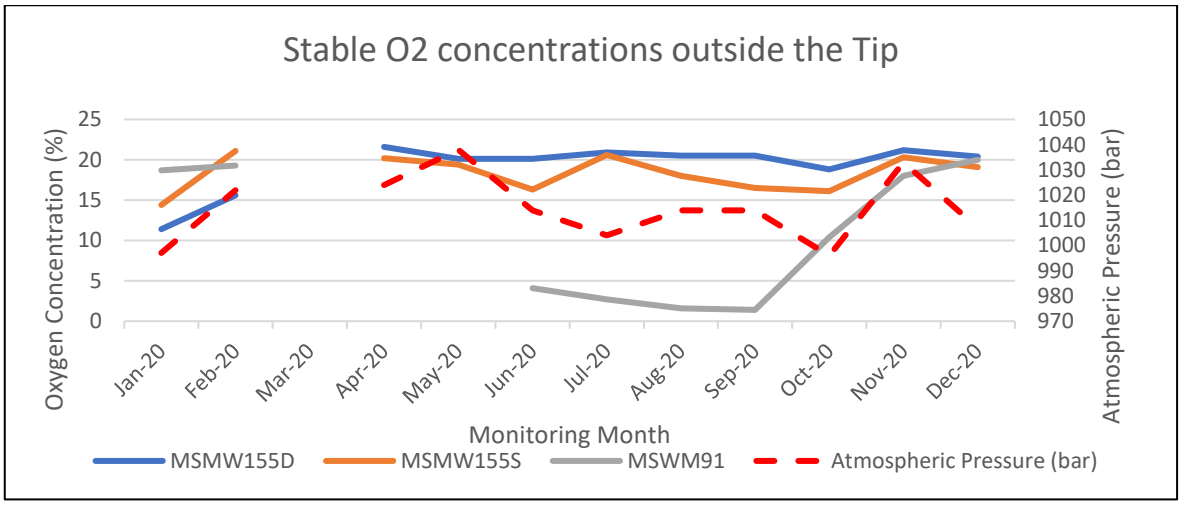


Figure 5: Oxygen Concentrations in Boreholes Outside the Tip

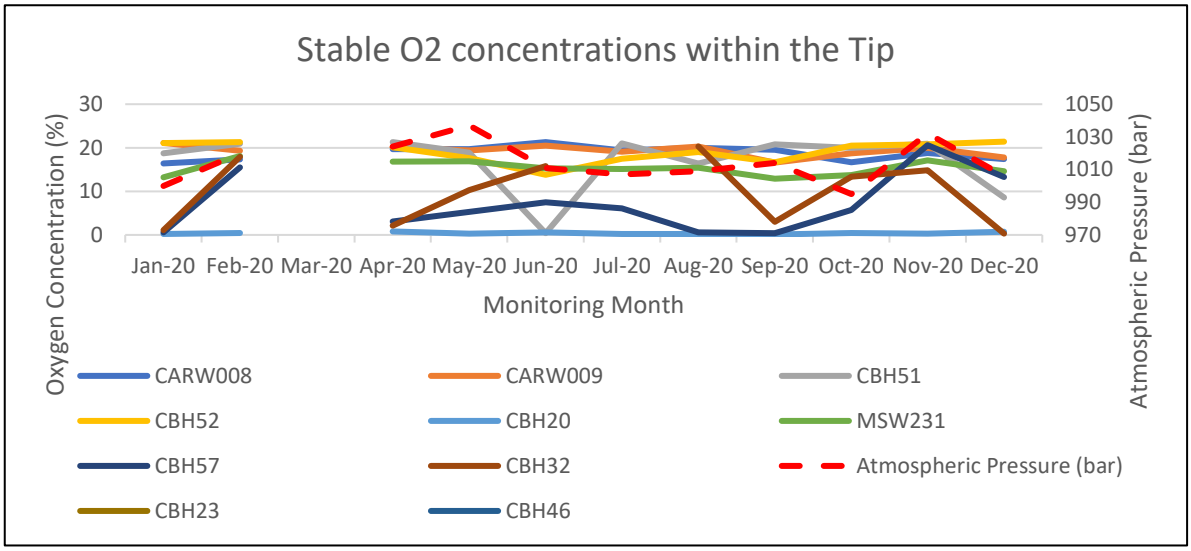


Figure 6: Oxygen Concentrations in Boreholes within the Tip

Landfill gas monitoring results recorded during 2020 are summarised in Table 8.

Based on the gas monitoring dataset for 2020, there does not appear to be an obvious link between boreholes with greater thicknesses of free phase hydrocarbons and elevated gas concentrations. Monitoring locations where elevated gas concentrations were detected generally have none or only minor amounts of free phase hydrocarbons present. The elevated methane concentration seen in CBH20 in August coincides with the highest annual temperatures, and the increased methane may be attributable to greater methanogenesis occurring in warmer temperatures although this relationship is not fully established.

7.3 Gas Flow Rates

Recorded gas flow rates were variable during 2020, ranging from -12.8 litres/hour (l/hr) in CARW008 in September 2020 to 14.0l/hr in CARW009 in April 2020 which coincided with a falling atmospheric pressure event. Both boreholes are located on the southern margin of the Tip with response zones primarily in Made Ground, but based on the exploratory hole logs they appear to be outside of the landfilled area.

Table 8: Landfill Gas Concentration Summary

Monitoring location	Location	Methane (%)		Carbon dioxide (%)		Oxygen (%)	
		Min	Max	Min	Max	Min	Max
CARW008	In waste on SE boundary	<0.1	5.4	0.1	5.3	16.4	21.3
CARW009	In waste on SE boundary	<0.1	6.0	0.2	4.9	16.6	21.1
CBH20	In waste within central section	34.1	94.6	3.7	10.8	0.1	0.8
CBH32	In waste within central section	<0.1	6.0	0.1	12.3	0.3	20.3
CBH46	In waste within central section	0.4	21.1	0.1	2.1	1.4	21.3
CBH51	In waste within central section	<0.1	18.7	<0.1	9.6	0.4	21.3
CBH52	In waste within central section	<0.1	9.8	0.1	2.9	13.8	21.4
CBH57	In waste within central section	<0.1	11.5	0.1	8.7	0.4	20.6
CBH23	In waste within central section	<0.1	10.5	0.1	8.1	4.7	20.2
MSMW231	In waste within central section	3.2	16	1.8	5.3	12.9	18.1
MSMW155s	Beyond W boundary of landfill area	<0.1	4.0	0.3	3.1	14.4	21.1
MSMW91	Beyond W boundary of landfill area	<0.1	2.2	1.7	17.1	1.4	20.0
MSMW155d	Beyond W boundary of landfill area	<0.1	4.3	0.1	2.7	11.4	21.6

8 Commentary

Groundwater levels, NAPL, groundwater quality, surface water quality and landfill gas continued to be monitored in and around the Tip during 2020.

Groundwater levels were most variable in boreholes located in the central area of the Tip during 2020, and least variable on the southern margin of the Tip beyond the extent of the landfilled area.

Generally, more consistent occurrences and greater thicknesses of LNAPL were recorded in the central and eastern areas of the Tip. The area in the west (the 'lower tip') which has previously undergone removal of bulk sources of free phase hydrocarbons has fewer recorded instances of LNAPL in boreholes and sumps.

Suspected DNAPL was measured only once in Sumps 18 and 19, in May 2020. These sumps are located on the northern boundary near the north east corner of the 'lower tip', and are believed to be installed in waste material and/or ash. The DNAPL is presumed to have originated from the main tip which is at a higher elevation, located to the south east of these sumps. During 2019, DNAPL was detected in five locations between January and March 2019. Two of these locations are upgradient of the sumps, CBH20 and CBH57, potentially suggesting a limited and localised DNAPL source within the central area of the Tip.

Elevated concentrations of metals, benzene and PAH compared to the Water Quality Standards were identified in groundwater samples recovered from boreholes located in the Tip. TPH concentrations in groundwater were relatively stable and generally less than 20,000 ug/l throughout 2020, although concentrations above 500,000µg/l were sporadically recorded in CBH16 in January, in CBH32 in October and in CBH52 in September.

Limited exceedances of the respective EQS for metals and PAH were recorded in surface water samples during 2020. Concentrations of TPH in surface water samples were generally low, with the exception of a concentration of 12,300 µg/l recorded at SW1 in May.

Consistent with the heterogeneous nature of the waste material and presence of free phase hydrocarbons in the Tip, methane and carbon dioxide have been recorded at variable concentrations during 2020.

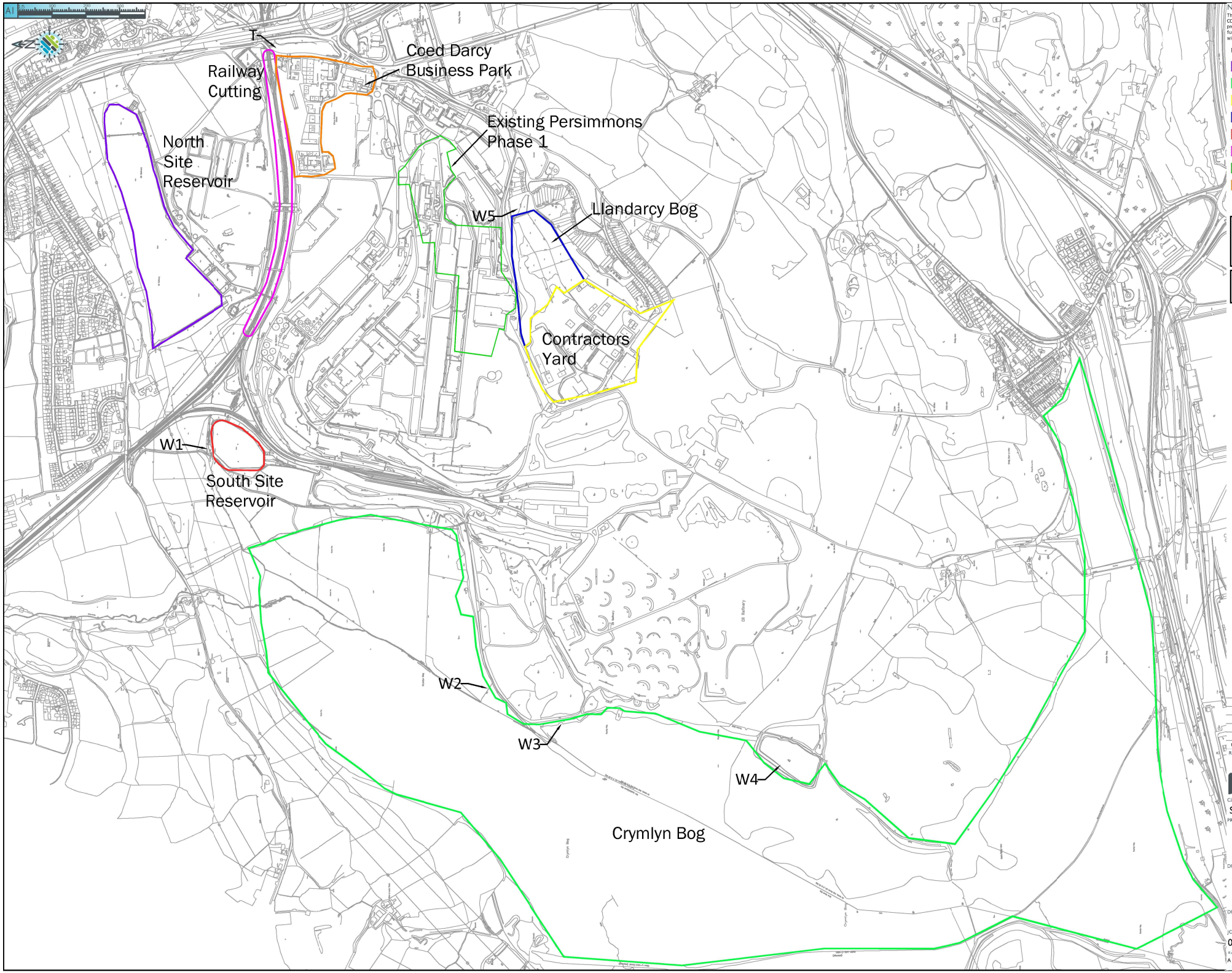
Five additional wells have been located during 2020 which will provide greater spatial coverage across the Tip. Furthermore, due to ongoing work and data reviews a number of the previously monitored wells have had their original identities determined and original borehole logs located, which has confirmed borehole installation screening information.

Locating, identifying and assessing the condition of historical wells at the Tip is an ongoing process and it is proposed that additional samples are collected from these 'new' wells during 2021.

Oil recovery will continue from the peripheral trench in 2020 and will also target sumps and wells where LNAPL is consistently measured at recoverable thicknesses. Continued monitoring will show the impact this has on the NAPL distribution and thickness.

The groundwater level, NAPL, groundwater quality, surface water quality and landfill gas monitoring will continue throughout 2021 to increase the dataset which will in time inform suitable compliance and control limits to be used in the preparation of a closure and aftercare management plan. The monitoring results will also continue to be reviewed on a monthly basis to determine the efficacy of the current approach to oil recovery at the Tip and to identify if improvements can be made.

Appendix A Site Plans



NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

Notable Areas:

- North Site Reservoir - 9.42ha
- Crymlyn Bog - 155.53ha
- Contractors Yard - 9.36ha
- Llandarcy Bog - 4.43ha
- South Site Reservoir - 1.73ha
- Railway Cutting - 3.02ha
- Existing Persimmons Phase 1 - 9.19ha
- Coed Darcy Business Park - 5.61ha

- W1 - Ta Y Fedw
- W2 - Crymlyn Bog Diffuse Discharge
- W3 - Crymlyn Bog Point Discharge
- W4 - Freemans Bund
- W5 - Llandarcy Bog Interceptor
- T - 36" (Trade Effluent Discharge)

Note:
PJA works under the task order do not extend to work associated with the southern access route.

REV	DATE	REVISION NOTE	BY
P1	20.08.19	Education Campus & Southern Primary School added	JAL

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CLIENT
St Modwen Developments Ltd

PROJECT
Coed Darcy, Swansea

DRAWING TITLE
Notable Areas & NRW Discharge Consent Points

DRAWING ISSUE STATUS
INFORMATION

JOB CODE	SUB-CODE	DRAWING NO.	REVISION
04020	A	0110	P1

Revision Letter : P Prelim / T - Tender / C - Construction

SCALE	DRAWN	REVIEWED	DATE
A1@1:5000	CB	LC	10.07.19

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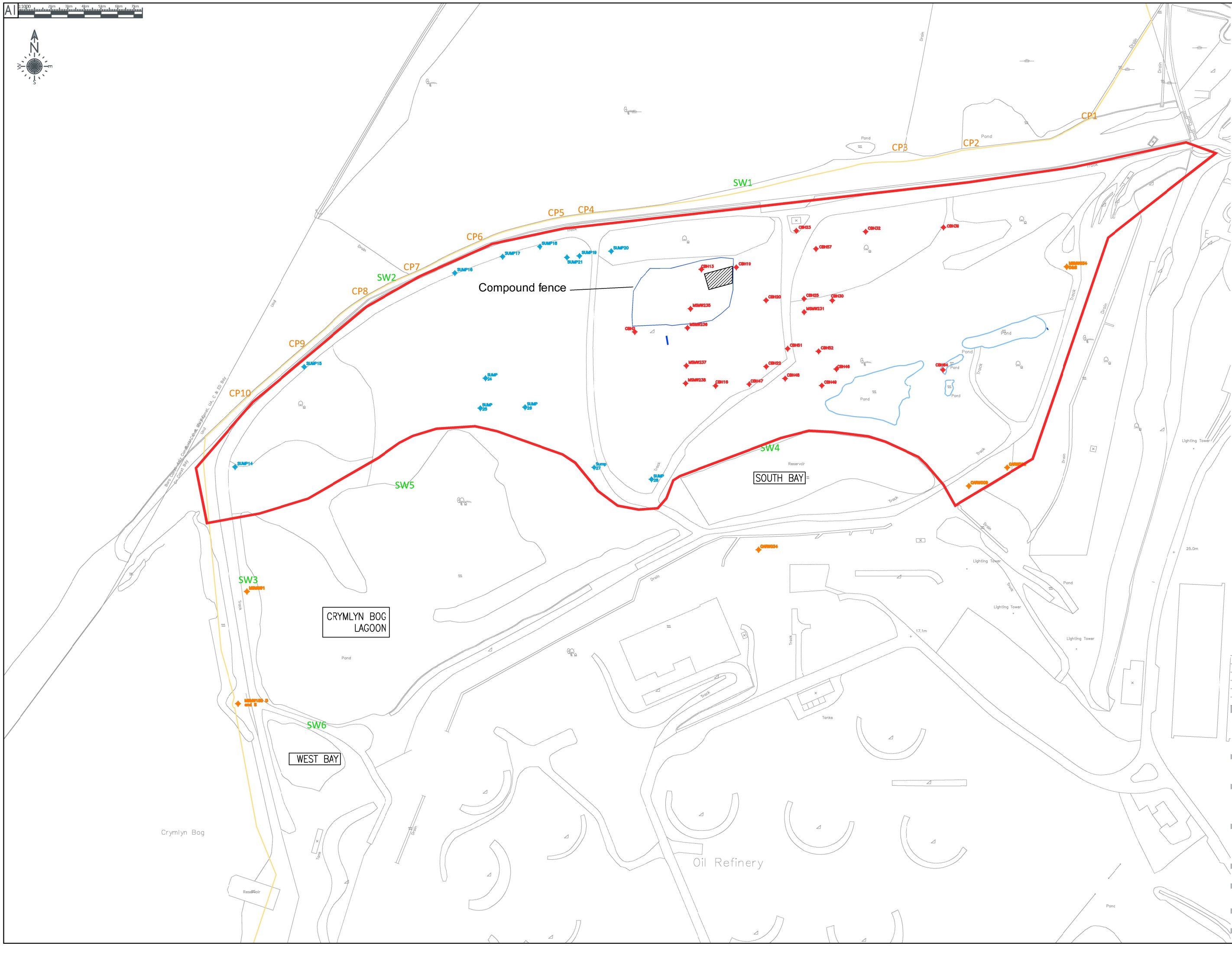

NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sanpling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY
P1	13:02:20	Added more boreholes to loation plan	JP

PJA

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CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK201	P2

Revision Letter : P - Prlim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	BAI	27.01.21

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Appendix B Borehole Logs

Celtic
Design and Construct Remediation

Borehole Number: CBH2

Date: 27 Jan 2009 | Easting: 270302.000

Project No: C1296 | Engineer: MS | Northing: 195534.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.50 - 10.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
3.50m					MADE GROUND: Waste Tip Fill.			
					Continued next sheet			

Comments:

CBH2

Celtic
Design and Construct Remediation

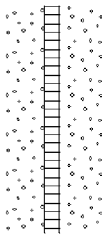
Borehole Number: CBH2

Date: 27 Jan 2009 | Easting: 270302.000

Project No: C1296 | Engineer: MS | Northing: 195534.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.50 - 10.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					PEAT:	10.20		
					End of Borehole	10.50		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH13

Date: 29 Jan 2009 | Easting: 270343.000

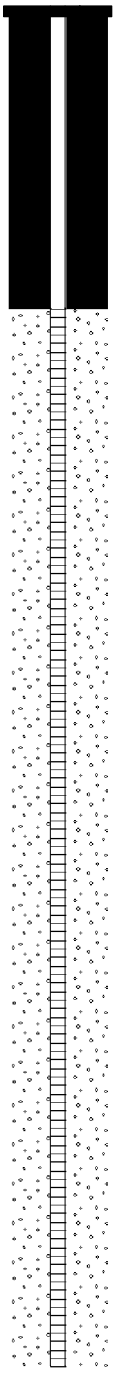
Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH13

Celtic
Design and Construct Remediation

Borehole Number: CBH13

Date: 29 Jan 2009 | Easting: 270343.000

Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
▽ 9.50m					MADE GROUND: Waste Tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH13

Celtic
Design and Construct Remediation

Borehole Number: CBH16

Date: 9 Feb 2009 | Easting: 270351.000

Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
▽ 6.00m					MADE GROUND: Waste Tip Fill. Black oil Continued next sheet			

Comments:

CBH16

Celtic
Design and Construct Remediation

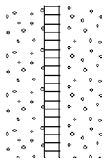
Borehole Number: CBH16

Date: 9 Feb 2009 | Easting: 270351.000

Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

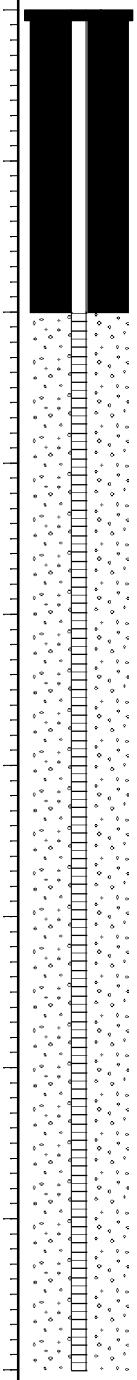
Borehole Number: CBH19

Date: 29 Jan 2009 | Easting: 270362.000

Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH19

Date: 29 Jan 2009 | Easting: 270362.000

Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
9.00m					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH19

Celtic
Design and Construct Remediation

Borehole Number: CBH20

Date: 27 Jan 2009 | Easting: 270832.000

Project No: C1296 | Engineer: MS | Northing: 195553.000

Site Location: BP Former Llandarcy | Method: CP | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 0.80 - 7.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: mixture of compacted grey to black clay, gravels and cobbles (up to 10 cm)			
					MADE GROUND: Mixture of black ash, brick fragments, gravel and brown clay.	2.50		
					End of Borehole	7.50		

0 1 2 3 4 5 6 7 8 9

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH23

Date: 4 Feb 0009 | Easting: 270401.000

Project No: C1296 | Engineer: MS | Northing: 195595.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9

7.50m

Comments:

CBH23

Celtic
Design and Construct Remediation

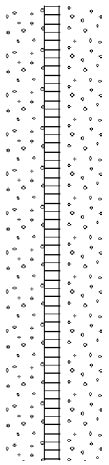
Borehole Number: CBH23

Date: 4 Feb 0009
Easting: 270401.000

Project No: C1296
Engineer: MS
Northing: 195595.000

Site Location: BP Former Llandarcy
Method: ODEX
Datum: -

Client: St. Modwen
Hole Diameter: 200mm
Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					PEAT:	11.90		
					End of Borehole	12.00		

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Comments:

CBH23

Celtic
Design and Construct Remediation

Borehole Number: CBH25

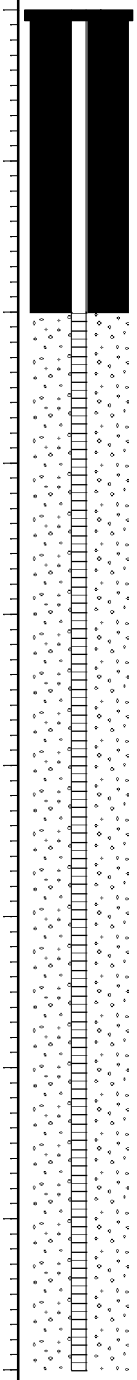
Date: 30 Jan 2009 | Easting: 270405.000

Project No: C1296 | Engineer: MS | Northing: 195554.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			



Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH25

Date: 30 Jan 2009 | Easting: 270405.000

Project No: C1296 | Engineer: MS | Northing: 195554.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
9.00m					MADE GROUND: Waste tip Fill.			
					PEAT:	11.00		
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH25

Celtic
Design and Construct Remediation

Borehole Number: CBH32

Date: 4 Feb 0009 | Easting: 270442.000

Project No: C1296 | Engineer: MS | Northing: 195595.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
1.50m					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

Comments:

CBH32

Celtic
Design and Construct Remediation

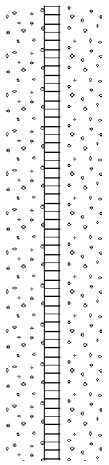
Borehole Number: CBH32

Date: 4 Feb 0009
Easting: 270442.000

Project No: C1296
Engineer: MS
Northing: 195595.000

Site Location: BP Former Llandarcy
Method: ODEX
Datum: -

Client: St. Modwen
Hole Diameter: 200mm
Screen Position: 1.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

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Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH39

Date: 5 Feb 2009 | Easting: 270489.000

Project No: C1296 | Engineer: MS | Northing: 195598.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
4.50m					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

Comments:

CBH39

Celtic
Design and Construct Remediation

Borehole Number: CBH39

Date: 5 Feb 2009 | Easting: 270489.000

Project No: C1296 | Engineer: MS | Northing: 195598.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH39

Celtic
Design and Construct Remediation

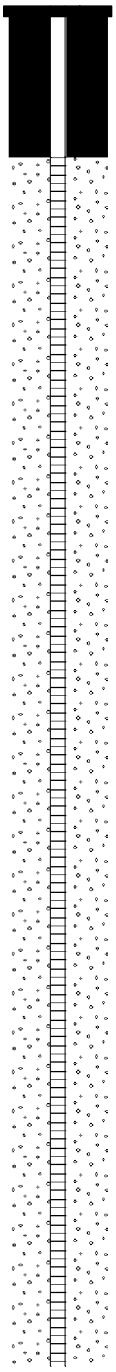
Borehole Number: CBH47

Date: 23 Jul 2009 | Easting: 270372.000

Project No: C1296 | Engineer: MS | Northing: 195500.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
						8.60		
					Continued next sheet			

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH47

Date: 23 Jul 2009 | Easting: 270372.000

Project No: C1296 | Engineer: MS | Northing: 195500.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH48

Date: 23 Jul 2009 | Easting: 270394.000

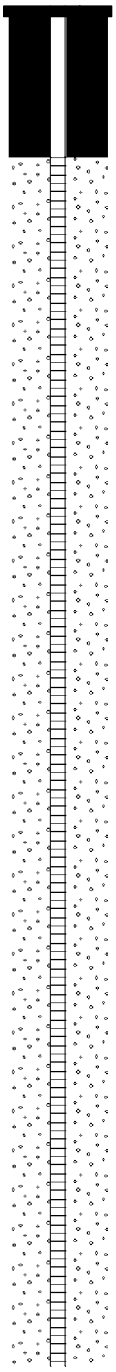
Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
						8.80		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH48

Celtic
Design and Construct Remediation

Borehole Number: CBH48

Date: 23 Jul 2009 | Easting: 270394.000

Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH51

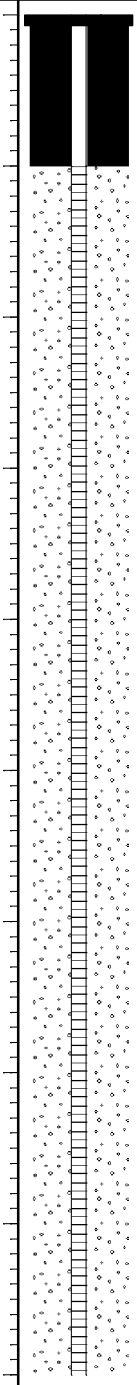
Date: 22 Jul 2009 | Easting: 270393.000

Project No: C1296 | Engineer: MS | Northing: 195523.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					Continued next sheet			



Comments:

CBH51

Celtic
Design and Construct Remediation

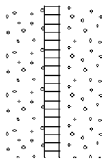
Borehole Number: CBH51

Date: 22 Jul 2009 | Easting: 270393.000

Project No: C1296 | Engineer: MS | Northing: 195523.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH52

Date: 22 Jul 2009 | Easting: 270415.000

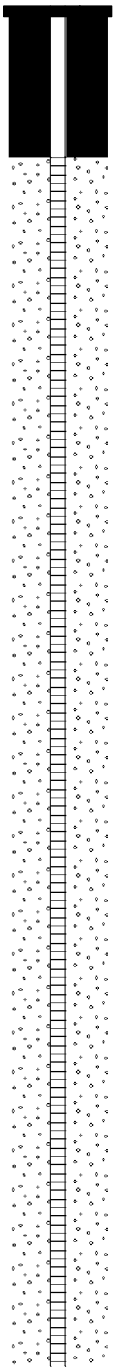
Project No: C1296 | Engineer: MS | Northing: 195525.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
						8.70		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH52

Celtic
Design and Construct Remediation

Borehole Number: CBH52

Date: 22 Jul 2009 | Easting: 270415.000

Project No: C1296 | Engineer: MS | Northing: 195525.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH57

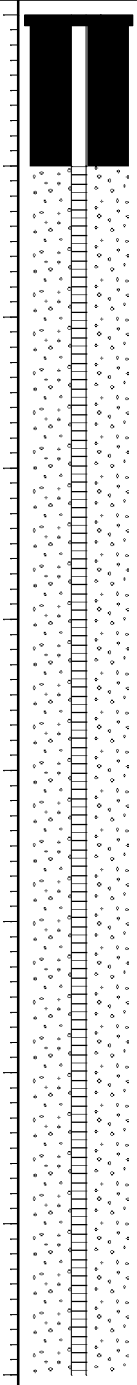
Date: 24 Jul 2009 | Easting: 270410.000

Project No: C1296 | Engineer: MS | Northing: 195585.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					Continued next sheet			



Comments:

CBH57

Celtic
Design and Construct Remediation

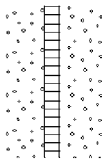
Borehole Number: CBH57

Date: 24 Jul 2009 | Easting: 270410.000

Project No: C1296 | Engineer: MS | Northing: 195585.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					PEAT:	9.60		
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH57

Celtic
Design and Construct Remediation

Borehole Number: CBH64

Date: 29 Jul 2009 | Easting: 270483.000

Project No: C1296 | Engineer: MS | Northing: 195513.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

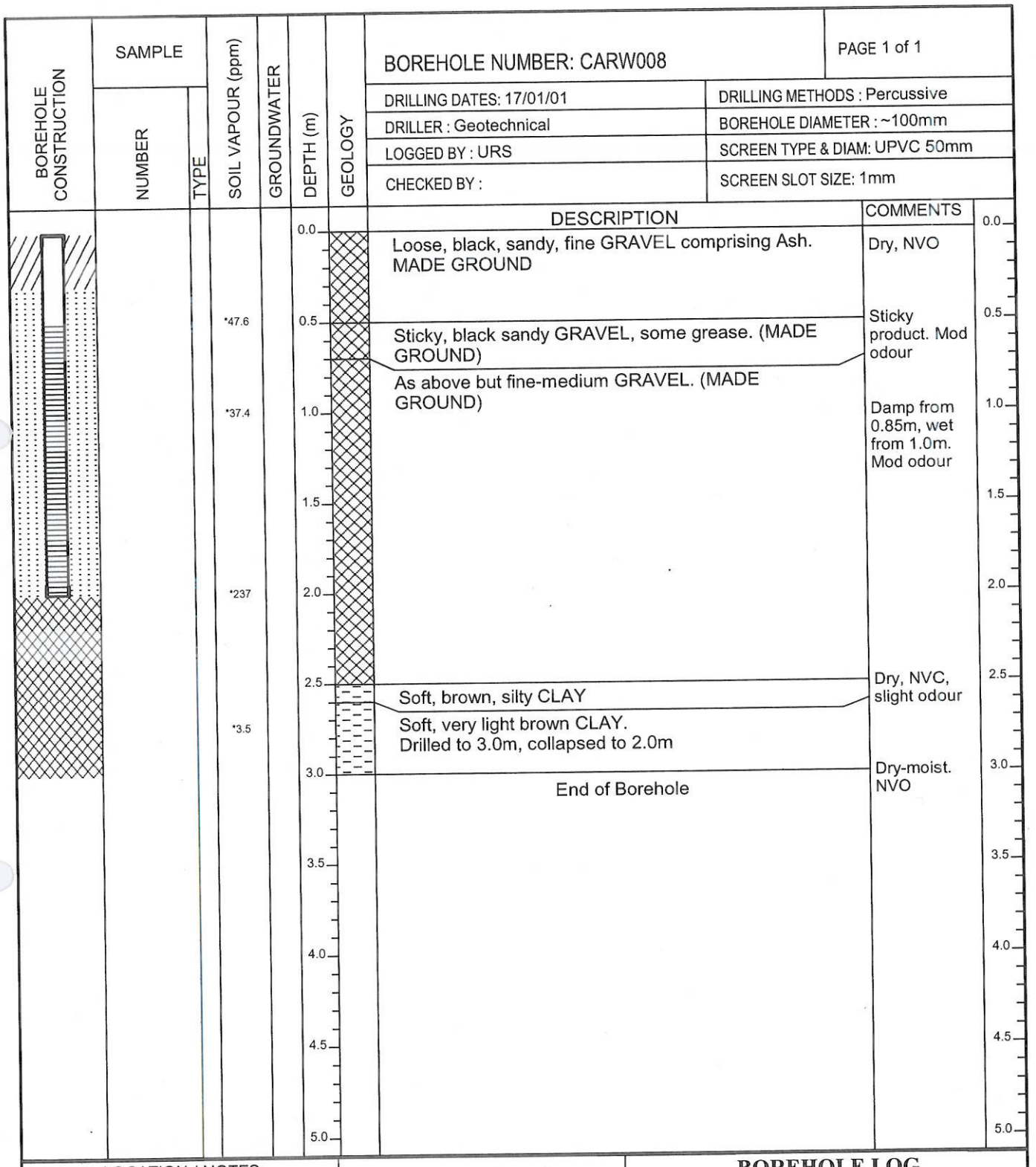
Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					PEAT:	8.40		
					End of Borehole			

0 1 2 3 4 5 6 7 8 9

Comments:

CBH64



LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

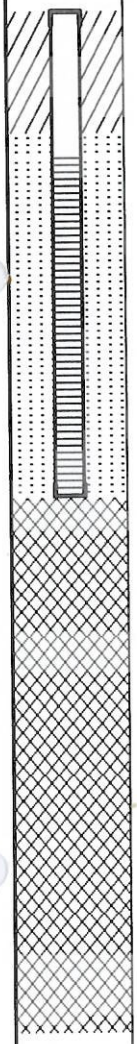
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 05/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: CARW009	PAGE 1 of 1
DRILLING DATES: 09/01/01 - 10/01/01	DRILLING METHODS :
DRILLER : Geotechnical	BOREHOLE DIAMETER :
LOGGED BY : SC	SCREEN TYPE & DIAM:
CHECKED BY :	SCREEN SLOT SIZE:



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
				0.0		Soft-loose, black, fine-coarse GRAVEL with patches of sandy silt. Grades into gravelly, silty SAND from 0.6m. Lump of sticky grease at 0.65m MADE GROUND	Wet, slight odour
		*4.2		0.5			
		*3.4				Soft, med brown, slightly clayey, slightly sandy SILT with occasional gravels and cobbles. (MADE GROUND)	Wet. Manure-like odour
		*3.5		1.0		Med-soft grey/black clayey SILT.	Damp. Manure odour, some staining
		*14.5		1.5		Very soft, brown/grey/black, slightly gravelly, clayey, sandy SILT. More clayey at 2.0m, but remains soft. Becomes sandier and firmer (compressed) from 2.3m	Very damp, slight odour, some staining. Odour decreases with depth
		*2.2		2.0			
		*1.5		2.5			
		*1.3		3.0		Firm, grey (with some orange streaks), clayey, very sandy SILT. Becoming more clayey from 3.2m	Moist. NVO. Some chicken wire
		*0.5		3.5		Loose, med brown, gravelly SAND. Very gravelly from 3.5m	
				4.0		Med-dense, med brown, gravelly, very sandy SILT	
						End of Borehole	
				4.5			
				5.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

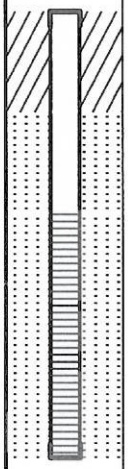
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 05/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: CARW034		PAGE 1 of 1
DRILLING DATES: 20/06/01	DRILLING METHODS : Percussive	
DRILLER : Geotechnical	BOREHOLE DIAMETER : ~100mm	
LOGGED BY : NL	SCREEN TYPE & DIAM: UPVC 50mm	
CHECKED BY :	SCREEN SLOT SIZE: 1mm	



DEPTH (m)	DESCRIPTION	COMMENTS
0.0	Soft, brown, silty PEAT	Strong odour
0.5	SAMPLE LOST DUE TO HIGH WATER CONTENT	
1.5	Mottled orange/grey sandy SILT with some clay and occasional gravel. Gravel concentration increasing with depth, resulting in harder drilling.	Sheen and odour. Some free phase product. Heavy staining throughout.
2.5	End of Borehole	

SAMPLE — NUMBER / TYPE | SOIL VAPOUR (ppm) | GROUNDWATER | BOREHOLE CONSTRUCTION

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

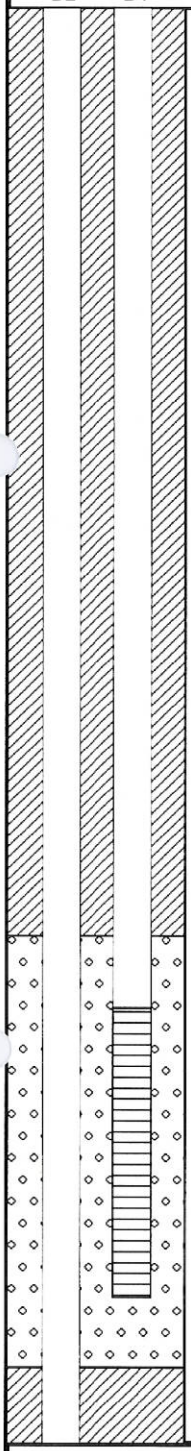
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: **MSMW034D1/D2**		PAGE 1 of 2
START DATE: 21/4/99	DRILLING METHOD: ROTARY AIR FLUSH	
FINISH DATE: 21/4/99	BOREHOLE DIAMETER: 165 mm	
DRILLER: R1	SCREEN TYPE & DIAMETER: 50/19 mm ID UPVC	
LOGGED BY: MC APPR'D BY:	SCREEN SLOT SIZE: 0.5/1 mm	



DEPTH (m)	DESCRIPTION	COMMENTS
0	Grey-dark grey sandy gravelly CLAY with sandstone and brick fragments (MADE GROUND)	Strong hydrocarbon odour Moist
3.0	Dark brown-black peaty, gravelly CLAY with wood fragments (MADE GROUND)	Strong hydrocarbon odour
	Grey clayey GRAVEL	Damp - wet No odour
4.0	Dense brown gravelly, silty CLAY (BOULDER CLAY)	Dry No hydrocarbon odour
6.0	Dense brown clayey GRAVEL	Productive at 8.2 m but cased out at 9.6 m
		Moist
10		

LOCATION / NOTES:

1. All measurements in m below ground level

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW034D1/D2**	PAGE 2 of 2
START DATE: 21/4/99	DRILLING METHOD: ROTARY AIR FLUSH
FINISH DATE: 21/4/99	BOREHOLE DIAMETER: 165 mm
DRILLER: R1	SCREEN TYPE & DIAMETER: 50/19 mm ID UPVC
LOGGED BY: MC APPR'D BY:	SCREEN SLOT SIZE: 0.5/1 mm

BOREHOLE CONSTRUCTION | SAMPLE NUMBER | SAMPLE TYPE | SOIL VAPOUR (ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY

DESCRIPTION	COMMENTS
Gravelly CLAY (BOULDER CLAY)	Moist
Dense coarse grey silty, sandy GRAVEL becoming more clayey at 11 m	No water in hole
ROCKHEAD - Dark grey MUDSTONE with occasional silty and sandy layers.	

10 11 12 13 14 15 16 17 18 19 20

LOCATION / NOTES:

1. All measurements in m below ground level

LEGEND

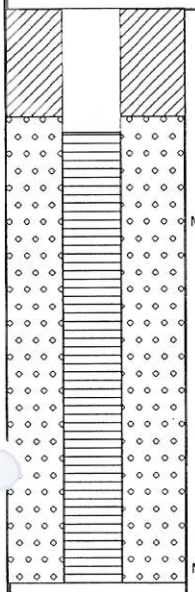
- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW091**	PAGE 1 of 1
START DATE: 5/3/99	DRILLING METHOD: Hydraulic Percussive
FINISH DATE: 5/3/99	BOREHOLE DIAMETER: 100 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: 50 mm UPVC
LOGGED BY: SG APPR'D BY:	SCREEN SLOT SIZE: 1 mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	Soft, brown sandy SILT with some clay.	Slight hydrocarbon odour.
		*123		Soft to very soft, orange-brown sandy SILT with occasional gravel.	
		*228	1.0		
MSMW091 1.5m		*1010		Soft, grey slightly gravelly sandy SILT with frequent cobbles.	Strong hydrocarbon odour.
		*366	2.0	Gravel at 1.9m	Heavy black staining at 1.9m
		*892			
		*475	3.0		Very strong hydrocarbon odour.
		*503		Gravel at 3.5m	
MSMW091 4.0m		*508	4.0		
			5.0		
			6.0		
			7.0		
			8.0	Borehole terminated at 4m.	
			9.0		
			10		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. DUP GG = MSMW091-1.5m.

LEGEND

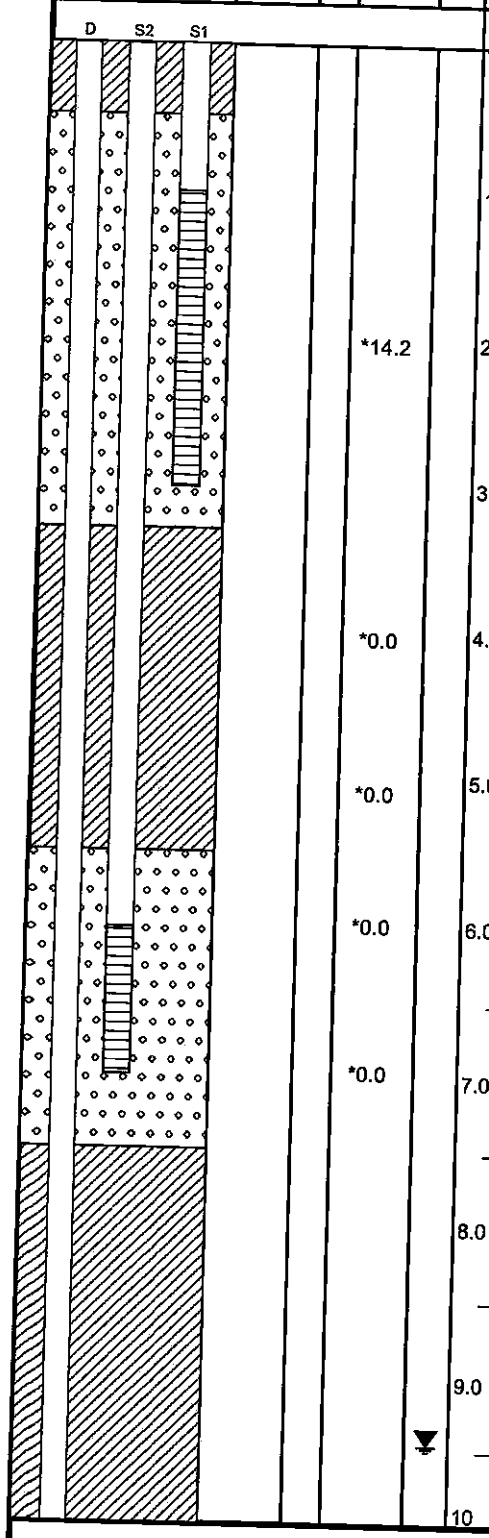
- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DAMES & MOORE

BOREHOLE NUMBER: **MSMW156D, S1, S2**	PAGE 1 of 2
START DATE: 9/4/99	DRILLING METHOD: Cable Percussion/Rotary
FINISH DATE: 9/4/99	BOREHOLE DIAMETER: 200/165 mm
DRILLER: CP2/R1	SCREEN TYPE & DIAMETER: 50 mm ID UPVC
LOGGED BY: JC/DB APPR'D BY:	SCREEN SLOT SIZE: 0.5 mm



BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
					0		Loose mottled brown and grey sandy clayey SILT with frequent medium to coarse slag gravel, sandstone and brick fragments (MADE GROUND)	Dry Slight hydrocarbon odour
					1.0			
			*14.2		2.0		Soft dark brown and yellow PEAT	Very strong hydrocarbon odour and staining from 1.6-3.0m
					3.0			Damp No odour in peat from 3.0m
			*0.0		4.0			
			*0.0		5.0		becoming lighter in colour and red-brown at 5.5m	
			*0.0		6.0			
			*0.0		7.0		Soft grey-brown CLAY	No hydrocarbon odour Dry beneath bentonite seal No odour
					8.0			
					9.0		clay becoming gravelly at 9.0m	
							Loose grey-brown gravel	No odour Water strike at 10m - productive
					10			

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. Cable Percussion to 7.5 m, Rotary with ODEX from 7.5m to 14.0 m
3. Temporary 200 mm casing installed to 7.5 m during Rotary drilling and well installation

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

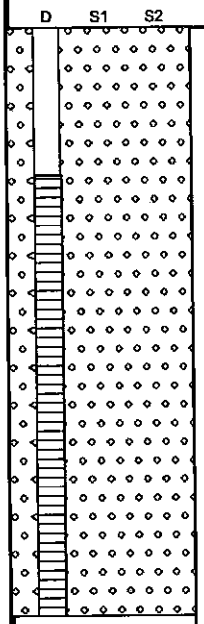
BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW156D, S1, S2**	PAGE 2 of 2
START DATE: 9/4/99	DRILLING METHOD: Cable Percussion/Rotary
FINISH DATE: 9/4/99	BOREHOLE DIAMETER: 200 mm
DRILLER: RD1	SCREEN TYPE & DIAMETER: 50 mm ID UPVC
LOGGED BY: JC/DB APPR'D BY:	SCREEN SLOT SIZE: 1 mm

BOREHOLE CONSTRUCTION | SAMPLE NUMBER | SAMPLE TYPE | SOIL VAPOUR (ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY



DESCRIPTION	COMMENTS
Loose grey-brown gravel	
gravel becoming more dense	No odour
ROCKHEAD - Soft grey MUDSTONE (BEDROCK)	No odour
Borehole terminated at 14.0 mbgl	

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. Cable Percussion to 7.5 m, Rotary with

LEGEND

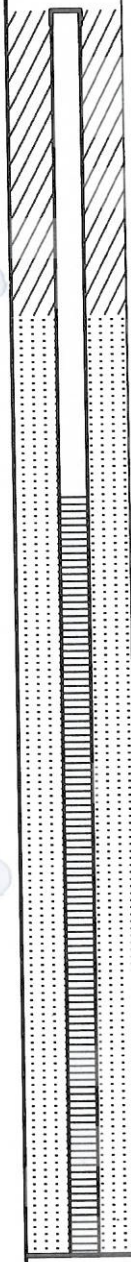
- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DAMES & MOORE

BOREHOLE NUMBER: MSMW231	PAGE 1 of 2
DRILLING DATES: 03/04/01 - 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
				0.0		Dark brown sandy/clayey fine-coarse GRAVEL. MADE GROUND Intermittent hard bands of concrete/rubble.	
				5.0		Fine-medium GRAVEL with silt and clay. MADE GROUND.	Oil/Free Product from 4.0m Wet/Oily
				7.0		Medium, subangular GRAVEL fill with peat/fibrous plant remains. MADE GROUND Decreasing fibrous material from 8.0m Increasing amounts of ash and clinker.	Wet/Oily Saturated with H/C Very poor returns
				10.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: MSMW231	PAGE 2 of 2
DRILLING DATES: 03/04/01 - 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY		COMMENTS
					10.5		Small amounts of fibrous material, abundant ash and clinker. MADE GROUND	
					11.0			
					11.5		Gravelly CLAY. Borehole terminated and backfilled to 11m	
					12.0		End of Borehole	
					12.5			
					13.0			
					13.5			
					14.0			
					14.5			
					15.0			
					15.5			
					16.0			
					16.5			
					17.0			
					17.5			
					18.0			
					18.5			
					19.0			
					19.5			
					20.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

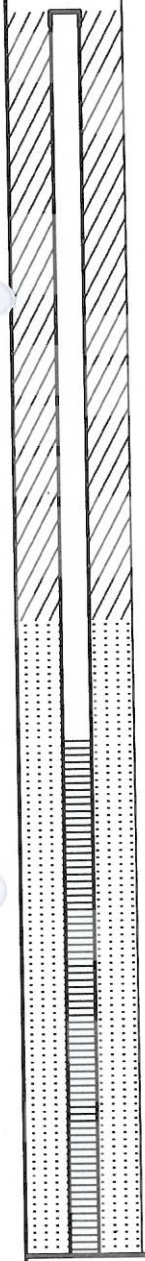
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: MSMW238	PAGE 1 of 3
DRILLING DATES: 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
				0.0		Light-dark brown, silty/clayey/sandy med-coarse GRAVEL fill with brick fragments, wood, plastic liner and clinker. MADE GROUND	
				0.5		Dark grey, gravelly/sandy CLAY with brick fragments and pipe lagging. MADE GROUND	
				4.0		As above plus abundant lagging foam between 4.0 and 5.0m. MADE GROUND	Saturated with dark, black H/C Abundant free product from 4.5m
				5.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: MSMW238

PAGE 2 of 3

DRILLING DATES: 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY		COMMENTS
					5.5			
					6.0			
					6.5		Gravelly CLAY with abundant fibrous plant material (possibly peat). MADE GROUND	
					7.0		As above with decreasing gravel to fine-medium/coarse SAND with increasing clay. MADE GROUND	
					7.5		Decreasing clay and increasing fine-coarse, subrounded, reworked GRAVEL with clinker/rubble. MADE GROUND	
					8.0			
					8.5			
					9.0			
					9.5			
					10.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW238	PAGE 3 of 3
							DRILLING DATES: 05/04/01	DRILLING METHODS : Rotary Air Flush
							DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
							LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
							CHECKED BY :	SCREEN SLOT SIZE: 1mm

COMMENTS	DEPTH (m)	GEOLOGY
	10.5	End of Borehole
	11.0	
	11.5	
	12.0	
	12.5	
	13.0	
	13.5	
	14.0	
	14.5	
	15.0	

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

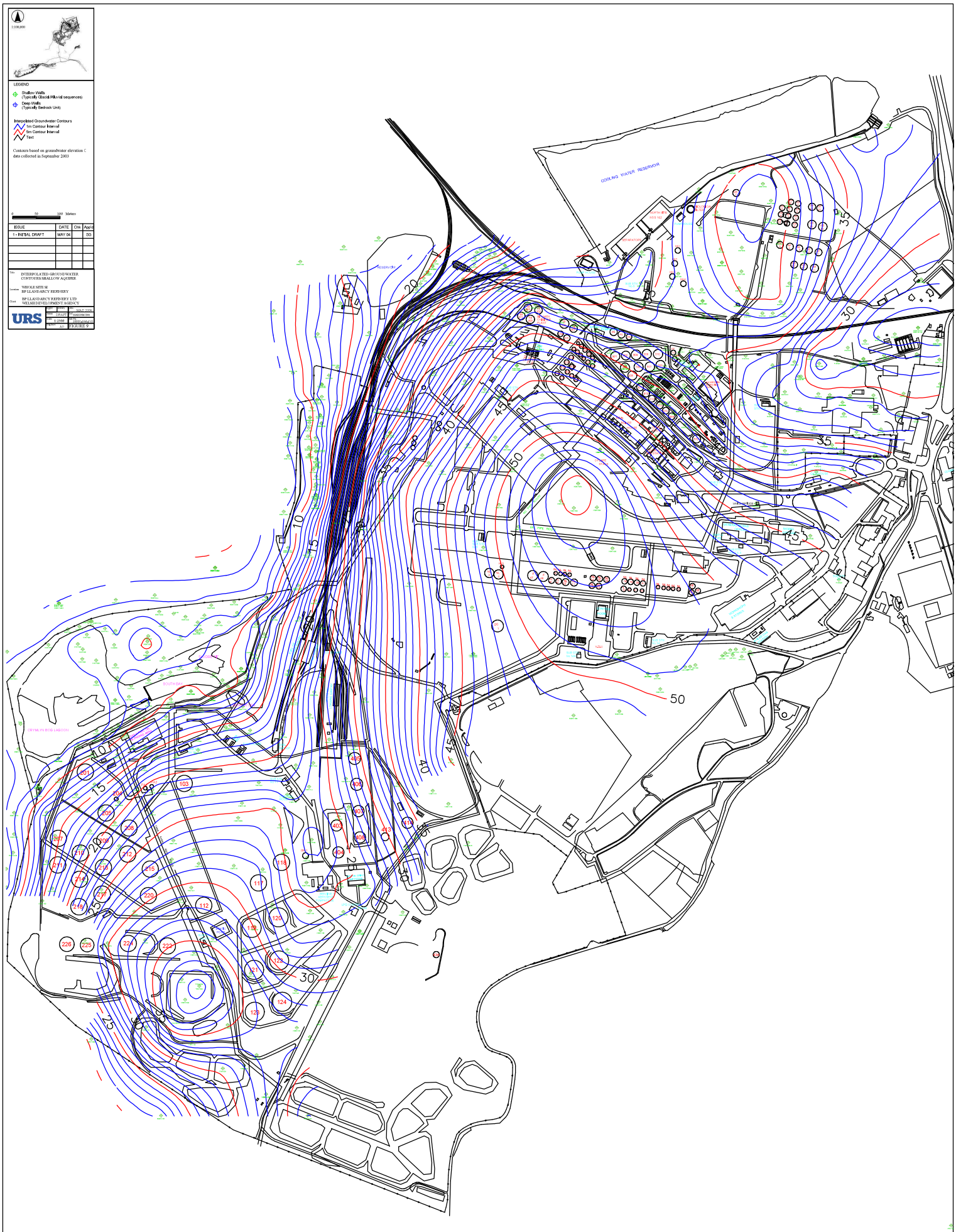
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

Appendix C URS groundwater drawings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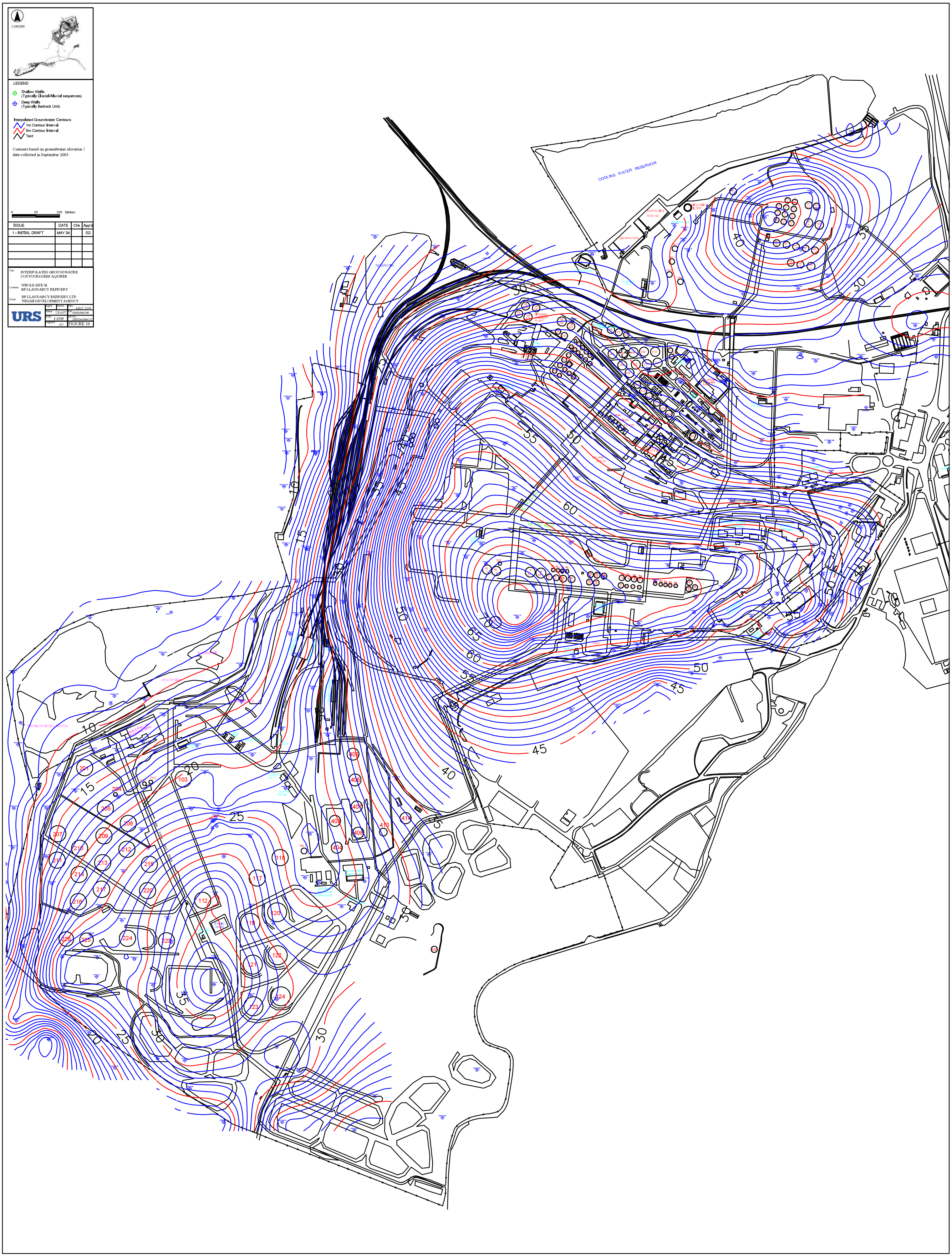
LEGEND
Shallow Wells
(Typically Glacial/Alluvial sequences)
Deep Wells
(Typically Bedrock Unit)
Interpolated Groundwater Contours
1m Contour Interval
5m Contour Interval
Text
Contours based on groundwater elevation C
data collected in September 2003
0 50 100 Meters
ISSUE
DATE
Chk
App'd
1 - INITIAL DRAFT
MAY 04
SG
Title
INTERPOLATED GROUNDWATER CONTOURS SHALLOW AQUIFER
Location
WHOLE SITE SE
BP LLANDARCY REFINERY
Client
BP LLANDARCY REFINERY LTD
WELSH DEVELOPMENT AGENCY
URS
DRAFT
1:2500
MAY 2004
FIGURE 9
COOLING WATER RESERVOIR
SOUTH BAY
CRYMLYN BOG LAGOON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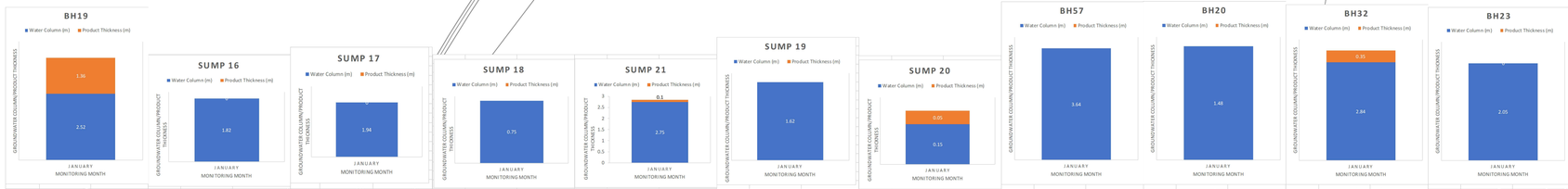
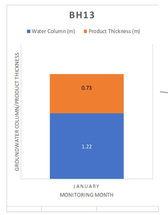
LEGEND
Shallow Wells (Typically Glacial/Alluvial sequences)
Deep Wells (Typically Bedrock Unit)
Interpolated Groundwater Contours
1m Contour Interval
5m Contour Interval
Text
Contours based on groundwater elevation data collected in September 2003
0 50 100 Meters
ISSUE | DATE | Chk | App'd
1 - INITIAL DRAFT | MAY 04 | | SG
Title INTERPOLATED GROUNDWATER CONTOURS DEEP AQUIFER
Location WHOLE SITE SI BP LLANDARCY REFINERY
Client BP LLANDARCY REFINERY LTD WELSH DEVELOPMENT AGENCY
URS
Date: MAY 2004
Status DRAFT
Ref: SG/GIS/MAY04/1
Scale: 1:2500
Job No.: 39991-044-785
Drg Size A0
FIGURE 10
COOLING WATER RESERVOIR
10
15
20
25
30
35
40
45
50
55
60
65
70

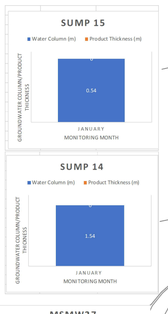
Appendix D NAPL thickness and distribution

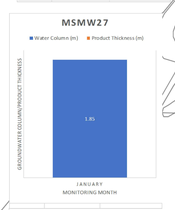
A1 1:1000 20 30 40 50 60 70

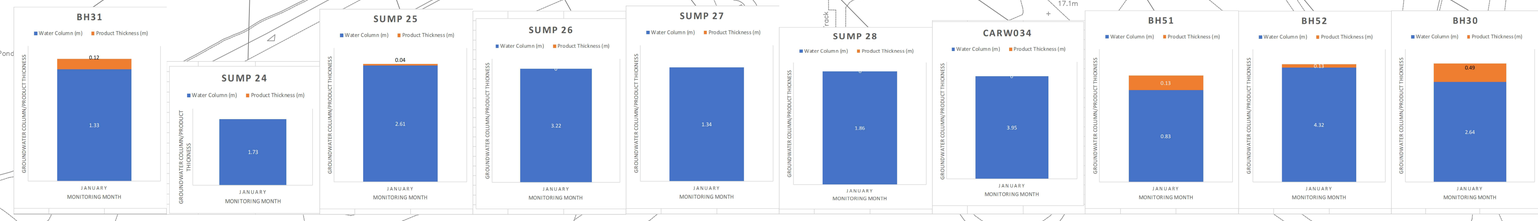
N W E S

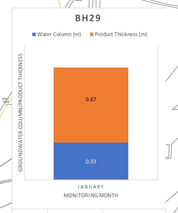


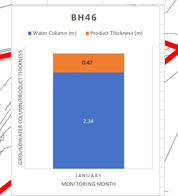


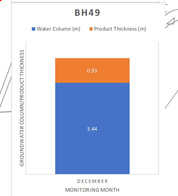


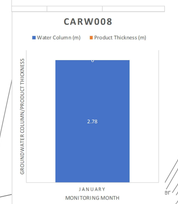


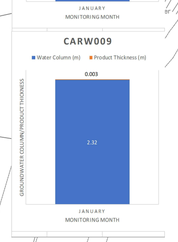












NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA
Seven House - High Street
Longbridge - Birmingham
B31 2UQ - Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
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CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
January

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BIM DRAWING REFERENCE

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A1 1:1000 20 30 40 50 60 70

N W E S

Compound fence

SOUTH BAY

Crymlyn Bog

Oil Refinery

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CLIENT
St Modwen Development Ltd

PROJECT
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DRAWING TITLE
Crymlyn Tip
Monitoring Location Plan
March

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Crymlyn Tip
Monitoring Location Plan
June 2020

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INFORMATION

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St Modwen Development Ltd

PROJECT

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DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
September 2020

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INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
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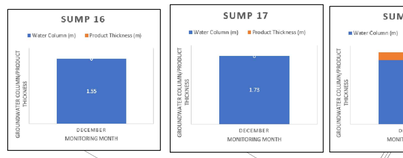

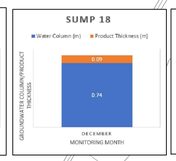

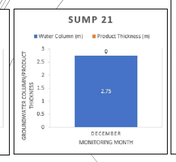

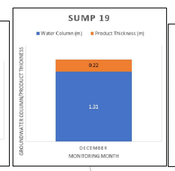

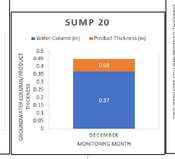

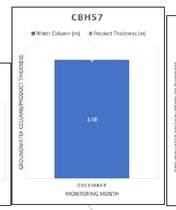

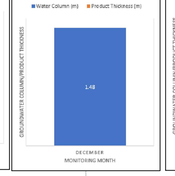

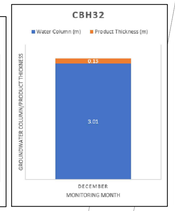

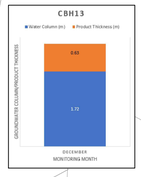

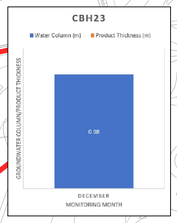

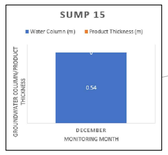

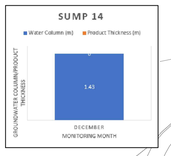

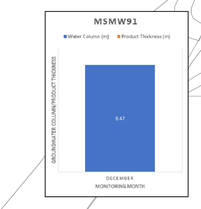

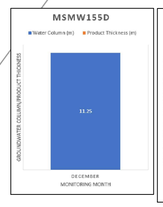

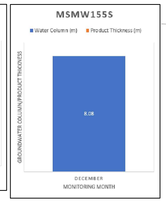

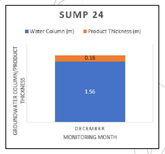

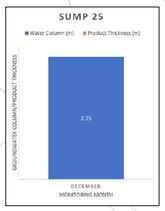

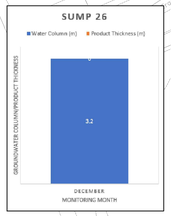

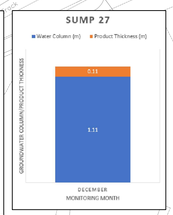

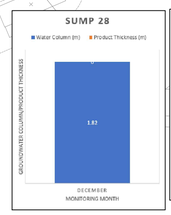

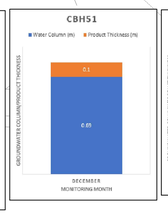

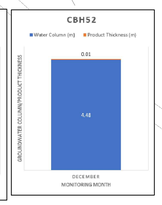

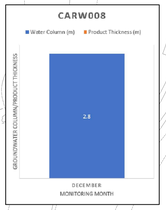

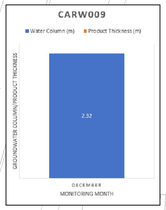

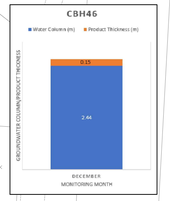

CP1 CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SW1 SW2 SW3 SW4 SW5 SW6

Compound fence

SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP15 SUMP14 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28 MSMW91 MSMW15S - D and S

CBH23 CBH32 CBH57 CBH19 CBH13 CBH20 CBH30 CBH21 CBH51 CBH52 CBH46 CBH64 MSW238 CBH16 CBH47 CBH48

CARW008 CARW009 CARW034

SOUTH BAY

Crymlyn Bog

Oil Refinery

Pond Track Drain Lighting Tower Reservoir 17.1m

NOTES

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KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA
Seven House - High Street
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CLIENT
St Modwen Development Ltd

PROJECT
Coed Darcy

DRAWING TITLE
Crymlyn Tip
Monitoring Location Plan
December 2020

DRAWING ISSUE STATUS
INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO	REVISION
04020	A	SK219	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JAL	BI	22.01.21

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Appendix E Groundwater & Surface Water Laboratory Results

		21591371	21591407	21591390	21591419	21591430	21591552	21591536	21591575	21591324	21591339	21591351	21820558	21820589	21820570	21820618	21820629
SDG ID.		200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200305-35	200305-35	200305-35	200305-35	200305-35
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar
Sample Description		BH 52	BH 57	BH XI	BH20	BH30	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 52	BH 57	BH XI	BH20	BH30
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		29/01/2020	29/01/2020	29/01/2020	29/01/2020	29/01/2020	28/01/2020	28/01/2020	29/01/2020	29/01/2020	29/01/2020	29/01/2020	03/03/2020	03/03/2020	03/03/2020	03/03/2020	03/03/2020
Received On		31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020
Date Complete		09/02/2020	11/02/2020	09/02/2020	09/02/2020	11/02/2020	11/02/2020	10/02/2020	10/02/2020	09/02/2020	11/02/2020	09/02/2020	14/03/2020	13/03/2020	13/03/2020	13/03/2020	17/03/2020
Laboratory data																	
Ammoniacal Nitrogen as N	mg/l	<0.2	<0.2	0.279	1.1	1.44	0.851	2.17	0.436	1.26	<0.2	<0.2	<0.2	<0.2	0.252	1.06	0.674
Chloride	mg/l	15	13	28.2	32.2	33.6	22.2	21.4	11.2	20.7	21.3	14.8	18.7	14.5	26.9	41.6	15.2
Arsenic (diss.filt)	µg/l	2.26	1.84	4.2	2.01	2.78	0.92	0.789	**32.5**	1.67	1.72	5.18	2.41	<0.5	3.4	1.93	2.66
Boron (diss.filt)	µg/l	38	<10	208	68.1	101	52.1	34.1	<10	63	<10	64.8	47.8	<10	157	94	67.5
Cadmium (diss.filt)	µg/l	<0.08	<0.08	**0.954**	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**0.604**	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.04	<1	<1
Copper (diss.filt)	µg/l	4.44	1.94	51	1.62	0.301	<0.3	0.502	0.537	<0.3	<0.3	0.39	4.35	10.4	42	<0.3	<0.3
Lead (diss.filt)	µg/l	<0.2	0.233	**15.3**	0.733	<0.2	<0.2	<0.2	0.257	<0.2	<0.2	0.226	0.24	0.224	**16.5**	<0.2	0.286
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011	<0.01	<0.01
Nickel (diss.filt)	µg/l	1.4	0.982	17.2	0.94	0.827	1.05	<0.4	2.07	<0.4	1.14	2.17	1.36	1.01	13.9	0.564	0.518
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.15	<1	<1
Zinc (diss.filt)	µg/l	16.3	5.89	208	4.14	3.3	<1	1.02	6.9	<1	1.56	10.1	23.3	5.87	151	<1	3.39
Aliphatics >C10-C12	µg/l	52	<10	<10	24	370	41	353	32	11	<10	<10	51	<10	<10	47	637
Aliphatics >C12-C16 (aq)	µg/l	420	<10	<10	133	57400	<1000	650	506	<10	<10	282	2490	<10	<10	12	8770
Aliphatics >C16-C21 (aq)	µg/l	752	<10	<10	200	156000	1580	1920	1270	<10	<10	615	3990	<10	<10	14	15700
Aliphatics >C21-C35 (aq)	µg/l	2400	20	<10	1240	756000	1350	1800	2060	<10	<10	1060	12600	<10	<10	22	70300
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	13	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	11
Aliphatics >C6-C8	µg/l	<10	<10	<10	17	90	<10	25	<10	<10	<10	<10	15	<10	<10	27	111
Aliphatics >C8-C10	µg/l	17	<10	<10	14	127	18	50	11	<10	<10	<10	17	<10	<10	28	282
Aromatics >EC10-EC12	µg/l	35	<10	<10	16	246	27	235	21	<10	<10	<10	34	<10	<10	31	425
Aromatics >EC12-EC16 (aq)	µg/l	94	<10	<10	56	11700	<1000	479	199	32	<10	31	409	51	<10	<10	2570
Aromatics >EC16-EC21 (aq)	µg/l	358	<10	<10	109	47000	<1000	1030	595	11	<10	251	1820	126	<10	<10	7410
Aromatics >EC21-EC35 (aq)	µg/l	1260	15	<10	752	215000	<1000	890	1270	<10	<10	1200	7100	431	<10	<10	26300
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	12	<10	<10	<10	85	12	36	<10	<10	<10	<10	11	<10	<10	19	188
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	125	<50	<50	83	932	112	705	81	<50	<50	<50	134	<50	<50	157	1650
GRO Surrogate % recovery**	%	106	101	100	95	99	104	98	104	107	100	102	98	95	96	93	107
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
liphatics & Aromatics >C5-35 (aq)	µg/l	5410	35	<10	2580	1240000	3040	7480	5990	77	<10	3440	28500	612	14	205	133000
Total Aliphatics >C12-C35 (aq)	µg/l	3570	20	<10	1580	970000	2930	4370	3840	<10	<10	1960	19100	<10	<10	48	94800
Total Aromatics >EC12-EC35 (aq)	µg/l	1710	15	<10	917	274000	<1000	2400	2070	43	<10	1480	9330	608	<10	<10	36300

	21591371	21591407	21591390	21591419	21591430	21591552	21591536	21591575	21591324	21591339	21591351	21820558	21820589	21820570	21820618	21820629
SDG ID.	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200305-35	200305-35	200305-35	200305-35	200305-35
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar
Sample Description	BH 52	BH 57	BH XI	BH20	BH30	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 52	BH 57	BH XI	BH20	BH30
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled	29/01/2020	29/01/2020	29/01/2020	29/01/2020	29/01/2020	28/01/2020	28/01/2020	29/01/2020	29/01/2020	29/01/2020	29/01/2020	03/03/2020	03/03/2020	03/03/2020	03/03/2020	03/03/2020
Received On	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020
Date Complete	09/02/2020	11/02/2020	09/02/2020	09/02/2020	11/02/2020	11/02/2020	10/02/2020	10/02/2020	09/02/2020	11/02/2020	09/02/2020	14/03/2020	13/03/2020	13/03/2020	13/03/2020	17/03/2020
Laboratory data																
Acenaphthene (aq) µg/l	<0.1	<0.005	<0.005	<0.25	<5	<0.5	<0.25	0.0421	4.44	<0.005	<0.005	<0.005	<0.005	0.0132	0.274	16.6
Acenaphthylene (aq) µg/l	<0.1	<0.005	<0.005	<0.25	<5	<0.5	<0.25	0.0384	<0.005	<0.005	0.0697	<0.005	<0.005	<0.005	0.0498	1.51
Anthracene (aq) µg/l	<0.1	<0.005	0.0187	<0.25	<5	<0.5	<0.25	<0.005	0.286	<0.005	<0.005	<0.005	0.0133	0.0101	0.0347	6.61
Benzo(a)anthracene (aq) µg/l	<0.1	0.00819	0.0348	<0.25	<5	<0.5	<0.25	<0.005	0.0287	<0.005	0.0717	2.35	0.0631	0.0401	<0.005	<0.01
Benzo(a)pyrene (aq) µg/l	<0.04	**0.0218**	**0.0448**	<0.1	<2	<0.2	<0.1	**0.0883**	<0.002	<0.002	<0.002	**2.35**	**0.0815**	**0.0538**	**0.101**	<0.004
Benzo(b)fluoranthene (aq) µg/l	<0.1	**0.0315**	**0.0656**	<0.25	<5	<0.5	<0.25	**0.137**	<0.005	<0.005	**0.199**	**2.54**	**0.127**	**0.0851**	<0.005	<0.01
Benzo(g,h,i)perylene (aq) µg/l	<0.1	**0.0118**	<0.005	<0.25	<5	<0.5	<0.25	**0.0931**	<0.005	<0.005	**0.335**	**1.25**	**0.0708**	**0.0494**	**0.0476**	**1.33**
Benzo(k)fluoranthene (aq) µg/l	<0.1	0.0115	**0.0178**	<0.25	<5	<0.5	<0.25	**0.0406**	<0.005	<0.005	<0.005	**0.985**	**0.0407**	**0.0389**	<0.005	<0.01
Indeno(1,2,3-cd)pyrene (aq) µg/l	<0.1	<0.005	<0.005	<0.25	<5	<0.5	<0.25	0.0622	<0.005	<0.005	0.199	0.749	0.0655	0.0397	<0.005	<0.01
SUM OF 4 PAH	*0*	*0.0548*	*0.0834*	*<0.25*	*<5*	*<0.5*	<0.25	***0.3329***	<0.005	<0.005	***0.733***	***5.524***	***0.304***	***0.2131***	*0.0476*	***1.33***
Chrysene (aq) µg/l	<0.1	0.0201	0.0451	<0.25	<5	<0.5	<0.25	<0.005	0.0242	<0.005	0.226	4.96	0.0834	0.0596	<0.005	<0.01
Dibenzo(a,h)anthracene (aq) µg/l	<0.1	<0.005	0.0076	<0.25	<5	<0.5	<0.25	<0.005	<0.005	<0.005	<0.005	0.423	<0.005	0.016	<0.005	<0.01
Fluoranthene (aq) µg/l	<0.1	0.0248	0.0788	<0.25	<5	<0.5	<0.25	0.107	**0.971**	<0.005	0.0368	**3.67**	0.0906	0.0717	**0.205**	**6.98**
Fluorene (aq) µg/l	<0.1	0.00554	0.013	<0.25	<5	<0.5	<0.25	0.0701	0.733	0.0118	<0.005	<0.005	<0.005	0.0123	0.255	19
Naphthalene (aq) µg/l	<0.2	<0.01	<0.01	<0.5	<10	<1	<0.5	0.0386	2.98	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	2.67
H, Total Detected USEPA 16 (aq) µg/l	<1.64	0.183	0.462	<4.1	<82	<8.2	<4.1	1.3	10.2	<0.082	1.28	28.7	0.79	0.625	1.53	86.5
Phenanthrene (aq) µg/l	<0.1	0.0173	0.0626	<0.25	<5	<0.5	<0.25	<0.005	0.269	<0.005	<0.005	<0.005	0.0641	0.0586	0.226	19.5
Pyrene (aq) µg/l	<0.1	0.0308	0.0736	<0.25	<5	<0.5	<0.25	0.586	0.511	0.0183	0.14	9.45	0.0894	0.0766	0.294	12.3

		21820603	21820727	21820710	21820739	21820514	21820525	21820544	22002976	22002997	22002987	22003018	22003042	22003051	22003223	22003192	22003241
SDG ID.		200305-35	200305-35	200305-35	200305-35	200305-35	200305-35	200305-35	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit
Sample Description		BH51	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 52	BH 57	BH XI	BH20	BH23	BH30	CARW008	CARW009	CARW034
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		03/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	01/04/2020	31/03/2020	31/03/2020	01/04/2020	01/04/2020	01/04/2020	31/03/2020	31/03/2020	31/03/2020
Received On		05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020
Date Complete		14/03/2020	13/03/2020	14/03/2020	13/03/2020	14/03/2020	14/03/2020	14/03/2020	10/04/2020	10/04/2020	14/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020
Laboratory data																	
Ammoniacal Nitrogen as N	mg/l	2.89	0.564	2.24	0.548	1.12	<0.2	<0.2	1.16	0.93	0.42	1.4	2.61	2.76	0.486	1.66	0.427
Chloride	mg/l	21.4	23.4	25.1	15.6	19.1	21.3	24.1									
Arsenic (diss.filt)	µg/l	2.07	1.98	1.61	31.2	3.19	<0.5	3.93	3.82	12.7	19.9	3.41	0.705	5.31	2.16	3.95	39.9
Boron (diss.filt)	µg/l	126	34.8	37.9	<10	54.7	14.4	51.3	79.5	15.6	179	184	46.1	357	42.6	41.9	<10
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	3.13	5.7	<1	<1	<1	<1	<1	1.32
Copper (diss.filt)	µg/l	<0.3	<0.3	<0.3	0.43	<0.3	<0.3	<0.3	0.373	0.858	7.53	0.697	<0.3	<0.3	<0.3	0.545	0.678
Lead (diss.filt)	µg/l	<0.2	<0.2	<0.2	0.26	<0.2	0.411	<0.2	<0.2	0.306	4.76	0.31	<0.2	<0.2	<0.2	0.327	0.336
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	0.891	3.63	<0.4	2.35	<0.4	0.4	1.69	1.58	1.92	15.8	0.651	5.91	0.832	3.46	0.717	1.58
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	6.15	<1	<1	<1	<1	<1	<1	2.29	2.44	1.35	1.45	<1	4.4	<1	1.21	<1
Zinc (diss.filt)	µg/l	<1	<1	<1	6.85	1.35	2.96	6.42	5.01	5.24	133	6.69	4.38	3.04	1.35	5.21	5.08
Aliphatics >C10-C12	µg/l	1240	20	340	52	<10	<10	<10	125	<10	<10	28	92	627	50	1880	48
Aliphatics >C12-C16 (aq)	µg/l	5550	<10	1570	<10	<10	<10	365	426	<10	<10	17	6710	2290	112	6720	344
Aliphatics >C16-C21 (aq)	µg/l	5840	<10	4690	<10	<10	<10	841	687	<10	<10	17	9590	4000	390	19000	951
Aliphatics >C21-C35 (aq)	µg/l	17400	42	4260	<10	<10	<10	1380	2430	42	<10	162	27300	20300	519	21000	1630
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	22	<10	10	<10
Aliphatics >C6-C8	µg/l	49	<10	26	18	<10	<10	<10	24	<10	<10	29	26	171	20	96	12
Aliphatics >C8-C10	µg/l	332	12	58	23	<10	<10	<10	34	<10	<10	20	38	290	30	409	15
Aromatics >EC10-EC12	µg/l	824	13	227	34	<10	<10	<10	83	<10	<10	18	61	418	33	1250	32
Aromatics >EC12-EC16 (aq)	µg/l	2070	<10	776	<10	<10	<10	43	171	<10	<10	26	159	769	121	3160	238
Aromatics >EC16-EC21 (aq)	µg/l	2800	<10	2150	<10	<10	<10	329	410	<10	<10	11	642	1800	325	10400	468
Aromatics >EC21-EC35 (aq)	µg/l	9140	206	2480	<10	<10	<10	1610	1470	22	<10	109	2990	7770	578	13300	1120
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	23	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	228	<10	41	15	<10	<10	<10	23	<10	<10	13	26	195	20	274	10
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	23	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	2680	64	700	149	<50	<50	<50	320	<50	<50	115	247	1720	158	3920	120
GRO Surrogate % recovery**	%	95	87	88	96	100	100	100	95	108	113	113	96	90	111	90	106
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
o-Xylene	µg/l	7	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
liphatics & Aromatics >C5-35 (aq)	µg/l	45500	312	16600	149	<10	<10	4580	5920	101	<10	458	47600	38700	2200	77500	4870
Total Aliphatics >C12-C35 (aq)	µg/l	28800	42	10500	<10	<10	<10	2580	3540	42	<10	196	43600	26600	1020	46700	2920
Total Aromatics >EC12-EC35 (aq)	µg/l	14000	206	5410	<10	<10	<10	1980	2050	22	<10	146	3790	10300	1020	26900	1820

	21820603	21820727	21820710	21820739	21820514	21820525	21820544	22002976	22002997	22002987	22003018	22003042	22003051	22003223	22003192	22003241
SDG ID.	200305-35	200305-35	200305-35	200305-35	200305-35	200305-35	200305-35	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37	200406-37
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy - Februar	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit
Sample Description	BH51	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 52	BH 57	BH XI	BH20	BH23	BH30	CARW008	CARW009	CARW034
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled	03/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	01/04/2020	31/03/2020	31/03/2020	01/04/2020	01/04/2020	01/04/2020	31/03/2020	31/03/2020	31/03/2020
Received On	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020
Date Complete	14/03/2020	13/03/2020	14/03/2020	13/03/2020	14/03/2020	14/03/2020	14/03/2020	10/04/2020	10/04/2020	14/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020
Laboratory data																
Acenaphthene (aq) µg/l	4.57	0.47	1.55	0.258	3.36	<0.005	<0.005	0.881	0.033	0.0335	0.325	0.729	7.12	0.36	3.67	0.366
Acenaphthylene (aq) µg/l	0.841	0.0977	0.544	<0.005	0.0385	<0.005	<0.005	0.0768	<0.005	0.00863	<0.005	1.17	0.387	0.103	1.71	0.0805
Anthracene (aq) µg/l	<0.025	<0.005	<0.005	<0.005	0.121	<0.005	<0.005	0.0996	0.00825	0.0446	0.0274	<0.1	2.14	<0.005	<0.005	<0.005
Benzo(a)anthracene (aq) µg/l	0.643	<0.005	<0.005	0.0423	<0.005	<0.005	<0.005	0.494	0.0173	<0.005	<0.005	3.96	1.15	<0.005	<0.005	0.199
Benzo(a)pyrene (aq) µg/l	<0.01	0.0226	<0.002	0.0429	<0.002	<0.002	0.307	0.451	0.0259	0.239	0.0142	6.92	0.877	0.0459	<0.002	0.308
Benzo(b)fluoranthene (aq) µg/l	1.1	0.0482	<0.005	0.063	<0.005	<0.005	0.39	0.406	0.039	0.383	0.0163	9.6	0.872	0.0902	0.665	0.48
Benzo(g,h,i)perylene (aq) µg/l	<0.025	0.029	<0.005	0.0452	<0.005	<0.005	0.411	0.142	0.00759	0.19	<0.005	4.85	<0.025	0.0426	<0.005	0.365
Benzo(k)fluoranthene (aq) µg/l	0.412	0.0199	<0.005	0.0224	<0.005	<0.005	<0.005	0.117	0.0167	0.12	<0.005	2.67	0.411	0.0256	0.192	0.166
Indeno(1,2,3-cd)pyrene (aq) µg/l	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	0.36	0.173	0.0167	0.167	<0.005	4.45	<0.025	0.0273	<0.005	0.276
SUM OF 4 PAH	*1.512*	*0.0971*	<0.005	*0.1306*	<0.005	<0.005	*1.161*	*0.838*	*0.07999*	*0.86*	*0.0163*	*21.57*	*1.283*	*0.1857*	*0.857*	*1.287*
Chrysene (aq) µg/l	1.6	<0.005	<0.005	0.103	<0.005	<0.005	<0.005	0.936	0.0437	<0.005	<0.005	4.92	2.21	<0.005	<0.005	0.218
Dibenzo(a,h)anthracene (aq) µg/l	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0628	<0.005	0.0415	<0.005	1.44	<0.025	0.0112	<0.005	0.094
Fluoranthene (aq) µg/l	2.04	<0.005	0.606	0.103	0.625	<0.005	<0.005	0.935	0.0493	0.348	0.0514	7.26	2.77	0.127	<0.005	0.325
Fluorene (aq) µg/l	4.54	1.08	2.16	0.439	0.275	<0.005	<0.005	0.562	0.0397	0.0344	0.313	0.899	7.02	0.891	5.76	0.97
Naphthalene (aq) µg/l	0.173	0.0648	<0.01	0.0322	0.431	<0.01	<0.01	<0.01	0.0106	0.0153	0.105	0.276	<0.05	0.0569	<0.01	0.0492
H, Total Detected USEPA 16 (aq) µg/l	22.5	1.83	7.25	1.47	5.25	<0.082	1.47	7.14	0.421	2.18	1.07	61.2	32.3	2.15	17.6	5.24
Phenanthrene (aq) µg/l	3.63	<0.005	0.928	0.14	0.065	<0.005	<0.005	0.0948	0.043	0.236	0.15	<0.1	4.1	0.107	5.58	0.812
Pyrene (aq) µg/l	2.98	<0.005	1.46	0.175	0.325	<0.005	<0.005	1.71	0.0703	0.32	0.0668	12.1	3.23	0.267	<0.005	0.533

		22002948	22002958	22002967	22218462	22218444	22218453	22218471	22218480	22218546	22218537	22218555	22218424	22218415	22218438	22412561	22412580
SDG ID.		200406-37	200406-37	200406-37	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200703-4	200703-4
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito
Sample Description		MSMW155D	MSMW155S	MSMW27	BH 49	BH 52	BH XI	BH23	BH46	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 52	BH 57
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		31/03/2020	31/03/2020	31/03/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	01/07/2020	01/07/2020
Received On		06/04/2020	06/04/2020	06/04/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	03/07/2020	03/07/2020
Date Complete		10/04/2020	10/04/2020	10/04/2020	09/06/2020	09/06/2020	10/06/2020	09/06/2020	09/06/2020	09/06/2020	09/06/2020	10/06/2020	10/06/2020	10/06/2020	09/06/2020	13/07/2020	13/07/2020
Laboratory data																	
Ammoniacal Nitrogen as N	mg/l	1.07	<0.2	<0.2	4.17	1.74	2.68	6.11	13	0.777	1.88	2.52	<0.2	0.984	0.241	1.52	3.59
Chloride	mg/l				23.3	26.4	29.1	23.3	94.8	30.2	23	12.1	21.6	19.1	21.4	16.4	19.6
Arsenic (diss.filt)	µg/l	2.25	<0.5	3.41	10	3.43	51.4	8.32	5.4	<0.5	0.646	29	<0.5	1.81	1.4	4.85	6.97
Boron (diss.filt)	µg/l	52.8	<10	55.9	15.4	91.1	135	44.8	477	57.2	45.6	22.5	<10	48.9	69.2	127	21.2
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<1	<1	2.37	<1	1.21	<1	2.13	<1	<1	1.01	<1	<1	<1	<1	<1
Copper (diss.filt)	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	1.23	<0.3	<0.3	<0.3	<0.3	0.556	<0.3	<0.3	<0.3	1.42	0.671
Lead (diss.filt)	µg/l	0.227	<0.2	<0.2	<0.2	<0.2	1.13	0.299	<0.2	<0.2	<0.2	0.418	<0.2	<0.2	<0.2	1.33	0.408
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	0.426	0.659	1.44	0.675	1.57	6.75	1.8	6.43	<0.4	<0.4	2.18	0.803	<0.4	1.53	2.46	1.34
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	<1	<1	<1	2.01	4.95	5.47	<1	14.5	1.04	1.22	1.66	<1	1.4	<1	4	3.28
Zinc (diss.filt)	µg/l	4.02	3.77	1.97	8.33	1.89	17.6	2.89	1.37	2.53	2.38	14.5	12.4	2.8	6.91	9.39	12.2
Aliphatics >C10-C12	µg/l	<10	<10	98	<10	396	<10	98	237	80	223	51	<10	<10	<10	843	<10
Aliphatics >C12-C16 (aq)	µg/l	<10	<10	234	88	12000	<10	686	1250	49	100	159	<10	<10	4090	12100	891
Aliphatics >C16-C21 (aq)	µg/l	15	<10	355	208	19000	<10	1340	1520	232	531	355	<10	<10	5900	17200	1420
Aliphatics >C21-C35 (aq)	µg/l	72	<10	701	694	55200	<10	3340	2820	186	430	445	<10	<10	7110	54400	3910
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	<10	<10	<10	79	<10	10	<10	<10	<10	<10	17	<10
Aliphatics >C6-C8	µg/l	<10	<10	15	<10	30	<10	28	83	19	28	13	<10	<10	<10	53	<10
Aliphatics >C8-C10	µg/l	<10	<10	28	<10	110	<10	45	71	37	45	21	<10	<10	<10	232	<10
Aromatics >EC10-EC12	µg/l	<10	<10	65	<10	264	<10	65	158	53	149	34	<10	<10	<10	562	<10
Aromatics >EC12-EC16 (aq)	µg/l	<10	<10	30	24	3080	<10	183	248	30	162	35	<10	<10	509	2920	151
Aromatics >EC16-EC21 (aq)	µg/l	<10	<10	148	74	9020	<10	633	670	130	211	91	<10	<10	2070	8820	529
Aromatics >EC21-EC35 (aq)	µg/l	<10	<10	523	598	30600	<10	3130	1810	141	230	235	<10	<10	5150	30900	2610
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	172	<10	<10	<10	<10	<10	<10	27	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	<10	19	<10	74	<10	30	49	25	31	14	<10	<10	<10	155	<10
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	172	<7	<7	<7	<7	<7	<7	27	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	<50	<50	229	<50	886	<50	273	850	219	487	136	<50	<50	<50	1890	<50
GRO Surrogate % recovery**	%	108	117	97	119	119	119	113	118	106	99	108	100	108	104	112	112
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	<28	<28	<28	<28	<28	172	<28	<28	<28	<28	<28	<28	<28	<28
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
liphatics & Aromatics >C5-35 (aq)	µg/l	87	<10	2220	1690	130000	<10	9580	9160	987	2150	1460	<10	<10	24800	128000	9500
Total Aliphatics >C12-C35 (aq)	µg/l	87	<10	1290	990	86100	<10	5370	5580	467	1060	959	<10	<10	17100	83700	6210
Total Aromatics >EC12-EC35 (aq)	µg/l	<10	<10	701	696	42700	<10	3940	2730	301	603	361	<10	<10	7730	42700	3290

	22002948	22002958	22002967	22218462	22218444	22218453	22218471	22218480	22218546	22218537	22218555	22218424	22218415	22218438	22412561	22412580
SDG ID.	200406-37	200406-37	200406-37	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200703-4	200703-4
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit
Sample Description	MSMW155D	MSMW155S	MSMW27	BH 49	BH 52	BH XI	BH23	BH46	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 52	BH 57
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled	31/03/2020	31/03/2020	31/03/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	01/07/2020	01/07/2020
Received On	06/04/2020	06/04/2020	06/04/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	03/07/2020	03/07/2020
Date Complete	10/04/2020	10/04/2020	10/04/2020	09/06/2020	09/06/2020	10/06/2020	09/06/2020	09/06/2020	09/06/2020	09/06/2020	10/06/2020	10/06/2020	10/06/2020	09/06/2020	13/07/2020	13/07/2020
Laboratory data																
Acenaphthene (aq) µg/l	4.51	<0.005	0.0219	0.0836	12.7	0.0188	0.732	<0.005	0.183	1.03	<0.005	<0.005	0.121	<0.01	11.7	<0.01
Acenaphthylene (aq) µg/l	0.0336	<0.005	0.0425	<0.01	1.42	<0.005	0.341	0.148	<0.005	0.319	<0.005	<0.005	<0.005	0.337	1.1	0.0279
Anthracene (aq) µg/l	0.18	<0.005	<0.005	0.0647	5.76	0.0221	0.225	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	5.83	0.0985
Benzo(a)anthracene (aq) µg/l	<0.005	<0.005	<0.005	0.161	10.2	0.111	1.46	0.725	<0.005	<0.005	<0.005	<0.005	<0.005	2.35	8.97	0.318
Benzo(a)pyrene (aq) µg/l	0.00977	<0.002	**0.143**	**0.186**	**8.8**	**0.134**	**2.29**	**0.98**	**0.0378**	**0.0261**	**0.0313**	<0.002	<0.002	**2.48**	**10.4**	**0.359**
Benzo(b)fluoranthene (aq) µg/l	0.0145	<0.005	**0.203**	**0.306**	**9.47**	**0.195**	**3.53**	**1.11**	**0.055**	<0.005	**0.0387**	<0.005	<0.005	**4.11**	**8.8**	**0.49**
Benzo(g,h,i)perylene (aq) µg/l	<0.005	<0.005	**0.103**	**0.178**	**4.13**	**0.115**	**2.54**	**0.623**	**0.0274**	<0.005	**0.0281**	<0.005	<0.005	**1.7**	**5.12**	**0.327**
Benzo(k)fluoranthene (aq) µg/l	<0.005	<0.005	**0.0736**	**0.113**	**2.85**	**0.0834**	**1.45**	**0.365**	0.017	<0.005	**0.0179**	<0.005	<0.005	**1.47**	**3.1**	**0.202**
Indeno(1,2,3-cd)pyrene (aq) µg/l	<0.005	<0.005	0.0897	0.106	2.66	0.0796	1.92	0.363	<0.005	<0.005	<0.005	<0.005	<0.005	1.66	3.18	0.266
SUM OF 4 PAH	*0.0145*	<0.005	***0.4693***	***0.703***	***19.11***	***0.473***	***9.44***	***2.461***	*0.0994*	<0.005	*0.0847*	<0.005	<0.005	***8.94***	***20.2***	***1.285***
Chrysene (aq) µg/l	0.0394	<0.005	<0.005	0.353	19.9	0.14	2.04	1.01	<0.005	<0.005	<0.005	<0.005	<0.005	2.67	8.4	0.666
Dibenzo(a,h)anthracene (aq) µg/l	<0.005	<0.005	<0.005	0.0473	1.49	0.0276	0.509	0.116	<0.005	<0.005	<0.005	<0.005	<0.005	0.584	1.65	0.113
Fluoranthene (aq) µg/l	**0.737**	<0.005	0.0861	**0.402**	**21.8**	**0.196**	**3.16**	**0.661**	<0.005	0.0954	<0.005	<0.005	0.0663	**4.02**	**19.3**	**0.626**
Fluorene (aq) µg/l	0.191	<0.005	0.00868	0.148	13.7	0.0214	0.911	<0.005	0.145	1.21	<0.005	0.00568	<0.005	<0.01	9.1	0.195
Naphthalene (aq) µg/l	0.249	<0.01	<0.01	0.0385	1.42	0.0103	0.74	0.041	0.0499	1.43	<0.01	<0.01	<0.01	0.06	<0.02	0.0403
H, Total Detected USEPA 16 (aq) µg/l	6.43	<0.082	1.13	3.18	168	1.5	26.5	9.5	0.735	4.54	0.188	<0.082	0.591	26.3	140	5.37
Phenanthrene (aq) µg/l	0.0818	<0.005	<0.005	0.419	16.2	0.157	1.03	<0.005	<0.005	0.231	<0.005	<0.005	<0.005	<0.01	9.77	0.752
Pyrene (aq) µg/l	0.377	0.00601	0.363	0.569	35.8	0.193	3.67	3.36	0.22	0.203	0.0721	<0.005	0.404	4.87	33.4	0.888

		22412570	22412608	22412590	22412599	22412678	22412667	22412688	22412533	22412543	22412552	22579320	22579311	22579329	22579409	22579400	22579426
SDG ID.		200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200731-1	200731-1	200731-1	200731-1	200731-1	200731-1
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito
Sample Description		BH XI	BH24	BH46	BH51	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH XI	BH20	CARW008	CARW009	CARW034
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Received On		03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date Complete		08/07/2020	13/07/2020	10/07/2020	13/07/2020	09/07/2020	13/07/2020	09/07/2020	08/07/2020	13/07/2020	08/07/2020	07/08/2020	07/08/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020
Laboratory data																	
Ammoniacal Nitrogen as N	mg/l	1	1.28	4.6	5.89	0.966	1.66	0.911	<0.2	1.02	0.471	2.44	0.521	1.62	0.708	1.88	0.659
Chloride	mg/l	21.5	46.7	47.8	46.5	26.3	25.7	9.2	21.8	19.4	22.4	15.5	19.4	41.5	23.3	26.1	9.2
Arsenic (diss.filt)	µg/l	19.3	4.63	9.07	1.48	<0.5	0.509	23.9	1.19	2.26	2.68	4.83	18.7	2.51	0.749	0.633	1.81
Boron (diss.filt)	µg/l	145	171	353	498	72.2	67.6	35.4	<10	74.6	68.3	24.2	126	160	77.7	52.3	35.2
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.0992	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<1	1.22	<1	<1	<1	<1	<1	<1	<1	<1	1.06	1.02	<1	<1	<1
Copper (diss.filt)	µg/l	1.21	0.7	0.455	<0.3	<0.3	<0.3	5.26	<0.3	0.301	0.756	0.638	4.12	1.41	<0.3	<0.3	2.25
Lead (diss.filt)	µg/l	1.1	0.521	0.24	<0.2	<0.2	<0.2	1.94	<0.2	0.316	0.734	<0.2	2.77	<0.2	<0.2	<0.2	<0.2
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0126	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	9.62	1.41	5.74	1.43	<0.4	<0.4	3.6	1.34	0.482	6.29	2.06	8.52	1.66	12.3	6.03	3.76
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	3.75	1.77	13.9	7.69	<1	<1	1.01	<1	<1	<1	1.38	1.48	2.35	<1	<1	<1
Zinc (diss.filt)	µg/l	10.3	15.1	2.86	2.39	1.85	2.18	6.31	3.35	4.86	16.8	6.7	17.8	6.12	3.93	9.61	2.19
Aliphatics >C10-C12	µg/l	<10	196	294	242	46	340	53	<10	<10	13	<10	<10	122	51	380	27
Aliphatics >C12-C16 (aq)	µg/l	<20	1960	69	2220	127	1730	58	<10	<10	492	29	35	356	45	586	262
Aliphatics >C16-C21 (aq)	µg/l	<20	2240	123	2480	386	5480	288	<10	<10	663	77	84	497	179	1730	550
Aliphatics >C21-C35 (aq)	µg/l	128	8680	212	8150	376	5400	326	<10	<10	980	221	331	2690	146	1500	681
Aliphatics >C5-C6	µg/l	<10	<10	62	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10
Aliphatics >C6-C8	µg/l	<10	66	108	24	20	25	<10	<10	<10	<10	<10	<10	60	14	29	<10
Aliphatics >C8-C10	µg/l	<10	103	95	71	27	52	10	<10	<10	<10	<10	<10	64	23	58	<10
Aromatics >EC10-EC12	µg/l	<10	131	196	161	31	227	35	<10	<10	<10	<10	<10	81	34	253	18
Aromatics >EC12-EC16 (aq)	µg/l	<20	698	16	847	157	1010	12	<10	40	53	<10	<10	118	107	465	100
Aromatics >EC16-EC21 (aq)	µg/l	<20	1600	45	1190	299	3040	98	<10	21	286	<10	40	250	145	864	221
Aromatics >EC21-EC35 (aq)	µg/l	59	8170	145	3760	365	3720	344	<10	<10	687	22	169	1800	182	1070	468
Aromatics >EC5-EC7	µg/l	<10	<10	336	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	68	74	48	18	36	<10	<10	<10	<10	<10	<10	43	15	40	<10
Benzene	µg/l	<7	<7	336	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	<50	575	1170	555	146	690	114	<50	<50	<50	<50	<50	381	144	770	65
GRO Surrogate % recovery**	%	114	101	120	106	108	113	110	111	111	110	107	107	106	116	106	106
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	336	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
liphatics & Aromatics >C5-35 (aq)	µg/l	187	23900	1780	19200	1860	21100	1240	<10	83	3200	359	659	6090	948	6980	2350
Total Aliphatics >C12-C35 (aq)	µg/l	128	12900	404	12800	889	12600	672	<10	<10	2140	327	450	3550	370	3820	1490
Total Aromatics >EC12-EC35 (aq)	µg/l	59	10500	206	5800	821	7770	454	<10	61	1030	22	209	2170	434	2390	789

		22412570	22412608	22412590	22412599	22412678	22412667	22412688	22412533	22412543	22412552	22579320	22579311	22579329	22579409	22579400	22579426
SDG ID.		200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200731-1	200731-1	200731-1	200731-1	200731-1	200731-1
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito
Sample Description		BH XI	BH24	BH46	BH51	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH XI	BH20	CARW008	CARW009	CARW034
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Received On		03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date Complete		08/07/2020	13/07/2020	10/07/2020	13/07/2020	09/07/2020	13/07/2020	09/07/2020	08/07/2020	13/07/2020	08/07/2020	07/08/2020	07/08/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020
Laboratory data																	
Acenaphthene (aq)	µg/l	0.0518	1.51	<0.005	0.502	1.01	1.93	<0.005	<0.005	6.32	<0.005	0.0295	0.0951	0.363	0.824	1.27	<0.005
Acenaphthylene (aq)	µg/l	<0.01	0.33	0.0347	0.0717	0.2	0.497	<0.005	<0.005	0.0443	<0.005	<0.005	0.0401	<0.005	0.132	<0.005	<0.005
Anthracene (aq)	µg/l	0.0504	0.385	<0.005	0.062	<0.005	<0.005	<0.005	<0.005	0.347	<0.005	0.0145	0.106	0.042	<0.005	<0.005	<0.005
Benzo(a)anthracene (aq)	µg/l	0.221	0.62	0.0314	0.066	0.0315	<0.005	<0.005	<0.005	0.0386	0.22	0.0327	0.51	0.0734	<0.005	<0.005	0.0249
Benzo(a)pyrene (aq)	µg/l	**0.273**	**0.88**	**0.181**	**0.053**	**0.0489**	<0.002	**0.0285**	<0.002	<0.002	**0.268**	**0.0288**	**0.636**	**0.148**	<0.002	<0.002	**0.0416**
Benzo(b)fluoranthene (aq)	µg/l	**0.464**	**1**	**0.205**	**0.0657**	**0.0778**	<0.005	**0.0352**	<0.005	<0.005	**0.378**	**0.0479**	**1.03**	**0.135**	<0.005	**0.0433**	**0.052**
Benzo(g,h,i)perylene (aq)	µg/l	**0.266**	**0.625**	**0.111**	<0.025	**0.049**	**0.105**	**0.0339**	<0.005	<0.005	**0.162**	**0.0411**	**0.62**	**0.047**	<0.005	**0.0255**	**0.0268**
Benzo(k)fluoranthene (aq)	**µg/l**	**0.165**	**0.489**	**0.0615**	**0.0276**	**0.0255**	<0.005	<0.005	<0.005	<0.005	**0.151**	**0.0184**	**0.375**	**0.0364**	<0.005	<0.005	0.0122
Indeno(1,2,3-cd)pyrene (aq)	µg/l	0.227	0.376	<0.005	<0.025	0.0376	<0.005	<0.005	<0.005	<0.005	<0.005	0.0245	0.588	<0.005	<0.005	<0.005	<0.005
SUM OF 4 PAH		***1.122***	***2.49***	***0.3775***	*0.0933*	***0.1899***	***0.105***	*0.0691*	<0.005	<0.005	***0.691***	***0.1319***	***2.613***	***0.2184***	<0.005	*0.0688*	*0.091*
Chrysene (aq)	µg/l	0.287	0.797	0.031	0.105	0.0496	<0.005	<0.005	<0.005	0.0231	0.383	0.0685	0.678	0.229	<0.005	<0.005	0.0382
Dibenzo(a,h)anthracene (aq)	µg/l	0.0678	<0.01	<0.005	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0104	0.138	<0.005	<0.005	<0.005	<0.005
Fluoranthene (aq)	µg/l	**0.384**	**1.88**	0.0253	**0.166**	<0.005	**0.507**	<0.005	<0.005	**1.5**	**0.126**	0.0604	**0.839**	**0.237**	0.0534	**0.252**	0.0576
Fluorene (aq)	µg/l	0.058	1.66	0.0304	0.494	2.34	2.28	<0.005	<0.005	0.8	<0.005	0.0356	0.112	0.336	1.77	1.7	<0.005
Naphthalene (aq)	µg/l	<0.02	<0.02	<0.01	<0.05	0.0991	3.29	<0.01	<0.01	3.19	<0.01	0.01	0.0374	0.0776	0.0736	<0.01	0.0108
H, Total Detected USEPA 16 (aq)	µg/l	3.17	15.4	1.2	2.2	4.16	11.2	0.187	<0.082	13.4	2.44	0.626	7.25	2.3	2.99	4.59	0.482
Phenanthrene (aq)	µg/l	0.316	2.68	<0.005	0.375	<0.005	1.21	<0.005	<0.005	0.402	<0.005	0.101	0.58	0.267	<0.005	0.624	<0.005
Pyrene (aq)	µg/l	0.338	2.15	0.486	0.211	0.19	1.38	0.0897	<0.005	0.764	0.755	0.103	0.855	0.304	0.137	0.667	0.218

		22579285	22579294	22579303	22579338	22579347	22726132	22726119	22726146	22726231	22726219	22726246	22726083	22726095	22726107	22934262	22934276
SDG ID.		200731-1	200731-1	200731-1	200731-1	200731-1	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	201001-67	201001-67
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit
Sample Description		MSMW155D	MSMW155S	MSMW27	BH23	BH46	BH 57	BH XI	BH46	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH XI
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	UNSPEC_LIQUID	UNSPEC_LIQUID	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	25/08/2020	25/08/2020	25/08/2020	24/08/2020	24/08/2020	24/08/2020	25/08/2020	25/08/2020	24/08/2020	29/09/2020	29/09/2020
Received On		31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	01/10/2020	01/10/2020
Date Complete		07/08/2020	07/08/2020	10/08/2020	07/08/2020	07/08/2020	04/09/2020	04/09/2020	04/09/2020	04/09/2020	04/09/2020	03/09/2020	04/09/2020	04/09/2020	03/09/2020	14/10/2020	14/10/2020
Laboratory data																	
Ammoniacal Nitrogen as N	mg/l	<0.2	0.937	0.298	1.87	2.14	<0.2	0.894	<0.2	0.578	1.79	1.19	<0.2	1.14	<0.2	3.1	2.44
Chloride	mg/l	21.5	19.2	34.1	22.1	21.7	11.3	18.4	15.5	20.1	24.3	8.6	22.8	21	38.8	15.9	27.2
Arsenic (diss.filt)	µg/l	1.55	2.33	3.87	3.26	4.62	2.26	**14.7**	3.03	0.982	0.585	2.15	1.59	2.45	7.44	7.9	12.5
Boron (diss.filt)	µg/l	<10	62.3	152	51.2	180	14.8	89.8	69.5	72.8	48.1	21.8	<10	49.6	120	21.7	168
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<1	<1	<1	1.07	1.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (diss.filt)	µg/l	<0.3	<0.3	2	2.62	1.59	4.83	4.43	18.1	<0.3	<0.3	0.664	<0.3	<0.3	1.53	<0.3	1.23
Lead (diss.filt)	µg/l	<0.2	<0.2	1.36	<0.2	<0.2	0.304	1.23	0.546	<0.2	<0.2	<0.2	<0.2	<0.2	0.984	<0.2	0.508
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	0.875	<0.4	6.33	3.68	3.33	1.52	4.41	3.33	0.955	<0.4	4.13	0.45	<0.4	8.59	0.468	3.74
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	<1	<1	1.08	<1	8.77	<1	<1	4.05	<1	<1	<1	<1	<1	<1	<1	2.12
Zinc (diss.filt)	µg/l	5.39	7.81	3.3	31.9	4.06	11.7	22.2	6.65	<1	1.7	3.13	1.65	<1	143	<1	2.47
Aliphatics >C10-C12	µg/l	<10	<10	186	<10	518	<10	<10	166	62	383	105	<10	10	<10	<10	<10
Aliphatics >C12-C16 (aq)	µg/l	<10	<10	3740	166	1470	<10	<10	735	24	390	133	<10	<10	106	<10	<10
Aliphatics >C16-C21 (aq)	µg/l	<10	<10	4900	243	2200	<10	<10	1130	236	1530	248	<10	<10	125	14	<10
Aliphatics >C21-C35 (aq)	µg/l	<10	<10	6170	593	4310	21	22	2140	157	1200	342	<10	<10	177	62	<10
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	39	<10	16	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	µg/l	<10	<10	11	<10	95	<10	<10	15	15	26	12	<10	<10	<10	<10	<10
Aliphatics >C8-C10	µg/l	<10	<10	27	<10	116	<10	<10	36	25	48	25	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	µg/l	<10	<10	124	<10	345	<10	<10	111	41	255	70	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	µg/l	<10	58	603	63	286	<10	<10	223	112	360	111	<10	<10	41	<10	<10
Aromatics >EC16-EC21 (aq)	µg/l	<10	26	2390	146	921	<10	<10	614	205	697	142	<10	<10	61	<10	<10
Aromatics >EC21-EC35 (aq)	µg/l	<10	<10	4880	708	2400	21	25	1540	262	777	295	<10	<10	178	<10	<10
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	89	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	<10	18	<10	79	<10	<10	24	17	34	17	<10	<10	<10	<10	<10
Benzene	µg/l	<7	<7	<7	<7	**89**	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	<50	<50	372	<50	1280	<50	<50	356	165	752	233	<50	<50	<50	<50	<50
GRO Surrogate % recovery**	%	108	112	99	105	111	106	104	105	100	104	102	101	102	93	81	92
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	<28	<28	89	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
liphatics & Aromatics >C5-35 (aq)	µg/l	<10	111	23000	1940	12900	42	78	6740	1160	5710	1500	<10	32	688	76	<10
Total Aliphatics >C12-C35 (aq)	µg/l	<10	<10	14800	1000	7990	21	22	4000	417	3120	723	<10	<10	408	76	<10
Total Aromatics >EC12-EC35 (aq)	µg/l	<10	84	7870	917	3610	21	25	2380	579	1830	548	<10	<10	280	<10	<10

		22579285	22579294	22579303	22579338	22579347	22726132	22726119	22726146	22726231	22726219	22726246	22726083	22726095	22726107	22934262	22934276
SDG ID.		200731-1	200731-1	200731-1	200731-1	200731-1	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	200827-23	201001-67	201001-67
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit
Sample Description		MSMW155D	MSMW155S	MSMW27	BH23	BH46	BH 57	BH XI	BH46	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH XI
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	UNSPEC_LIQUID	UNSPEC_LIQUID	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	25/08/2020	25/08/2020	25/08/2020	24/08/2020	24/08/2020	24/08/2020	25/08/2020	25/08/2020	24/08/2020	29/09/2020	29/09/2020
Received On		31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	01/10/2020	01/10/2020
Date Complete		07/08/2020	07/08/2020	10/08/2020	07/08/2020	07/08/2020	04/09/2020	04/09/2020	04/09/2020	04/09/2020	04/09/2020	03/09/2020	04/09/2020	04/09/2020	03/09/2020	14/10/2020	14/10/2020
Laboratory data																	
Acenaphthene (aq)	µg/l	0.0237	7.12	0.631	0.0167	<0.05	<0.005	0.0151	0.0333	0.752	1.39	0.231	<0.005	0.819	<0.005	0.0771	0.0623
Acenaphthylene (aq)	µg/l	<0.005	0.0449	0.412	0.0293	<0.05	<0.005	0.00904	0.156	0.132	0.42	0.0135	<0.005	0.0487	0.00787	<0.005	<0.005
Anthracene (aq)	µg/l	<0.005	0.343	<0.005	<0.005	0.137	0.00937	0.0286	0.485	0.0497	<0.005	<0.005	<0.005	<0.005	<0.005	0.0168	0.0135
Benzo(a)anthracene (aq)	µg/l	<0.005	0.0217	2.44	0.101	0.554	0.0283	0.153	0.83	<0.005	<0.005	<0.005	<0.005	<0.005	0.0213	0.0423	0.0443
Benzo(a)pyrene (aq)	µg/l	<0.002	<0.002	**2.08**	**0.147**	**0.568**	**0.0375**	**0.175**	**0.707**	<0.002	<0.002	**0.0294**	<0.002	<0.002	**0.0382**	**0.037**	**0.0603**
Benzo(b)fluoranthene (aq)	µg/l	<0.005	<0.005	**3.57**	**0.225**	**0.648**	**0.0671**	**0.314**	**0.742**	<0.005	**0.0388**	**0.0231**	<0.005	<0.005	**0.069**	**0.0585**	**0.11**
Benzo(g,h,i)perylene (aq)	µg/l	<0.005	<0.005	**1.78**	**0.15**	**0.439**	**0.0243**	**0.159**	**0.368**	<0.005	<0.005	**0.0146**	<0.005	<0.005	**0.0288**	**0.0417**	**0.0466**
Benzo(k)fluoranthene (aq)	**µg/l**	<0.005	<0.005	**1.15**	**0.0951**	**0.199**	**0.0238**	**0.0975**	**0.239**	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0193**	**0.0185**	**0.036**
Indeno(1,2,3-cd)pyrene (aq)	µg/l	<0.005	<0.005	1.34	0.103	0.231	<0.005	0.116	0.258	<0.005	<0.005	0.0109	<0.005	<0.005	0.0373	0.0293	0.0437
SUM OF 4 PAH		<0.005	<0.005	***7.84***	***0.5731***	***1.517***	***0.1152***	***0.6865***	***1.607***	<0.005	*0.0388*	*0.0486*	<0.005	<0.005	***0.1544***	***0.148***	***0.2363***
Chrysene (aq)	µg/l	<0.005	0.0232	3.18	0.122	0.449	0.0397	0.124	1.23	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.055	0.0757
Dibenzo(a,h)anthracene (aq)	µg/l	<0.005	<0.005	0.511	0.0443	0.0783	<0.005	0.0393	0.0993	<0.005	<0.005	<0.005	<0.005	<0.005	0.00957	0.00872	<0.005
Fluoranthene (aq)	µg/l	<0.005	**1.49**	**5.61**	**0.144**	**0.568**	0.0441	**0.233**	**1.58**	0.0755	**0.186**	0.0332	<0.005	**0.3**	0.019	0.0622	0.0978
Fluorene (aq)	µg/l	<0.005	0.841	<0.005	<0.005	<0.05	0.0114	0.0195	0.107	1.67	1.69	0.0985	<0.005	0.043	<0.005	0.0844	0.0173
Naphthalene (aq)	µg/l	<0.01	3.97	0.0734	0.0361	0.786	<0.01	0.0177	0.0289	0.0684	0.231	<0.01	<0.01	0.0295	<0.01	<0.01	0.0104
H, Total Detected USEPA 16 (aq)	µg/l	<0.082	15.1	29.1	1.59	6.7	0.382	1.93	10.7	3	4.9	0.579	<0.082	1.61	0.277	0.706	0.796
Phenanthrene (aq)	µg/l	<0.005	0.447	<0.005	0.0492	<0.05	0.0421	0.211	0.508	0.0583	0.465	<0.005	<0.005	<0.005	<0.005	0.0866	0.0799
Pyrene (aq)	µg/l	<0.005	0.756	6.33	0.323	2.04	0.054	0.217	3.38	0.19	0.476	0.124	<0.005	0.374	0.0267	0.0873	0.0981

		22934221	22934037	22934245	22934420	22934453	22934399	22934355	22934332	22934304	23202758	23202770	23202746	23202721	23202605	23202732	23202827
SDG ID.		201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201107-110	201107-110	201107-110	201107-110	201107-110	201107-110	201107-110
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito	Coed Darcy Tip Monito
Sample Description		BH21	BH46	BH52	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH XI	BH23	BH32	BH46	BH52	CARW008
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020
Received On		01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020
Date Complete		14/10/2020	13/10/2020	14/10/2020	13/10/2020	13/10/2020	13/10/2020	14/10/2020	14/10/2020	13/10/2020	17/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	17/11/2020
Laboratory data																	
Ammoniacal Nitrogen as N	mg/l	2.41	13.3	1.2	0.774	1.53	1.65	<0.2	0.914	0.276	0.2	1.45	0.207	0.281	0.2	0.2	0.357
Chloride	mg/l	62.7	144	18	28.5	23.1	11.4	22.1	20.6	29.3	21.1	40	20.1	17.5	35	20.1	24.3
Arsenic (diss.filt)	µg/l	2.5	5.52	2.76	0.617	<5	42.5	1.94	2.48	1.38	2.39	3.13	1.16	1.04	4.51	2.25	1.92
Boron (diss.filt)	µg/l	172	597	120	72.5	<100	22.1	13	64.8	149	14.9	85.2	34.4	10	83	45.7	60.7
Cadmium (diss.filt)	µg/l	<0.08	<0.88	<0.08	<0.08	<0.8	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.0853	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<11	<1	<1	<10	<1	<1	<1	<1	1	1	1	1	1	1	1
Copper (diss.filt)	µg/l	<0.3	<3.3	<0.3	<0.3	<3	0.892	<0.3	<0.3	0.402	1.72	6.58	4.72	1.26	3.56	3.05	0.3
Lead (diss.filt)	µg/l	<0.2	<2.2	<0.2	<0.2	<2	0.32	<0.2	<0.2	<0.2	0.211	1.13	0.293	0.2	0.2	0.2	0.2
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.0138	0.01	0.01	0.01	0.01
Nickel (diss.filt)	µg/l	0.633	13.5	2.63	8.43	<4	3.18	0.789	<0.4	5.26	1.05	8.76	2.5	1.25	4	1.56	2.13
Selenium (diss.filt)	µg/l	<1	<11	<1	<1	<10	<1	<1	<1	<1	1	1	1	1	1	1	1
Vanadium (diss.filt)	µg/l	1.86	25.6	7.2	<1	<10	<1	<1	<1	<1	1	1	1	1	3.94	1	1
Zinc (diss.filt)	µg/l	1.5	<11	<1	<1	<10	4.67	1.41	2.05	22.1	4.65	32.8	24.1	2.56	2.71	11.4	1.4
Aliphatics >C10-C12	µg/l	24	588	2860	34	369	63	<10	<10	15	10	10	10	270	537	443	18
Aliphatics >C12-C16 (aq)	µg/l	<10	1530	85800	228	822	379	<10	<10	206	10	10	117	23400	14500	21000	10
Aliphatics >C16-C21 (aq)	µg/l	<10	1610	107000	707	2690	875	<10	<10	277	10	10	229	118000	15800	28100	156
Aliphatics >C21-C35 (aq)	µg/l	<10	3000	302000	723	2050	736	<10	<10	58	10	10	704	1040000	28300	79700	321
Aliphatics >C5-C6	µg/l	<10	118	55	<10	21	<10	<10	<10	<10	10	10	10	11	10	10	10
Aliphatics >C6-C8	µg/l	15	159	233	<10	49	<10	<10	<10	<10	10	10	10	48	18	10	10
Aliphatics >C8-C10	µg/l	14	201	1300	18	73	12	<10	<10	<10	10	10	10	158	79	75	11
Aromatics >EC10-EC12	µg/l	16	392	1910	23	246	42	<10	<10	10	10	10	10	180	358	295	12
Aromatics >EC12-EC16 (aq)	µg/l	<10	962	10700	42	610	174	<10	<10	23	10	10	38	6970	4730	4670	116
Aromatics >EC16-EC21 (aq)	µg/l	<10	1030	25600	204	1410	623	<10	<10	144	10	10	90	52500	7230	12200	173
Aromatics >EC21-EC35 (aq)	µg/l	<10	1770	64600	99	1590	453	<10	<10	320	26	10	631	445000	17000	42600	260
Aromatics >EC5-EC7	µg/l	<10	734	22	<10	<10	<10	<10	<10	<10	10	10	10	10	10	10	10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	10	10	10	10	10	10
Aromatics >EC8-EC10	µg/l	<10	153	870	12	50	<10	<10	<10	<10	10	10	10	106	52	50	10
Benzene	µg/l	<7	734	22	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	7	<5	<5	<5	<5	<5	<5	<5	5	5	5	5	5	5	5
GRO >C5-C12	µg/l	81	2350	7260	97	807	130	<50	<50	<50	50	50	50	774	1050	875	56
GRO Surrogate % recovery**	%	89	92	92	82	87	87	85	82	83	92	107	97	90	96	90	108
m,p-Xylene	µg/l	<8	8	<8	<8	<8	<8	<8	<8	<8	8	8	8	8	8	8	8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	3	3	3	3	3	3	3
o-Xylene	µg/l	<3	4	<3	<3	<3	<3	<3	<3	<3	3	3	3	3	3	3	3
Sum of detected BTEX	µg/l	<28	757	<28	<28	<28	<28	<28	<28	<28	28	28	28	28	28	28	28
Sum of detected Xylenes	µg/l	<11	12	<11	<11	<11	<11	<11	<11	<11	11	11	11	11	11	11	11
Toluene	µg/l	<4	4	<4	<4	<4	<4	<4	<4	<4	4	4	4	4	4	4	4
liphatics & Aromatics >C5-35 (aq)	µg/l	81	12200	603000	2100	9990	3370	<10	<10	1060	30	10	1830	1680000	88600	189000	1080
Total Aliphatics >C12-C35 (aq)	µg/l	<10	6140	495000	1660	5560	1990	<10	<10	541	10	10	1050	1180000	58600	129000	477
Total Aromatics >EC12-EC35 (aq)	µg/l	<10	3760	101000	345	3620	1250	<10	<10	487	26	10	759	505000	29000	59500	549

	22934221	22934037	22934245	22934420	22934453	22934399	22934355	22934332	22934304	23202758	23202770	23202746	23202721	23202605	23202732	23202827
SDG ID.	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201107-110	201107-110	201107-110	201107-110	201107-110	201107-110	201107-110
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit
Sample Description	BH21	BH46	BH52	CARW008	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH XI	BH23	BH32	BH46	BH52	CARW008
Status	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	29/09/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020
Received On	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020
Date Complete	14/10/2020	13/10/2020	14/10/2020	13/10/2020	13/10/2020	13/10/2020	14/10/2020	14/10/2020	13/10/2020	17/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	17/11/2020
Laboratory data																
Acenaphthene (aq) µg/l	0.333	34.7	108	0.817	1.56	0.703	<0.005	7.01	0.382	0.005	0.0111	0.0267	7.71	88.8	27.9	0.455
Acenaphthylene (aq) µg/l	0.0369	0.554	118	0.866	1.78	0.946	<0.005	0.0371	0.436	0.005	0.005	0.005	8.79	86.9	32.2	0.45
Anthracene (aq) µg/l	0.0277	8.75	40.3	<0.005	<0.005	<0.01	<0.005	0.407	<0.005	0.005	0.0153	0.005	0.1	39.9	13.2	0.0386
Benzo(a)anthracene (aq) µg/l	0.0151	1.44	<0.25	<0.005	<0.005	<0.01	<0.005	0.0305	0.167	0.005	0.0579	0.005	0.1	8.69	0.005	0.005
Benzo(a)pyrene (aq) µg/l	0.00869	**1.04**	**30.1**	**0.0657**	<0.002	<0.004	<0.002	<0.002	**0.112**	<0.002	**0.0712**	**0.115**	**0.04**	**9.42**	<0.002	<0.002
Benzo(b)fluoranthene (aq) µg/l	0.0138	**1.17**	**30.1**	**0.107**	<0.005	<0.01	<0.005	<0.005	**0.164**	<0.005	**0.118**	**0.161**	**0.1**	**10.8**	<0.005	<0.005
Benzo(g,h,i)perylene (aq) µg/l	<0.005	**0.628**	**14.5**	**0.0603**	**0.0356**	**0.143**	<0.005	<0.005	**0.0524**	<0.005	**0.062**	**0.164**	**0.1**	**5.2**	<0.005	<0.005
Benzo(k)fluoranthene (aq) µg/l	0.00505	**0.423**	**8.69**	**0.0359**	<0.005	<0.01	<0.005	<0.005	**0.0764**	<0.005	**0.0556**	**0.0572**	**0.1**	**4.02**	<0.005	<0.005
Indeno(1,2,3-cd)pyrene (aq) µg/l	<0.005	0.472	8.81	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	0.0547	0.0939	0.1	3.31	<0.005	<0.005
SUM OF 4 PAH	*0.01885*	***2.693***	***62.1***	***0.2032***	*0.0356*	***0.143***	<0.005	<0.005	***0.2928***	<0.005	***0.2903***	***0.4761***	***0.4***	***23.33***	<0.005	<0.005
Chrysene (aq) µg/l	0.0226	1.85	<0.25	<0.005	<0.005	<0.01	<0.005	0.0195	0.245	<0.005	0.0763	0.005	0.1	8.73	<0.005	<0.005
Dibenzo(a,h)anthracene (aq) µg/l	<0.005	0.149	<0.25	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	0.0175	0.0334	0.1	1.37	<0.005	<0.005
Fluoranthene (aq) µg/l	0.0533	**4.6**	**87.7**	**0.164**	<0.005	**0.404**	<0.005	**1.47**	**0.408**	0.0228	0.106	0.11	0.1	**29.5**	**38.5**	0.0406
Fluorene (aq) µg/l	0.275	29.8	135	1.89	2.09	1.58	<0.005	1.1	0.121	0.005	0.0108	0.0211	17	87.9	33	1.04
Naphthalene (aq) µg/l	0.0543	8.29	<0.5	0.0866	<0.01	0.0616	<0.01	5.73	<0.01	0.01	0.0103	0.026	0.2	0.01	0.01	0.0554
H, Total Detected USEPA 16 (aq) µg/l	1.01	120	909	4.38	6.33	5.36	<0.082	17.2	2.59	0.082	0.853	1.03	75.8	493	240	2.22
Phenanthrene (aq) µg/l	0.0928	19.7	217	<0.005	0.86	0.769	<0.005	0.714	<0.005	0.0227	0.0905	0.0479	42.4	77.4	39.6	0.0455
Pyrene (aq) µg/l	0.071	6.2	111	0.285	<0.005	0.756	0.00557	0.715	0.426	0.0258	0.0954	0.178	0.1	31.6	55.7	0.0919

		23202840	23202815	23202805	23202794	23202783	23344302	23344293	23344230	23344284	23344313	23344376	23344366	23344327	23344356	23344341	23516988
SDG ID.		201107-110	201107-110	201107-110	201107-110	201107-110	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	210108-121
Status		Authorised	Authorised	Authorised	Authorised	Authorised											
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy											
Project		Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monitoring											
Sample Description		CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH23	BH46	BH52	BH XI	CARW008	CARW034	MSMW27	MSMW155D	MSMW155S	BH 57
Status		Authorised	Authorised	Authorised	Authorised	Authorised											
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled		05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	1/7/2021
Received On		07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	1/8/2021
Date Complete		19/11/2020	19/11/2020	17/11/2020	19/11/2020	19/11/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	1/14/2021
Laboratory data																	
Ammoniacal Nitrogen as N	mg/l	1.37	0.493	0.2	1.14	0.2	0.372	0.878	1.49	0.2	3.56	0.741	0.334	0.2	0.2	0.94	0.425
Chloride	mg/l	24.9	9.8	22.7	22.1	21.6	23.1	25.8	47.5	18.8	35.5	26.7	14.4	23.6	22.1	21.4	12.6
Arsenic (diss.filt)	µg/l	0.56	**26.1**	2.1	3.27	2.81	7.16	1.44	5.22	2.24	**20.8**	2.06	**27.5**	6.53	1.88	2.93	4.8
Boron (diss.filt)	µg/l	44.9	10	11.4	53.2	64.8	15.4	51.4	125	47.2	145	60.9	100	84.3	10.7	82.3	10.4
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	1	1	1	1	1	1.01	1	1.52	1	1.09	1	1	1	1	1	<1
Copper (diss.filt)	µg/l	0.3	0.681	0.3	0.3	0.515	0.954	2.56	0.314	3.3	1.09	0.3	0.633	0.652	0.3	0.3	0.47
Lead (diss.filt)	µg/l	0.2	0.27	0.2	0.2	0.477	0.2	0.559	0.2	0.2	0.276	0.34	0.338	0.372	0.2	0.2	<0.2
Mercury (diss.filt)	µg/l	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	<0.01
Nickel (diss.filt)	µg/l	0.4	2.05	0.74	0.4	2.14	1.47	2.67	3.29	1.73	3.94	3.42	2.2	3.85	0.933	0.4	0.445
Selenium (diss.filt)	µg/l	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	<1
Vanadium (diss.filt)	µg/l	1	1	1	1	1	1	1	9.34	1	1.61	1	1	1	1	1	1.55
Zinc (diss.filt)	µg/l	7.39	3.58	1.34	1.06	4.27	2.05	17.3	1.31	17.8	5.55	4.25	4.83	15.3	3.14	1	2.49
Aliphatics >C10-C12	µg/l	304	122	10	10	10	10	10	136	78	10	25	56	10	10	14	<10
Aliphatics >C12-C16 (aq)	µg/l	976	668	10	10	31	20	57	76	648	10	97	1680	92	23	10	<10
Aliphatics >C16-C21 (aq)	µg/l	4360	1280	10	10	138	20	150	88	940	10	372	4380	113	105	10	11
Aliphatics >C21-C35 (aq)	µg/l	4240	1680	10	10	247	20	435	123	2560	10	276	4690	106	80	10	81
Aliphatics >C5-C6	µg/l	10	10	10	10	10	10	10	15	10	10	10	10	10	10	10	<10
Aliphatics >C6-C8	µg/l	22	10	10	10	10	10	10	33	10	10	10	10	10	10	10	<10
Aliphatics >C8-C10	µg/l	47	19	10	10	10	10	10	33	15	10	12	15	10	10	10	<10
Aromatics >EC10-EC12	µg/l	202	81	10	10	10	10	10	91	52	10	16	37	10	10	10	<10
Aromatics >EC12-EC16 (aq)	µg/l	378	234	12	35	84	20	10	257	68	10	104	475	10	10	70	<10
Aromatics >EC16-EC21 (aq)	µg/l	1750	421	10	18	100	20	84	101	106	10	244	1730	10	62	28	<10
Aromatics >EC21-EC35 (aq)	µg/l	2640	972	10	10	292	20	444	138	292	10	314	3880	10	101	10	45
Aromatics >EC5-EC7	µg/l	10	10	10	10	10	10	10	50	10	10	10	10	10	10	10	<10
Aromatics >EC7-EC8	µg/l	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	<10
Aromatics >EC8-EC10	µg/l	33	13	10	10	10	10	10	24	10	10	10	10	10	10	10	<10
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	**50**	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	<5
GRO >C5-C12	µg/l	614	251	50	50	50	50	50	382	166	50	69	132	50	50	50	
GRO Surrogate % recovery**	%	103	93	95	91	94											
m,p-Xylene	µg/l	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	3	3	3	3	3	3	3	3	3	3	3	3	3	3	6	
o-Xylene	µg/l	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	<3
Sum of detected BTEX	µg/l	28	28	28	28	28	28	28	50	28	28	28	28	28	28	28	
Sum of detected Xylenes	µg/l	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
Toluene	µg/l	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	<4
liphatics & Aromatics >C5-35 (aq)	µg/l	15000	5510	12	57	900	20	1170	1170	4780	10	1480	17000	311	371	134	137
Total Aliphatics >C12-C35 (aq)	µg/l	9570	3630	10	10	416	20	642	287	4140	10	745	10800	311	208	10	92
Total Aromatics >EC12-EC35 (aq)	µg/l	4770	1630	12	53	476	20	528	496	466	10	662	6090	10	163	98	45

	23202840	23202815	23202805	23202794	23202783	23344302	23344293	23344230	23344284	23344313	23344376	23344366	23344327	23344356	23344341	23516988
SDG ID.	201107-110	201107-110	201107-110	201107-110	201107-110	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	201202-12	210108-121
Status	Authorised	Authorised	Authorised	Authorised	Authorised											
Project Site	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy											
Project	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monit	Coed Darcy Tip Monitoring											
Sample Description	CARW009	CARW034	MSMW155D	MSMW155S	MSMW27	BH 57	BH23	BH46	BH52	BH XI	CARW008	CARW034	MSMW27	MSMW155D	MSMW155S	BH 57
Status	Authorised	Authorised	Authorised	Authorised	Authorised											
Sample Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Date Sampled	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	30/11/2020	1/7/2021
Received On	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	02/12/2020	1/8/2021
Date Complete	19/11/2020	19/11/2020	17/11/2020	19/11/2020	19/11/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	1/14/2021
Laboratory data																
Acenaphthene (aq) µg/l	1.18	0.395	0.005	6.43	0.208	0.0182	0.0277	15.7	2.13	0.0186	0.496	0.45	0.005	0.0222	7.89	0.0317
Acenaphthylene (aq) µg/l	1.43	0.456	0.005	0.0316	0.251	0.0122	0.0291	0.0938	2.46	0.00527	0.136	0.712	0.005	0.0337	7.95	0.0054
Anthracene (aq) µg/l	0.005	0.005	0.005	0.373	0.005	0.01	0.00737	0.738	0.55	0.0148	0.0603	0.05	0.005	0.005	0.514	0.0133
Benzo(a)anthracene (aq) µg/l	0.005	0.005	0.005	0.0135	0.005	0.0238	0.0444	0.111	0.616	0.0421	0.0257	0.262	0.005	0.005	0.044	0.0319
Benzo(a)pyrene (aq) µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	**0.017**	**0.0981**	**0.0541**	**0.349**	**0.0363**	<0.002	**0.316**	**0.0289**	<0.002	0.002	**0.0479**
Benzo(b)fluoranthene (aq) µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0332**	**0.141**	**0.0744**	**0.42**	**0.0745**	**0.0195**	**0.463**	**0.0381**	0.0123	0.00778	**0.0816**
Benzo(g,h,i)perylene (aq) µg/l	**0.111**	**0.0785**	<0.005	<0.005	<0.005	**0.01**	**0.104**	**0.0492**	**0.187**	**0.0581**	**0.0237**	**0.159**	**0.0305**	<0.005	<0.005	**0.0431**
Benzo(k)fluoranthene (aq) µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.0157	**0.0612**	**0.0202**	**0.221**	**0.0219**	<0.005	**0.0602**	0.0152	<0.005	<0.005	**0.0277**
Indeno(1,2,3-cd)pyrene (aq) µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.0143	0.0685	0.0251	0.116	0.0442	<0.005	0.05	<0.005	<0.005	<0.005	<0.005
SUM OF 4 PAH	***0.111***	*0.0785*	<0.005	<0.005	<0.005	*0.0732*	***0.3747***	***0.1689***	***0.944***	***0.1987***	*0.0432*	***0.7322***	*0.0838*	*0.0123*	*0.00778*	***0.1524***
Chrysene (aq) µg/l	<0.005	0.005	0.005	0.0141	0.005	0.0262	0.119	0.185	1.4	0.0658	0.0365	0.655	0.005	0.005	0.0472	0.0548
Dibenzo(a,h)anthracene (aq) µg/l	<0.005	0.005	0.005	0.005	0.005	0.01	0.0176	0.005	0.0666	0.0105	0.005	0.05	0.005	0.005	0.005	<0.005
Fluoranthene (aq) µg/l	<0.005	**0.182**	<0.005	**1.15**	**0.138**	0.0257	0.0693	**0.568**	**1.26**	0.0574	0.0771	**0.636**	0.0155	0.0228	**1.56**	0.068
Fluorene (aq) µg/l	1.38	0.905	0.005	1.08	0.0933	0.0182	0.0173	12	2.09	0.0108	1.3	0.548	0.005	0.0362	1.33	0.0229
Naphthalene (aq) µg/l	0.01	0.0327	0.01	5.21	0.01	0.02	0.0145	1.65	0.213	0.0155	0.0951	0.104	0.01	0.0245	6.74	<0.01
H, Total Detected USEPA 16 (aq) µg/l	4.83	3.06	0.082	15.6	0.904	0.257	1	35.6	15.4	0.598	2.55	6.46	0.207	0.278	28	0.546
Phenanthrene (aq) µg/l	0.725	0.593	0.005	0.735	0.116	0.0269	0.0294	3.66	1.54	0.0669	0.0535	0.711	0.005	0.0781	1.19	0.0423
Pyrene (aq) µg/l	0.005	0.414	0.005	0.604	0.0979	0.0255	0.154	0.597	1.76	0.0553	0.228	1.38	0.0786	0.0482	0.766	0.0755

	23517001	23516951	23516883	23516942	23516969	23516978	23517012	23517060	23516960	23517051	23517021	23517041	23517031				
SDG ID.	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121				
Status																	
Project Site																	
Project																	
Sample Description	BH20	BH23	BH46	BH52	BH34D	BH34S	BH XI	CARW008	CARW009	CARW034	MSMW27	MSMW155D	MSMW155S				
Status																	
Sample Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00				
Sample Type	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER				
Date Sampled	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	**WHO DWG / UK DWD**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**
Received On	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021				
Date Complete	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021				
Laboratory data																	
Ammoniacal Nitrogen as N mg/l	1.19	0.7	2.51	<0.2	0.2	2.87	1.02	0.2	1.25	0.334	0.2	0.2	0.915	**0.5**			0.3
Chloride mg/l	29.7	15.2	38.9	15.8	27.2	32.7	35.7	24.5	24.2	9.8	17.3	21.6	21.8	**250**		**300**	
Arsenic (diss.filt) µg/l	2.22	4.58	3.96	4.51	2.66	2.93	2.98	2.56	2.32	**23.5**	6.06	2.05	2.62	**10**	50		
Boron (diss.filt) µg/l	79.9	38.6	149	38.8	14.6	49.8	153	30.8	36.5	10	65.6	10	67	**1000**			
Cadmium (diss.filt) µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**5**	0.08	**0.45**	
Chromium (diss.filt) µg/l	<1	<1	<1	<1	1	1	1.49	1	1	1	1	1	1	**50**	4.7		
Copper (diss.filt) µg/l	<0.3	1.36	0.704	1.13	0.3	0.3	9.57	0.579	0.3	0.371	0.454	0.3	0.3	**2000**	1		
Lead (diss.filt) µg/l	0.204	0.257	0.233	<0.2	0.2	0.2	1.72	0.258	0.2	0.224	0.448	0.2	0.2	**10**	1.2	**14**	
Mercury (diss.filt) µg/l	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	**1**		**0.07**	
Nickel (diss.filt) µg/l	<0.4	1.5	5.43	1.52	1.15	0.497	10.7	12	0.835	1.73	2.55	0.607	0.4	**20**	4	**34**	
Selenium (diss.filt) µg/l	<1	<1	<1	<1	1	1	1	1	1	1	1	1	1	**10**			
Vanadium (diss.filt) µg/l	<1	<1	3.63	<1	1	1.45	1	1	1.07	1	1	1	1.15		20		
Zinc (diss.filt) µg/l	3.49	18	3.5	2.77	2.1	1.38	75.1	7.42	10	6.72	8.86	2.05	2.53		10.9		
Aliphatics >C10-C12 µg/l	29	<10	539	26	10	193	10	11	193	27	10	10	10				
Aliphatics >C12-C16 (aq) µg/l	61	<10	1880	2140	10	10	10	10	1310	225	19	10	10				
Aliphatics >C16-C21 (aq) µg/l	100	11	2850	4110	10	10	10	10	4680	795	48	10	10				
Aliphatics >C21-C35 (aq) µg/l	619	35	5340	12700	10	10	10	10	4190	935	43	10	10				
Aliphatics >C5-C6 µg/l	<10	<10	15	<10	10	13	10	10	10	10	10	10	10				
Aliphatics >C6-C8 µg/l	30	<10	58	<10	10	58	10	10	13	10	10	10	10				
Aliphatics >C8-C10 µg/l	18	<10	127	11	10	408	10	10	36	10	10	10	10				
Aromatics >EC10-EC12 µg/l	20	<10	359	17	10	129	10	10	129	18	10	10	10				
Aromatics >EC12-EC16 (aq) µg/l	23	<10	704	386	10	126	10	10	423	123	10	10	30				
Aromatics >EC16-EC21 (aq) µg/l	32	<10	1430	1830	10	11	10	10	1880	298	11	10	11				
Aromatics >EC21-EC35 (aq) µg/l	354	32	3350	7030	10	10	10	10	2480	610	22	10	10				
Aromatics >EC5-EC7 µg/l	<10	<10	117	<10	10	10	10	10	10	10	10	10	10				
Aromatics >EC7-EC8 µg/l	<10	<10	<10	<10	10	10	10	10	10	10	10	10	10				
Aromatics >EC8-EC10 µg/l	12	<10	88	<10	10	272	10	10	25	10	10	10	10				
Benzene µg/l	<7	<7	**117**	<7	<7	**9**	<7	<7	<7	<7	<7	<7	<7	**1**	10	**50**	
Ethylbenzene µg/l	<5	<5	<5	<5	5	5	5	5	5	5	5	5	5	**300**			
GRO >C5-C12 µg/l																	
GRO Surrogate % recovery** %																	
m,p-Xylene µg/l	<8	<8	<8	<8	8	8	8	8	8	8	8	8	8				
Methyl tertiary butyl ether (MTBE) µg/l														**15**			
o-Xylene µg/l	<3	<3	<3	<3	3	3	3	3	3	3	3	3	3				
Sum of detected BTEX µg/l																	
Sum of detected Xylenes µg/l															30		
Toluene µg/l	<4	<4	<4	<4	4	4	4	4	4	4	4	4	4		74		
iphatics & Aromatics >C5-35 (aq) µg/l	1300	78	16900	28300	10	1220	10	32	15400	3050	143	10	62				
Total Aliphatics >C12-C35 (aq) µg/l	780	46	10100	19000	10	10	10	10	10200	1960	110	10	10				
Total Aromatics >EC12-EC35 (aq) µg/l	409	32	5490	9240	10	137	10	10	4790	1030	33	10	41				

	23517001	23516951	23516883	23516942	23516969	23516978	23517012	23517060	23516960	23517051	23517021	23517041	23517031				
SDG ID.	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121				
Status																	
Project Site																	
Project																	
Sample Description	BH20	BH23	BH46	BH52	BH34D	BH34S	BH XI	CARW008	CARW009	CARW034	MSMW27	MSMW155D	MSMW155S				
Status																	
Sample Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00				
Sample Type	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER				
Date Sampled	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	**WHO DWG / UK DWD**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**
Received On	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021				
Date Complete	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021				
Laboratory data																	
Acenaphthene (aq) µg/l	0.266	0.0301	20	1.23	<0.005	0.294	0.0242	0.235	1.51	0.263	0.005	0.005	6.47				
Acenaphthylene (aq) µg/l	0.317	0.0306	0.969	1.51	<0.005	0.0878	0.005	0.261	1.89	0.0585	0.005	0.005	6.57				
Anthracene (aq) µg/l	0.0214	<0.005	4.71	0.501	<0.005	0.0246	0.00837	<0.005	<0.005	0.204	0.005	<0.005	0.347		0.1	**0.1**	
Benzo(a)anthracene (aq) µg/l	<0.005	<0.005	2.69	6.54	<0.005	0.005	0.00917	<0.005	<0.005	0.065	0.0193	<0.005	0.0344				
Benzo(a)pyrene (aq) µg/l	<0.002	0.0227	**1.7**	**2.59**	<0.002	<0.002	**0.0148**	<0.002	<0.002	**0.062**	**0.029**	<0.002	<0.002	**0.01**	0.00017	**0.27**	
Benzo(b)fluoranthene (aq) µg/l	<0.005	**0.031**	**1.77**	**2.56**	<0.005	<0.005	**0.0223**	<0.005	<0.005	**0.0938**	**0.0434**	<0.005	0.00831			**0.017**	
Benzo(g,h,i)perylene (aq) µg/l	**0.0143**	**0.0377**	**1.05**	**1.43**	<0.005	<0.005	0.005	<0.005	**0.0618**	**0.0611**	**0.0262**	<0.005	<0.005			**0.0082**	
Benzo(k)fluoranthene (aq) µg/l	<0.005	0.00975	**0.684**	**1.09**	<0.005	<0.005	0.0123	<0.005	<0.005	**0.0317**	**0.0184**	<0.005	<0.005			**0.017**	
Indeno(1,2,3-cd)pyrene (aq) µg/l	<0.005	0.0276	0.755	0.973	<0.005	<0.005	0.005	<0.005	<0.005	0.005	0.005	<0.005	<0.005				
SUM OF 4 PAH	*0.0143*	***0.10605***	***4.259***	***6.053***	<0.005	<0.005	*0.0446*	<0.005	*0.0618*	***0.1916***	*0.093*	<0.005	*0.00831*	***0.1***			
Chrysene (aq) µg/l	<0.005	<0.005	2.53	3.51	<0.005	0.005	0.0164	<0.005	<0.005	0.181	0.0457	<0.005	0.0309				
Dibenzo(a,h)anthracene (aq) µg/l	<0.005	<0.005	0.235	0.461	<0.005	0.005	0.005	<0.005	<0.005	0.005	0.005	<0.005	<0.005				
Fluoranthene (aq) µg/l	0.0793	0.0201	**5.71**	**4.76**	<0.005	0.0248	0.0292	0.0276	0.005	**0.158**	0.0265	<0.005	**1.11**		0.0063	**0.12**	
Fluorene (aq) µg/l	0.269	0.0187	13.2	1.21	<0.005	0.297	0.005	0.577	2.18	0.349	0.005	<0.005	0.785				
Naphthalene (aq) µg/l	0.173	0.0144	0.501	0.209	0.0107	0.0732	0.01	0.0367	3.37	0.124	0.01	0.01	2.5		2	**130**	
H, Total Detected USEPA 16 (aq) µg/l	1.43	0.291	67.7	37.9	0.082	0.906	0.184	1.2	10.2	2.21	0.275	0.082	19				
Phenanthrene (aq) µg/l	0.178	0.0109	3.17	1.24	0.014	0.069	0.019	<0.005	1.16	0.207	0.005	<0.005	0.578				
Pyrene (aq) µg/l	0.111	0.0371	8.04	8.12	0.00728	0.0358	0.0284	0.0661	0.005	0.352	0.0667	<0.005	0.556				

Coed Darcy Crymlyn Tip 2020 Surface Water Quality Assessment

		21591312	21591449	21591466	21591480	21591499	21591517	21820493	21820645	21820656	21820669	21820683	21820695	22002938	22003070	22003089	22003111	22003132
SDG ID.		200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200305-35	200305-35	200305-35	200305-35	200305-35	200305-35	200406-37	200406-37	200406-37	200406-37	200406-37
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Mc	Coed Darcy Tip Mc	Coed Darcy Tip Mc	Coed Darcy Tip Mc	Coed Darcy Tip Mc	Coed Darcy Tip Mc	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T
Sample Description		SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W
Date Sampled		28/01/2020	28/01/2020	28/01/2020	28/01/2020	28/01/2020	28/01/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	31/03/2020	31/03/2020	31/03/2020	31/03/2020	31/03/2020
Received On		31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020
Date Complete		10/02/2020	09/02/2020	09/02/2020	09/02/2020	10/02/2020	11/02/2020	13/03/2020	14/03/2020	16/03/2020	17/03/2020	14/03/2020	14/03/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020
Ammoniacal Nitrogen as N	mg/l	4.17	1.04	<0.2	<0.2	<0.2	<0.2	3.51	0.312	<0.2	<0.2	<0.2	<0.2	3.51	0.299	<0.2	<0.2	0.384
Chloride	mg/l	27.2	19.3	18	16.1	14.1	13.8	30.9	19.4	15.2	17.3	14.7	14.4					
Arsenic (diss.filt)	µg/l	0.668	0.518	0.631	0.898	0.645	<0.5	1.04	<0.5	0.723	0.858	0.559	0.536	0.668	0.607	0.825	1.04	0.739
Boron (diss.filt)	µg/l	142	89	28.9	48.9	34	17.2	194	55	24.9	43.1	25.6	19.2	163	56.9	32.2	49.5	30.7
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (diss.filt)	µg/l	<0.3	<0.3	2.59	1.26	1.76	0.95	0.323	<0.3	1.76	1.39	1.89	1.45	<0.3	<0.3	1.9	1.7	1.34
Lead (diss.filt)	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.548	<0.2	0.241	<0.2	0.395	0.296	<0.2	0.277	0.48	0.361	0.976
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	0.446	<0.4	1.59	1.66	1.03	0.469	<0.4	<0.4	0.708	1.56	0.682	0.428	<0.4	0.461	0.908	1.5	1.02
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc (diss.filt)	µg/l	15.9	<1	12.9	4.63	4.62	2.01	7.13	<1	5.85	5.56	7.16	3.98	3.54	3.81	16	9.22	6.51
Aliphatics >C10-C12	µg/l	68	<10	<10	<10	<10	<10	63	<10	<10	<10	<10	<10	98	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	µg/l	13	<10	<10	<10	<10	18	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	µg/l	80	<10	<10	<10	<10	62	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	µg/l	15	<10	<10	<10	<10	<10	28	<10	<10	<10	<10	<10	30	<10	<10	<10	<10
Aliphatics >C8-C10	µg/l	42	<10	<10	<10	<10	<10	44	<10	<10	<10	<10	<10	57	<10	<10	<10	<10
Aromatics >EC10-EC12	µg/l	45	<10	<10	<10	<10	<10	42	<10	<10	<10	<10	<10	65	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	µg/l	116	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	94	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	µg/l	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	µg/l	38	<10	<10	<10	<10	<10	45	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	28	<10	<10	<10	<10	<10	29	<10	<10	<10	<10	<10	38	<10	<10	<10	<10
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	205	<50	<50	<50	<50	<50	212	<50	<50	<50	<50	<50	297	<50	<50	<50	<50
GRO Surrogate % recovery**	%	87	105	99	103	105	102	88	95	97	88	93	95	102	94	110	111	97
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Total Aliphatics & Aromatics >C5-35 (aq)	µg/l	481	12	<10	<10	<10	80	258	<10	12	11	<10	10	411	<10	12	15	<10
Total Aliphatics >C12-C35 (aq)	µg/l	93	<10	<10	<10	<10	80	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	µg/l	184	<10	<10	<10	<10	<10	45	<10	<10	<10	<10	<10	114	<10	<10	<10	<10

		21591312	21591449	21591466	21591480	21591499	21591517	21820493	21820645	21820656	21820669	21820683	21820695	22002938	22003070	22003089	22003111	22003132
SDG ID.		200131-17	200131-17	200131-17	200131-17	200131-17	200131-17	200305-35	200305-35	200305-35	200305-35	200305-35	200305-35	200406-37	200406-37	200406-37	200406-37	200406-37
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy Tip Mo	Coed Darcy Tip Mo	Coed Darcy Tip Mo	Coed Darcy Tip Mo	Coed Darcy Tip Mo	Coed Darcy Tip Mo	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy -	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T
Sample Description		SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_WATE	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W
Date Sampled		28/01/2020	28/01/2020	28/01/2020	28/01/2020	28/01/2020	28/01/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	02/03/2020	31/03/2020	31/03/2020	31/03/2020	31/03/2020	31/03/2020
Received On		31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	31/01/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	05/03/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020	06/04/2020
Date Complete		10/02/2020	09/02/2020	09/02/2020	09/02/2020	10/02/2020	11/02/2020	13/03/2020	14/03/2020	16/03/2020	17/03/2020	14/03/2020	14/03/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020	10/04/2020
Acenaphthene (aq)	µg/l	0.144	<0.005	<0.005	0.0373	0.00591	<0.005	<0.005	<0.005	<0.005	0.029	<0.005	<0.005	0.137	<0.005	0.0158	0.0357	0.0356
Acenaphthylene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Benzo(a)anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0149	<0.005	0.00849	0.0117	<0.005	<0.005	<0.005	<0.005	<0.005
Benzo(a)pyrene (aq)	µg/l	<0.002	<0.002	<0.002	0.00932	<0.002	<0.002	<0.002	<0.002	0.0308	<0.002	0.0268	0.0279	<0.002	<0.002	<0.002	0.00544	0.00443
Benzo(b)fluoranthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0601**	<0.005	**0.0528**	**0.058**	<0.005	<0.005	0.00806	0.0135	0.0128
Benzo(g,h,i)perylene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0322**	<0.005	**0.0267**	**0.0337**	<0.005	<0.005	<0.005	<0.005	<0.005
Benzo(k)fluoranthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0252**	<0.005	**0.0194**	**0.0191**	<0.005	<0.005	<0.005	0.00742	<0.005
Indeno(1,2,3-cd)pyrene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0265	<0.005	0.0291	0.0294	<0.005	<0.005	0.01	0.0141	0.0089
Chrysene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0177	<0.005	0.0219	0.0152	<0.005	<0.005	<0.005	<0.005	<0.005
Dibenzo(a,h)anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00965	<0.005	0.00883	0.0104	<0.005	<0.005	<0.005	<0.005	0.0153
Fluoranthene (aq)	µg/l	0.0117	<0.005	<0.005	0.0203	<0.005	<0.005	<0.005	<0.005	0.0229	<0.005	0.0211	0.0241	0.00748	<0.005	0.00703	0.0133	0.00791
Fluorene (aq)	µg/l	0.12	<0.005	<0.005	0.0192	0.00562	<0.005	0.0561	0.0343	<0.005	<0.005	<0.005	<0.005	0.127	<0.005	0.0146	0.0183	0.021
Naphthalene (aq)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0178	<0.01	<0.01	<0.01	0.021	<0.01	<0.01	<0.01	<0.01
PAH, Total Detected USEPA 16 (aq)	µg/l	0.314	<0.082	<0.082	0.113	<0.082	<0.082	<0.082	<0.082	0.289	<0.082	0.246	0.26	0.317	<0.082	<0.082	0.13	0.13
Phenanthrene (aq)	µg/l	0.013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0123	<0.005	0.00535	0.00624	0.0125
Pyrene (aq)	µg/l	0.0259	<0.005	0.0149	0.0266	0.0114	<0.005	<0.005	<0.005	0.0315	<0.005	0.031	0.0307	0.0119	<0.005	0.0114	0.0157	0.0113
Aliphatics >C16-C35 Aqueous	µg/l	93	<10	<10	<10	<10	80	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Coed Darcy Crymlyn Tip 2020 Surface Water Quality Assessment

		22003161	22218406	22218489	22218499	22218508	22218519	22218528	22412521	22412617	22412626	22412635	22412644	22412653	22579276	22579355	22579364	22579373	22579382	22579391	22726069
SDG ID.		200406-37	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200731-1	200731-1	200731-1	200731-1	200731-1	200731-1	200827-23
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T
Sample Description		SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V
Date Sampled		31/03/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	24/08/2020
Received On		06/04/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	27/08/2020
Date Complete		10/04/2020	09/06/2020	10/06/2020	10/06/2020	10/06/2020	10/06/2020	10/06/2020	13/07/2020	13/07/2020	09/07/2020	08/07/2020	09/07/2020	13/07/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020	04/09/2020
Ammoniacal Nitrogen as N	mg/l	<0.2	2.24	<0.2	0.243	<0.2	<0.2	<0.2	1.48	0.377	<0.2	<0.2	2.67	<0.2	0.785	<0.2	0.556	<0.2	<0.2	<0.2	2.63
Chloride	mg/l		21.1	18.3	18.9	18.5	15.2	16	23.4	15.8	15.7	18.2	12.4	12.9	19	16.2	14.4	18.3	15.5	12.2	25
Arsenic (diss.filt)	µg/l	<0.5	1.12	0.684	1.17	1.47	0.8	<0.5	3.21	0.781	1.31	1.44	2.95	0.642	0.551	0.612	0.837	1.17	0.857	0.604	1.07
Boron (diss.filt)	µg/l	21.7	199	61.9	64.9	59.5	46.2	17.9	177	101	55.1	60.1	65.8	30.1	99.1	127	54.5	62	50.7	25.1	142
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	0.083	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	<1	<1	<1	1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (diss.filt)	µg/l	0.913	0.402	<0.3	0.483	2.21	1.19	0.641	<0.3	<0.3	1.46	0.916	0.651	1.07	0.376	<0.3	0.988	0.673	1.32	0.488	<0.3
Lead (diss.filt)	µg/l	0.366	<0.2	<0.2	0.41	0.835	0.237	0.415	0.258	<0.2	0.331	<0.2	0.605	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	0.615	0.796	<0.4	0.69	2.25	0.931	<0.4	0.531	<0.4	1.25	1.26	2.71	<0.4	0.655	<0.4	1.23	1.08	1.12	<0.4	0.428
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	<1	1.05	<1	<1	1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc (diss.filt)	µg/l	21.9	6.19	20.9	21	22.6	1.75	10.5	14.5	3.35	5.68	49.6	11.5	2.5	2.88	2.55	5.14	<1	2.79	1.97	33.9
Aliphatics >C10-C12	µg/l	<10	54	<10	<10	<10	<10	<10	64	<10	<10	<10	<10	<10	20	<10	<10	<10	<10	<10	52
Aliphatics >C12-C16 (aq)	µg/l	<10	570	<10	<10	<10	<10	<10	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	61
Aliphatics >C16-C21 (aq)	µg/l	<10	1710	<10	<10	<10	58	<10	<20	<10	<10	<10	147	<10	<10	<10	302	<10	<10	<10	234
Aliphatics >C21-C35 (aq)	µg/l	<10	5970	<10	<10	<10	69	<10	<20	<10	<10	<10	403	<10	<10	<10	863	<10	<10	<10	624
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	µg/l	<10	12	<10	<10	<10	<10	<10	17	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	17
Aliphatics >C8-C10	µg/l	<10	30	<10	<10	<10	<10	<10	48	<10	<10	<10	<10	<10	15	<10	<10	<10	<10	<10	34
Aromatics >EC10-EC12	µg/l	<10	36	<10	<10	<10	<10	<10	42	<10	<10	<10	<10	<10	13	<10	<10	<10	<10	<10	34
Aromatics >EC12-EC16 (aq)	µg/l	<10	334	<10	<10	<10	<10	<10	20	<10	<10	<10	<10	<10	24	<10	<10	<10	<10	<10	52
Aromatics >EC16-EC21 (aq)	µg/l	<10	675	<10	<10	<10	13	<10	<20	<10	<10	<10	41	<10	<10	<10	73	<10	<10	<10	81
Aromatics >EC21-EC35 (aq)	µg/l	<10	2890	<10	<10	<10	12	<10	<20	<10	<10	<10	127	<10	<10	<10	298	<10	<10	<10	324
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	20	<10	<10	<10	<10	<10	32	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	23
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	<50	155	<50	<50	<50	<50	<50	210	<50	<50	<50	<50	<50	69	<50	<50	<50	<50	<50	169
GRO Surrogate % recovery**	%	97	102	108	110	111	104	112	114	118	108	121	114	115	111	107	105	107	102	115	106
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Total Aliphatics & Aromatics >C5-35 (aq)	µg/l	<10	12300	<10	<10	<10	155	<10	230	<10	<10	<10	718	<10	93	<10	1540	<10	<10	<10	1550
Total Aliphatics >C12-C35 (aq)	µg/l	<10	8250	<10	<10	<10	127	<10	<20	<10	<10	<10	550	<10	<10	<10	1170	<10	<10	<10	919
Total Aromatics >EC12-EC35 (aq)	µg/l	<10	3900	<10	<10	<10	25	<10	20	<10	<10	<10	168	<10	24	<10	371	<10	<10	<10	457

Coed Darcy Crymlyn Tip 2020 Surface Water Quality Assessment

		22003161	22218406	22218489	22218499	22218508	22218519	22218528	22412521	22412617	22412626	22412635	22412644	22412653	22579276	22579355	22579364	22579373	22579382	22579391	22726069
SDG ID.		200406-37	200529-12	200529-12	200529-12	200529-12	200529-12	200529-12	200703-4	200703-4	200703-4	200703-4	200703-4	200703-4	200731-1	200731-1	200731-1	200731-1	200731-1	200731-1	200827-23
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy
Project		Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T
Sample Description		SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V	SURFACE_V
Date Sampled		31/03/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	27/05/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	01/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020	24/08/2020
Received On		06/04/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	03/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020	27/08/2020
Date Complete		10/04/2020	09/06/2020	10/06/2020	10/06/2020	10/06/2020	10/06/2020	10/06/2020	13/07/2020	13/07/2020	09/07/2020	08/07/2020	09/07/2020	13/07/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020	12/08/2020	04/09/2020
Acenaphthene (aq)	µg/l	<0.005	0.174	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	0.0193	0.0805	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Acenaphthylene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0156
Anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Benzo(a)anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Benzo(a)pyrene (aq)	µg/l	0.00523	0.148	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	<0.002	<0.002	<0.002	0.0192	<0.002	<0.002	<0.002	0.0131	<0.002	0.0118	<0.002	<0.002
Benzo(b)fluoranthene (aq)	µg/l	0.00992	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	**0.0424**	<0.005	<0.005	<0.005	**0.0446**	<0.005	**0.0232**	<0.005	<0.005
Benzo(g,h,i)perylene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	**0.0176**	<0.005	<0.005	<0.005	**0.0169**	<0.005	**0.0122**	<0.005	<0.005
Benzo(k)fluoranthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	0.0166	<0.005	<0.005	<0.005	0.0169	<0.005	0.00975	<0.005	<0.005
Indeno(1,2,3-cd)pyrene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chrysene (aq)	µg/l	0.00633	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00939	<0.005	<0.005
Dibenzo(a,h)anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Fluoranthene (aq)	µg/l	0.00853	<0.005	<0.005	<0.005	<0.005	0.00914	<0.005	<0.01	<0.005	<0.005	0.0173	0.0504	<0.005	<0.005	<0.005	<0.005	<0.005	0.0154	<0.005	<0.005
Fluorene (aq)	µg/l	<0.005	0.267	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	0.00958	0.0435	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Naphthalene (aq)	µg/l	<0.01	0.0658	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.0105	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0127
PAH, Total Detected USEPA 16 (aq)	µg/l	<0.082	1.09	<0.082	<0.082	<0.082	<0.082	<0.082	<0.164	<0.082	<0.082	<0.082	0.405	<0.082	<0.082	<0.082	0.169	<0.082	0.11	<0.082	0.0938
Phenanthrene (aq)	µg/l	0.00773	0.176	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	0.0089	0.0553	<0.005	<0.005	<0.005	<0.005	<0.005	0.00805	<0.005	<0.005
Pyrene (aq)	µg/l	0.0102	0.263	<0.005	<0.005	<0.005	0.023	<0.005	<0.01	<0.005	0.0178	0.0171	0.0686	<0.005	0.0156	<0.005	0.0776	0.0185	0.0205	0.0117	0.0655
Aliphatics >C16-C35 Aqueous	µg/l	<10	7680	<10	<10	<10	127	<10	<20	<10	<10	<10	550	<10	<10	<10	1170	<10	<10	<10	858

Coed Darcy Crymlyn Tip 2020 Surface Water Quality Assessment

		22726157	22726172	22726182	22726194	22726204	22934195	22934168	22934142	22934122	22934096	22934066	23202708	23202698	23202687	23202668	23202657	23202631	23344275	23344266	23344257
SDG ID.		200827-23	200827-23	200827-23	200827-23	200827-23	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201107-110	201107-110	201107-110	201107-110	201107-110	201107-110	201202-12	201202-12	201202-12
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised			
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy			
Project		Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy Tip Monitoring			
Sample Description		SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised			
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	CE_WATER	CE_WATER	CE_WATER
Date Sampled		24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	30/11/2020	30/11/2020	30/11/2020
Received On		27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	02/12/2020	02/12/2020	02/12/2020
Date Complete		03/09/2020	04/09/2020	03/09/2020	04/09/2020	04/09/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	19/11/2020	19/11/2020	18/11/2020	17/11/2020	17/11/2020	17/11/2020	10/12/2020	10/12/2020	10/12/2020
Ammoniacal Nitrogen as N	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.913	<0.2	0.4	<0.2	1.13	<0.2	3.45	<0.2	<0.2	<0.2	<0.2	<0.2	3.68	<0.2	<0.2
Chloride	mg/l	18.1	15.1	17.9	12.2	11.3	27.6	20.3	19.9	17	16.3	11.4	27.8	21.3	20.2	17.2	14.9	12.6	24.8	21.5	20.4
Arsenic (diss.filt)	µg/l	<0.5	0.961	1.45	1.24	0.917	0.896	0.566	1.28	1.35	1.11	0.565	0.929	<0.5	1.14	0.904	<3	<0.5	0.545	0.5	0.745
Boron (diss.filt)	µg/l	89.6	47.2	61.5	50.3	20.5	153	63.9	68.5	61.8	54.4	25.7	158	28.8	43.1	61.7	<60	25.6	174	47.6	41.2
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.48	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	µg/l	<1	1.17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<6	<1	<1	<1	8.22
Copper (diss.filt)	µg/l	0.516	2.8	0.886	2.92	1.01	<0.3	<0.3	0.909	1.01	<0.3	0.68	<0.3	0.371	2.75	1.46	<1.8	1.33	0.3	0.3	2.18
Lead (diss.filt)	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.24	<0.2	<1.2	<0.2	0.2	0.2	0.2
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01
Nickel (diss.filt)	µg/l	<0.4	0.764	0.739	1.26	<0.4	0.558	<0.4	1.2	0.892	1.07	<0.4	<0.4	<0.4	1.29	1.42	<2.4	0.52	0.4	0.4	1.17
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<6	<1	<1	<1	<1
Vanadium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<6	<1	<1	<1	<1
Zinc (diss.filt)	µg/l	1.03	3.13	1.15	3.79	1.7	7.39	2.36	3.58	<1	1.12	8.45	40.1	2.15	9.35	4.15	6.02	4.83	15.4	1.19	4.44
Aliphatics >C10-C12	µg/l	<10	<10	<10	<10	<10	21	<10	<10	<10	<10	<10	37	<10	<10	<10	<10	<10	42	<10	<10
Aliphatics >C12-C16 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	26	<10	15	20	<10	<10
Aliphatics >C16-C21 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	<10	<10
Aliphatics >C21-C35 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	<10	<10
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10
Aliphatics >C6-C8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	11	<10	<10
Aliphatics >C8-C10	µg/l	<10	<10	<10	<10	<10	15	<10	<10	<10	<10	<10	25	<10	<10	<10	<10	<10	25	<10	<10
Aromatics >EC10-EC12	µg/l	<10	<10	<10	<10	<10	14	<10	<10	<10	<10	<10	25	<10	<10	<10	<10	<10	28	<10	<10
Aromatics >EC12-EC16 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	84	18	<10	<10	<10	<10	20	<10	<10
Aromatics >EC16-EC21 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	21	<10	<10	<10	<10	<10	20	<10	<10
Aromatics >EC21-EC35 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	<10	<10
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	17	<10	<10	<10	<10	<10	16	<10	<10
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
GRO >C5-C12	µg/l	<50	<50	<50	<50	<50	63	<50	<50	<50	<50	<50	119	<50	<50	<50	<50	<50			
GRO Surrogate % recovery**	%	98	110	107	108	103	88	89	98	85	80	100	93	95	111	112	97	99			
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3			
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sum of detected BTEX	µg/l	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28			
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11			
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Total Aliphatics & Aromatics >C5-35 (aq)	µg/l	<10	<10	<10	<10	<10	63	<10	<10	<10	<10	<10	224	18	<10	26	<10	15			
Total Aliphatics >C12-C35 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	26	<10	15			
Total Aromatics >EC12-EC35 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	105	18	<10	<10	<10	<10			

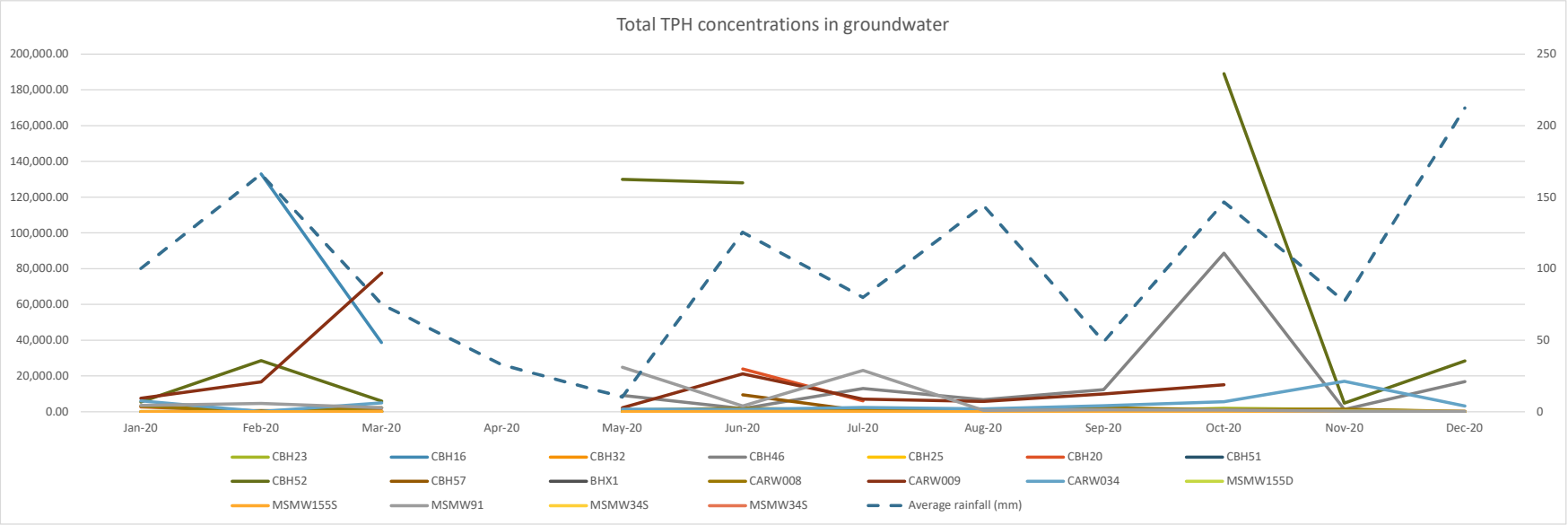
Coed Darcy Crymlyn Tip 2020 Surface Water Quality Assessment

		22726157	22726172	22726182	22726194	22726204	22934195	22934168	22934142	22934122	22934096	22934066	23202708	23202698	23202687	23202668	23202657	23202631	23344275	23344266	23344257
SDG ID.		200827-23	200827-23	200827-23	200827-23	200827-23	201001-67	201001-67	201001-67	201001-67	201001-67	201001-67	201107-110	201107-110	201107-110	201107-110	201107-110	201107-110	201202-12	201202-12	201202-12
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised			
Project Site		Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy	Coed Darcy			
Project		Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy T	Coed Darcy Tip Monitoring			
Sample Description		SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3
Status		Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised	Authorised			
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Sample Type		SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	CE_WATER	CE_WATER	CE_WATER
Date Sampled		24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	30/11/2020	30/11/2020	30/11/2020
Received On		27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	01/10/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	02/12/2020	02/12/2020	02/12/2020
Date Complete		03/09/2020	04/09/2020	03/09/2020	04/09/2020	04/09/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	19/11/2020	19/11/2020	18/11/2020	17/11/2020	17/11/2020	17/11/2020	10/12/2020	10/12/2020	10/12/2020
Acenaphthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.0502	0.018	0.301	0.0194	0.181	<0.005	0.195	<0.005	<0.005	<0.005	<0.005	<0.005	0.183	0.005	0.00612
Acenaphthylene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0133	<0.005	0.0108	<0.005	0.188	<0.005	<0.005	<0.005	<0.005	<0.005	0.195	0.005	0.005
Anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0107	<0.005	0.0102	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	0.005	0.005
Benzo(a)anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	0.005	0.005
Benzo(a)pyrene (aq)	µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002
Benzo(b)fluoranthene (aq)	µg/l	0.00788	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Benzo(g,h,i)perylene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Benzo(k)fluoranthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Indeno(1,2,3-cd)pyrene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Chrysene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Dibenzo(a,h)anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Fluoranthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0223	0.00871	0.0176	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Fluorene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.0265	<0.005	0.24	0.00957	0.0988	<0.005	0.155	<0.005	<0.005	<0.005	<0.005	<0.005	0.194	0.0109	0.005
Naphthalene (aq)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.0117	<0.01	0.0201	<0.01	0.0127	0.0104	0.0275	<0.01	<0.01	<0.01	<0.01	<0.01	0.0916	<0.01	<0.01
PAH, Total Detected USEPA 16 (aq)	µg/l	<0.082	<0.082	<0.082	<0.082	<0.082	0.101	<0.082	0.679	<0.082	0.406	<0.082	0.59	<0.082	<0.082	<0.082	<0.082	<0.082	0.663	0.082	0.082
Phenanthrene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0459	0.00623	0.0543	<0.005	0.0256	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	<0.005	<0.005
Pyrene (aq)	µg/l	0.0112	0.00743	0.012	0.0103	0.0113	0.0122	<0.005	0.0265	0.0111	0.0207	<0.005	<0.005	<0.005	0.00844	<0.005	<0.005	<0.005	0.01	<0.005	0.00728
Aliphatics >C16-C35 Aqueous	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	10	10

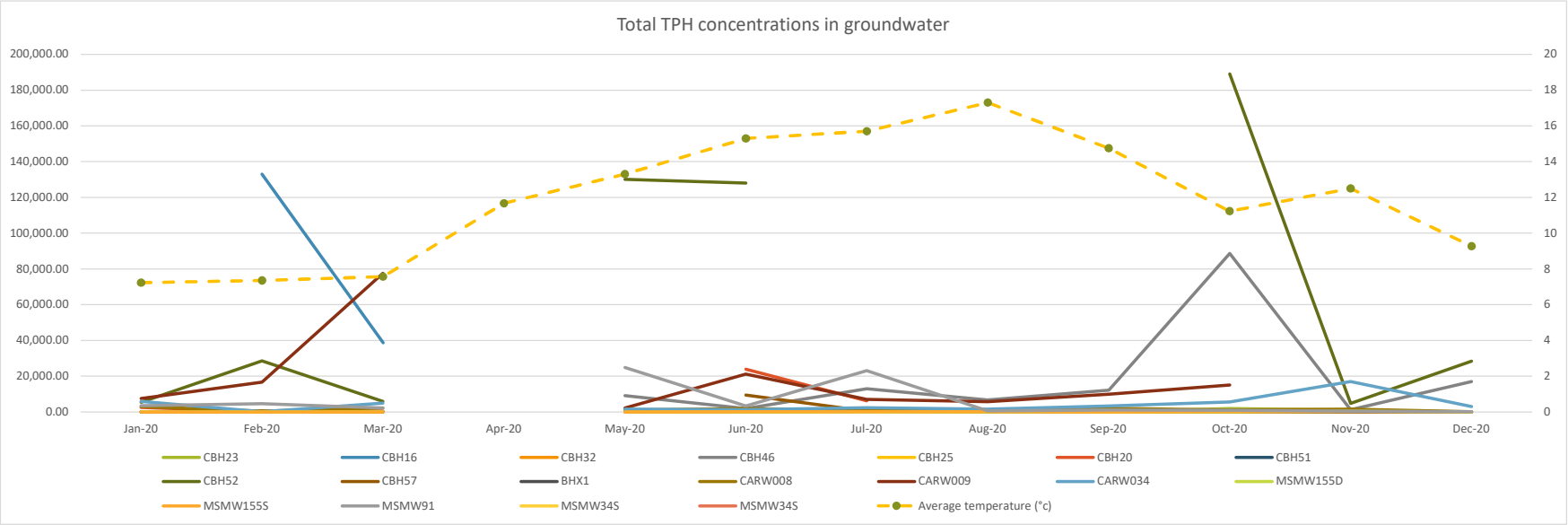
		23344248	23344239	23344385	23516933	23516924	23516915	23516904	23516894	23517073				
SDG ID.		201202-12	201202-12	201202-12	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121				
Status														
Project Site														
Project														
Sample Description		SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6				
Status														
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00				
Sample Type		CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER				
Date Sampled		30/11/2020	30/11/2020	30/11/2020	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Threshold**
Received On		02/12/2020	02/12/2020	02/12/2020	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021				
Date Complete		10/12/2020	10/12/2020	10/12/2020	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021				
Ammoniacal Nitrogen as N	mg/l	<0.2	0.587	<0.2	3.84	<0.2	<0.2	<0.2	<0.2	<0.2			0.3	
Chloride	mg/l	17.8	16.2	14.3	24.7	19.2	19.1	16.6	12.5	14		**300**		
Arsenic (diss.filt)	µg/l	0.857	0.995	0.534	0.502	<0.5	0.656	0.761	1.01	<0.5	50			
Boron (diss.filt)	µg/l	56.4	40.7	27.2	192	32.8	31.5	53.3	32.3	21.1				
Cadmium (diss.filt)	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	**0.45**		
Chromium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	1.11	<1	4.7			
Copper (diss.filt)	µg/l	1.2	1.49	0.923	<0.3	<0.3	2.61	1.89	2.94	1.13	1			
Lead (diss.filt)	µg/l	0.2	0.2	0.2	<0.2	<0.2	<0.2	<0.2	0.808	<0.2	1.2	**14**		
Mercury (diss.filt)	µg/l	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		**0.07**		
Nickel (diss.filt)	µg/l	1.38	1.44	0.477	<0.4	<0.4	0.843	1.33	2.03	0.423	4	**34**		
Selenium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1				
Vanadium (diss.filt)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	20			
Zinc (diss.filt)	µg/l	2.79	4.07	2.63	9.9	2	7.61	4.99	13.5	9.29	10.9			
Aliphatics >C10-C12	µg/l	<10	<10	<10	54	<10	<10	<10	<10	<10				
Aliphatics >C12-C16 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10				
Aliphatics >C16-C21 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10				
Aliphatics >C21-C35 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	49	<10				
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10				
Aliphatics >C6-C8	µg/l	<10	<10	<10	12	<10	<10	<10	<10	<10				
Aliphatics >C8-C10	µg/l	<10	<10	<10	30	<10	<10	<10	<10	<10				
Aromatics >EC10-EC12	µg/l	<10	<10	<10	36	<10	<10	<10	<10	<10				
Aromatics >EC12-EC16 (aq)	µg/l	<10	<10	<10	65	<10	<10	<10	<10	<10				
Aromatics >EC16-EC21 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10				
Aromatics >EC21-EC35 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10				
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10				
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10				
Aromatics >EC8-EC10	µg/l	<10	<10	<10	20	<10	<10	<10	<10	<10				
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	<7	<7	10	**50**		
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5				
GRO >C5-C12	µg/l													
GRO Surrogate % recovery**	%													
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8				
Methyl tertiary butyl ether (MTBE)	µg/l				<3	<3	<3	<3	<3	<3				
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3				
Sum of detected BTEX	µg/l													
Sum of detected Xylenes	µg/l										30			
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4	74			
Total Aliphatics & Aromatics >C5-35 (aq)	µg/l				220	<10	<10	<10	53	<10				5000
Total Aliphatics >C12-C35 (aq)	µg/l				<10	<10	<10	<10	49	<10				
Total Aromatics >EC12-EC35 (aq)	µg/l				65	<10	<10	<10	<10	<10				

		23344248	23344239	23344385	23516933	23516924	23516915	23516904	23516894	23517073				
SDG ID.		201202-12	201202-12	201202-12	210108-121	210108-121	210108-121	210108-121	210108-121	210108-121				
Status														
Project Site														
Project														
Sample Description		SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6				
Status														
Sample Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00				
Sample Type		CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER	CE_WATER				
Date Sampled		30/11/2020	30/11/2020	30/11/2020	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	1/7/2021	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Threshold**
Received On		02/12/2020	02/12/2020	02/12/2020	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021	1/8/2021				
Date Complete		10/12/2020	10/12/2020	10/12/2020	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021	1/14/2021				
Acenaphthene (aq)	µg/l	0.005	0.0676	0.005	0.149	<0.005	<0.005	<0.005	0.00753	<0.005				
Acenaphthylene (aq)	µg/l	0.005	0.005	0.005	0.0352	<0.005	<0.005	<0.005	<0.005	<0.005				
Anthracene (aq)	µg/l	0.005	0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1	**0.1**		
Benzo(a)anthracene (aq)	µg/l	0.005	0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Benzo(a)pyrene (aq)	µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	0.0103	<0.002	<0.002	<0.002	0.00017	**0.27**		
Benzo(b)fluoranthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.0145	<0.005	<0.005	<0.005		**0.017**		
Benzo(g,h,i)perylene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		**0.0082**		
Benzo(k)fluoranthene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.00801	<0.005	<0.005	<0.005		**0.017**		
Indeno(1,2,3-cd)pyrene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Chrysene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Dibenzo(a,h)anthracene (aq)	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Fluoranthene (aq)	µg/l	<0.005	0.0129	<0.005	0.00713	<0.005	0.00878	<0.005	<0.005	<0.005	0.0063	**0.12**		
Fluorene (aq)	µg/l	0.005	0.0367	0.00595	0.187	<0.005	<0.005	<0.005	0.00918	0.0055				
Naphthalene (aq)	µg/l	<0.01	<0.01	0.0125	0.0567	<0.01	<0.01	<0.01	<0.01	<0.01	2	**130**		
PAH, Total Detected USEPA 16 (aq)	µg/l	0.082	0.164	0.082	0.468	<0.082	<0.082	<0.082	<0.082	<0.082				
Phenanthrene (aq)	µg/l	<0.005	0.0302	0.0153	0.0197	<0.005	<0.005	<0.005	0.00699	<0.005				
Pyrene (aq)	µg/l	<0.005	0.0163	0.005	0.0142	<0.005	0.0132	0.017	<0.005	<0.005				
Aliphatics >C16-C35 Aqueous	µg/l	10	10	10	<10	<10	<10	<10	49	<10				

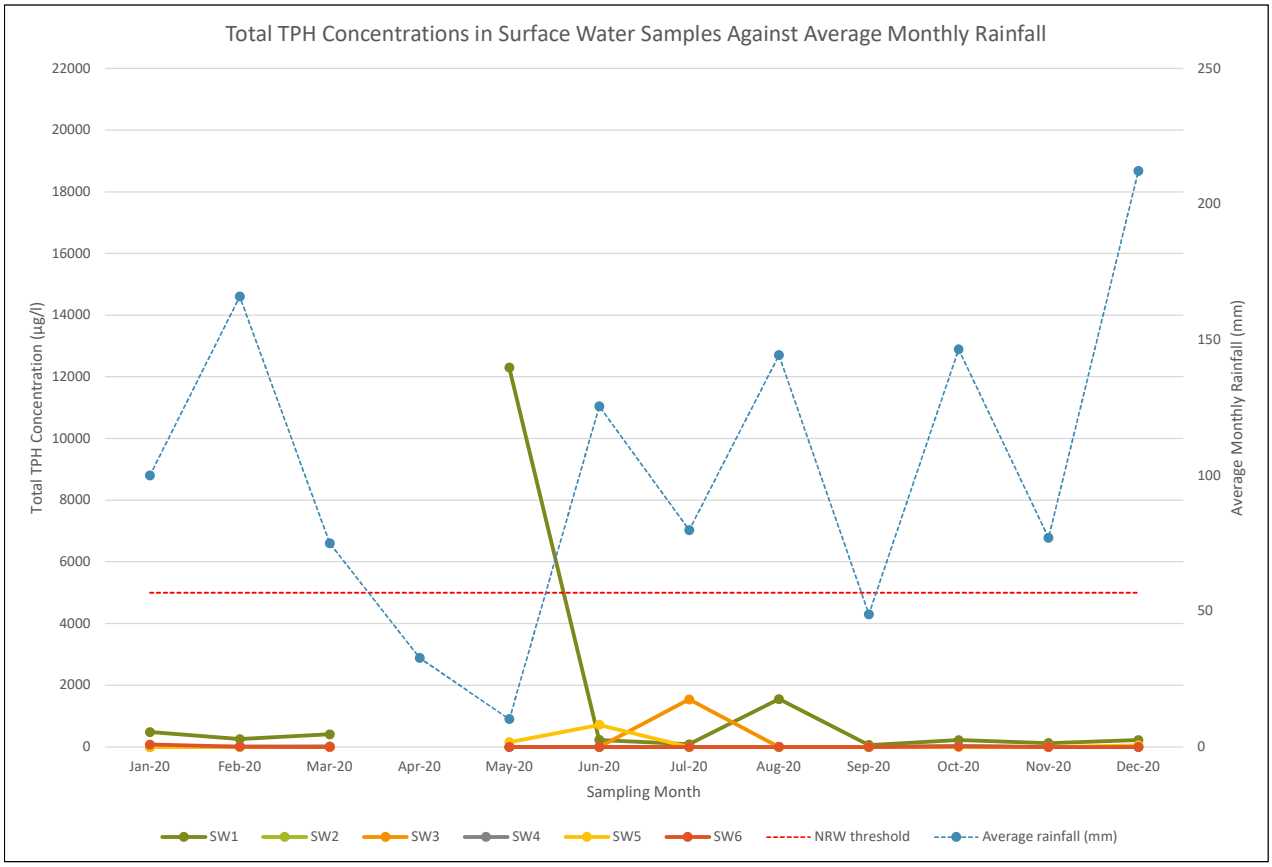
GRAPH 1



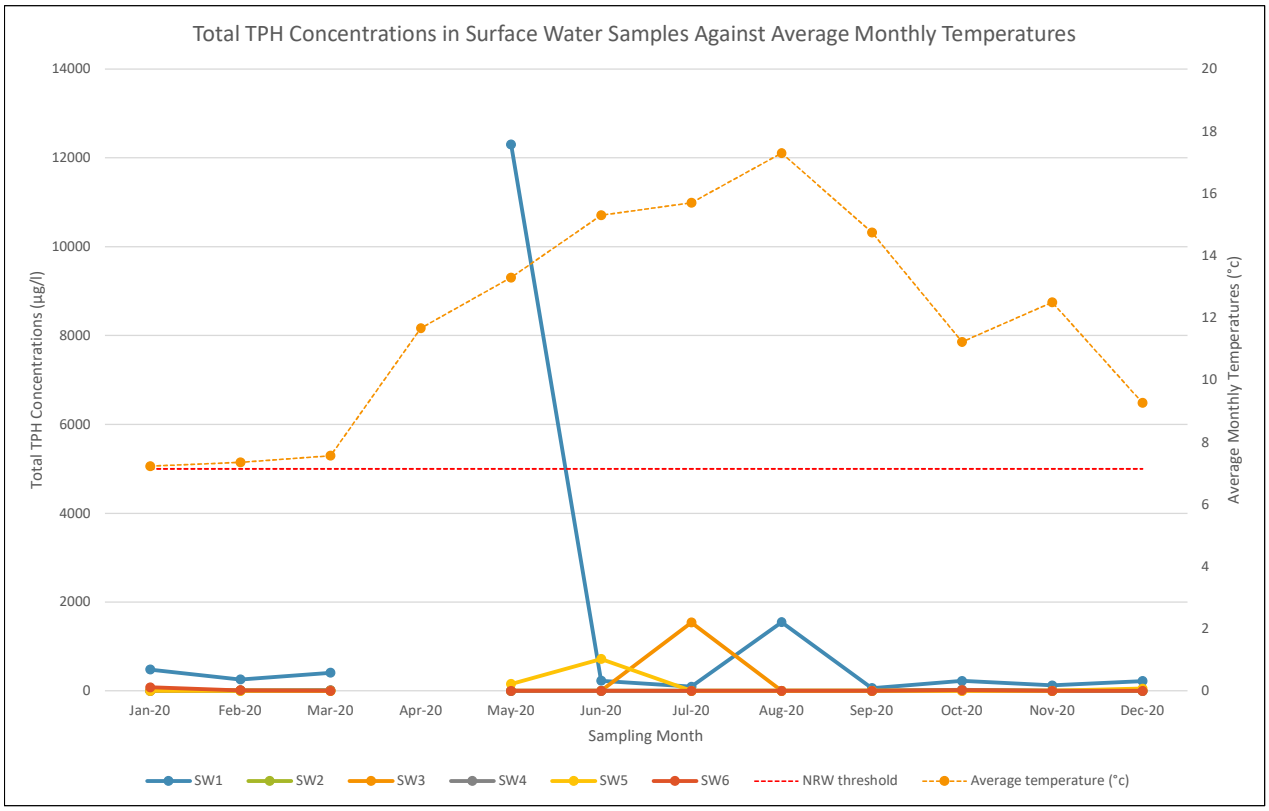
GRAPH 2



GRAPH 3



GRAPH 4



Appendix F Landfill Gas Monitoring Data

January Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		CO (ppm)	H2S (ppm)	Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable				
MSMW27	28/01/2020	0.2	0	3.3	3.3		18.7			997	-0.03
MSMW155D	28/01/2020	2.5	2.5	2.7	2.7		11.4			998	-0.05
MSMW155S	28/01/2020	0	0	3.1	3.1		14.4			997	-0.12
CARW034	28/01/2020										
CARW009	28/01/2020	0.8	0.8	0.9	0.9		21.1			997	0.01
CARW008	28/01/2020	0.6	0.6	3	3		16.4			997	0
BH51	28/01/2020	4.4	2.4	5.2	3.2		18.7			1000	-0.03
BH52	28/01/2020	0.1	0.1	0.2	0.2		21.1			1000	-0.14
BH20	28/01/2020	52.1	52	5.6	5.6		0.2			1000	-0.09
BH49	28/01/2020	16.5	16	5.5	5.3		13.2			1000	-0.05
BH57	28/01/2020	8.9	8.8	4.9	4.9		0.6			1000	-0.12
BH32	28/01/2020	0.1	0.1	5.9	5.9		1.1			1000	-0.05
BH23	28/01/2020	0.5	0.4	5.7	4.6		10.8			1000	-0.26

February Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		CO (ppm)	H2S (ppm)	Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable				
MSMW27	19/02/2020	0	0	3.4	3.4	19.3				1022	-0.1
MSMW155D	19/02/2020	4.3	4.3	2.2	2.2	15.6				1023	-0.39
MSMW155S	19/02/2020	0	0	0.8	0.8	21.1				1022	-0.14
CARW034	19/02/2020										
CARW009	19/02/2020	0.7	0.7	2.5	2.5	19.3				1022	-0.12
CARW008	19/02/2020	0.7	0.7	2.6	2.6	17.3				1022	-0.07
BH51	19/02/2020	0.9	0.4	3.4	1.3	20.9				1020	-0.09
BH52	19/02/2020	0	0	0.6	0.5	21.3				1020	-0.1
BH49	19/02/2020	4.2	4.1	3.1	2.9	18.1				1020	-0.05
BH20	19/02/2020	58.4	58.3	4.9	4.9	0.4				1020	-0.07
BH57	19/02/2020	0	0	0.8	0.8	15.5				1020	0.05
BH32	19/02/2020	0	0	3	2.3	17.9				1020	0.03

March Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		CO (ppm)	H2S (ppm)	Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable				
MSMW27											
MSMW155D											
MSMW155S											
CARW034											
CARW009											
CARW008											
BH51											
BH52											
BH20											
BH49											
BH57											
BH32											

April Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		CO (ppm)	H2S (ppm)	Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable				
MSMW27	30/04/2020	0	0	8.7	8.7	5.4	5.4			1024	-0.26
MSMW155D	30/04/2020	0	0	0.1	0.1	21.5	21.6			1024	0.03
MSMW155S	30/04/2020	0	0	1.8	1.8	20.1	20.2			1024	-4.31
CARW034	30/04/2020										
CARW009	30/04/2020	0.2	0.1	0.9	0.6	19.9	20.1			1024	0.1
CARW008	30/04/2020	0		1.2	1.1	17.8	19.7			1024	5.99
BH51	30/04/2020	0		0.1	0	21.3	21.3			1024	0.09
BH52	30/04/2020	0.5		0.8	0.8	20.1	20.1			1024	-0.05
BH49	30/04/2020	5.9		3.2	3.2	16.7	16.8			1024	0.15
BH20	30/04/2020	48.5		9.8	9.8	0.8	0.8			1024	0.02
BH57	30/04/2020	7.8		5.8	5.8	3.1	3.1			1024	-0.05
BH32	30/04/2020	6		12.9	12.3	2.1	2.1			1024	0.05
BH23	30/04/2020	10.5		6	5.9	4.7	4.7			1024	-0.02

May Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	26/05/2020								
MSMW155D	26/05/2020	0	0	0.2	0.2	20.1	20.1	1038	0.07
MSMW155S	26/05/2020	0.1	0	0.8	0.8	19.4	19.4	1038	0.07
CARW034	26/05/2020								
CARW009	26/05/2020	0.1	0.1	0.3	0.2	19.4	19.4	1037	0.01
CARW008	26/05/2020	0	0	0.1	0.1	19.7	19.7	1037	0.09
BH51	26/05/2020	1	1	0.8	0.8	18.9	18.9	1037	-0.02
BH52	26/05/2020	0.5	0.4	1.8	0.8	16.9	17.6	1037	-0.02
BH49	26/05/2020	5.2	3.2	4	1.8	14.6	16.9	1037	0
BH20	26/05/2020	38.9	38.8	8.4	8.3	0.3	0.3	1036	0.03
BH57	26/05/2020	10.5	10.4	5.3	5.3	5.3	5.3	1037	-0.03
BH32	26/05/2020	0.2	0.2	5.4	5.3	10.3	10.3	1037	-0.02
BH23	26/05/2020	0.5	0	0.5	0.1	14.3	20.1	1037	0.02

June Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	25/06/2020	0	0	11.3	11.2	3.8	4.1	1014	0.03
MSMW155D	25/06/2020	0	0	0.3	0.3	20.1	20.1	1014	0.03
MSMW155S	25/06/2020	0.1	0.1	2.4	2.4	16.3	16.3	1014	0.03
CARW034	25/06/2020								
CARW009	25/06/2020	0.8	0.8	1.5	1.5	20.5	20.5	1011	-0.03
CARW008	25/06/2020	0.1	0.1	0.1	0.1	21.3	21.3	1011	-0.03
BH51	25/06/2020	18.7	18.7	9.7	9.6	0.4	0.4	1013	0.02
BH52	25/06/2020	9.8	9.8	2.9	2.9	13.8	13.8	1013	0.02
BH49	25/06/2020	8.1	5.3	4.2	3.6	15.3	15.3	1013	0.03
BH20	25/06/2020	50.2	50.2	7.1	7.1	0.6	0.6	1013	0.03
BH57	25/06/2020	8.9	8.8	4.9	4.9	7.5	7.5	1000	-0.12
BH32	25/06/2020	0.2	0.2	2.8	2.8	15.8	15.8	1010	-0.05
BH23	25/06/2020	0.1		0.1		20		1013	-0.02
BH46	25/06/2020	0.9	0.9	0.4	0.4	19	19	1013	0.03

July Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	30/07/2020	0.2	0.2	13.4	13.3	2.7	2.7	1004	0.07
MSMW155D	30/07/2020	0.2	0.2	0.2	0.1	20.9	20.9	1004	-1.4
MSMW155S	30/07/2020	0.4	0.3	0.6	0.3	20.6	20.6	1004	-7.3
CARW034	30/07/2020	Install pipe snapped at surface							
CARW009	30/07/2020	0.2	0.2	1.3	1.2	19.1	19.1	1016	0
CARW008	30/07/2020	3	2.4	3	2.4	19.4	19.4	1016	-10.5
BH51	30/07/2020	0.4	0.2	0.1	0.1	21	21	1003	0
BH52	30/07/2020	1	0.8	0.8	0.7	17.5	17.5	1003	0
BH49	30/07/2020	11.7	11.7	3.9	3.9	15.1	15.1	1003	0.34
BH20	30/07/2020	84	83.9	5.5	5.5	0.2	0.2	1002	-0.03
BH57	30/07/2020	7.8	7.8	5.2	5.2	6.1	6.1	1003	0.02
BH23	30/07/2020	1.1	0.2	0.3	0.2	20.2	20.2	1003	0.03
BH46	30/07/2020	5.1	5	0.6	0.6	19.1	19.1	1017	-0.1

August Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	26/08/2020	0.2	0.2	17.2	17.1	1.6	1.6	1014	0.07
MSMW155D	26/08/2020	0.2	0.2	0.4	0.1	20.5	20.5	1014	-0.15
MSMW155S	26/08/2020	0.2	0.2	2	2	18	18	1014	0.03
CARW034	26/08/2020	Install snapped at surface							
CARW009	26/08/2020	2.4	2.4	1.7	1.7	20.3	20.3	995	0.02
CARW008	26/08/2020	0.3	0.3	0.1	0.1	20	20	995	0.12
BH51	26/08/2020	4	4	2.4	2.4	16.4	16.4	1013	0.05
BH52	26/08/2020	0.4	0.4	2.2	1.1	19	19	1013	0
BH49	26/08/2020	8.1	7.8	3.9	3.4	15.4	15.4	1013	0.03
BH20	26/08/2020	94.6	94.6	3.7	3.7	0.2	0.2	1013	0.03
BH57	26/08/2020	8.4	8.2	7.7	7.6	0.6	0.6	1013	0.09
BH32	26/08/2020	0.2	0.2	0.1	0.1	20.3	20.3	1013	0.02

September Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	29/09/2020	2.3	2.2	16	16	1.4	1.4	1014	-2.46
MSMW155D	29/09/2020	0.7	0.3	0.7	0.7	20.5	20.5	1014	0.07
MSMW155S	29/09/2020	4	4	2	2	16.5	16.5	1014	-15.82
CARW034	29/09/2020	Install snapped at surface							
CARW009	29/09/2020	6	6	4.9	4.9	16.6	16.6	1017	-1.88
CARW008	29/09/2020	0.3	0.2	1.2	1.1	19.5	19.5	1017	0.02
BH51	29/09/2020	0.5	0.2	0.3	0.1	20.8	20.8	1013	0
BH52	29/09/2020	6.9	5.7	3.3	2.7	16.7	16.7	1013	-1.73
BH49	29/09/2020	14.9	14	5.3	4.8	12.9	12.9	1013	0.05
BH20	29/09/2020	53.8	53.6	10.8	10.8	0.1	0.1	1013	0.03
BH57	29/09/2020	11.6	11.5	8.7	8.7	0.4	0.4	1013	0.07
BH32	29/09/2020	6.1	6	12.5	12.3	3	3	1013	0.02
BH46	29/09/2020	21.2	21.1	2.1	2.1	16.6	16.6	1013	0.03

October Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	28/10/2020	0.4	0.3	9.7	9.6	10.4	10.4	996	19.39
MSMW155D	28/10/2020	0.6	0.3	2.1	2.1	18.8	18.8	996	8.05
MSMW155S	28/10/2020	3.3	0.5	2.4	2.4	16.1	16.1	996	14.64
CARW034	28/10/2020	Install snapped at surface							
CARW009	28/10/2020	0.8	0.3	2	1.9	18.7	18.7	996	3.37
CARW008	28/10/2020	5.4	5.4	5.3	5.3	16.7	16.7	996	-0.92
BH51	28/10/2020	0.4	0.4	1.7	1.7	20	20	995	0.03
BH52	28/10/2020	1	0.4	0.5	0.2	20.5	20.5	995	-2.05
BH49	28/10/2020	13.5	12.3	6.1	5.3	13.7	13.7	995	0
BH20	28/10/2020	52.8	52.8	4.4	4.4	0.4	0.4	995	-2.22
BH57	28/10/2020	8.2	5.5	1.5	1.3	5.7	5.7	995	-2.57
BH32	28/10/2020	1.1	0.3	2.4	2	13.4	13.4	995	-2.8
BH23	28/10/2020	0.4	0.3	2.1	1.5	8.1	8.1	996	4.43
BH48	28/10/2020	0.4	0.4	7.7	7.7	1.4	1.4	996	-1.3

November Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	19/11/2020	0.2	0.2	1.7	1.7	20.3	20.3	1033	-0.1
MSMW155D	19/11/2020	0.2	0.2	0.6	0.2	21.2	21.2	1033	-0.09
MSMW155S	19/11/2020	0.3	0.2	1.8	1.8	18	18	1033	-0.05
CARW034	19/11/2020	Install snapped at surface							
CARW009	19/11/2020	0.9	0.8	1.9	1.8	20	20	1035	-0.09
CARW008	19/11/2020	0.4	0.3	1.8	1.8	18.8	18.8	1035	-0.09
BH51	19/11/2020	0.3	0.3	0.1	0.1	20.9	20.9	1031	-0.1
BH52	19/11/2020	0.8	0.4	0.3	0.1	20.8	20.8	1031	-0.05
BH49	19/11/2020	6.7	6.2	4.1	3.7	17.1	17.1	1030	0.1
BH20	19/11/2020	40.9	40.9	4.9	4.9	0.3	0.3	1029	-0.03
BH57	19/11/2020	5.7	3	0.6	0.1	20.6	20.6	1029	-0.17
BH32	19/11/2020	0.3	0.3	5.6	2.4	14.8	14.8	1030	-0.07
BH23	19/11/2020	0.6	0.3	1.5	1.3	17.9	17.9	1030	0.02
BH46	19/11/2020	0.4	0.4	0.2	0.1	20.8	20.8	1031	-0.09

December Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW27	12/12/2020	0.3	0.3	2.9	2.9		20	1007	0.39
MSMW155D	12/12/2020	0.4	0.3	1.4	1.2		20.4	1007	-0.09
MSMW155S	12/12/2020	3.3	3.2	1.3	1.2		19.1	1007	-0.02
CARW034	12/12/2020	Install snapped at surface							
CARW009	12/12/2020	2.8	2.8	4.1	4.1		17.8	1006	0.62
CARW008	12/12/2020	0.7	0.7	2.7	2.7		17.4	1005	-0.1
BH51	12/12/2020	16.2	16	6.4	6.3		8.6	1007	-0.12
BH52	12/12/2020	0.8	0.4	0.4	0.2		21.4	1007	-2.45
BH20	12/12/2020	34.1	34.1	6	6		0.7	1006	-1.59
BH49	12/12/2020	14.5	14.5	5.1	5		14.6	1006	-0.03
BH57	12/12/2020	3.3	3.3	1.3	1.1		13.3	1006	14.5
BH32	12/12/2020	1.7	1.7	4.8	4.8		0.3	1006	-2.63
CBH23	12/12/2020	0.5	0.4	1.5	1.4		18.7	1006	-0.14
CBH46	12/12/2020	1.7	1.2	0.5	0.3		21.3	1007	-0.79

St. Modwen Developments Limited

Coed Darcy

Crymlyn Tip - Environmental Monitoring Annual Report

March 2022

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1 Introduction

1.1 Overview

This report has been prepared to satisfy Condition 4.2.2 (a) of Crymlyn Tip Environmental Permit EPR/AP3990LR and subsequent variations (the Permit), which states:

'4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency [now Natural Resources Wales] by 31 January (or other date agreed in writing by [NRW] each year. The report(s) shall include as a minimum:

a) A review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the risk assessments submitted in relation to this site and any agreed amendments thereto.'

This report covers the monitoring period January 1st 2021 to December 31st 2021.

1.2 Background

St. Modwen Developments Limited (St. Modwen) acquired responsibility for Crymlyn Tip (the Tip) in 2008, when they purchased the former Llandarcy Oil Refinery from BP. For the Tip to enter 'definitive' closure NRW must be satisfied that a Closure and Aftercare Management Plan has been produced.

In January 2018 Atkins were appointed by St. Modwen to undertake an environmental monitoring programme in line with the requirements of the Permit and to assist in the production of the Closure and Aftercare Management Plan.

1.3 Summary of Works

The environmental monitoring programme was initially undertaken by Atkins up until March 2019. As of April 2019, PJA took over responsibilities for elements of the monitoring and reporting of the findings on behalf of St. Modwen.

GeoEnvironmental Applications Ltd (GAL) have been contracted by St. Modwen to manage the recovery of local free phase oil within the Tip and its peripheries. Alongside oil recovery, GAL carry out groundwater monitoring within boreholes/sumps and obtain monthly gas readings from available boreholes within/surrounding the Tip as part of the monitoring programme. The oil recovery and monitoring works carried out by GAL are overseen by PJA, who also collect groundwater and surface water samples on a monthly basis as part of the monitoring programme.

1.4 Supporting Documents

The last annual monitoring report covering the year 2020 was produced by PJA and submitted to NRW in February 2021:

- Coed Darcy – Crymlyn Tip Environmental Monitoring Annual Report, February 2021 –Ref: 4020-PJA-20-XX-RP-R-0045

Additional information relating to the history, operation, previous assessments and risk assessments of the Tip are presented in the following reports:

- Atkins (2013) Coed Darcy – Hydrogeological Risk Assessment Crymlyn Tip;
- Atkins (2013) – Coed Darcy – Landfill Gas Risk Assessment and Gas Management Plan;
- Atkins (2017) – Coed Darcy Crymlyn Tip- Partial Surrender of Coed Darcy Wetlands. EPR/AP3990LR/S003 Site Condition Report. Ref 5041216-RAP-RPT-0001788;
- Atkins (2019) – Coed Darcy Crymlyn Tip – Environmental Permit Monitoring. Ref: 5041216. Dated: 31/01/2019;
- Natural Resources Wales (2019) – Compliance Assessment Report. Ref: CAR_NRW0034811. Dated: 13/03/2019;
- PJA (2019) – Coed Darcy – Crymlyn Tip Factual Summary Report, April – September 2019: Ref: 4020-PJA-19-XX-TN-R-005. Dated 22/10/2019; and
- PJA (2020) – Crymlyn Tip – Environmental Monitoring Annual Report. Ref: 04020/OUT/0027. Dated April 2020.

It is assumed that the reader has access to the above documentation and is familiar with previous assessments undertaken. This report is not intended to repeat or reproduce findings of previous assessments in any great detail.

1.5 Limitations

This report has been prepared by PJA, on behalf of St. Modwen, for submission to NRW. This report shall not be relied upon or transferred to any other parties. If an unauthorised third party comes into possession of this report, they rely on its contents at their own risk.

The findings within this report are based upon information gained from a variety of sources and field measurements as detailed within this report which PJA believes are reliable. Nevertheless, PJA cannot guarantee the authenticity or reliability of third-party information.

The conclusions made within this report are based on the guidance available at the time of writing.

2 Site Setting

2.1 Site Location and Description

The Tip is located in the historical 'Containment Area' in the western section of the wider Coed Darcy development at the former Llandarcy Oil Refinery. The 'Containment Area' also includes a series of lagoons and wetlands. The containment area is shown in Appendix A on PJA drawing 04020-A-0110-P1: Notable Areas & NRW Discharge Consent Points.

The area covered by the Permit, and to which this report relates, is shown on drawing 04020-A-SK201-P2 and consists of the 'lower tip' in the west and the 'main tip' in the centre and east. To the north is Crymlyn Bog and to the south of the permitted area are the wetlands which were surrendered from the Permit in 2017.

2.2 Brief Site History

When the refinery opened in the early 1920s the 'Containment Area' comprised a series of lagoons and wetlands, congruent with Crymlyn Bog. The lagoons were initially constructed during the operational years of the refinery and were intended to intercept oil, preventing it from entering Crymlyn Bog. There are three lagoons within the Containment Area: Crymlyn Bog Lagoon (approx. 10,500m^3), South Bay (approx. 4,450m^3) and West Bay (approx. 1,500m^3).

Prior to the Second World War an ash bund was constructed around the Containment Area to provide a containment area for oil, which may have otherwise flowed into Crymlyn Bog if the tank farm area had been struck by bombs during the war. The ash bund also contained drainage systems, serving the southern half of the former refinery.

In 1977 a waste disposal licence was granted for the Containment Area. The licence granted the deposition of refinery waste, including both inert and potentially hazardous materials. Waste was filled in the area north of the wetlands. No waste has been accepted since 1999 and the landfill has been non-operational since July 2001.

Remedial works have taken place within the wetlands (South Bay, West Bay and Crymlyn Bog Lagoon) between 2011 and 2015. These works were summarised as part of the submission for the partial surrender of the waterbodies from the permitted area. The partial surrender report (Atkins report reference- 5041216-RAP-RPT-0001788) was submitted to NRW and the Coed Darcy wetlands removed from the permitted area in 2017. The remaining permitted area is outlined in red on drawing 04020-A-SK201-P2.

3 Environmental Setting

3.1 Geology

Published British Geological Survey records indicate superficial deposits at the Tip to predominantly comprise Peat underlain by Devensian Till; however, Peat is absent from the eastern portion of the Tip. Bedrock of the Pennant Sandstone Formation underlies the superficial deposits.

Based on historical borehole logs Made Ground/waste thicknesses are variable but extend to depths in excess of 17mbgl locally. Made Ground generally comprises grey, brown, and black, sandy, gravelly clay, with sand, gravels and cobbles. Gravels and cobbles consist of bricks, concrete, timber, metal, and ash. Much of the infill material is consistent with waste derived from refinery operations. There are areas where asbestos waste is reported to have been deposited as well as tank sludges, other industrial waste by-products, oil, and tar residues.

Available borehole logs are presented in Appendix B.

3.2 Hydrogeology

Peat is classified as Unproductive Strata and Till is classified as a Secondary (Undifferentiated) Aquifer. The underlying bedrock is classified as a Secondary A Aquifer.

Following an investigation across the wider Llandarcy Oil Refinery, including the Tip, URS produced groundwater contour plots for the bedrock and superficial aquifers (URS Report: 39991-044-785: Final Factual Report Whole Site Investigation BP LLANDARCY REFINERY 12th August 2005). These plots indicate groundwater in the bedrock beneath the Tip flows from south to north across the permitted area. Artesian and sub-artesian conditions may be present in the bedrock around the boundary between the Tip and Crymlyn Bog. Monitoring of shallow groundwater beneath the Tip indicates possible local radial flow although this may be distorted by the presence of residual oil and by the heterogeneous nature of the waste material.

For reference the groundwater contour plots taken from the original URS report are presented in Appendix C.

3.3 Hydrology

A ‘peripheral trench’ separating the Tip from Crymlyn Bog to the north is a narrow channel that intercepts groundwater flowing to the north from the Tip. A plywood wall in the trench traps free phase oil, whilst allowing groundwater to flow underneath the plywood into the bog. Oil is periodically collected from the trench (and from sumps and boreholes within the Tip) and sent for offsite processing.

Three water bodies located in the south of the wider Containment Area, namely South Bay, West Bay and Crymlyn Bog Lagoon, were surrendered from the Permit in 2017.

3.3.1 South Bay

South Bay has a capacity of approximately 4,450m^3 and is located to the south of the Tip. The waterbody was originally created to intercept uncontrolled discharge of free product from the refinery and prevent it from entering Crymlyn Bog.

3.3.2 West Bay

West Bay is approximately 1,500m^3 in capacity and lies to the south west of the Tip. Similar to South Bay, West Bay was installed to intercept uncontrolled discharge of free product from the western section of southern tank farm and prevent it from entering Crymlyn Bog.

3.3.3 Crymlyn Bog Lagoon

Located to the south of the Tip, Crymlyn Bog Lagoon receives inputs from both South Bay and West Bay, prior to discharging into Crymlyn Bog. Discharge to the bog from Crymlyn Bog Lagoon is via a siphon valve and a historical oil-water interceptor located within the ash bund. The outfall from the siphon valve is a NRW consented discharge point, W3, under Environmental Permit EPR/ LB3293HN which is held by St. Modwen.

4 Surface Water and Groundwater Monitoring and Sampling

4.1 Monitoring and Sampling Locations

Current sampling locations are shown on PJA drawing 04020-A-SK201-P2 in Appendix A and are summarised in Table 1.

Table 1: Summary of Monitoring and Sampling Locations

Location ID	Monitoring Type	Response Zone
SW1 –SW6	Surface water	Surface water
Sumps 14 – 21 & 24-28	Groundwater monitoring & oil recovery	Made Ground
CBH2	Groundwater monitoring	Made Ground
CBH13	Groundwater monitoring	Made Ground
CBH16	Groundwater monitoring	Made Ground
CBH19	Groundwater monitoring	Made Ground
CBH20	Gas, groundwater monitoring & sampling	Made Ground
CBH23	Gas, groundwater monitoring & sampling	Made Ground
CBH25	Groundwater monitoring	Made Ground & Peat
CBH32	Groundwater monitoring	Made Ground
CBH39	Groundwater monitoring	Made Ground
CBH46	Groundwater monitoring & sampling	No borehole log
CBH47	Groundwater monitoring	Made Ground
CBH48	Groundwater monitoring	Made Ground
CBH49	Groundwater monitoring	Made Ground
CBH51	Gas & groundwater monitoring	Made Ground
CBH52	Gas, groundwater monitoring & sampling	Made Ground
CBH57	Gas, groundwater monitoring & sampling	Made Ground
CBH64	Groundwater sampling	Made Ground
CARW008	Gas, groundwater monitoring & sampling	Made Ground
CARW009	Gas, groundwater monitoring & sampling	Made Ground & Silt
CARW034	Groundwater sampling	Made Ground & Silt
MSMW034D	Groundwater monitoring & sampling	Mudstone (Coal Measures)
MSMW034S	Groundwater monitoring & sampling	Gravel (Glacial Deposits)
MSMW91	Gas & groundwater monitoring	Gravel (Glacial Deposits)
MSMW155D	Gas, groundwater monitoring & sampling	No borehole log (presumed bedrock)
MSMW155S	Gas, groundwater monitoring and sampling	No borehole log (presumed superficial deposits)
MSMW231	Gas & groundwater monitoring	Made Ground
MSMW238	Groundwater monitoring	Made Ground

GAL carry out field measurements, monitoring of the groundwater levels and taking gas readings from locations installed with a gas bung and tap using a GA5000 gas analyser. PJA carry out monthly groundwater and surface water sampling. Sampling is carried out using a peristaltic pump where

possible or bailer where excessive groundwater depth or the presence of free phase prevent the use of the pump.

4.2 Laboratory Analysis

A total of 150 groundwater samples and 71 surface water samples were scheduled for the following suite of laboratory analysis during 2021:

- pH
- Ammoniacal Nitrogen as N;
- Chloride;
- Dissolved and total metals (arsenic, boron, cadmium, chromium, copper, lead, nickel, selenium, vanadium, zinc) (excluding SW6 in May 2021);
- Hardness (total as $CaCO_3$ unfiltered);
- Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG);
- BTEX compounds (Benzene, Toluene, Ethylbenzene and Xylenes);
- MTBE (methyl tertiary butyl ether); and
- Polycyclic Aromatic Hydrocarbons (PAH) (aqueous).

4.3 Surface Water Sampling Regime

The six surface water locations, SW1 to SW6, were all sampled on a monthly basis throughout 2021.

Groundwater Sampling Regime

Table 2 shows when each of the groundwater locations has been sampled over the course of 2021. During each sampling visit, collection of groundwater samples is attempted from a number of locations within and surrounding the Tip to provide good spatial distribution. During some sampling rounds it may not have been possible to obtain a sample because of any one or a combination of the following factors:

- difficulty in obtaining a sample due to the presence of free phase hydrocarbons;
- sampling equipment error; or
- time constraints.

Table 2: Groundwater Sampling Regime

Sampling location	27/01	23/02	23/03	30/04	04/06	07/07	11/08	25/08	07/10	04/11	26/11	16/12
CBH20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CBH23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CBH46	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CBH52	×	×	✓	✓	✓	✓	✓	✓	×	×	×	×
CBH57	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CBH64	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
CARW008	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CARW009	✓	✓	✓	×	✓	✓	×	✓	✓	✓	✓	✓
CARW034	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MSMW091	✓	✓	✓	✓	✓	×	×	×	×	×	×	×
MSMW155S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MSMW155D	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓
CBH30	✓	×	×	×	×	×	×	×	×	×	×	×
MSMW034S	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓
MSMW034D	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓

✓groundwater sample taken

× groundwater sample not taken

5 Groundwater and Non-aqueous Phase Liquid Monitoring Results

5.1 Introduction

Groundwater level and non-aqueous phase liquid (NAPL) monitoring was undertaken in boreholes and sumps at the Tip during 2021. PJA Drawing 04020-A-SK201-P2 showing all monitoring locations is presented in Appendix A.

Available borehole logs, presented in Appendix B, have been reviewed to identify response zones for each of the monitoring locations. Response zones are constructed within either waste material, superficial deposits, or bedrock.

5.2 Groundwater Level Monitoring

Groundwater level monitoring was carried out in a total of 25 boreholes locations during 2021. A summary of the groundwater levels recorded during 2021 are provided in Table 3.

5.3 Non-Aqueous Phase Liquid Levels (NAPL)

Light non-aqueous phase liquids (LNAPL) have been recorded in boreholes and/or sumps during 2021. A summary of LNAPL recorded in boreholes is presented in Table 4. LNAPL thicknesses recorded in sumps are presented in Table 5.

Plans visually displaying 'snapshots' of recorded LNAPL thicknesses throughout 2021 are presented in Appendix D.

No suspected dense non-aqueous phase liquids (DNAPL) were detected in any monitoring locations during 2021.

Table 3: Summary of Recorded Groundwater Levels in Boreholes

Monitoring Locations	Response Zone	Maximum		Minimum		Average	Variability
		Depth	Month	Depth	Month		
CBH2	Waste/Made Ground	2.28m bgl 11.38m aod	December	3.94m bgl 9.72m aod	July	3.27m bgl	1.66m
CBH13	Waste/Made Ground	7.08m bgl 8.20m aod	January	8.46m bgl 6.82m aod	May	7.78m bgl	1.38m
CBH16	Waste/Made Ground	4.03m bgl 10.52m aod	November	7.10m bgl 7.45m aod	September	6.09m bgl	3.07m
CBH19	Waste/Made Ground	5.83m bgl 9.98m aod	June	8.12m bgl 7.69m aod	August	7.08m bgl	2.29m
CBH20	Waste/Made Ground	5.20m bgl 10.42m aod	November	7.71m bgl 7.91m aod	August	6.45m bgl	2.51m
CBH23	Waste/Made Ground	4.81m bgl 9.80m aod	January	6.97m bgl 7.63m aod	August	5.51m bgl	2.17m
CBH25	Waste/Made Ground & Peat	6.32m bgl 6.07m aod	January	7.90m bgl 4.49m aod	November	7.20m bgl	1.58m
CBH32	Waste/Made Ground	6.72m bgl 9.96m aod	January	10.22m bgl 6.46m aod	November	8.98m bgl	3.50m
CBH39	Made Ground	8.42m bgl	May	11.22m bgl	January	10.15m bgl	2.80m
CBH46	No borehole log	1.85m bgl 11.51m aod	January	4.73m bgl 8.63m aod	November	3.04m bgl	2.88m
CBH47	Waste/Made Ground	3.28m bgl 11.29m aod	February	6.74m bgl 7.84m aod	September	5.29m bgl	3.45m
CBH48	Waste/Made Ground	0.95m bgl 11.95m aod	October	7.42m bgl 5.48m aod	July	4.18m bgl	6.47m
CBH49	Waste/Made Ground	1.23m bgl 12.60m aod	March	3.25m bgl 10.58m aod	September	2.50m bgl	2.02m
CBH51	Waste/Made Ground	5.88m bgl 8.97m aod	January	7.02m bgl 7.82m aod	September & November	6.55m bgl	1.15m
CBH52	Waste/Made Ground	0.29m bgl	February	5.82m bgl	September	3.16m bgl	5.53m

Monitoring Locations	Response Zone	Maximum		Minimum		Average	Variability
		Depth	Month	Depth	Month		
		14.67m aod		9.14m aod			
CBH57	Waste/Made Ground	6.24m bgl 9.81m aod	December	8.17m bgl 7.88m aod	March	7.12m bgl	1.93m
CARW008	Waste/Made Ground	0.61m bgl 10.69m aod	December	1.32m bgl 9.98m aod	November	0.76m bgl	0.71m
CARW009	Waste/Made Ground	0.70m bgl 10.63m aod	September	1.71m bgl 9.62m aod	November	0.87m bgl	1.01m
MSMW91	Gravel (Glacial Deposits)	1.46m bgl 8.63m aod	October	2.60m bgl 7.49m aod	September	2.17m bgl	1.14m
MSMW155S	Presumed Superficial Deposits	0.36m bgl 8.86m aod	May	0.93m bgl 8.29m aod	November	0.71m bgl	0.57m
MSMW155D	Presumed Bedrock	0.31m bgl 9.07m aod	December	0.91m bgl 8.47m aod	September	0.58m bgl	0.60m
MSMW231	Waste/Made Ground	2.20m bgl 13.09m aod	October	7.94m bgl 7.35m aod	June	6.44m bgl	5.74m
MSMW238	Waste/Made Ground	3.94m bgl 10.91m aod	December	8.90m bgl 5.95m aod	January	6.67m bgl	4.96m
MSMW034S	Gravel (Glacial Deposits)	Groundwater constantly at ground level – 9.00m water column.					
MSMW034D	Mudstone (Coal Measures)	Groundwater constantly at ground level – 13.50m water column.					

Table 4: Summary of Recorded LNAPL in Boreholes

Borehole ID	Response Zone	Number of occurrences	LNAPL thickness		Average thickness
			Minimum (date)	Maximum (date)	
CBH2	Waste/Made Ground	8/12	0.06m (January 2021)	0.91m (July 2021)	0.38m
CBH13	Waste/Made Ground	12/12	0.30m (June & October 2021)	1.02m (March 2021)	0.63m
CBH16	Waste/Made Ground	12/12	0.01m (December 2021)	1.81m (November 2021)	0.74m
CBH19	Waste/Made Ground	6/6 (Borehole obstructed January – June 2021)	0.18m (September 2021)	0.44m (July 2021)	0.29m

Borehole ID	Response Zone	Number of occurrences	LNAPL thickness		Average thickness
			Minimum (date)	Maximum (date)	
CBH20	Waste/Made Ground	1/12	0.29m thickness of LNAPL detected in August 2021		
CBH25	Made Ground & Peat	12/12	0.10m (April 2021)	1.35m (November 2021)	0.40m
CBH32	Waste/Made Ground	11/12	0.12m (January 2021)	2.46m (May 2021)	0.70m
CBH39	Made Ground	12/12	0.07m (May 2021)	2.36m (January 2021)	1.26m
CBH46	Waste/Made Ground	12/12	0.03m (April 2021)	0.48m (November 2021)	0.26m
CBH47	Waste/Made Ground	10/12	0.01m (January & February 2021)	0.66m (September 2021)	0.21m
CBH48	Waste/Made Ground	4/12	0.12m (June 2021)	0.61m (July 2021)	0.33m
CBH49	Made Ground	10/12	0.05m (January 2021)	0.77m (March 2021)	0.41m
CBH51	Waste/Made Ground	12/12	0.07m (April 2021)	0.59m (November 2021)	0.24m
CBH52	Waste/Made Ground	12/12	0.02m (February 2021)	1.01m (March 2021)	0.29m
CARW009	Made Ground	2/12	0.02m (March 2021)	0.19m (July 2021)	0.11m
MSMW231	Waste/Made Ground	10/12	0.11m (February 2021)	3.19m (March 2021)	0.65m
MSMW238	Waste/Made Ground	11/12	0.11m (August 2021)	1.74m (March 2021)	0.79m

Table 5: Summary of Recorded LNAPL in Sumps

Sump ID	Response Zone	Number of occurrences	NAPL thickness		Average thickness
			Minimum	Maximum (date)	
18	Waste/Made Ground	12/12	0.05m (April 2021)	0.60m (December 2021)	0.17m
19	Waste/Made Ground	11/12	0.05m (June & July 2021)	0.60m (November 2021)	0.17m
20	Waste/Made Ground	4/12	0.01m (May 2021)	0.20m (December 2021)	0.07m
21	Waste/Made Ground	10/12	0.02m (March 2021)	0.50m (December 2021)	0.15m
25	Waste/Made Ground	11/12	0.06m (March 2021)	0.58m (November 2021)	0.16m
27	Waste/Made Ground	12	0.001m (March 2021)	0.65m (November 2021)	0.12m

N.B. Only sumps where NAPL was detected are shown in Table 5.

5.4 Groundwater and NAPL Levels Discussion

5.4.1 Groundwater Levels

A review of groundwater level monitoring data collected over the last 12 months shows that generally the lowest levels were recorded in September and November 2021, and the highest levels in January and December 2021.

There is an average variability of 2.57m between the lowest and highest recorded groundwater level in any location which is similar to the degree of variability in groundwater levels reported in 2020 and 2019.

Boreholes MSMW238 (4.96m) and CBH52 (5.53m) have the greatest variability in groundwater levels. Both boreholes are located in the central area of the Tip where a high degree of local heterogeneity would be expected in the waste material. Furthermore, these wells are used periodically for oil recovery, which will exert influence over groundwater levels.

Boreholes MSMW155S, MSMW155D CARW008 and CARW009 recorded the smallest variability in groundwater levels of 0.57m, 0.60m, 0.71m and 1.01m respectively. These boreholes are all located beyond the landfilled area to the south and west and in an area where saturated ash deposits are prevalent.

5.4.2 Non-Aqueous Phase Liquid (NAPL) Levels and Distribution

LNAPL has been detected in all but eight borehole locations during 2021: MSMW91, MSMW155S, MSMW155D, CARW008, CBH57 and CBH23. With the exception of CBH57 and CBH23, these boreholes are installed outside the main landfilled area in Made Ground, superficial deposits and bedrock.

The greatest LNAPL thickness of 3.19m was recorded in MSMW231 in March 2021. In locations CBH32 and CBH52 LNAPL was recorded most consistently, where it was present during all monitoring rounds. The least LNAPL was recorded in boreholes CBH16 and CBH47, where 0.01m of oil was recorded in December 2021 in CBH16 and in January and February 2021 in CBH47. CBH16 and CBH47 are located adjacent to each other in the south central area of the landfilled area. CBH20 is located centrally in the Tip and the relatively small amount of free product in this location may be a result of the heterogenous nature of the waste materials and oil distribution. It should also be noted that CBH20 is topographically higher than other monitoring locations. The elevation may also play a role in the limited amount of free product accumulating in this location.

LNAPL has been detected in six sumps during 2021, generally on between ten and twelve of the monthly monitoring rounds. The greatest thicknesses of LNAPL in sumps were recorded in November 2021 and December 2021, ranging from 0.20m to 0.65m thickness. The lowest thicknesses of LNAPL were recorded in sumps between March 2021 and July 2021, ranging from 0.001m to 0.06m.

Suspected DNAPL has been detected in previous years within Sump 18, Sump 19 in 2020 and in CARW008, CARW009, CARW034, CBH20 (formerly BH20) and CBH57 (formerly BH57) in 2019. However, no DNAPL was detected within any boreholes or sumps during 2021.

NAPL monitoring records for 2021 are presented on drawings in Appendix D. These drawings show the spatial distribution and thickness of the LNAPL across the Tip. The central and eastern areas of the Tip are most impacted by LNAPL. The sumps and boreholes in the western half, (the 'lower Tip') record lesser thicknesses, and the presence of LNAPL is less frequent.

6 Groundwater and Surface Water Quality Assessment

6.1 Assessment Criteria

Results from laboratory analysis of groundwater and surface water samples obtained during 2021 have been screened against relevant Water Quality Standards, with copper, nickel and zinc screened against predicted no effect concentrations (PNEC) values derived from the metal bioavailability assessment tool (M-BAT). The measured dissolved organic carbon (DOC) concentration recorded within the receiving water body (Crymlyn Bog) exceeded the upper limit of the validated range for copper, nickel, and zinc. As a result, the site-specific PNEC for copper was calculated using a DOC concentration of 15mg/l and the site-specific PNEC for nickel and zinc was calculated using a DOC concentration of 20mg/l. PNEC have been calculated using the average of pH and calcium values and the median DOC value recorded in Crymlyn Bog during 2021, in accordance with the WFD UKTAG M-BAT Method Statement (July 2014).

Groundwater data have been screened against threshold concentrations in The Water Supply (Water Quality) Regulations 2018, and against Environmental Quality Standards (EQS) in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. The threshold concentrations in The Water Supply (Water Quality) Regulations 2018 (referred to as DWS) have been used to give a broad indication of overall groundwater quality, however they are overly conservative in this instance, because groundwater is not abstracted from the Tip for water supply purposes. EQS have been used because groundwater recharges Crymlyn Bog.

Surface water data have been screened against EQS in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015, and the specified emission limits in EPR/LB3293HN for the site drainage from Coed Darcy. Whilst the emission limits are not strictly applicable to the SW1-SW6 surface water monitoring locations, they have been used to identify the presence of elevated concentrations of contaminants in surface waters in proximity to Crymlyn Bog. The Environmental Permit EPR/ LB3293HN emission limit for 'visible oil and grease' of 5,000 µg/l in surface water has been used to assess total petroleum hydrocarbon concentrations.

Laboratory analytical data screening is presented in Appendix E.

6.2 Groundwater

During 2021, 62 annual average EQS exceedances for metals and 97 exceedances of ammoniacal nitrogen were recorded in 150 groundwater samples. Where maximum allowable concentration (MAC) EQS are available, these were exceeded in one sample for lead.

Three exceedances of PNEC screening values, derived using the M-BAT, were recorded in January, and February. Two exceedances were recorded in January and relate to boreholes CBH57 (copper) and CBH64 (zinc). A copper concentration of 53.6µg/l was recorded in CBH57 compared to an PNEC value of 49.12µg/l and a zinc concentration of 99.9µg/l was recorded in CBH64 compared to an

PNEC value of 79.03µg/l. In February a zinc concentration of 132µg/l was recorded within CBH64 compared to the zinc PNEC value of 79.03µg/l.

The DWS for arsenic was exceeded in 13 samples and the DWS for lead was exceeded in two samples.

The annual average EQS MAC-EQS for benzene was exceeded on ten occasions and the DWS for benzene was exceeded in 16 samples.

A total of 185 annual average EQS exceedances were recorded in groundwater samples for PAH compounds and DWS for benzo(a)pyrene was exceeded in 59 groundwater samples.

The Environmental Permit threshold of 5,000µg/l used for 'visible oil and grease' in surface water which has been used to make an indicative assessment of TPH concentrations was exceeded in 37 groundwater samples. The majority of exceedances were recorded in boreholes located centrally in the Tip, with occasional exceedances recorded in isolated boreholes located to the south, east and west of the landfilled area.

Graphs 1 and 2 in Appendix E show TPH concentrations recorded in groundwater samples taken from boreholes, plotted against average rainfall and average temperature respectively.

Generally monitoring locations located outside the landfill area recorded lower TPH concentrations than monitoring points located within the landfill area. TPH concentrations were generally less than 20,000 ug/l throughout 2021, however, 10% of total TPH concentrations exceeded 20,000µg/l. Borehole location CBH46, located within the central area of the Tip, recorded the greatest number of total TPH concentrations exceeding 20,000µg/l.

Based on the dataset from 2021, there appears to be no clear relationship between TPH concentration in groundwater and either average rainfall or temperature data.

6.3 Surface Waters

Over the twelve-month monitoring period three individual metal annual average EQS exceedances were recorded (two for lead in SW1 and SW3 and one for chromium in SW5), and 30 individual annual average / maximum allowable concentration EQS PAH exceedances were recorded (for benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, anthracene and fluoranthene) in the surface water samples. In addition, 18 ammoniacal nitrogen exceedances of the EQS 90th percentile were recorded.

No recorded exceedances for copper, nickel or zinc were recorded when concentrations were compared to PNEC values derived from the M-BAT.

Sampling point W5 (West Bay) in the west of the Tip, was recorded as having the highest number of exceedances (16) and sampling location W2 (Crymlyn Bog), located along the northern boundary of the Tip, recorded the lowest number of exceedances (3).

During 2021 a single concentration of TPH was recorded marginally above the wider Coed Darcy Environmental Permit emission limit of 5,000µg/l for 'visible oil and grease'. This occurred at SW1 in August and the TPH concentration was recorded as 5,600µg/l. Recorded TPH concentrations at SW1 during the other 2021 monitoring rounds were below 5,000µg/l. TPH was generally below the laboratory detection limit of 10µg/l at all other surface water monitoring locations during 2021.

Graphs 3 and 4 in Appendix E show TPH concentrations recorded in surface water samples against average monthly rainfall and average monthly temperature data respectively. The elevated TPH concentration at sampling location SW1 occurred in August 2021 in warmer temperatures. This may indicate that rising temperatures may have increased mobility of the free phase hydrocarbons. However, a similar trend was not seen in other surface water sampling locations during summer months. It should be noted that TPH results from SW1 in August (5,600µg/l) has been omitted from the graph to improve visual representation of the other data.

7 Landfill Gas

7.1 Landfill Gas Monitoring

Landfill gas monitoring was undertaken at 13 boreholes across the Tip and its surroundings, using a GA5000 gas analyser. Due to the age of the boreholes, a number of headworks are damaged, and the boreholes therefore cannot be monitored for gas. Of the 13 boreholes that were monitored during 2021, ten are located within the Permit boundary, and three are located outside of the Permit boundary to the south and south west, as summarised in Table 6.

Table 6: Landfill Gas Monitoring Location Information

Monitoring locations in the Tip	Monitoring locations outside the Tip
CBH20	MSMW155S (located to the south west)
CBH23	MSMW155D (located to the south west)
CBH32	MSMW091 (located to the south west)
CBH49	
CBH51	
CBH52	
CBH57	
CARW008 (located outside fill area)	
CARW009 (located outside fill area)	
MSMW231	

7.2 Landfill Gas Concentrations

Landfill gas monitoring was undertaken by GAL throughout 2021. The minimum atmospheric pressure reading was recorded as 999 millibars (mbar) in December 2021, whilst the highest atmospheric pressure was recorded as 1035 mbar in May 2021. Monitoring rounds carried out in March, June, July, September, and November were carried out during falling atmospheric pressure events, which represent conditions when positive flow of landfill gas is most likely to be recorded. Landfill gas monitoring data is presented in Appendix F.

Methane (CH_4)

Based on the graphs for boreholes outside of the Tip and boreholes in the Tip presented as Figure 1 and Figure 2 respectively, methane concentrations during 2021 appear to show some variability. Generally, methane concentrations within the Tip were below 10% with the exception of CBH20 which recorded concentrations ranging from 0.30% (December) to 83.90% (July), CBH49 with recorded concentrations between 79.9% (January) and <0.1% (May), and MSMW231 where concentrations ranged from 2.70% (May) to 60.40% (December). The lowest methane concentration of <0.1% was recorded across several monitoring locations in the Tip throughout the year.

Outside the Permit Area, a maximum methane concentration of 3.20% was detected in MSMW155S (assumed to be screened with a response zone in superficial deposits) in January 2021. The minimum methane concentration of <0.1% was recorded outside the former landfill area in all three monitoring locations on multiple monitoring rounds.

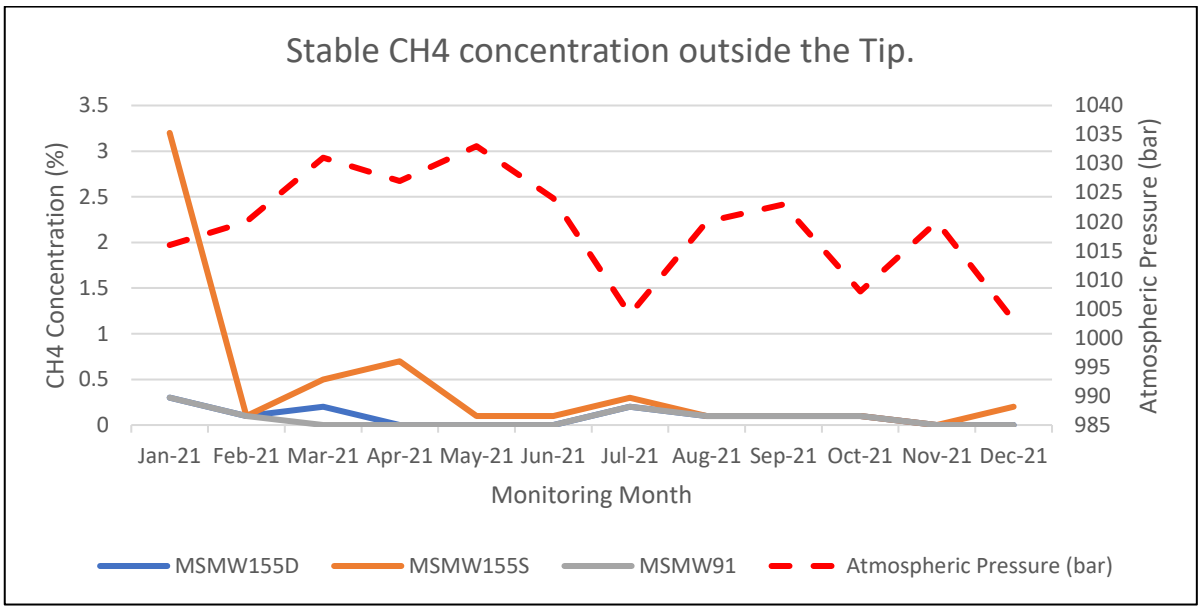


Figure 1: Methane concentrations in boreholes outside the Tip.

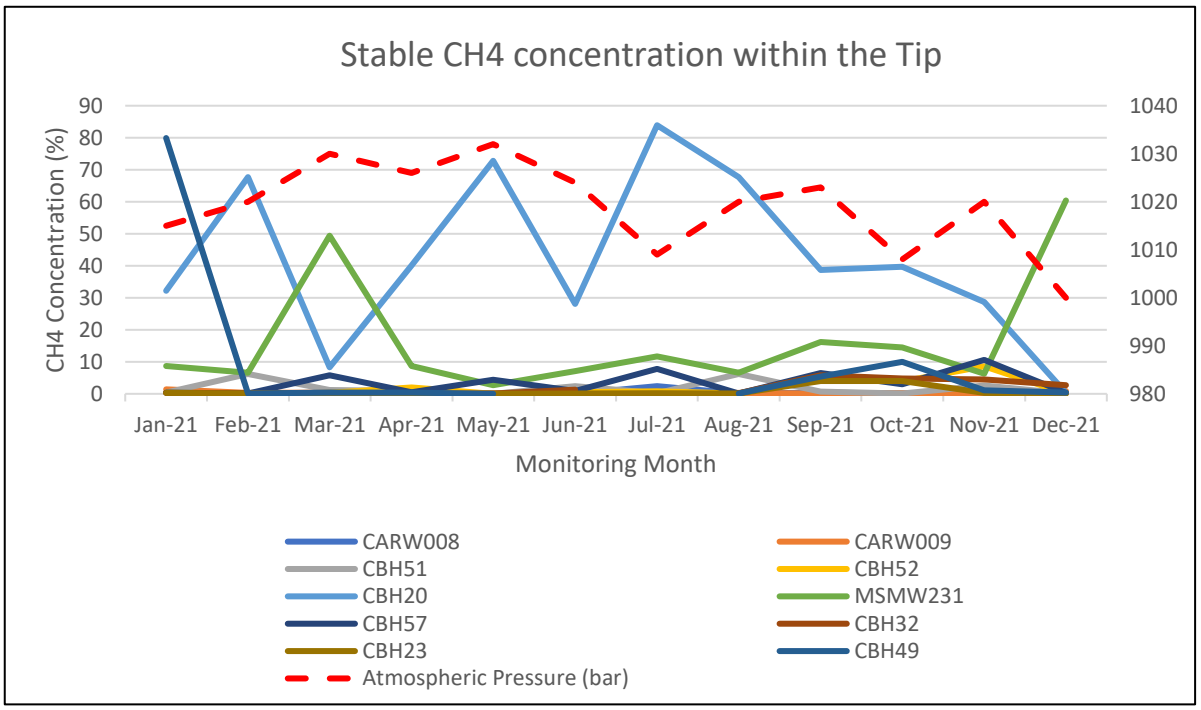


Figure 2: Methane Concentrations in Boreholes within the Tip.

Carbon Dioxide (CO_2)

Based on monitoring data presented in the graphs below (Figure 3 and Figure 4) stable carbon dioxide concentrations in the Tip ranged from 0.10% to 13.20%. The maximum carbon dioxide concentration of 13.20% was detected in BH32 in September and the lowest concentration (0.10%) detected in several monitoring locations across the Tip.

The maximum carbon dioxide concentration of 13.50% recorded outside of the Tip was in MSMW91 (screened in superficial deposits) in February and August and the lowest concentration of <0.1% was recorded in MSMW91 in March (screened in superficial deposits) and in MSMW155S (screened in superficial deposits) in May.

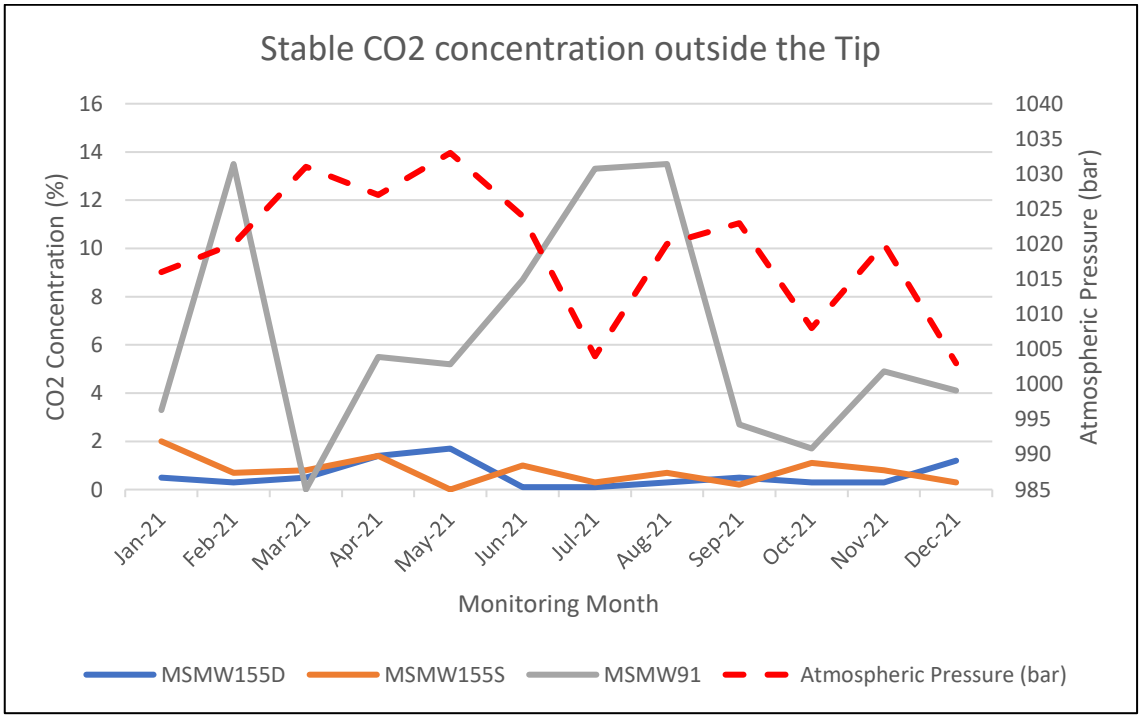


Figure 3: Carbon Dioxide Concentrations in Boreholes Outside the Tip.

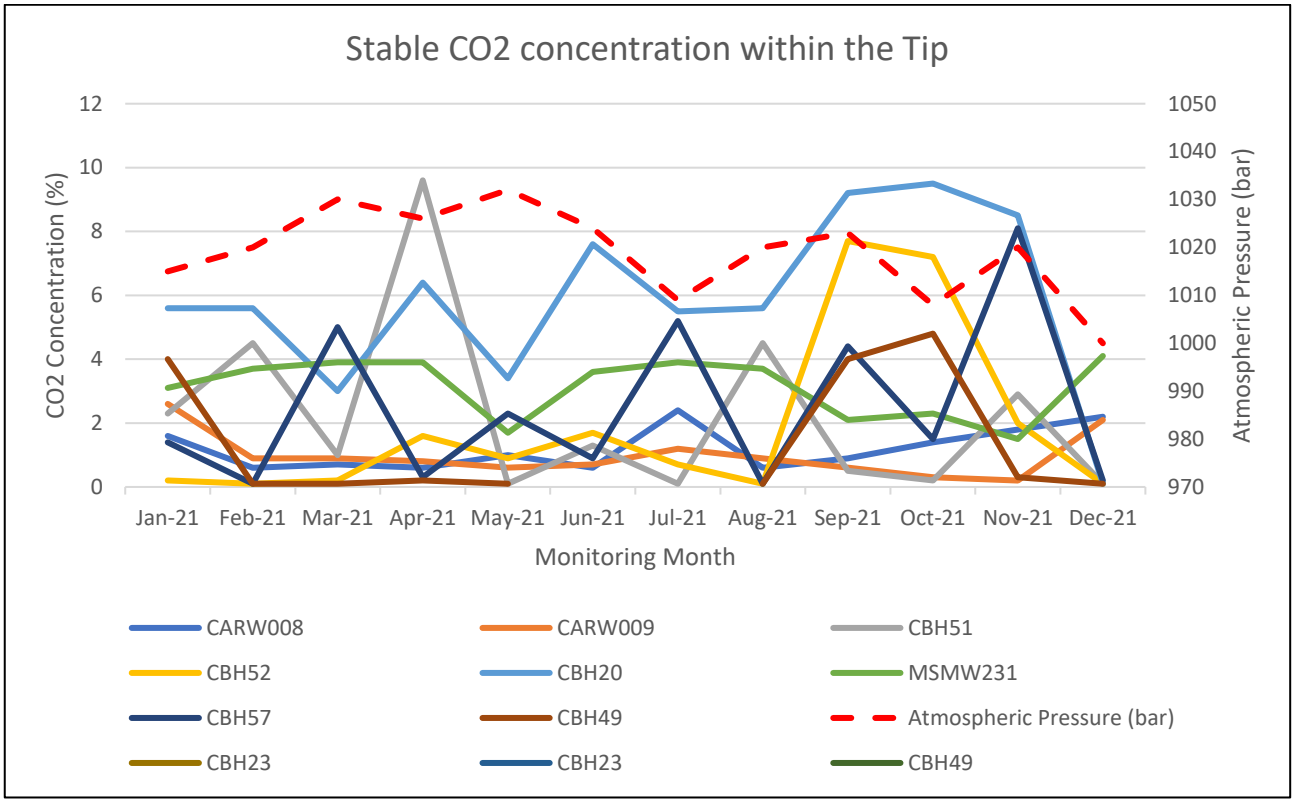


Figure 4: Carbon Dioxide Concentrations in Boreholes in the Tip.

Oxygen (O_2)

Oxygen concentrations shown on the graphs presented as Figure 5 and Figure 6 in the Tip range from 0.10% to 21.90%, with the lowest concentration recorded in BH20 in January and November as well as in CBH57 in November. The maximum concentration of 21.90% was detected in CBH20 during December.

Outside of the Tip oxygen concentrations ranged from 2.70% to 21.90%. The minimum concentration of 2.70% was recorded in MSMW91 in July and the maximum concentration of 21.90% was recorded in MSMW155D in June.

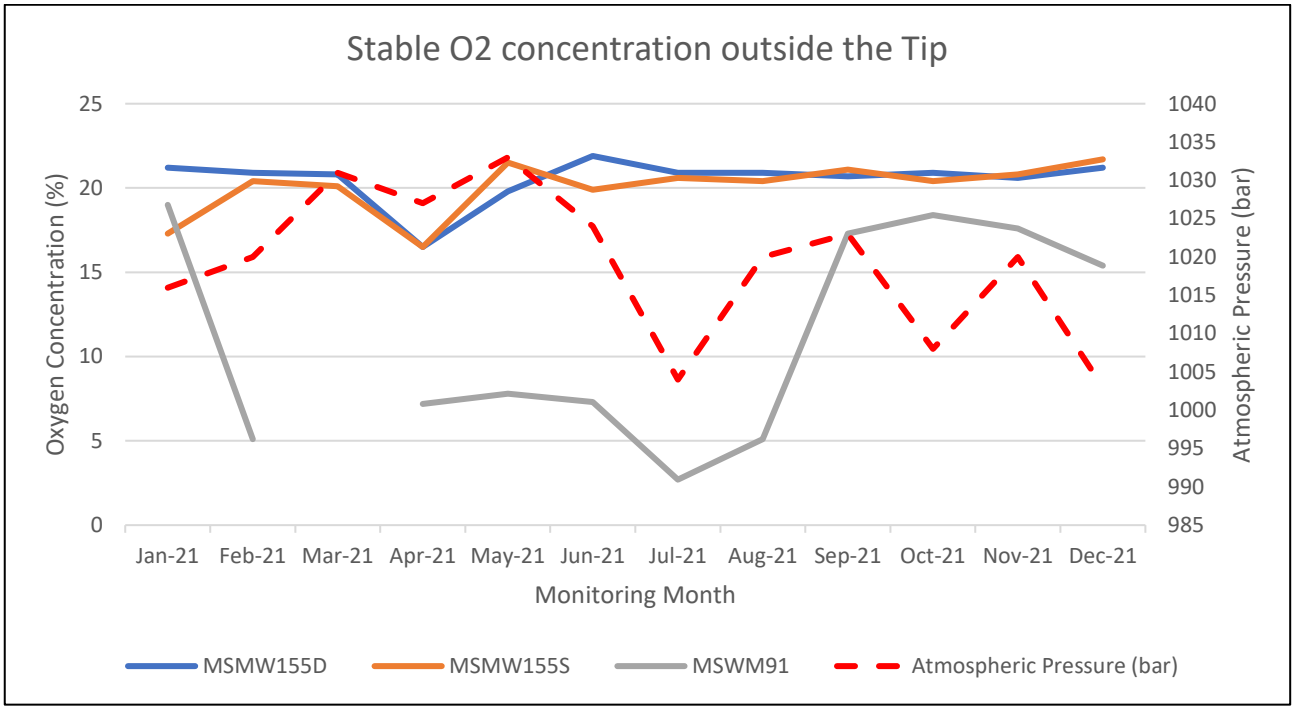


Figure 5: Oxygen Concentrations in Boreholes Outside the Tip.

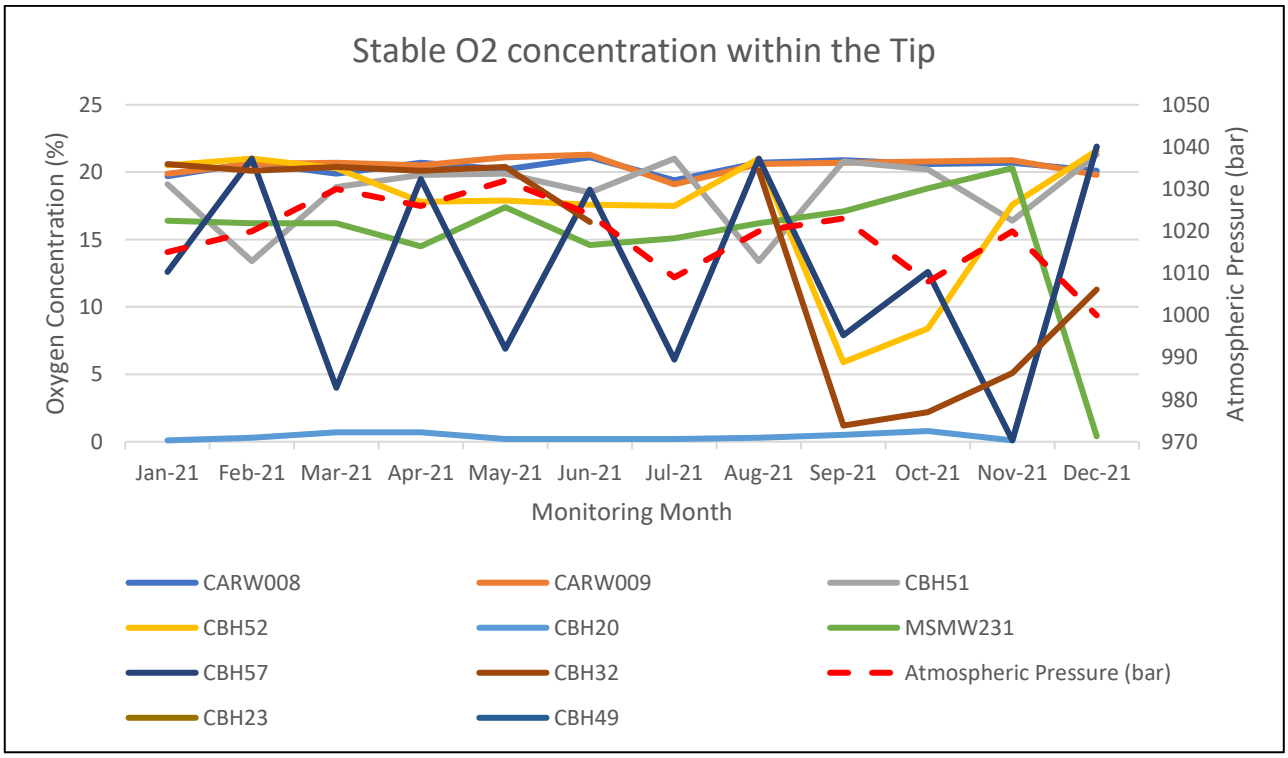


Figure 6: Oxygen Concentrations in Boreholes within the Tip.

Based on the gas monitoring dataset for 2021, there does not appear to be an obvious link between boreholes with greater thicknesses of free phase hydrocarbons and elevated gas concentrations. Landfill gas monitoring results recorded during 2021 are summarised in Table 7.

7.3 Gas Flow Rates

Recorded gas flow rates were variable during 2021, the lowest reading (-10.5l/hr) was recorded in July in borehole CARW008, the lowest recorded gas flow rate in 2020 was also recorded at monitoring location CARW008. CARW008 is located on the southern margin of the Tip, with the response zone in Made Ground. The highest gas flow rate (4.99l/hr) was recorded in January in borehole CBH32. CBH32 is located in the north east of the Tip, with the response zone located within the landfill material of the Tip.

Table 7: Landfill Gas Concentration Summary

Monitoring location	Location	Methane (%)		Carbon dioxide (%)		Oxygen (%)	
		Min	Max	Min	Max	Min	Max
CARW008	In waste on SE boundary	<0.1	2.4	0.6	2.4	19.4	21.1
CARW009	In waste on SE boundary	<0.1	1.4	0.2	2.6	19.1	21.3
CBH20	In waste within central section	<0.1	8.6	0.1	9.5	0.1	21.9
CBH32	In waste within central section	<0.1	5.8	0.1	13.2	1.2	20.6
CBH49	In waste within central section	<0.1	79.9	0.1	4.8	6.9	21.7
CBH51	In waste within central section	<0.1	6.2	0.1	9.6	13.4	21.3
CBH52	In waste within central section	<0.1	8.6	0.1	7.7	5.9	21.6
CBH57	In waste within central section	0.1	10.6	0.1	8.1	0.1	21.9
CBH23	In waste within central section	<0.1	4	0.1	1.7	17.8	21.1
MSMW231	In waste within central section	2.7	60.4	1.5	4.1	0.4	20.3
MSMW155s	Beyond W boundary of landfill area	<0.1	3.2	<0.1	2	16.5	21.7
MSMW91	Beyond W boundary of landfill area	<0.1	0.3	<0.1	13.5	2.7	19
MSMW155d	Beyond W boundary of landfill area	<0.1	0.3	0.1	1.7	16.5	21.9

8 Commentary

Groundwater levels, NAPL, groundwater quality, surface water quality and landfill gas continued to be monitored in and around the Tip during 2021.

Groundwater levels were most variable in boreholes located in the central area of the Tip during 2021, and least variable on the southern and western margin of the Tip beyond the extent of the landfilled area.

Generally, more consistent occurrences and greater thicknesses of LNAPL were recorded in the central and eastern areas of the Tip. The area in the west (the 'lower tip') which has previously undergone removal of bulk sources of free phase hydrocarbons has fewer recorded instances of LNAPL in boreholes and sumps.

DNAPL was not detected during monitoring rounds undertaken in 2021. Suspected DNAPL was previously measured only once in Sumps 18 and 19, in May 2020. These sumps are located on the northern boundary near the north east corner of the 'lower Tip', and are believed to be installed in waste material and/or ash. The suspected DNAPL recorded in 2020 is presumed to have originated from the main tip which is at a higher elevation, located to the south east of these sumps. During 2019, DNAPL was detected in five locations between January and March 2019. Two of these locations are upgradient of the sumps, CBH20 and CBH57, potentially suggesting a limited and localised DNAPL source within the central area of the Tip.

Elevated concentrations of metals, ammoniacal nitrogen, benzene and PAH in relation to the available Water Quality Standards were identified in groundwater samples recovered from boreholes located in the Tip. Three exceedances of calculated PNEC were recorded in groundwater during January and February, two for copper and one for zinc TPH concentrations in groundwater were generally less than 20,000µg/l throughout 2021, although concentrations above 100,000µg/l were recorded on two occasions in CBH46 (180,000µg/l) in June and in CBH20 (213,000µg/l) in February.

Limited exceedances of the relevant Water Quality Standards for metals, ammoniacal nitrogen and PAH compounds were recorded in surface water during 2021. Concentrations of TPH in surface water samples were generally low, with the exception of a concentration of 5,600µg/l recorded at SW1 in August. This concentration marginally exceeds the wider Coed Darcy Environmental Permit emission limit of 5,000µg/l for oil and grease.

Consistent with the heterogeneous nature of the waste material and presence of free phase hydrocarbons in the Tip, methane and carbon dioxide have been recorded at variable concentrations during 2021.

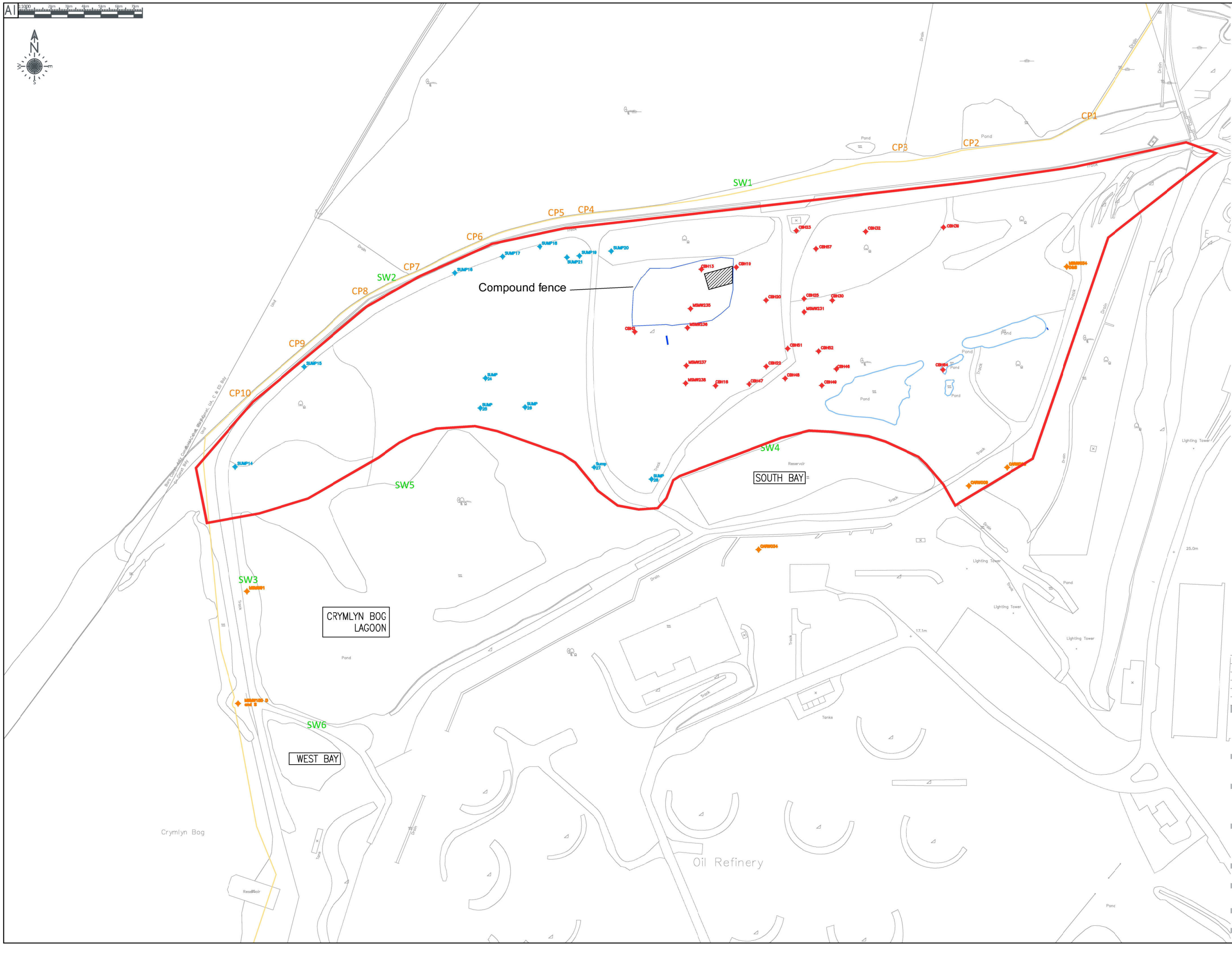
Following vegetation clearance works in early 2022, several additional wells have been located. These wells will be audited to assess their condition and serviceability to determine if they can be monitored and sampled. If these additional wells can be monitored and sampled, they will be added to the monitoring round from February 2022 onwards.

Oil recovery will continue from the peripheral trench, sumps and wells in 2022, where LNAPL is consistently measured at recoverable thicknesses. Continued monitoring will show the impact this has on the NAPL distribution and thickness.

The groundwater level, NAPL, groundwater quality, surface water quality and landfill gas monitoring will continue throughout 2022 to increase the dataset which will in time inform suitable compliance and control limits to be used in the preparation of a closure and aftercare management plan. The monitoring results will also continue to be reviewed on a monthly basis to determine the efficacy of the current approach to oil recovery at the Tip and to identify if improvements can be made.

At the time of writing, a specification is being produced for the remediation of the Tip. The specification is due to be issued for tender late February / early March, with works proposed to begin in Summer 2022. Remedial works associated with the specification will be documented in future annual summary reports.

Appendix A Site Plans



NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sanpling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY
P1	13:02:20	Added more boreholes to loation plan	JP

PJA

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Longbridge - Birmingham
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Exeter - London - Reading
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CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK201	P2

Revision Letter : P - Prlim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	BAI	27.01.21

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Appendix B Borehole Logs

Celtic
Design and Construct Remediation

Borehole Number: CBH2

Date: 27 Jan 2009 | Easting: 270302.000

Project No: C1296 | Engineer: MS | Northing: 195534.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.50 - 10.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
3.50m					MADE GROUND: Waste Tip Fill.			
					Continued next sheet			

Comments:

CBH2

Celtic
Design and Construct Remediation

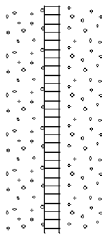
Borehole Number: CBH2

Date: 27 Jan 2009 | Easting: 270302.000

Project No: C1296 | Engineer: MS | Northing: 195534.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.50 - 10.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					PEAT:	10.20		
					End of Borehole	10.50		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH13

Date: 29 Jan 2009 | Easting: 270343.000

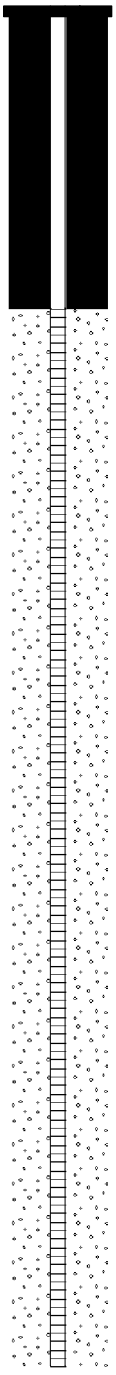
Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH13

Celtic
Design and Construct Remediation

Borehole Number: CBH13

Date: 29 Jan 2009 | Easting: 270343.000

Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
▽ 9.50m					MADE GROUND: Waste Tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH13

Celtic
Design and Construct Remediation

Borehole Number: CBH16

Date: 9 Feb 2009 | Easting: 270351.000

Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
▽ 6.00m					MADE GROUND: Waste Tip Fill. Black oil Continued next sheet			

Comments:

CBH16

Celtic
Design and Construct Remediation

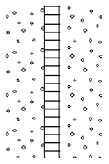
Borehole Number: CBH16

Date: 9 Feb 2009 | Easting: 270351.000

Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH19

Date: 29 Jan 2009 | Easting: 270362.000

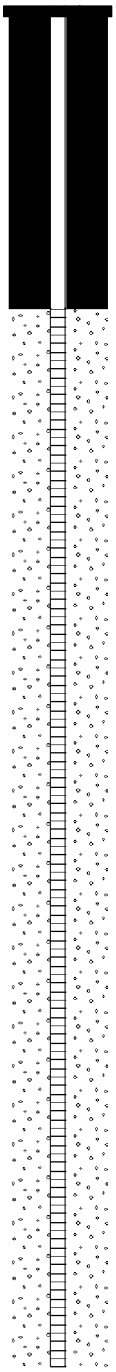
Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH19

Date: 29 Jan 2009 | Easting: 270362.000

Project No: C1296 | Engineer: MS | Northing: 195572.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
9.00m					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH19

Celtic
Design and Construct Remediation

Borehole Number: CBH20

Date: 27 Jan 2009 | Easting: 270832.000

Project No: C1296 | Engineer: MS | Northing: 195553.000

Site Location: BP Former Llandarcy | Method: CP | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 0.80 - 7.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: mixture of compacted grey to black clay, gravels and cobbles (up to 10 cm)			
					MADE GROUND: Mixture of black ash, brick fragments, gravel and brown clay.	2.50		
					End of Borehole	7.50		

0 1 2 3 4 5 6 7 8 9

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH23

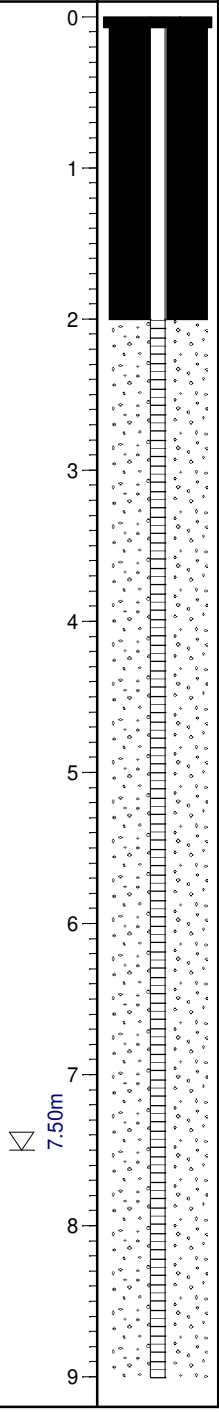
Date: 4 Feb 0009 | Easting: 270401.000

Project No: C1296 | Engineer: MS | Northing: 195595.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			



Comments:

CBH23

Celtic
Design and Construct Remediation

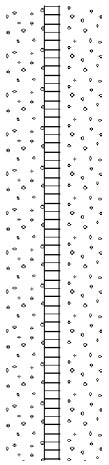
Borehole Number: CBH23

Date: 4 Feb 0009
Easting: 270401.000

Project No: C1296
Engineer: MS
Northing: 195595.000

Site Location: BP Former Llandarcy
Method: ODEX
Datum: -

Client: St. Modwen
Hole Diameter: 200mm
Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					PEAT:	11.90		
					End of Borehole	12.00		

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Comments:

CBH23

Celtic
Design and Construct Remediation

Borehole Number: CBH25

Date: 30 Jan 2009 | Easting: 270405.000

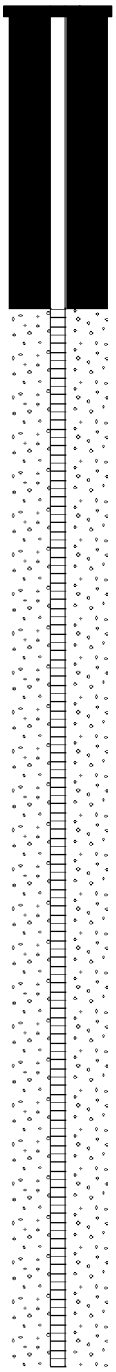
Project No: C1296 | Engineer: MS | Northing: 195554.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH25

Date: 30 Jan 2009 | Easting: 270405.000

Project No: C1296 | Engineer: MS | Northing: 195554.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
9.00m					MADE GROUND: Waste tip Fill.			
					PEAT:	11.00		
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

CBH25

Celtic
Design and Construct Remediation

Borehole Number: CBH32

Date: 4 Feb 0009 | Easting: 270442.000

Project No: C1296 | Engineer: MS | Northing: 195595.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
1.50m					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

Comments:

CBH32

Celtic
Design and Construct Remediation

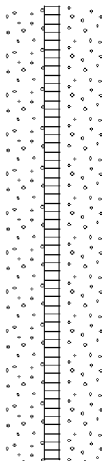
Borehole Number: CBH32

Date: 4 Feb 0009
Easting: 270442.000

Project No: C1296
Engineer: MS
Northing: 195595.000

Site Location: BP Former Llandarcy
Method: ODEX
Datum: -

Client: St. Modwen
Hole Diameter: 200mm
Screen Position: 1.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

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Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH39

Date: 5 Feb 2009 | Easting: 270489.000

Project No: C1296 | Engineer: MS | Northing: 195598.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
4.50m					MADE GROUND: Waste tip Fill.			
					Continued next sheet			

Comments:

CBH39

Celtic
Design and Construct Remediation

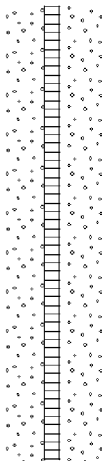
Borehole Number: CBH39

Date: 5 Feb 2009 | Easting: 270489.000

Project No: C1296 | Engineer: MS | Northing: 195598.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 2.00 - 12.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste tip Fill.			
					End of Borehole	12.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

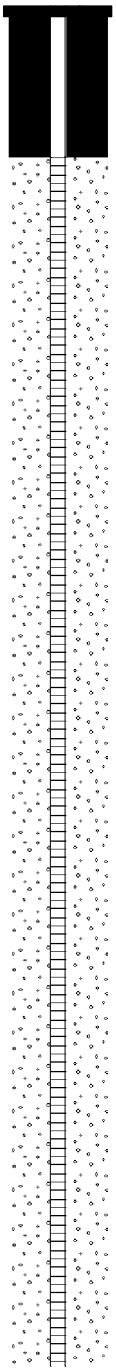
Borehole Number: CBH47

Date: 23 Jul 2009 | Easting: 270372.000

Project No: C1296 | Engineer: MS | Northing: 195500.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip Fill.			
						8.60		
					Continued next sheet			

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH47

Date: 23 Jul 2009 | Easting: 270372.000

Project No: C1296 | Engineer: MS | Northing: 195500.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH48

Date: 23 Jul 2009 | Easting: 270394.000

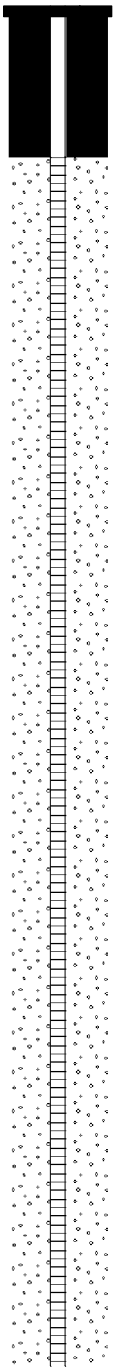
Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
						8.80		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH48

Celtic
Design and Construct Remediation

Borehole Number: CBH48

Date: 23 Jul 2009 | Easting: 270394.000

Project No: C1296 | Engineer: MS | Northing: 195502.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

CBH48

Celtic
Design and Construct Remediation

Borehole Number: CBH51

Date: 22 Jul 2009 | Easting: 270393.000

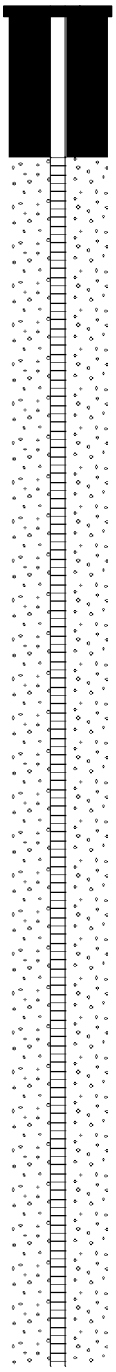
Project No: C1296 | Engineer: MS | Northing: 195523.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH51

Celtic
Design and Construct Remediation

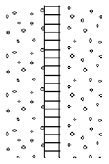
Borehole Number: CBH51

Date: 22 Jul 2009 | Easting: 270393.000

Project No: C1296 | Engineer: MS | Northing: 195523.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH52

Date: 22 Jul 2009 | Easting: 270415.000

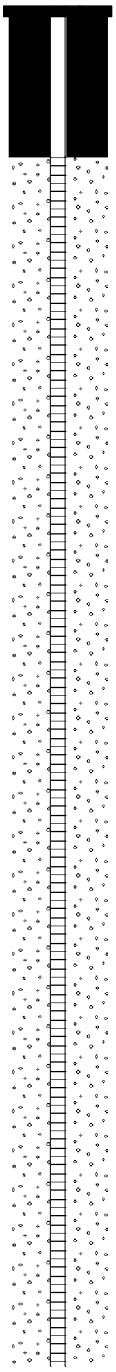
Project No: C1296 | Engineer: MS | Northing: 195525.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
						8.70		
					Continued next sheet			

0 1 2 3 4 5 6 7 8 9



Comments:

CBH52

Celtic
Design and Construct Remediation

Borehole Number: CBH52

Date: 22 Jul 2009 | Easting: 270415.000

Project No: C1296 | Engineer: MS | Northing: 195525.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					PEAT:	9.00		
					End of Borehole			

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH57

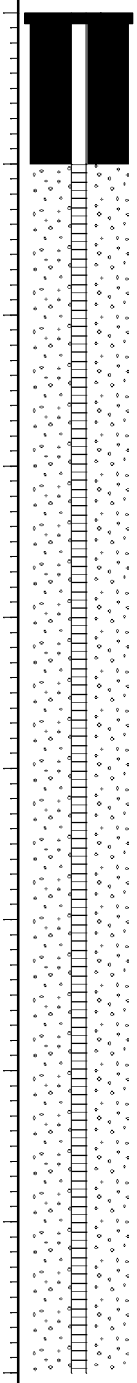
Date: 24 Jul 2009 | Easting: 270410.000

Project No: C1296 | Engineer: MS | Northing: 195585.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					Continued next sheet			



Comments:

CBH57

Celtic
Design and Construct Remediation

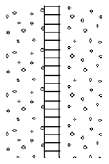
Borehole Number: CBH57

Date: 24 Jul 2009 | Easting: 270410.000

Project No: C1296 | Engineer: MS | Northing: 195585.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 10.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					PEAT:	9.60		
					End of Borehole	10.00		

9 10 11 12 13 14 15 16 17 18

Comments:

Celtic
Design and Construct Remediation

Borehole Number: CBH64

Date: 29 Jul 2009 | Easting: 270483.000

Project No: C1296 | Engineer: MS | Northing: 195513.000

Site Location: BP Former Llandarcy | Method: ODEX | Datum: -

Client: St. Modwen | Hole Diameter: 200mm | Screen Position: 1.00 - 9.00m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: Waste Tip fill.			
					PEAT:	8.40		
					End of Borehole			

0 1 2 3 4 5 6 7 8 9

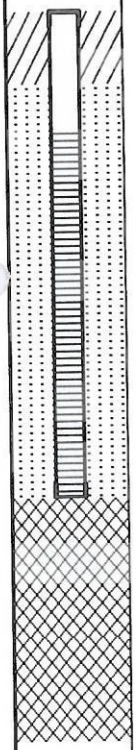
Comments:

CBH64

BOREHOLE NUMBER: CARW008

PAGE 1 of 1

DRILLING DATES: 17/01/01	DRILLING METHODS : Percussive
DRILLER : Geotechnical	BOREHOLE DIAMETER : ~100mm
LOGGED BY : URS	SCREEN TYPE & DIAM: UPVC 50mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
				0.0		Loose, black, sandy, fine GRAVEL comprising Ash. MADE GROUND	Dry, NVO
		*47.6		0.5		Sticky, black sandy GRAVEL, some grease. (MADE GROUND)	Sticky product. Mod odour
		*37.4		1.0		As above but fine-medium GRAVEL. (MADE GROUND)	Damp from 0.85m, wet from 1.0m. Mod odour
		*237		2.0			
		*3.5		2.5		Soft, brown, silty CLAY	Dry, NVC, slight odour
						Soft, very light brown CLAY. Drilled to 3.0m, collapsed to 2.0m	
				3.0		End of Borehole	Dry-moist. NVO
				3.5			
				4.0			
				4.5			
				5.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

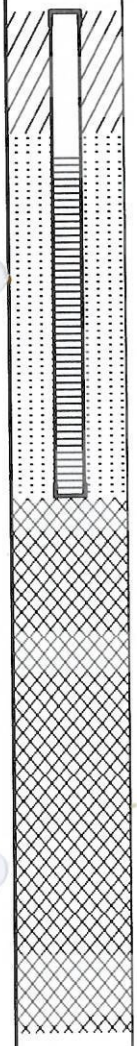
URS

App'd:	Date: 05/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: CARW009

PAGE 1 of 1

DRILLING DATES: 09/01/01 - 10/01/01	DRILLING METHODS :
DRILLER : Geotechnical	BOREHOLE DIAMETER :
LOGGED BY : SC	SCREEN TYPE & DIAM:
CHECKED BY :	SCREEN SLOT SIZE:



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
				0.0		Soft-loose, black, fine-coarse GRAVEL with patches of sandy silt. Grades into gravelly, silty SAND from 0.6m. Lump of sticky grease at 0.65m MADE GROUND	Wet, slight odour
		*4.2		0.5			
		*3.4				Soft, med brown, slightly clayey, slightly sandy SILT with occasional gravels and cobbles. (MADE GROUND)	Wet. Manure-like odour
		*3.5		1.0		Med-soft grey/black clayey SILT.	Damp. Manure odour, some staining
		*14.5		1.5		Very soft, brown/grey/black, slightly gravelly, clayey, sandy SILT. More clayey at 2.0m, but remains soft. Becomes sandier and firmer (compressed) from 2.3m	Very damp, slight odour, some staining. Odour decreases with depth
		*2.2		2.0			
		*1.5		2.5			
		*1.3		3.0		Firm, grey (with some orange streaks), clayey, very sandy SILT. Becoming more clayey from 3.2m	Moist. NVO. Some chicken wire
		*0.5		3.5		Loose, med brown, gravelly SAND. Very gravelly from 3.5m	
				4.0		Med-dense, med brown, gravelly, very sandy SILT	
						End of Borehole	
				4.5			
				5.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

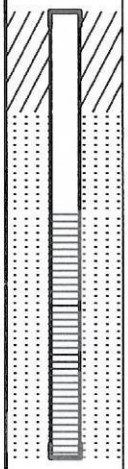
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 05/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: CARW034	PAGE 1 of 1
							DRILLING DATES: 20/06/01	DRILLING METHODS : Percussive
							DRILLER : Geotechnical	BOREHOLE DIAMETER : ~100mm
							LOGGED BY : NL	SCREEN TYPE & DIAM: UPVC 50mm
							CHECKED BY :	SCREEN SLOT SIZE: 1mm



DESCRIPTION	COMMENTS
Soft, brown, silty PEAT	Strong odour
SAMPLE LOST DUE TO HIGH WATER CONTENT	
Mottled orange/grey sandy SILT with some clay and occasional gravel. Gravel concentration increasing with depth, resulting in harder drilling.	Sheen and odour. Some free phase product. Heavy staining throughout.
End of Borehole	

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

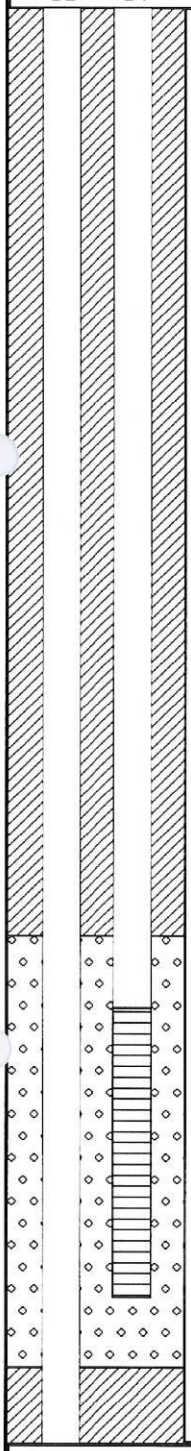
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: **MSMW034D1/D2**		PAGE 1 of 2
START DATE: 21/4/99	DRILLING METHOD: ROTARY AIR FLUSH	
FINISH DATE: 21/4/99	BOREHOLE DIAMETER: 165 mm	
DRILLER: R1	SCREEN TYPE & DIAMETER: 50/19 mm ID UPVC	
LOGGED BY: MC APPR'D BY:	SCREEN SLOT SIZE: 0.5/1 mm	



DEPTH (m)	DESCRIPTION	COMMENTS
0	Grey-dark grey sandy gravelly CLAY with sandstone and brick fragments (MADE GROUND)	Strong hydrocarbon odour Moist
3.0	Dark brown-black peaty, gravelly CLAY with wood fragments (MADE GROUND)	Strong hydrocarbon odour
	Grey clayey GRAVEL	Damp - wet No odour
4.0	Dense brown gravelly, silty CLAY (BOULDER CLAY)	Dry No hydrocarbon odour
6.0	Dense brown clayey GRAVEL	Productive at 8.2 m but cased out at 9.6 m
		Moist
10		

LOCATION / NOTES:

1. All measurements in m below ground level

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

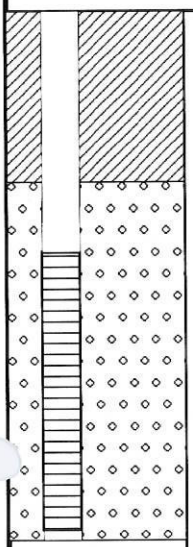
Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW034D1/D2**	PAGE 2 of 2
START DATE: 21/4/99	DRILLING METHOD: ROTARY AIR FLUSH
FINISH DATE: 21/4/99	BOREHOLE DIAMETER: 165 mm
DRILLER: R1	SCREEN TYPE & DIAMETER: 50/19 mm ID UPVC
LOGGED BY: MC APPR'D BY:	SCREEN SLOT SIZE: 0.5/1 mm

BOREHOLE CONSTRUCTION | SAMPLE NUMBER | SAMPLE TYPE | SOIL VAPOUR (ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY

DESCRIPTION	COMMENTS
Gravelly CLAY (BOULDER CLAY)	Moist
Dense coarse grey silty, sandy GRAVEL becoming more clayey at 11 m	No water in hole
ROCKHEAD - Dark grey MUDSTONE with occasional silty and sandy layers.	



10 11 12 13 14 15 16 17 18 19 20

LOCATION / NOTES:

1. All measurements in m below ground level

LEGEND

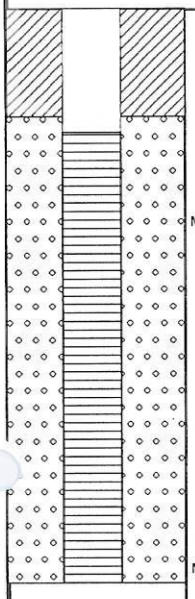
- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW091**	PAGE 1 of 1
START DATE: 5/3/99	DRILLING METHOD: Hydraulic Percussive
FINISH DATE: 5/3/99	BOREHOLE DIAMETER: 100 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: 50 mm UPVC
LOGGED BY: SG APPR'D BY:	SCREEN SLOT SIZE: 1 mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	Soft, brown sandy SILT with some clay.	Slight hydrocarbon odour.
		*123		Soft to very soft, orange-brown sandy SILT with occasional gravel.	
		*228	1.0		
MSMW091 1.5m		*1010		Soft, grey slightly gravelly sandy SILT with frequent cobbles.	Strong hydrocarbon odour.
		*366	2.0	Gravel at 1.9m	Heavy black staining at 1.9m
		*892			Very strong hydrocarbon odour.
		*475	3.0		
		*503		Gravel at 3.5m	
MSMW091 4.0m		*508	4.0		
			5.0		
			6.0		
			7.0		
			8.0	Borehole terminated at 4m.	
			9.0		
			10		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. DUP GG = MSMW091-1.5m.

LEGEND

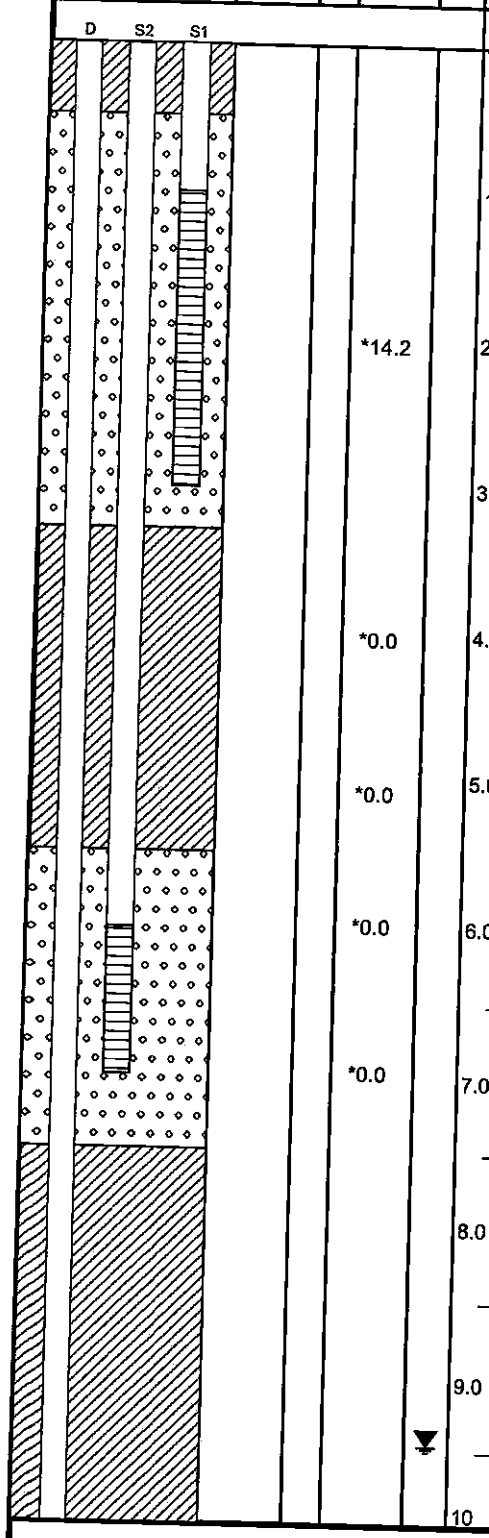
- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW156D, S1, S2**	PAGE 1 of 2
START DATE: 9/4/99	DRILLING METHOD: Cable Percussion/Rotary
FINISH DATE: 9/4/99	BOREHOLE DIAMETER: 200/165 mm
DRILLER: CP2/R1	SCREEN TYPE & DIAMETER: 50 mm ID UPVC
LOGGED BY: JC/DB APPR'D BY:	SCREEN SLOT SIZE: 0.5 mm



BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
					0		Loose mottled brown and grey sandy clayey SILT with frequent medium to coarse slag gravel, sandstone and brick fragments (MADE GROUND)	Dry Slight hydrocarbon odour
					1.0			
			*14.2		2.0		Soft dark brown and yellow PEAT	Very strong hydrocarbon odour and staining from 1.6-3.0m
					3.0			Damp No odour in peat from 3.0m
			*0.0		4.0			
			*0.0		5.0		becoming lighter in colour and red-brown at 5.5m	
			*0.0		6.0			
			*0.0		7.0		Soft grey-brown CLAY	No hydrocarbon odour Dry beneath bentonite seal No odour
					8.0			
					9.0		clay becoming gravelly at 9.0m	
							Loose grey-brown gravel	No odour Water strike at 10m - productive
					10			

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. Cable Percussion to 7.5 m, Rotary with ODEX from 7.5m to 14.0 m
3. Temporary 200 mm casing installed to 7.5 m during Rotary drilling and well installation

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

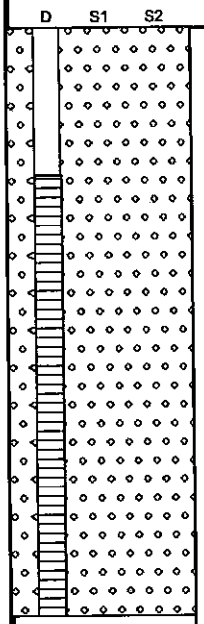
BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DCM GROUP DAMES & MOORE

BOREHOLE NUMBER: **MSMW156D, S1, S2**	PAGE 2 of 2
START DATE: 9/4/99	DRILLING METHOD: Cable Percussion/Rotary
FINISH DATE: 9/4/99	BOREHOLE DIAMETER: 200 mm
DRILLER: RD1	SCREEN TYPE & DIAMETER: 50 mm ID UPVC
LOGGED BY: JC/DB APPR'D BY:	SCREEN SLOT SIZE: 1 mm

BOREHOLE CONSTRUCTION | SAMPLE NUMBER | SAMPLE TYPE | SOIL VAPOUR (ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY



DESCRIPTION	COMMENTS
Loose grey-brown gravel	
gravel becoming more dense	No odour
ROCKHEAD - Soft grey MUDSTONE (BEDROCK)	No odour
Borehole terminated at 14.0 mbgl	

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)
2. Cable Percussion to 7.5 m, Rotary with

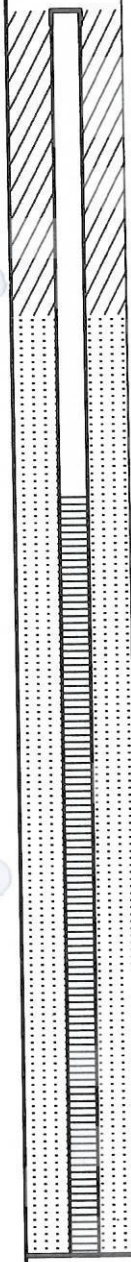
LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	SOIL & GROUNDWATER INVESTIGATION
Location	LLANDARCY REFINERY
Client	BP LLANDARCY LTD
App'd	DRAFT
Ref.	CR/MC/BRS
Date	MAY 99
Job No.	39991-004-401

DAMES & MOORE



BOREHOLE NUMBER: MSMW231	PAGE 1 of 2
DRILLING DATES: 03/04/01 - 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm

DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
0.0 – 5.0	MADE GROUND	Dark brown sandy/clayey fine-coarse GRAVEL. MADE GROUND Intermittent hard bands of concrete/rubble.	Oil/Free Product from 4.0m Wet/Oily
5.0 – 7.0	MADE GROUND	Fine-medium GRAVEL with silt and clay. MADE GROUND.	Wet/Oily
7.0 – 10.0	MADE GROUND	Medium, subangular GRAVEL fill with peat/fibrous plant remains. MADE GROUND Decreasing fibrous material from 8.0m Increasing amounts of ash and clinker.	Saturated with H/C Very poor returns

SAMPLE — NUMBER / TYPE | SOIL VAPOUR (ppm) | GROUNDWATER | BOREHOLE CONSTRUCTION

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: MSMW231	PAGE 2 of 2
DRILLING DATES: 03/04/01 - 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY		COMMENTS
					10.5		Small amounts of fibrous material, abundant ash and clinker. MADE GROUND	
					11.0			
					11.5		Gravelly CLAY. Borehole terminated and backfilled to 11m	
					12.0		End of Borehole	
					12.5			
					13.0			
					13.5			
					14.0			
					14.5			
					15.0			
					15.5			
					16.0			
					16.5			
					17.0			
					17.5			
					18.0			
					18.5			
					19.0			
					19.5			
					20.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

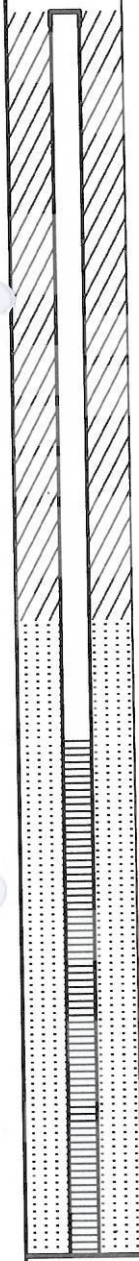
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: MSMW238	PAGE 1 of 3
DRILLING DATES: 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm



SAMPLE NUMBER	SAMPLE TYPE	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
		0.0		Light-dark brown, silty/clayey/sandy med-coarse GRAVEL fill with brick fragments, wood, plastic liner and clinker. MADE GROUND	
		0.5		Dark grey, gravelly/sandy CLAY with brick fragments and pipe lagging. MADE GROUND	
		4.0		As above plus abundant lagging foam between 4.0 and 5.0m. MADE GROUND	Saturated with dark, black H/C Abundant free product from 4.5m
		5.0			

SOIL VAPOUR (ppm) | GROUNDWATER

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE NUMBER: MSMW238

PAGE 2 of 3

DRILLING DATES: 05/04/01	DRILLING METHODS : Rotary Air Flush
DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
CHECKED BY :	SCREEN SLOT SIZE: 1mm

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY		COMMENTS
					5.5			
					6.0			
					6.5		Gravelly CLAY with abundant fibrous plant material (possibly peat). MADE GROUND	
					7.0		As above with decreasing gravel to fine-medium/coarse SAND with increasing clay. MADE GROUND	
					7.5		Decreasing clay and increasing fine-coarse, subrounded, reworked GRAVEL with clinker/rubble. MADE GROUND	
					8.0			
					8.5			
					9.0			
					9.5			
					10.0			

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

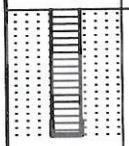
Location: Llandarcy Refinery

Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW238	PAGE 3 of 3
							DRILLING DATES: 05/04/01	DRILLING METHODS : Rotary Air Flush
							DRILLER : Tectonics	BOREHOLE DIAMETER : 250mm
							LOGGED BY : PW	SCREEN TYPE & DIAM: HDPE 100mm
							CHECKED BY :	SCREEN SLOT SIZE: 1mm



COMMENTS

10.5 End of Borehole

11.0

11.5

12.0

12.5

13.0

13.5

14.0

14.5

15.0

LOCATION / NOTES:

NVO = No visual or olfactory evidence

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: Containment Area Investigation

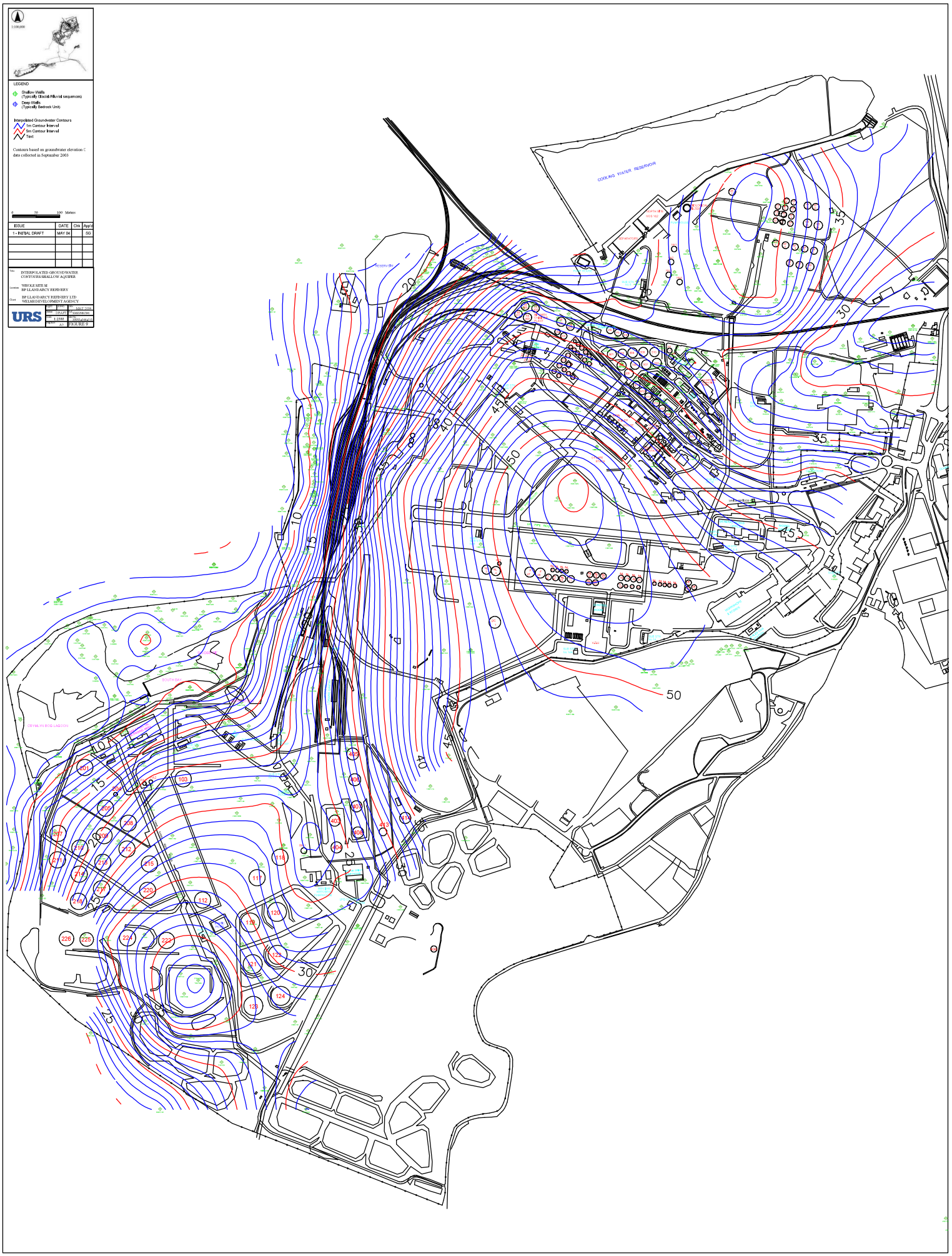
Location: Llandarcy Refinery

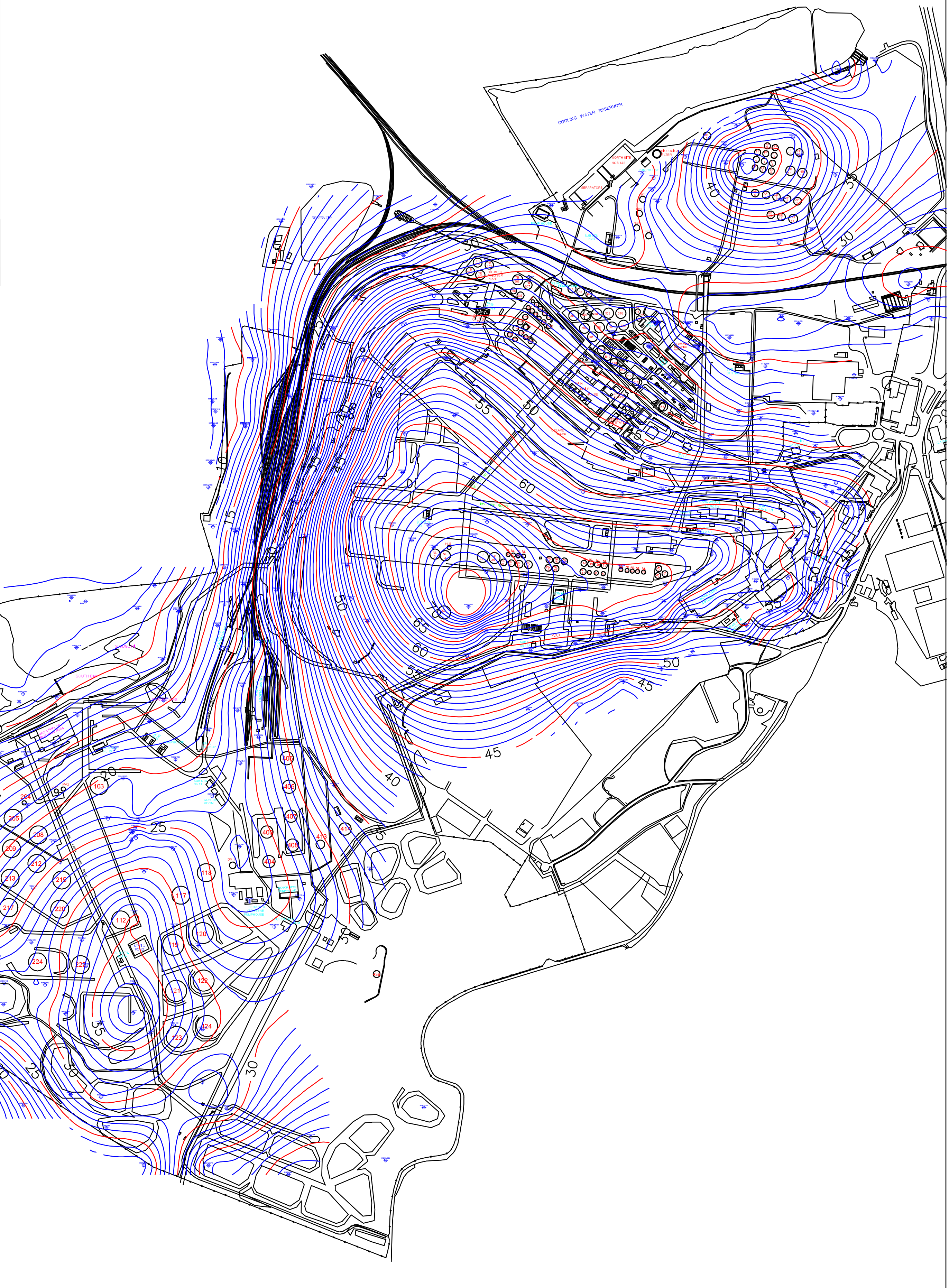
Client: BP Llandarcy Refinery

URS

App'd:	Date: 04/09/2002
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-016
Drg. Size: A4	BOREHOLE LOG

Appendix C URS groundwater drawings


LEGEND
Shallow Wells
(Typically Glacial/Alluvial sequences)
Deep Wells
(Typically Bedrock Unit)
Interpolated Groundwater Contours
1m Contour Interval
5m Contour Interval
Text
Contours based on groundwater elevation d
data collected in September 2003
0 50 100 Meters
ISSUE
DATE
Chk
Appd
1 - INITIAL DRAFT
MAY 04
SG
INTERPOLATED GROUNDWATER CONTOURS SHALLOW AQUIFER
WHOLE SITE SI
BP LLANDARCY REFINERY
BP LLANDARCY REFINERY LTD
WELSH DEVELOPMENT AGENCY
URS
FIGURE 9
COOLING WATER RESERVOIR
CRYMLYN BOG LAGOON



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LEGEND

- Shallow Wells (Typically Glacial/Alluvial sequences)
- Deep Wells (Typically Bedrock Unit)

Interpolated Groundwater Contours
- 1m Contour Interval
- 5m Contour Interval
- Text

Contours based on groundwater elevation data collected in September 2003

0 50 100 Meters

ISSUE	DATE	Chk	App'd
1 - INITIAL DRAFT	MAY 04		SG

Title: INTERPOLATED GROUNDWATER CONTOURS DEEP AQUIFER

Location: WHOLE SITE SI BP LLANDARCY REFINERY

Client: BP LLANDARCY REFINERY LTD WELSH DEVELOPMENT AGENCY

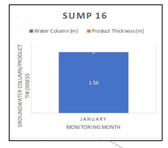
URS

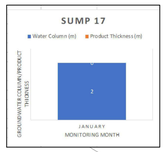
App'd:	Drawn:	Date: MAY 2004	
Status: DRAFT		Ref: SG/GIS/MAY04/1	
Scale: 1:2500		Job No.: 39991-044-785	
DrgSize: A0		FIGURE 10	

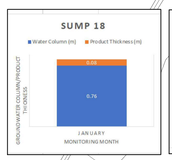
Appendix D NAPL thickness and distribution

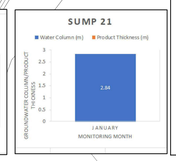
A1 1:1000 20 30 40 50 60 70

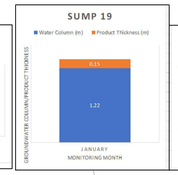
N W E S

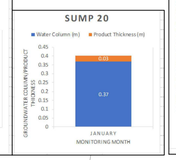


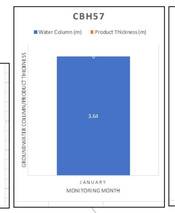


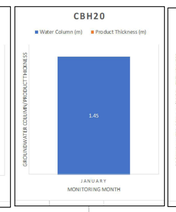


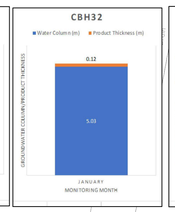


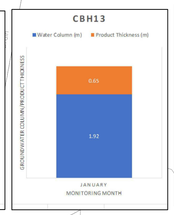


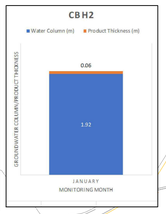


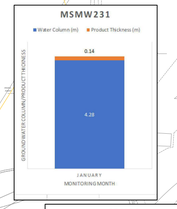


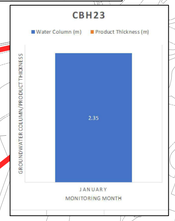


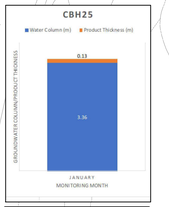


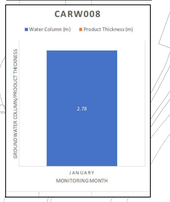


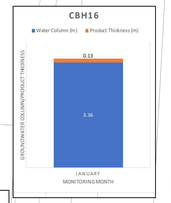


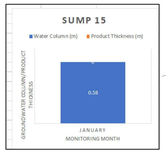


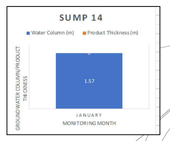


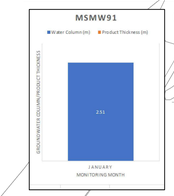


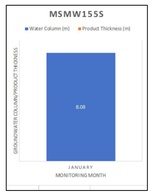


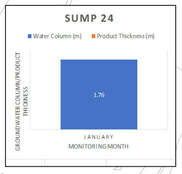


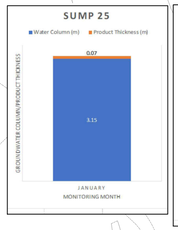


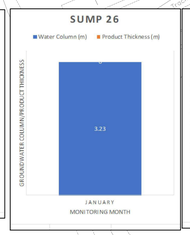


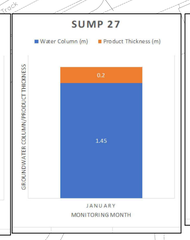


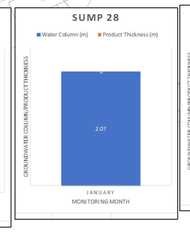


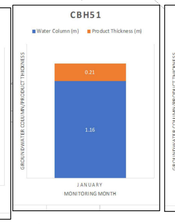


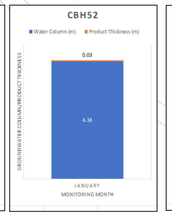


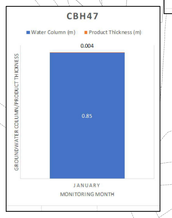












SW1 SW2 SW3 SW4 SW5 SW6

CP1 CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

Compound fence

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

CBH13 CBH19 CBH23 CBH32 CBH57 CBH20 CBH24 MSMW231 CBH25 CBH51 CBH52 CBH46 CBH64 MSMW238 CBH16 CBH47 CBH48

CARW008 CARW009 CARW034

MSMW91 MSMW155 D and S

SOUTH BAY

Oil Refinery

Crymlyn Bog

Reservoir

Pond Track Drain Lighting Tower 17.1m

NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA
Seven House - High Street
Longbridge - Birmingham
B31 2LQ - Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
January 2021

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK220	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	08.02.21

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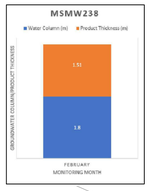

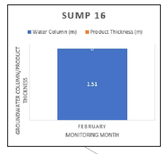

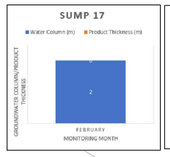

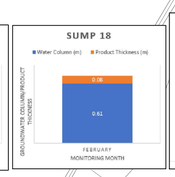

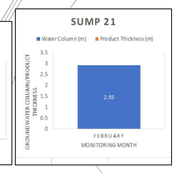

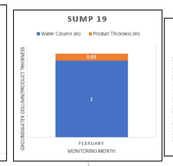

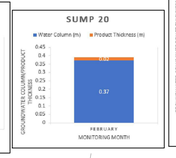

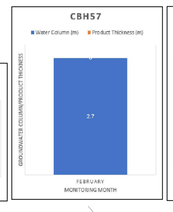

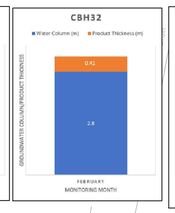

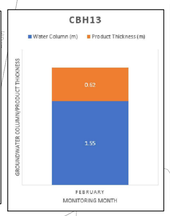

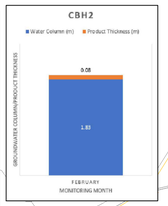

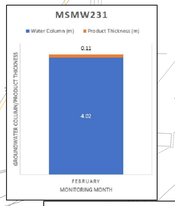

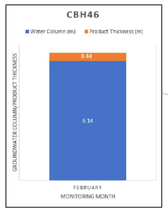

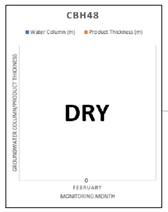

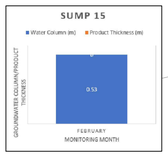

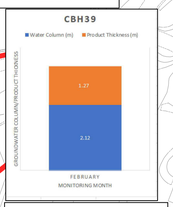

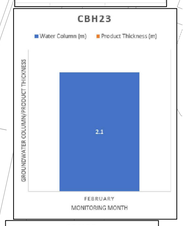

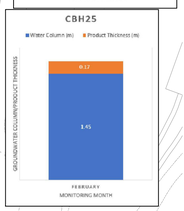

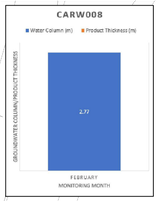

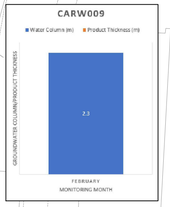

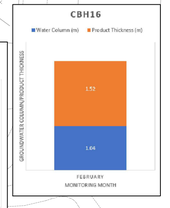

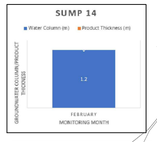

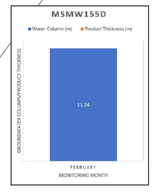

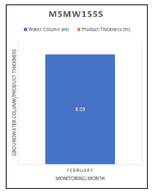

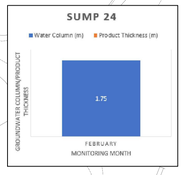

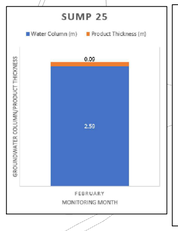

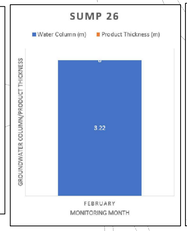

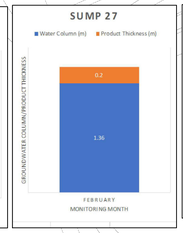

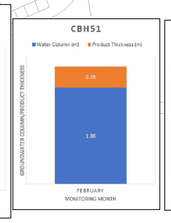

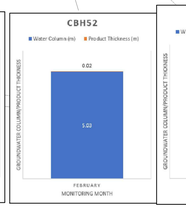

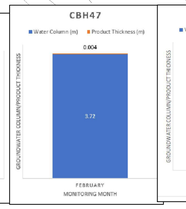

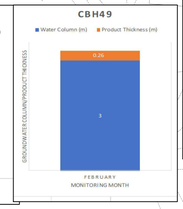

CP1 CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SW1 SW2 SW3 SW4 SW5 SW6

Compound fence

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

MSMW91 MSMW155 - D and S MSMW231 MSMW238

CBH2 CBH13 CBH16 CBH19 CBH20 CBH23 CBH25 CBH32 CBH39 CBH46 CBH47 CBH48 CBH49 CBH51 CBH52 CBH57 CBH64

CARW008 CARW009 CARW034

SOUTH BAY

Crymlyn Bog

Oil Refinery

NOTES

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KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA
Seven House - High Street
Longbridge - Birmingham
B31 2UQ . Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT: St Modwen Development Ltd

PROJECT: Coed Darcy

DRAWING TITLE: Crymlyn Tip Monitoring Location Plan February 2021

DRAWING ISSUE STATUS: INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO	REVISION
04020	- A -	SK221 -	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JAL	LC	09.03.21

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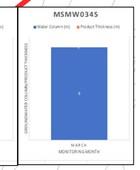

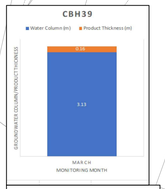

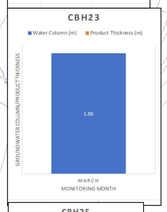

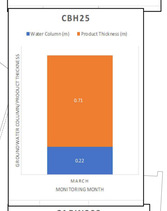

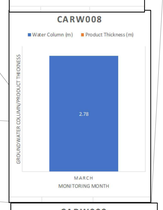

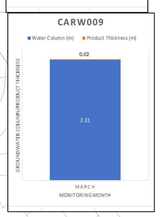

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CLIENT

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PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
March 2021

DRAWING ISSUE STATUS

INFORMATION

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04020	- A -	SK222 -	P0

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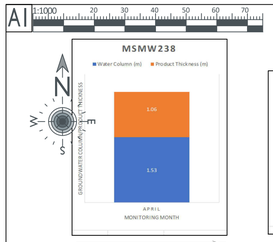

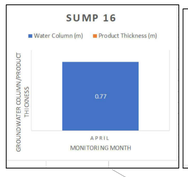

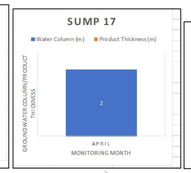

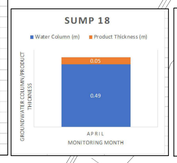

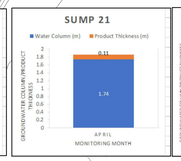

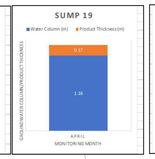

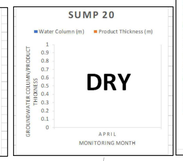

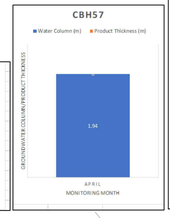

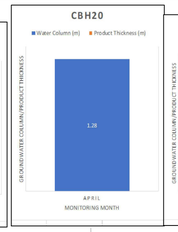

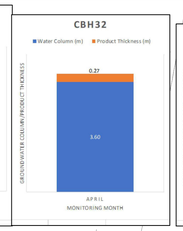

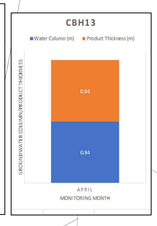

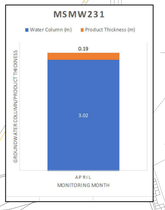

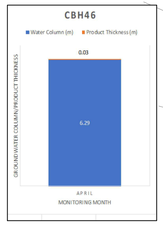

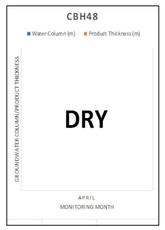

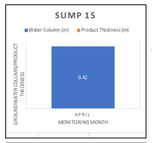

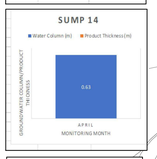

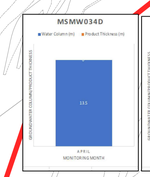

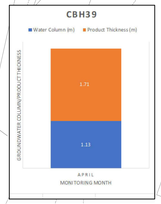

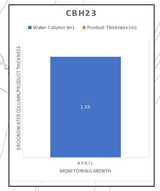

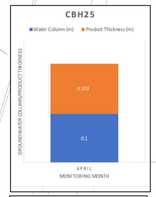

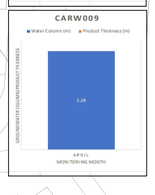

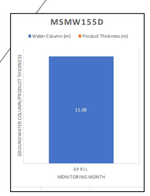

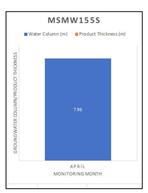

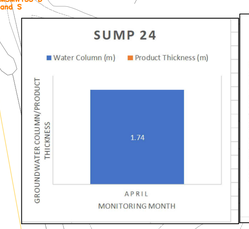

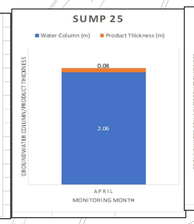

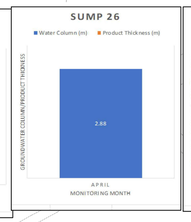

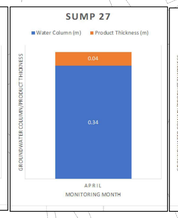

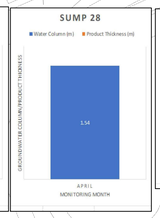

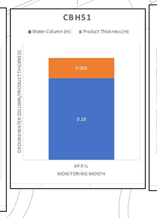

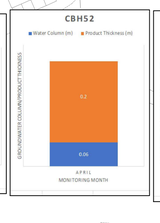

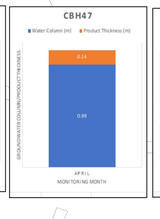

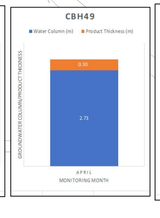

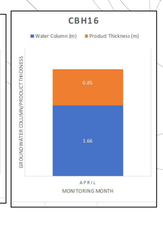

Compound fence

SW1 SW2 SW3 SW4 SW5

CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

CBH11 CBH19 CBH20 CBH23 CBH32 CBH39 CBH57 MSMW034 D and S MSMW231 CBH25 CBH51 CBH52 CBH46 CBH48 CBH49 CBH47 CBH16 MSMW238 CBH24 CBH64

MSMW91 MSMW155 D and S CARW034 CARW008 CARW009

SOUTH BAY

Crymlyn Bog

Oil Refinery

Reservoir

Pond Track Drain Lighting Tower 17.1m

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April 2021

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INFORMATION

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BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	06.05.21

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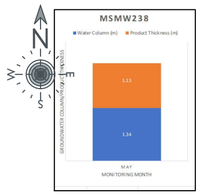

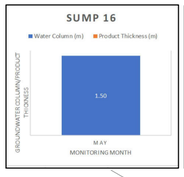

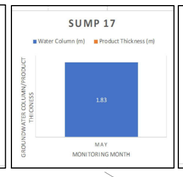

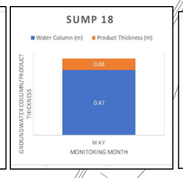

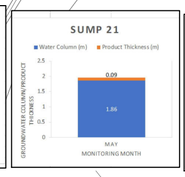

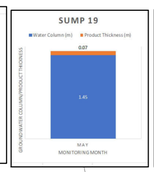

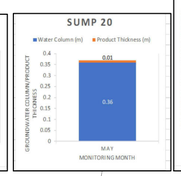

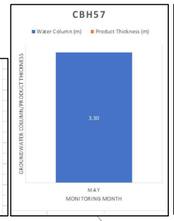

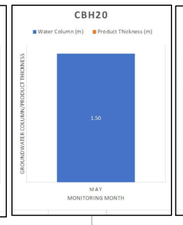

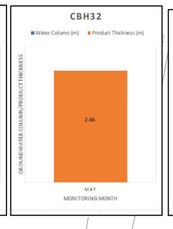

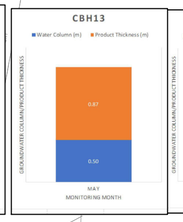

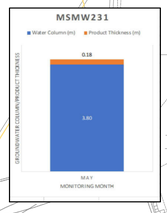

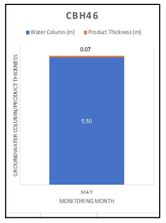

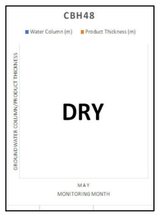

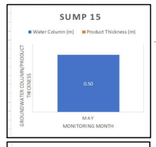

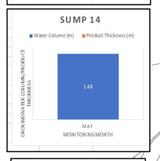

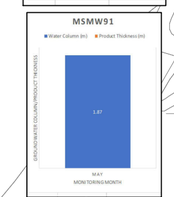

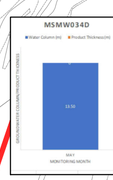

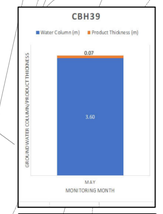

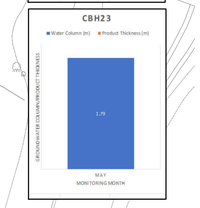

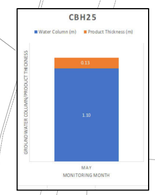

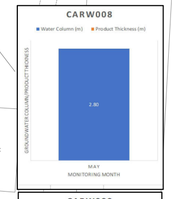

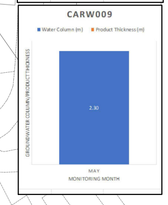

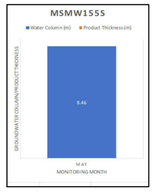

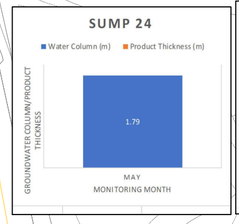

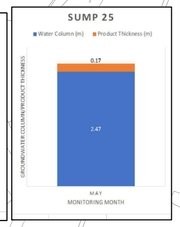

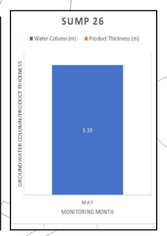

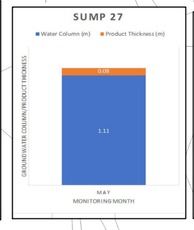

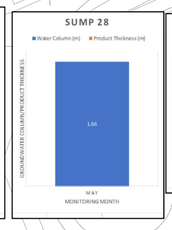

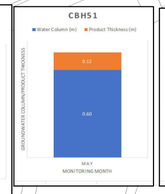

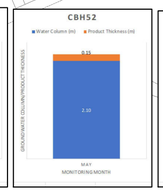

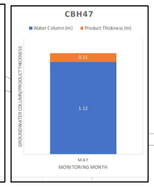

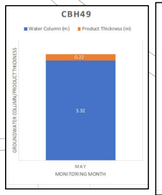

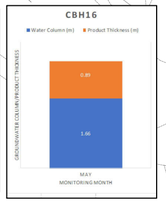

Compound fence

CP1 CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SW1 SW2 SW3 SW4 SW5

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

CBH16 CBH19 CBH20 CBH23 CBH24 CBH25 CBH32 CBH39 CBH46 CBH47 CBH48 CBH49 CBH51 CBH52 CBH57 CBH64

MSMW034D and S MSMW155 D and S MSMW231 MSMW238 MSMW91

CARW008 CARW009 CARW034

SOUTH BAY

Crymlyn Bog

Oil Refinery

Reservoir

Pond

Track

Drain

Lighting Tower

17.1m

NOTES

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KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA

Seven House - High Street
Longbridge - Birmingham
B31 2UQ - Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
May 2021

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK224	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	16.06.21

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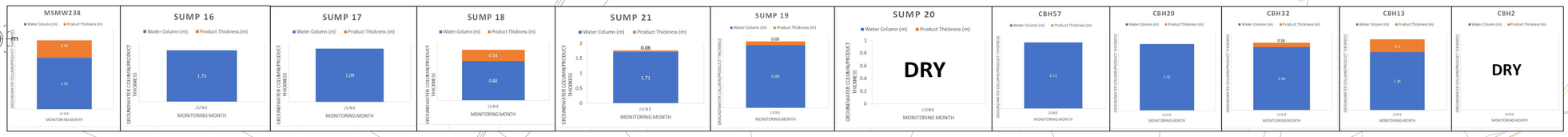

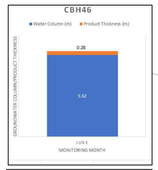

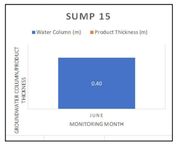

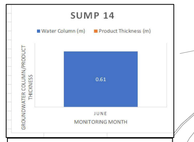

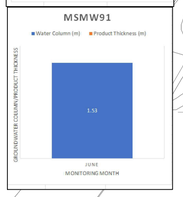

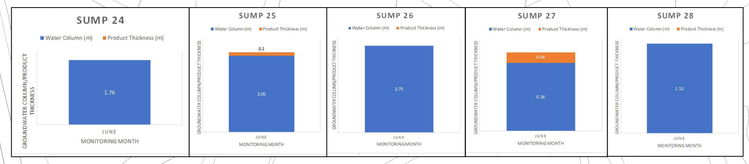

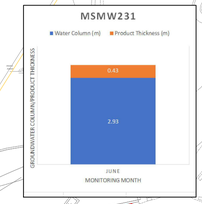

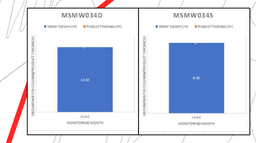

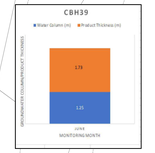

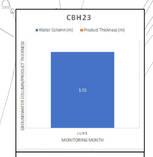

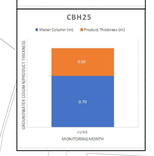

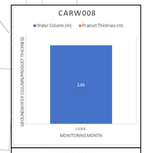

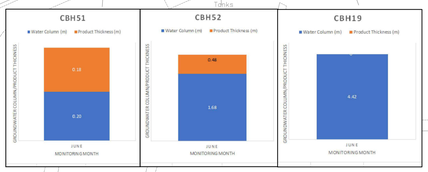

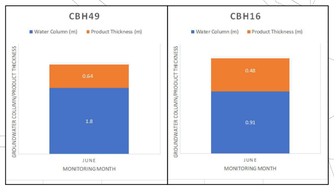

Compound fence

SW1 SW2 SW3 SW4 SW5 SW6

CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

MSMW91 MSMW155 D and S MSMW238 MSMW231

CBH11 CBH19 CBH23 CBH57 CBH32 CBH39 CBH20 CBH25 CBH24 CBH51 CBH52 CBH46 CBH48 CBH49 CBH16 CBH64 CBH34

CARW034 CARW009 CARW008

SOUTH BAY

Crymlyn Bog

Oil Refinery

Pond Track Drain Lighting Tower Tanks Reservoir 17.1m

NOTES

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KEY

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- Groundwater monitoring/sampling locations
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- CP7 Collection point

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Birmingham - Bristol
Exeter - London - Reading
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CLIENT
St Modwen Development Ltd

PROJECT
Coed Darcy

DRAWING TITLE
Crymlyn Tip
Monitoring Location Plan
June 2021

DRAWING ISSUE STATUS
INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK225	P0

Revision Letter : P - Predim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	30.07.21

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NOTES

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KEY

- Permit area
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REV	DATE	REVISION NOTE	BY
P1	11.08.21	Updated Graph CBH52	JP

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CLIENT
St Modwen Development Ltd

PROJECT
Coed Darcy

DRAWING TITLE
Crymlyn Tip
Monitoring Location Plan
July 2021

DRAWING ISSUE STATUS
INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO	REVISION
04020	A	SK226	P1

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
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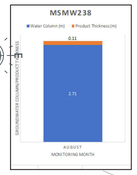

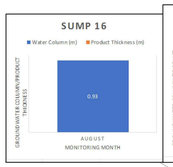

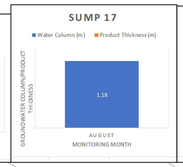

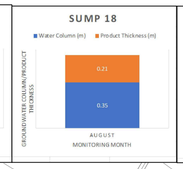

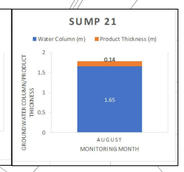

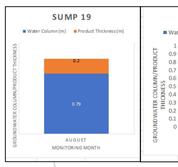

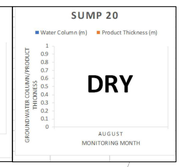

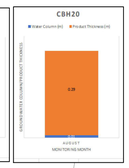

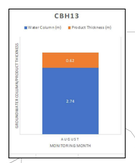

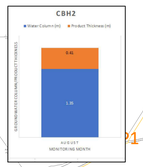

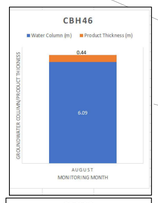

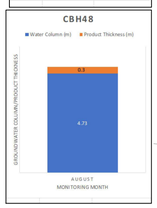

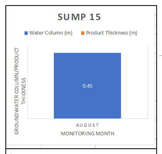

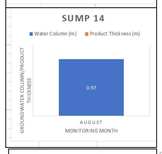

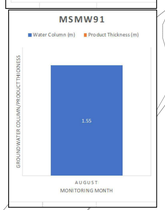

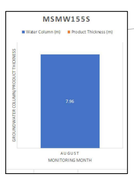

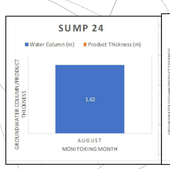

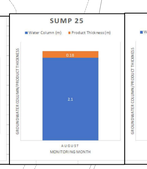

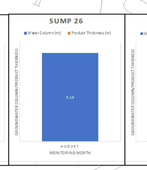

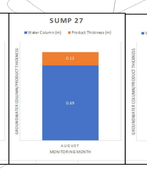

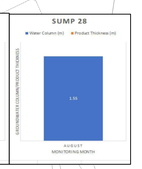

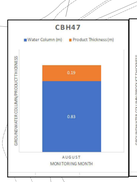

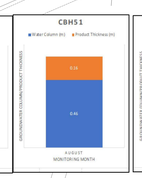

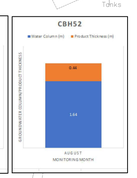

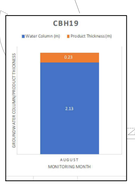

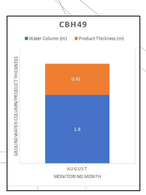

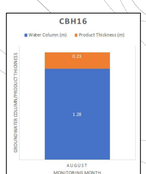

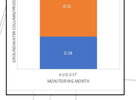

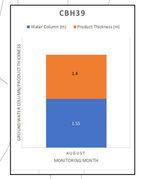

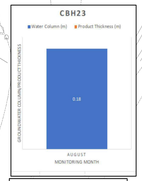

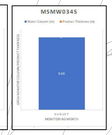

Compound fence

SW1 SW2 SW3 SW4 SW5 SW6

CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SUMP15 SUMP14 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

CBH11 CBH19 CBH23 CBH32 CBH57 CBH39 CBH20 MSMW231 CBH25 CBH24 CBH51 CBH52 CBH46 CBH49 CBH48 CBH47 MSMW238 CBH16 CBH64

MSMW034D and S CARW034 CARW009 CARW008 MSMW91 MSMW155 D and S

SOUTH BAY

Crymlyn Bog

Oil Refinery

Pond Track Drain Lighting Tower Tanks Reservoir Quarry Land 17.1m

NOTES

These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9

KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA
Seven House - High Street
Longbridge - Birmingham
B31 2UQ - Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
August 2021

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK227	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	14.09.21

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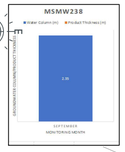
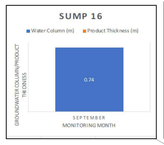
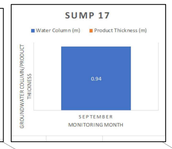
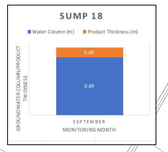
A1 1:1000 20 30 40 50 60 70

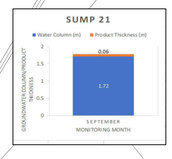
N W E S

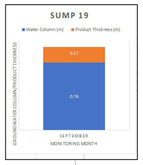


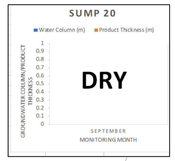


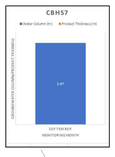


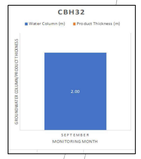


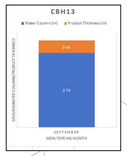


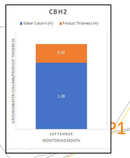


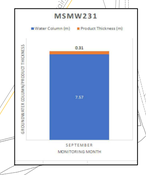


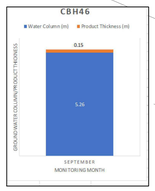


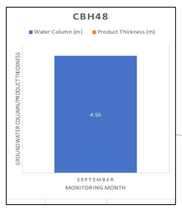


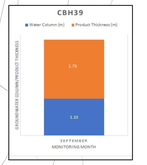


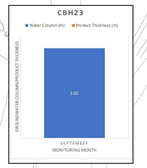


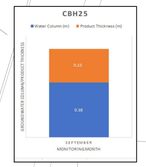


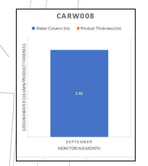


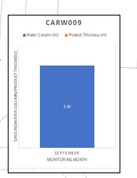


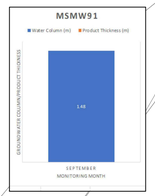


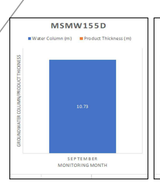


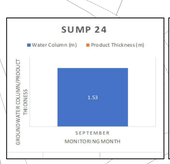


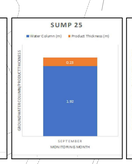


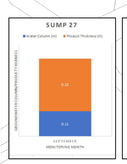


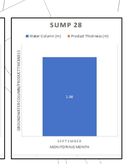


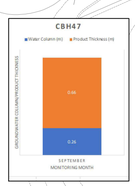


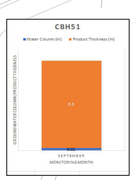


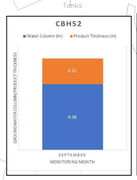


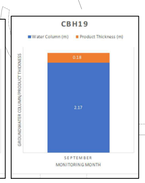


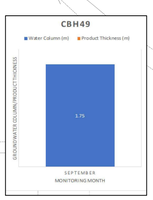


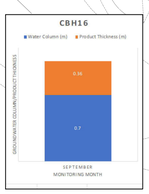












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CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

MSMW91 MSMW155 D and S MSMW231 MSMW034 D and S

CBH11 CBH16 CBH19 CBH20 CBH23 CBH25 CBH32 CBH39 CBH46 CBH47 CBH48 CBH49 CBH51 CBH52 CBH57 CBH64 MSMW238

CARW034 CARW009 CARW008

Compound fence

SOUTH BAY

Crymlyn Bog

Oil Refinery

Reservoir

Pond Track Drain Lighting Tower Tanks 17.1m

NOTES

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KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

PJA
Seven House - High Street
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Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
September 2021

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO	REVISION
04020	A	SK228	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	12.10.21

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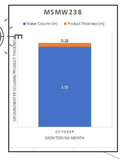

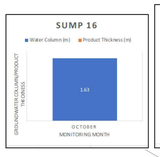

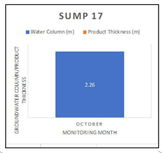

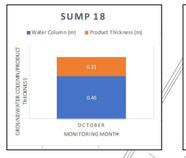

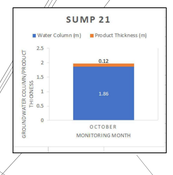

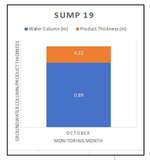

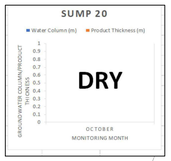

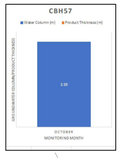

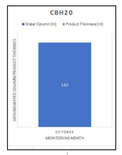

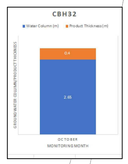

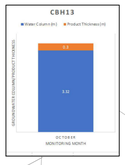

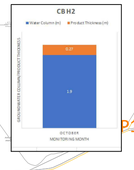

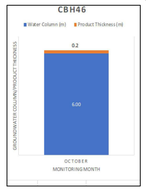

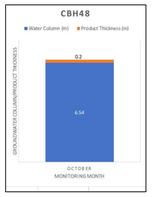

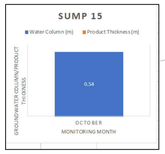

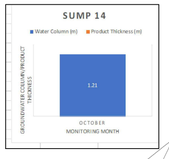

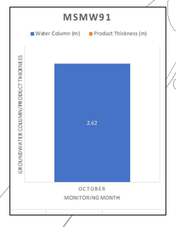

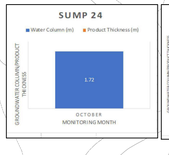

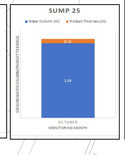

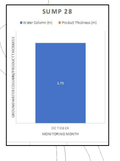

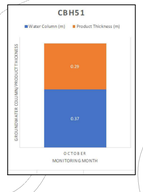

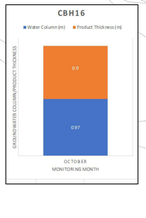

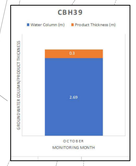

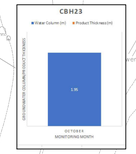

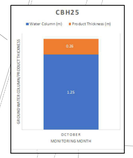

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PJA
Seven House - High Street
Longbridge - Birmingham
B31 2UQ - Tel: 0121 475 0234
Birmingham - Bristol
Exeter - London - Reading
pja.co.uk

CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
October 2021

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	A	SK229	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	09.11.21

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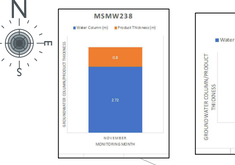

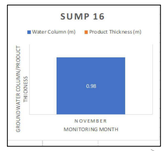

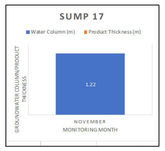

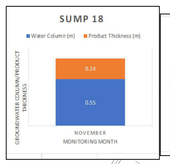

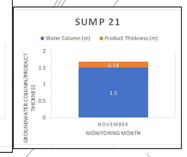

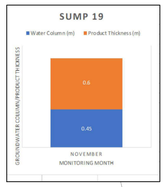

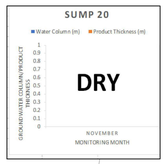

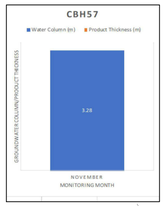

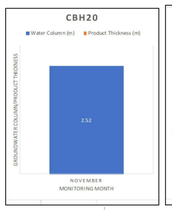

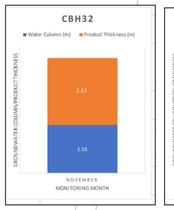

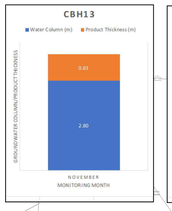

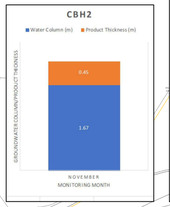

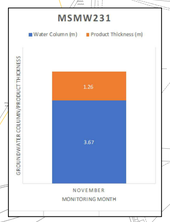

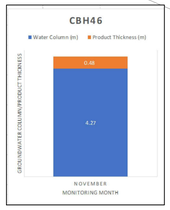

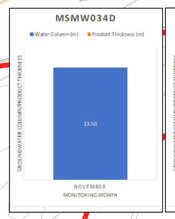

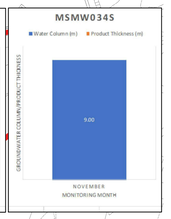

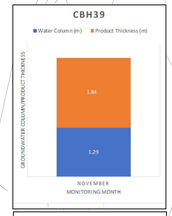

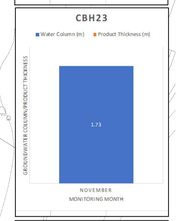

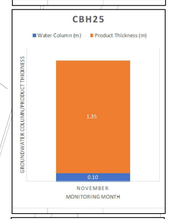

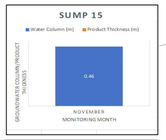

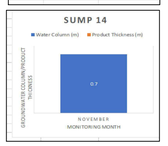

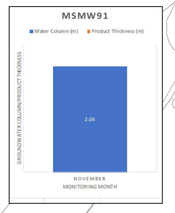

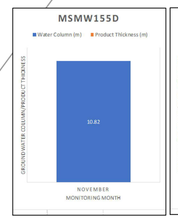

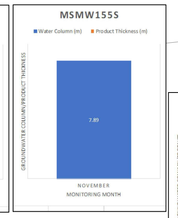

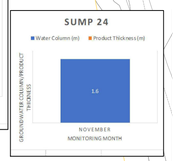

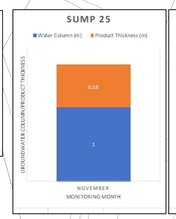

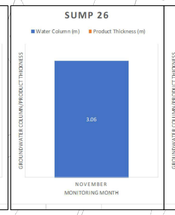

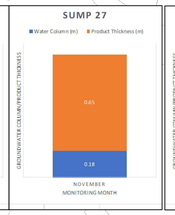

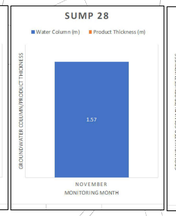

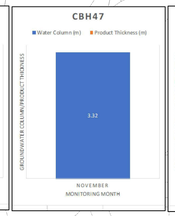

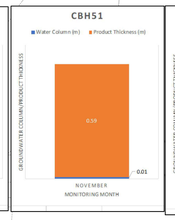

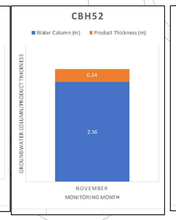

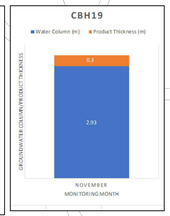

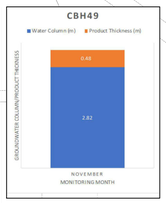

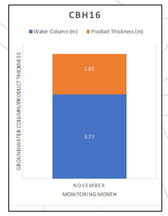

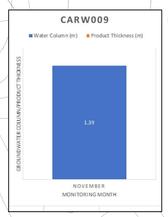

SW1 SW2 SW3 SW4 SW5 SW6

CP1 CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

Compound fence

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28 MSMW91 MSMW155 D and S CBH2 CBH13 CBH19 CBH20 CBH23 CBH25 CBH32 CBH39 CBH46 CBH47 CBH48 CBH49 CBH51 CBH52 CBH57 MSMW231 MSMW238 MSMW034 D and S CBH16 CBH64 CARW034 CARW009 CARW008

SOUTH BAY

Crymlyn Bog

Oil Refinery

Pond Track Drain Lighting Tower Tanks Reservoir Quarry Spoil Tip 17.1m

NOTES

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KEY

- Permit area
- SW1 Surface water sampling locations
- Groundwater monitoring/sampling locations
- Sump locations
- CP7 Collection point

REV	DATE	REVISION NOTE	BY

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Birmingham - Bristol
Exeter - London - Reading
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CLIENT

St Modwen Development Ltd

PROJECT

Coed Darcy

DRAWING TITLE

Crymlyn Tip
Monitoring Location Plan
November 2021

DRAWING ISSUE STATUS

INFORMATION

PJA JOB No.	SUB-CODE	DRAWING NO.	REVISION
04020	- A -	SK231 -	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	10.01.22

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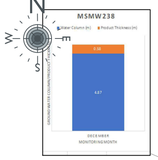
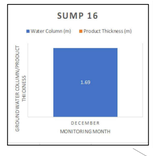
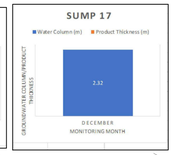
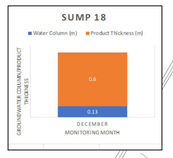
A1 1:1000 20 30 40 50 60 70

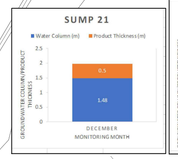
N W E S

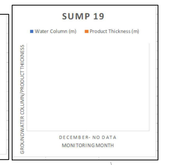


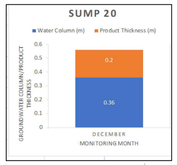


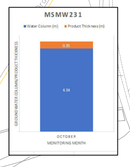


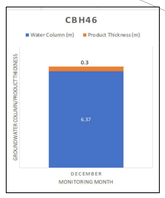


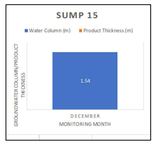


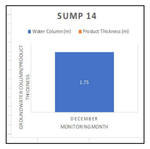


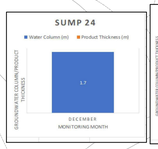


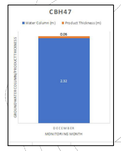


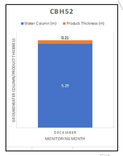


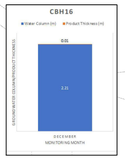












Compound fence

SW1 SW2 SW3 SW4 SW5 SW6

CP1 CP2 CP3 CP4 CP5 CP6 CP7 CP8 CP9 CP10

SUMP14 SUMP15 SUMP16 SUMP17 SUMP18 SUMP19 SUMP20 SUMP21 SUMP22 SUMP23 SUMP24 SUMP25 SUMP26 SUMP27 SUMP28

CBH11 CBH19 CBH24 CBH20 CBH23 CBH57 CBH32 CBH39 MSMW231 CBH25 MSMW034D and S CBH51 CBH52 CBH46 CBH49 CBH48 CBH64 MSMW238 CBH16 CBH47

CARW034 CARW009 CARW008

MSMW91 MSMW155S D and S

SOUTH BAY

Crymlyn Bog

Oil Refinery

Pond Track Drain Lighting Tower Tanks Reservoir 17.1m

NOTES

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REV	DATE	REVISION NOTE	BY

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Birmingham - Bristol
Exeter - London - Reading
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CLIENT
St Modwen Development Ltd

PROJECT
Coed Darcy

DRAWING TITLE
Crymlyn Tip
Monitoring Location Plan
December 2021

DRAWING ISSUE STATUS
INFORMATION

PJA JOB NO.	SUB-CODE	DRAWING NO.	REVISION
04020	- A -	SK232 -	P0

Revision Letter : P - Prelim / A - Approval / T - Tender / C - Construction

BIM DRAWING REFERENCE

SCALE	DRAWN	REVIEWED	DATE
A1@1:1000	JP	LC	06.01.22

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Appendix E Groundwater & Surface Water Laboratory Results

ALS

	Janaury	February	March	April	May	June	July	August	September	October	November	December
Customer Sample ID	CARW008	CARW008	CARW008	CARW008	CARW008	CARW008	CARW008	CARW008	CARW008	CARW008	CARW008	CARW008
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id												
Sample Type	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER
Sampled Date	27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	23/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021	05/01/2022
SDG	210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number	23630319	23794779	23968762	24193434	24398246	24603813	24798318	24876380	25122035	25288361	25416994	25559761
Sample Temperature	7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2	11.2
Sample Time												

Analysis	Test	Method	Units	LOD												UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT PNEC
Inorgani																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*0.323*	0.26	*0.751*	*0.36*	*0.36*	*0.349*	*0.558*	*0.59*	<0.2	<0.2	*0.557*	*0.668*				*0.3*		
	pH	TM256	pH Units	<1.00		16	7.01	7.57	7.07	6.94	7.1	6.98	6.9	7.07	7.12	7.1						
	Chloride	TM184	mg/l	<2	22.3	7.07	24.2	29.1	25.3	26	29.6	32.4	20.4	22.9	26.4	26.8	250		300			
Filtered (																					
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	0.711	2.5	1.69	0.721	1.59	1.41	<0.5	<0.5	1.35	2.36	2.94	2.37	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	28.4	35.8	47	58.8	43.6	85.9	89.4	79	64.1	60.6	65.1	49	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	1	<1	<1	1.76	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	0.403	0.2	<0.2	0.267	<0.2	0.392	0.243	<0.2	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	11.9	3.4	2.36	0.59	2.22	<0.4	0.659	<0.4	3.7	<0.4	1.57	2.32	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	1.56	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	1.15	1	<1	<1	<1	<1	<1	1.1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	2.7	2.66	<1	1.77	1	1.51	2.01	<1	9.48	<1	<1	1.85		**10.9**				***79.03***
Unfiltere																					
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	3.11	<2	<2	2.16	3.43	<2	<2	<2	3.74	5.16	5.98						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	50.7	48.3	59.8	61.1	93.8	93.9	86.8	67.9	50.9	100	63.4						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1.2	<1	<1	<1	<1	<1	<1	<1						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	8.34	4.75	20.1	9.03	15.9	22.3	5.6	3.07	13.3	18.8	23.9						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	11.5	20.2	8.87	7.75	<5	<5	<5	10.1	7.76						
	Hardness, Total as CaCO3 unfilt	TM152	mg/l	<0.35	-	222	366	455	348	475	545	629	412	286	447	409						
TPH Crit																					
	GRO Surrogate % recovery**	TM245	%		118	101	119	102	122	105	87	85	101	97	104	109						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	63	165	106	95	151	110	57	93	<50	<50						
	Methyl tertiary butyl ether (MTBE	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	8	<8	3.3	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	11	<11	3.3	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	13	10	10	11	12	<10	10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	11	32	20	14	29	22	<10	19	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	22	57	35	33	52	35	19	30	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	19	<10	25	<10	75	<20	123	62	<10	<10	47	15						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	125	10	201	169	220	80	430	186	36	<10	113	91						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	55	<10	210	146	256	89	416	221	31	<10	131	76						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	199	10	436	315	551	169	969	469	67	<10	291	182						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	21	13	10	19	15	<10	13	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	15	38	23	22	35	23	13	20	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	25	17	50	127	62	55	102	132	82	17	97	63						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	92	25	367	159	145	60	150	180	81	<10	114	96						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	90	14	22	198	157	40	211	198	110	<10	162	127						
	Total Aromatics >EC12-EC35 (a	TM174	µg/l	<10	207	56	439	484	364	155	463	510	273	17	373	286						
	Total Aliphatics & Aromatics >C5	TM174	µg/l	<10	406	90	938	964	1020	419	1580	1090	397	109	665	468					**5000**	
Polyaron																						

Naphthalene (aq)	TM178	µg/l	<0.01	0.0231	0.0131	0.0266	0.0824	0.0789	0.0358	0.0902	0.0817	0.0374	0.0258	0.0414	0.0557		**2**	130			
Acenaphthene (aq)	TM178	µg/l	<0.005	0.0972	0.0671	0.238	0.809	0.591	0.391	0.957	0.92	0.43	0.274	0.421	0.328						
Acenaphthylene (aq)	TM178	µg/l	<0.005	0.0185	0.0135	0.0278	0.146	0.0817	0.0593	0.154	<0.005	0.0638	0.034	0.0527	0.0582						
Fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	**0.0443**	**0.0444**	**0.0563**	<0.005	**0.118**	**0.0719**	**0.0253**	**0.015**	<0.005	<0.005		**0.0063**	0.12			
Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0653	0.042	0.0258	0.0196	<0.005	<0.005		**0.1**	0.1			
Phenanthrene (aq)	TM178	µg/l	<0.005	0.0222	<0.005	0.0346	0.055	0.005	<0.005	0.0842	0.0488	0.0223	0.0165	<0.005	<0.005						
Fluorene (aq)	TM178	µg/l	<0.005	0.217	0.148	0.481	2.02	1.35	0.864	2.31	2.36	1.02	0.524	0.988	0.812						
Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.01	<0.005	0.0264	0.0117	<0.005	<0.005						
Pyrene (aq)	TM178	µg/l	<0.005	0.0901	0.0349	0.142	0.147	0.181	0.0427	0.318	0.195	0.0748	0.0271	0.0634	0.0754						
Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.01	<0.005	0.0152	0.0236	<0.005	<0.005						
Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	0.0101	<0.005	<0.005	0.1		0.017			
Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.01	<0.005	<0.005	0.0052	<0.005	<0.005	0.1		0.017			
Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	<0.002	<0.002	**0.0072**	<0.002	<0.002	0.01	**0.00017**	0.27			
Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.01	<0.005	<0.005	0.0051	<0.005	<0.002						
Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.0126	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.0082			
Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.01	<0.005	<0.005	0.0099	<0.005	<0.005	0.1					
PAH, Total Detected USEPA 16	TM178	µg/l	<0.082	0.468	0.277	0.994	3.3	2.35	1.39	4.1	3.72	1.74	1.01	1.57	1.33						
EPH CW																					
Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	180	10	411	315	476	169	846	407	67	<10	244	167						

ALS

	January	February	March	May	June	August	September	October	November	December
Customer Sample ID	CARW009	CARW009	CARW009	CARW009	CARW009	CARW009	CARW009	CARW009	CARW009	CARW009
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id										
Sample Type	JND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER
Sampled Date	27/01/2021	23/02/2021	23/03/2021	04/06/2021	07/07/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date	29/01/2021	25/02/2021	25/03/2021	05/06/2021	09/07/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	05/06/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date	05/02/2021	06/03/2021	06/04/2021	14/06/2021	21/07/2021	06/09/2021	18/10/2021	15/11/2021	07/12/2021	06/01/2022
SDG	210129-40	210225-101	210325-86	210605-41	210709-150	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number	23630290	23794791	23968778	24398257	24603832	24876523	25122075	25288405	25417043	25559749
Sample Temperature	7.2	7.8	6.8	17.4	18.2	11.8	11.2	11.2	11.2	11.2
Sample Time										

Analysis	Test	Method	Units	LOD										UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorgani																			
	Ammoniacal N	TM099	mg/l	<0.2	*1.33*	*1.39*	*2.17*	*1.25*	*1.34*	*1.17*	*1.27*	*1.3*	*1.05*	*1.19*				*0.3*		
	pH	TM256	pH Units	<1.00		6.9	6.99	7.27	7.27	7.14	7.36	7.37	7.32	7.48						
	Chloride	TM184	mg/l	<2	23.5	20.3	21.9	26.6	24.6	29.9	28.5	36.7	33.9	36.9	250		300			
**Filtered (																			
	Mercury (diss.	TM183	µg/l	<0.01	<0.01	0.0104	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	1		0.07			
	Arsenic (diss.f	TM152	µg/l	<0.5	<0.5	1.59	1.22	0.5	0.597	0.647	0.629	0.591	<0.5	<0.5	10	**50**				
	Boron (diss.filt	TM152	µg/l	<10	35.9	41.4	41.8	49.6	64.3	61.8	66.5	66.2	63.6	58.6	1000					
	Cadmium (dis	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (dis	TM152	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.f	TM152	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.234	<0.2	10	**1.2**	14			
	Nickel (diss.fil	TM152	µg/l	<0.4	<0.4	<0.4	<0.4	0.658	<0.4	<0.4	0.598	<0.4	<0.4	<0.4	20	**4**	34			***30.4***
	Selenium (dis	TM152	µg/l	<1.0	<1	<1	<1	1	<1	1.38	<1	<1	1.02	<1	10					
	Vanadium (dis	TM152	µg/l	<1.0	<1	<1	<1	1	<1	<1	<1	1.78	1.06	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	3.62	1.26	1.37	1	1.56	2.23	1.62	1.33	1.05	1.23		**10.9**				***79.03***
Unfiltere																			
	Mercury (tot.u	TM183	µg/l	<0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.02						
	Arsenic (tot.ur	TM152	µg/l	<2	-	9.52	2.23	2	<2	<2	<2	<2	<2	<2						
	Boron (tot.unfi	TM152	µg/l	<20	-	43.4	42.4	72.6	62.1	66.8	73.1	64.5	80.9	73.5						
	Cadmium (tot.	TM152	µg/l	<0.5	-	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot	TM152	µg/l	<3	-	<3	<3	3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.un	TM152	µg/l	<1	-	1	<1	2.62	<1	<1	<1	<1	<1	<1						
	Lead (tot.unfilt	TM152	µg/l	<1	-	<1	<1	1.45	<1	<1	<1	<1	<1	<1						
	Nickel (tot.unfi	TM152	µg/l	<1	-	<1	<1	3.92	<1	<1	<1	<1	1.47	1.19						
	Selenium (tot.u	TM152	µg/l	<1	-	<1	<1	1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot	TM152	µg/l	<5	-	<5	<5	5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	7.79	<5	41.2	24.6	<5	<5	<5	11.8	9.4						
	Hardness, Tot	TM152	mg/l	<0.35	-	261	268	407	349	432	453	427	390	420						
TPH Crit																			
	GRO Surrogat	TM245	%		117	99	120	112	98	113	100	102	100	74						
	GRO >C5-C1	TM245	µg/l	<50	372	454	485	529	436	508	473	553	710	575						
	Methyl tertiary	TM245	µg/l	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1						
	Sum of detect	TM245	µg/l	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2						
	Sum of detect	TM245	µg/l	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5						
	Aliphatics >C5	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6	TM245	µg/l	<10	24	25	18	21	17	18	23	24	36	35						
	Aliphatics >C8	TM245	µg/l	<10	41	48	36	46	37	61	51	75	110	85						
	Aliphatics >C1	TM245	µg/l	<10	164	205	240	253	209	230	213	238	290	235						
	Aliphatics >C1	TM174	µg/l	<10	151	193	48	127	185	139	147	81	293	274						
	Aliphatics >C1	TM174	µg/l	<10	456	553	144	415	422	547	441	67	608	459						
	Aliphatics >C2	TM174	µg/l	<10	393	456	125	543	436	497	511	57	626	388						
	Total Aliphatic	TM174	µg/l	<10	1000	1200	317	1090	1040	1180	1100	205	1530	1120						
	Aromatics >E(	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >E(	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >E(	TM245	µg/l	<10	30	33	26	32	26	42	35	52	74	58						
	Aromatics >E(	TM245	µg/l	<10	109	136	160	169	140	153	142	159	194	157						
	Aromatics >E(	TM174	µg/l	<10	202	202	133	222	205	266	253	210	336	274						
	Aromatics >E(	TM174	µg/l	<10	216	203	91	281	244	303	244	76	306	233						
	Aromatics >E(	TM174	µg/l	<10	239	169	89	428	299	439	290	57	386	103						
	Total Aromatic	TM174	µg/l	<10	657	574	313	931	748	1010	787	343	1030	610						
	Total Aliphatic	TM174	µg/l	<10	2030	2230	1120	2540	2230	2700	2360	1100	3270	2310					**5000**	
Polyaron																			

Naphthalene (	TM178	µg/l	<0.01	<0.01	1.91	1.23	1.11	<0.01	0.616	1.74	0.0844	**2.14**	**2.46**		**2**	130			
Acenaphthene	TM178	µg/l	<0.005	0.845	0.928	0.78	0.957	<0.005	1.13	0.893	0.0344	1.14	1.15						
Acenaphthyler	TM178	µg/l	<0.005	0.216	0.246	0.166	0.275	<0.005	0.368	0.319	0.218	0.367	0.367						
Fluoranthene (	TM178	µg/l	<0.005	**0.0729**	<0.005	<0.005	<0.005	<0.005	**0.084**	**0.0487**	**0.0228**	<0.005	<0.005		**0.0063**	0.12			
Anthracene (a	TM178	µg/l	<0.005	0.0293	**0.252**	<0.005	<0.005	<0.005	<0.005	<0.005	0.0075	<0.005	<0.005		**0.1**	0.1			
Phenanthrene	TM178	µg/l	<0.005	0.303	0.308	0.148	0.005	<0.005	0.144	0.193	0.109	0.232	0.25						
Fluorene (aq)	TM178	µg/l	<0.005	1.05	1.21	0.919	1.13	<0.005	1.42	1.3	0.954	1.52	1.41						
Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.068	<0.005	<0.005	<0.005						
Pyrene (aq)	TM178	µg/l	<0.005	0.194	<0.005	0.115	0.005	<0.005	0.185	0.204	0.0496	<0.005	<0.005						
Benzo(a)anthr	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.00886	<0.005	<0.005	<0.005						
Benzo(b)fluor	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
Benzo(k)fluor	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
Benzo(a)pyrer	TM178	µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	**0.00017**	0.27			
Dibenzo(a,h)a	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002						
Benzo(g,h,i)pe	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0104	<0.005	<0.005	<0.005	0.1		0.0082			
Indeno(1,2,3-c	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1					
PAH, Total De	TM178	µg/l	<0.082	2.71	4.85	3.36	3.47	<0.082	3.94	4.79	1.48	5.4	5.63						
EPH CW																			
Aliphatics >C1	TM174	µg/l	<10	849	1010	269	958	858	1040	952	124	1230	847						

ALS

		Janaury	February	March	April	May	June	July	August	September	October	November	December
Customer Sample ID		CARW034	CARW034	CARW034	CARW034	CARW034	CARW034	CARW034	CARW034	CARW034	CARW034	CARW034	CARW034
Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id													
Sample Type		OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER	OUND_WATER
Sampled Date		27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date		05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	23/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021	06/01/2022
SDG		210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number		23630308	23794812	23968793	24193449	24398267	24603845	24798329	24876536	25122085	25288416	25417055	25559911
Sample Temperature		7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2	11.2
Sample Time													

Analysis	Test	Method	Units	LOD												UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*0.566*	*0.517*	*0.432*	1.44	1.13	<0.2	<0.2	*0.777*	*0.505*	0.246	<0.2	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00		7.06	6.95	7.15	6.79	6.59	6.83	6.75	7	6.99	6.98	7.18						
	Chloride	TM184	mg/l	<2	8	6.7	10.5	14.1	14.6	8	7	8.7	10.1	8.7	11.1	15.6	250		300			
Filtered (Dissolved) Metals																					
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	1.15	29.5	20.6	32	29.2	9.27	17	14.9	11.5	12.2	7.93	9.27	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	<10	10.6	<10	<10	10	42.6	34.8	33	31.8	23	20	12.8	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**0.0814**	<0.08	**0.111**	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	<0.3	<0.3	<0.3	0.36	0.3	3.84	1.2	1.77	6.34	1.35	0.521	0.764	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	**1.31**	**1.61**	0.645	**2.76**	0.418	0.482	0.281	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	1.97	3.2	3.24	1.07	3.04	6.75	4.56	2.84	2.84	2.63	2.71	2.19	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	1.03	1	<1	<1	<1	<1	1.13	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	2.8	10.8	4.02	4.26	2.97	48.4	16.8	5.32	8.9	5.89	7.66	7.17		**10.9**				***79.03***
Unfiltered (Total) Metals																					
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	43.2	32.2	39.1	33.2	17.9	18.7	22.4	21.6	20	15.5	49						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	20.1	<20	<20	20	44.7	36.4	35.2	32.8	<20	39	<20						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	0.544	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	6.83	1.59	14.6	2.08	23	15	9.68	29.8	9.64	<1	3.57						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	5.2	3.14	16.4	2.8	11.4	7.54	5.47	16.5	7.28	3.13	4.16						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	5.63	3.41	11	4.31	11.7	4.41	4.32	6.16	7.1	3.37	2.76						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	1.06	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	60.7	12.2	86.5	5	123	48.7	22.6	70.9	59.2	11.8	19.4						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	307	336	389	424	299	448	551	482	377	382	321						
TPH Criteria Working Group (TPH CWG)																					
	GRO Surrogate % recovery**	TM245	%		119	100	108	91	102	92	93	96	102	103	104	85						
	GRO >C5-C12	TM245	µg/l	<50	<50	97	<50	117	74	145	148	353	192	<50	73	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	10	12	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	11	<10	18	12	13	25	37	13	<10	17	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	41	18	46	27	69	57	166	96	18	21	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	70	100	213	457	1060	3060	1910	1760	571	512	1430	580						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	168	280	523	671	2440	6630	4480	3670	1260	1160	3200	1350						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	230	369	692	<50	4030	8920	6270	5230	1850	1920	4600	2110						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	468	749	1430	1130	7530	18600	12700	10700	3680	3590	9230	4040						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	12	<10	<10	16	25	<10	<10	11	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	27	12	31	18	46	38	111	64	12	14	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	32	101	100	54	291	754	242	559	216	137	363	150						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	67	177	267	1940	956	2790	1020	1850	631	603	1160	439						

	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	71	359	612	<50	2310	6170	2510	4270	1400	1580	2780	953						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	170	637	979	2000	3560	9710	3780	6680	2250	2320	4300	1540						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	639	1480	2460	3240	11200	28500	16600	17700	6120	5960	13600	5580					5000	
Polyaromatic Hydrocarbons (PAHs)																						
	Naphthalene (aq)	TM178	µg/l	<0.01	0.0521	<0.01	0.0149	<0.05	<0.01	<0.01	0.0385	0.133	0.0329	0.0135	0.136	0.0636		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	0.144	<0.005	0.0606	0.259	0.005	<0.005	<0.01	0.389	0.144	<0.005	<0.005	<0.005						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	0.0406	<0.005	0.0391	<0.025	0.005	<0.005	0.197	0.294	0.0489	0.0535	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	**0.0374**	<0.005	<0.005	0.155	<0.005	<0.005	0.328	0.867	0.21	**0.0972**	<0.005	<0.005		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.322	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.018	<0.005	<0.005	0.132	0.005	<0.005	<0.01	<0.005	0.161	0.0146	<0.005	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	0.222	<0.005	0.0528	0.0861	0.005	<0.005	<0.01	<0.005	0.0855	<0.005	<0.005	<0.005						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0955	<0.025	0.545	1.14	1.46	0.702	0.234	0.156	<0.005	0.384						
	Pyrene (aq)	TM178	µg/l	<0.005	0.124	0.179	0.238	0.52	0.005	<0.005	1.99	2.07	0.666	0.376	<0.005	0.488						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0531	<0.025	0.157	1.57	0.382	0.447	0.123	0.0979	<0.005	0.17						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0772	0.133	0.005	0.446	0.539	0.55	0.151	0.158	<0.005	<0.005	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0245	0.0524	0.005	0.442	0.164	0.216	0.0323	0.0334	0.194	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	<0.002	0.0474	0.0844	0.002	0.747	0.388	0.473	0.113	0.125	0.379	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.01	<0.005	0.0292	0.0384	<0.005	<0.002						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.0163	<0.005	0.0458	0.0667	0.005	<0.005	0.317	0.404	0.0954	0.0702	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	0.241	<0.005	0.0725	0.0586	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	0.654	0.179	0.749	1.81	0.702	4.35	6.04	6.54	2.2	1.29	0.709	1.11						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	398	649	1220	671	6470	15500	10700	8900	3110	3080	7800	3460						

ALS

	January	February	March	April	May	June	July	August	September	October	November	December
Customer Sample ID	CBH20	CBH20	CBH20	CBH20	CBH20	CBH20	CBH20	CBH20	CBH20	CBH20	CBH20	CBH20
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id												
Sample Type	OUND_WATER	GROUND_WATER	GROUND_WATER	OUND_WATER	OUND_WATER	GROUND_WATER	OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date	27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	21/08/2021	06/09/2021	18/10/2021	15/11/2021	07/12/2021	06/01/2022
SDG	210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number	23630436	23794649	23968563	24193283	24398181	24603529	24798158	24876433	25122125	25288472	25417103	25559814
Sample Temperature	7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2	11.2
Sample Time												

Analysis	Test	Method	Units	LOD												UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*0.72*	*1.07*	*1.74*	3.1	1.95	<0.2	*0.484*	*0.692*	*0.948*	*1.35*	*1.34*	*1.27*				*0.3*		
	pH	TM256	pH Units	<1.00	-	6.78	7.03	7.23	6.91	7.03	6.69	6.56	7.33	6.73	6.74	6.8						
	Chloride	TM184	mg/l	<2	19.7	22.3	52	149	110	76.6	66.5	78.9	46.9	32.8	39.7	48.5	250		300			
Filtered (Dissolved) Metals																					
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	1.97	3.29	2.57	3.73	2.64	6.18	1.9	2.76	2.5	3.35	3.11	2.13	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	55.4	54.3	190	592	380	126	161	162	100	85	98.7	52.2	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	<1	1.45	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	0.441	<0.3	<0.3	<0.3	1.2	5.94	<0.3	0.675	1.62	0.335	<0.3	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	0.227	<0.2	<0.2	<0.2	0.2	**2.56**	0.515	0.486	0.808	0.26	<0.2	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	0.647	0.552	0.674	0.792	0.806	4.92	2.01	0.716	1.93	<0.4	1.06	0.656	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	1.57	1.66	1	1.55	1.79	2.22	1.74	1.59	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	1.27	2.85	1.72	3	1.31	13.7	2.91	4.52	3.52	3.71	3.27	2.88		**10.9**				***79.03***
Unfiltered (Total) Metals																					
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	0.0696	0.124	<0.02	0.02	<0.02	0.217	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	133	4.87	5.75	3.23	7.11	5.32	9	3.26	3.61	4.3	2.83						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	58.3	177	645	408	126	157	170	91.1	94.2	125	55.5						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	8.11	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	**94.9**	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	1310	20.3	9.83	6.07	12.6	30.8	54.4	8.52	2.11	25.5	13.5						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	1690	16.2	6.14	6.22	3.83	22.8	37.4	4.3	1.09	5.5	3.32						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	259	4.78	4.8	2.3	5.53	7.68	11.5	2.07	1.02	2.68	<1						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	1.76	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	208	<5	<5	5	<5	<5	6.55	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	3840	63.2	21.8	25.3	21.9	80.3	122	8.86	7.23	72	28.8						
	Hardness, Total as CaCO3 unfiltere	TM152	mg/l	<0.35	-	310	212	308	288	141	137	206	191	212	266	243						
TPH Criteria Working Group (TPH CWG)																					
	GRO Surrogate % recovery**	TM245	%		120	98	110	91	112	94	97	95	101	94	98	89						
	GRO >C5-C12	TM245	µg/l	<50	<50	3330	61	140	122	147	297	66	85	84	147	220						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	3.76	2.07	1.37	1.26	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	24	<10	<10	<10	11	12	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	259	16	19	32	35	46	19	22	23	27	35						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	671	10	27	20	21	52	10	12	<10	32	39						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	1160	15	42	28	37	90	14	21	23	38	70						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	30500	22	<50	357	285	865	263	59	87	231	140						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	30800	31	<50	490	438	1220	345	85	73	314	192						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	162	77700	293	1350	3460	2460	6690	1910	534	373	1900	1220						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	162	139000	346	1350	4310	3180	8780	2520	678	533	2440	1550						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	448	<10	18	13	15	35	<10	<10	<10	21	26						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	772	10	28	19	25	60	10	14	15	25	47						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	8570	25	<50	127	117	402	110	76	76	72	75						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	14400	32	360	286	244	734	206	72	62	131	105						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	57	47600	241	1510	2000	1560	4340	1350	366	304	1020	483						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	57	70600	298	1870	2410	1920	5470	1670	514	442	1220	663						
	Total Aliphatics & Aromatics >C5-3	TM174	µg/l	<10	220	**213000**	705	3360	**6840**	**5250**	**14600**	4260	1280	1060	3810	2430					**5000**	
Polyaromatic																						
	Naphthalene (aq)	TM178	µg/l	<0.01	0.151	<0.2	0.0231	1.97	0.219	0.172	1.18	0.22	0.103	0.0714	0.11	0.137		**2**	130			

Polycyclic Aromatic Hydrocarbons (PAHs)	Acenaphthene (aq)	TM178	µg/l	<0.005	0.243	21.7	0.236	0.415	0.412	<0.005	0.687	0.534	0.329	0.324	0.496	0.4						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	0.0266	6.52	0.0249	0.16	0.0738	<0.005	<0.05	0.0794	0.0398	<0.005	0.0758	0.0584						
	Fluoranthene (aq)	TM178	µg/l	<0.005	**0.0488**	40.9	**0.0654**	0.173	0.266	<0.005	0.712	0.31	**0.0699**	**0.0577**	<0.005	**0.108**		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	0.0155	**6.84**	<0.005	<0.025	0.0479	<0.005	<0.05	0.0615	0.0171	0.0165	<0.005	0.0263		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.128	81.2	0.0776	0.265	0.318	<0.005	0.751	0.26	0.185	0.117	0.259	0.265						
	Fluorene (aq)	TM178	µg/l	<0.005	0.174	36.2	0.203	0.338	0.396	0.464	0.666	0.534	0.303	0.268	0.476	0.381						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	36.5	<0.005	<0.025	<0.005	0.446	<0.05	0.446	0.0459	0.0233	<0.005	0.203						
	Pyrene (aq)	TM178	µg/l	<0.005	0.0701	43.6	0.116	0.307	0.503	<0.005	1.13	0.394	0.127	0.0732	0.21	0.147						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	23.3	<0.005	<0.025	<0.005	<0.005	<0.05	0.113	0.0237	<0.005	<0.005	0.0167						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	16.3	0.0378	0.196	0.265	0.0883	0.504	0.174	0.0319	0.0205	<0.005	<0.005	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	8.9	0.0142	0.0708	<0.005	0.0892	<0.05	0.0482	0.00559	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	21.6	<0.002	0.131	<0.002	<0.002	<0.02	0.116	0.0159	0.0138	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.1	<0.005	<0.025	0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.002						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.1	0.0153	0.0765	<0.005	<0.005	0.276	0.0656	0.012	<0.005	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.1	<0.005	0.0726	0.005	<0.005	<0.05	0.0654	0.0174	<0.005	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (a	TM178	µg/l	<0.082	0.856	344	0.813	4.18	2.5	1.26	5.91	3.42	1.32	0.985	1.63	1.74						
EPH CWG (Speciated)	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	162	108000	324	1350	3950	2900	7920	2260	619	446	2210	1410						

ALS

		January	February	March	April	May	June	July	August	September	October	November	December
Customer Sample ID		CBH23	CBH23	CBH23	CBH23	CBH23	CBH23	CBH23	CBH23	CBH23	CBH23	CBH23	CBH23
Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id													
Sample Type		OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date		27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date		05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	21/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021	06/01/2022
SDG		210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number		23630389	23794663	23968582	24193298	24398192	24603548	24798171	24876447	25122135	25288486	25417115	25559802
Sample Temperature		7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2	11.2
	Sample Time												

Analysis	**Test**	**Method**	**Units**	**LOD**												**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Emission Limit**	**MBAT Values**
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	<0.2	*2.49*	*4.39*	*2.74*	*0.42*	*0.671*	*4.12*	<0.2	<0.2	*0.61*	<0.2			*0.3*		
	pH	TM256	pH Units	<1.00	-	7.31	7.04	7.17	7.05	7.01	6.93	7.24	7.51	7.5	7.06	7.46					
	Chloride	TM184	mg/l	<2	11.5	9.3	16.7	17.9	24.3	33	22.6	25.5	34.6	18.9	23.8	30.8	250		300			
Filtered (Dissolved) Metals																					
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	0.511	0.519	8.63	9.47	7.4	3.75	4.56	9.89	5.44	0.954	1.36	1	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	37.1	23.7	44.8	54.4	42.6	57.9	59.9	54.3	53.5	62.4	63.1	36.3	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**0.0885**	<0.08	**0.0887**	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	2.27	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	6.27	6.21	0.452	<0.3	0.35	2.65	<0.3	<0.3	0.756	12.2	1.84	7.84	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.358	0.425	<0.2	<0.2	<0.2	0.878	0.487	0.393	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	1.63	1.52	1.18	0.409	1.46	4.73	3.15	<0.4	3.11	1.69	4.14	3.27	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	1.23	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	19.7	13	4.79	3.92	3.89	9.56	8.77	2.9	10.9	20.7	31.1	23.5		**10.9**				***79.03***
Unfiltered (Total) Metals																					
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	0.139	<0.02	0.193	0.0367	<0.02	0.316	<0.02	0.215	0.0363	0.0646	0.132						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	4.35	11.5	19.2	9.89	5.48	21.7	41	15.3	2.41	20.5	4.39						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	31.2	43.7	47.9	48.4	57.7	78.3	138	51.9	48.4	68.3	48.2						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	0.701	0.5	<0.5	1	1.85	0.554	<0.5	0.809	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	4.02	3	<3	**7.13**	**12.7**	3.78	<3	**6.56**	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	30.1	7.09	69.6	13.4	15.5	112	211	69.8	22.1	110	30						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	19.1	7.67	57.7	10.1	8.02	96.6	194	54.4	12	107	22.9						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	3.35	2.43	7.63	3.25	3.8	14.6	26.9	10.3	3.99	16.1	6.14						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	1.06	<1	1	<1	1.35	<1	1.03	<1	1.02	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	9.21	5	<5	13.8	25.2	7.66	<5	18.8	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	54	20.6	160	26.2	50.4	259	464	139	40.3	228	70.5						
	Hardness, Total as CaCO3 ur	TM152	mg/l	<0.35	-	236	305	357	346	414	356	439	379	256	311	285						
TPH Criteria Working Group (TPH CWG)																					
	GRO Surrogate % recovery**	TM245	%		111	113	115	98	118	102	96	90	97	100	103	83						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	<50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTI	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	13	25	374	213	614	3450	4140	547	150	214	500						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	52	28	667	399	1110	6440	7370	938	223	425	996						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	150	96	1580	1250	2970	18100	20200	2510	577	1230	2980						
	Total Aliphatics >C12-C35 (ac	TM174	µg/l	<10	<10	215	149	2620	1860	4690	28000	31700	4000	950	1870	4470						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	59	72	129	842	854	117	42	50	47						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	24	20	259	229	512	3530	3570	437	109	191	347						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	219	200	1510	1150	2470	17400	16900	2110	764	1330	2530						
	Total Aromatics >EC12-EC35	TM174	µg/l	<10	<10	243	220	1830	1460	3110	21800	21300	2670	915	1570	2930						
	Total Aliphatics & Aromatics >	TM174	µg/l	<10	<10	458	370	4480	3320	**7810**	**49800**	**53000**	**6670**	1870	3440	**7400**					**5000**	
Polyaromatic Hydrocarbons																					
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	0.0284	0.048	0.0797	<0.1	0.443	0.0614	0.0119	0.0216	0.0901		**2**	130			

Hydrocarbons (PAHs)	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0227	0.0245	0.0818	<0.005	<0.05	2.05	0.201	0.0055	0.0401	0.0674						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0157	0.11	0.0613	<0.005	<0.05	1.03	0.117	0.0383	0.0527	0.132						
	Fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	**0.0363**	<0.005	0.236	0.297	0.85	6.75	6.65	0.935	**0.0848**	0.134	0.852		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	0.918	<0.005	0.009	<0.005	0.0718		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	0.0198	<0.005	0.104	0.0787	<0.005	<0.05	1.07	0.143	0.0442	0.0605	0.359						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	2.7	0.202	0.0107	0.0449	0.111						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.473	0.349	0.904	<0.05	3.83	0.702	0.111	<0.005	0.809						
	Pyrene (aq)	TM178	µg/l	<0.005	<0.005	0.0409	0.0824	0.813	0.653	1.32	10.9	9.69	1.28	0.14	0.283	1.22						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.246	0.196	0.437	<0.05	3.56	0.391	0.0512	0.0712	0.41						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	0.0568	0.0969	0.987	0.555	0.673	6.72	7.58	0.717	0.174	0.223	0.64	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	0.0276	0.0276	0.256	0.16	<0.005	2.12	2.93	0.303	0.0402	0.118	0.611	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	0.0422	0.0596	0.535	0.288	0.683	3.5	5.18	0.488	0.14	0.29	0.851	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	1.14	<0.005	0.0232	<0.005	0.851						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0642	<0.005	0.252	0.621	<0.05	5.09	0.473	0.193	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	0.0492	0.0503	0.375	0.278	0.367	<0.05	3.93	0.448	0.171	<0.005	0.561	0.1					
	PAH, Total Detected USEPA	TM178	µg/l	<0.082	<0.082	0.273	0.419	4.19	3.3	5.93	30	57.8	6.46	1.25	1.34	6.78						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	202	124	2250	1650	4080	24500	27500	3450	800	1660	3970						

ALS

	January
Customer Sample ID	CBH30
Depth	0.00-0.00
AGS Id	
Sample Type	GROUND_WATER
Sampled Date	27/01/2021
Sample Received Date	29/01/2021
Final Instruction Date	29/01/2021
Report Completed Date	05/02/2021
SDG	210129-40
Lab Sample Number	23630417
Sample Temperature	7.2
Sample Time	

Analysis	Test	Method	Units	LOD		UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorganics											
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*0.508*				0.3		
	pH	TM256	pH Units	<1.00							
	Chloride	TM184	mg/l	<2	15.3	250		300			
Filtered (Dissolved) Met											
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	1.18	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	97.8	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	2.61	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	0.92	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	6.77	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	17.3		**10.9**				***79.03***
Unfiltered (Total) Metals											
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-						
	Boron (tot.unfilt)	TM152	µg/l	<20	-						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-						
	Lead (tot.unfilt)	TM152	µg/l	<1	-						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-						
TPH Criteria Working G											
	GRO Surrogate % recovery**	TM245	%		119						
	GRO >C5-C12	TM245	µg/l	<50	180						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3						
	Benzene	TM245	µg/l	<7	<7	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5						
	m,p-Xylene	TM245	µg/l	<8	<8						
	o-Xylene	TM245	µg/l	<3	<3						
	Sum of detected Xylenes	TM245	µg/l	<11	<11						
	Sum of detected BTEX	TM245	µg/l	<28	<28						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	12						
	Aliphatics >C8-C10	TM245	µg/l	<10	25						
	Aliphatics >C10-C12	TM245	µg/l	<10	74						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	1020						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	1010						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	2770						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	4810						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	17						
	Aromatics >EC10-EC12	TM245	µg/l	<10	49						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	275						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	359						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	634						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	5620					5000	
Polyaromatic Hydrocart											

	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	1.05						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	0.119						
	Fluoranthene (aq)	TM178	µg/l	<0.005	0.994		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	0.139		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.181						
	Fluorene (aq)	TM178	µg/l	<0.005	0.374						
	Chrysene (aq)	TM178	µg/l	<0.005	0.57						
	Pyrene (aq)	TM178	µg/l	<0.005	1.15						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	0.304						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.4	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.148	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.237	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.157	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.124	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	5.95						
EPH CWG (Speciated)											
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	3780						

ALS

	January	February	March	April	May	June	July	August	September	October	November	December
Customer Sample ID	CBH46	CBH46	CBH46	CBH46	CBH46	CBH46	CBH46	CBH46	CBH46	CBH46	CBH46	CBH46
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id												
Sample Type	OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date	27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	23/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021	06/01/2022
SDG	210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number	23630398	23794672	23968604	24193310	24398202	24603565	24798192	24876458	25122145	25288499	25417126	25559788
Sample Temperature	7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2	11.2
Sample Time												

Analysis	Test	Method	Units	LOD											UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorganics																				
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	*0.333*	*8.05*	13.4	14.4	*16.2*	*12.8*	*13.7*	*12*	*11.8*	*13.4*	*3.72*				*0.3*		
	pH	TM256	pH Units	<1.00		7.61	7.35	7.53	7.43	7.28	7.51	7.48	7.83	7.44	7.31	7.44						
	Chloride	TM184	mg/l	<2	13.6	14.5	88.5	134	139	171	125	156	111	131	120	45.7	250		300			
Filtered (Dissolved) Metals																				
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	1.93	2.2	6.31	5.63	7.97	7.17	5.83	3.9	13.7	5.82	6.22	4.8	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	76	66.7	405	551	681	604	543	545	562	509	539	150	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	1.52	2.32	2.28	<1	2.23	2.13	2.42	1.38	2.4	1.09	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	8.82	1.05	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.39	<0.3	<0.3	0.654	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	0.396	<0.2	<0.2	<0.2	0.495	<0.2	<0.2	<0.2	0.378	<0.2	0.252	0.284	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	3.63	2.91	10*	11.9	14.3	13.2	10.6	16.2	8.15	11.4	10.2	2.8	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	3.18	4.25	18.2	**26.7**	**26.8**	**24**	**23.2**	**26.9**	17.6	**23.7**	**23.9**	10.6		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	10.6	4.06	1.85	<1	1.7	<1	1.55	2.24	2.82	2.62	1.18	1.5		**10.9**				***79.03***
Unfiltered (Total) Metals																				
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	0.0281	0.048	0.0901	0.112	0.0566	<0.02	0.103	0.101	<0.2	0.0514						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	<20	10.2	8.34	11.6	14.8	7.43	10.2	20.5	11.2	13	10.9						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	<200	396	590	678	671	570	585	604	495	605	171						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.508	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<30	**10.1**	**9.7**	**10.7**	**25.5**	**6.94**	**13.3**	**12.7**	**17.9**	**15.9**	**14.7**		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	11.4	19.7	26.9	17.4	73.2	20.1	43.7	52.6	63.5	76.1	71.2						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	<10	22.4	20.8	18.8	66.7	21.5	34.6	39.5	43.3	43.1	51.5						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	<10	15.4	18.6	18.8	34.2	15.3	81.8	19.8	26.9	23.5	15.8						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<10	<1	1.27	1	1.08	1.05	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<50	45.2	42.6	52.8	97.2	37.3	57.3	54.7	63.9	59.9	48.9						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	<50	146	59.6	48.4	203	57.1	322	111	132	155	145						
	Hardness, Total as CaCO3 u	TM152	mg/l	<0.35	-	394	638	587	597	609	606	647	607	572	609	513						
TPH Criteria Working Group (TPH CWG)																				
	GRO Surrogate % recovery*	TM245	%		126	108	110	94	104	81	88	95	94	99	95	73						
	GRO >C5-C12	TM245	µg/l	<50	296	1690	1140	2180	1590	1940	4170	1500	1760	2630	2560	1530						
	Methyl tertiary butyl ether (M	TM245	µg/l	<3	<3	<3	<3	52	39	<3	9	7.75	10.2	5.7	8.11	1.04						
	Benzene	TM245	µg/l	<7	<7	<7	483	833	734	574	847	1100	615	928	1000	78	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	4	<4	4.08	5.23	3.4	4.23	4.29	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	5	6	5	<5	4.9	5.65	1.29	2.91	4.06	1.04						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	8	<8	4.26	4.61	3.94	2.24	2.8	1.62						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	4	3	<3	3.28	3.03	2.93	2.58	2.86	1.58						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	7.54	7.64	6.87	4.82	5.66	3.2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	488	839	734	574	847	1100	624	928	1000	82.2						
	Aliphatics >C5-C6	TM245	µg/l	<10	11	<10	62	46	45	68	46	71	91	74	108	53						
	Aliphatics >C6-C8	TM245	µg/l	<10	27	39	99	99	63	92	86	96	150	143	187	160						
	Aliphatics >C8-C10	TM245	µg/l	<10	34	180	67	167	104	144	327	85	155	202	257	197						
	Aliphatics >C10-C12	TM245	µg/l	<10	121	806	220	509	311	570	1710	221	459	715	538	555						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	1990	14900	1440	3850	6260	29200	3540	1070	5000	2340	2130	3020						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	2570	17400	1690	4620	7280	32900	4290	1340	5490	2990	2320	3240						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	4740	30200	3080	8180	15700	59200	7480	2600	9820	5660	4140	6030						
	Total Aliphatics >C12-C35 (a	TM174	µg/l	<10	9300	62500	6210	16600	29200	121000	15300	5000	20300	11000	8590	12300						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	483	833	734	574	629	808	493	873	925	61						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	23	120	57	129	83	107	234	68	107	145	184	135						
	Aromatics >EC10-EC12	TM245	µg/l	<10	81	538	147	340	207	380	1140	147	306	477	359	370						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	725	5050	386	1970	1680	9900	587	387	1810	609	950	953						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	1340	8560	835	2760	3280	15500	1700	738	2500	1390	1100	1210						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	2890	17200	1800	5490	6460	31400	3930	1600	4860	3110	1960	2470						
	Total Aromatics >EC12-EC3	TM174	µg/l	<10	4960	30800	3020	10200	11400	56800	6220	2720	9170	5110	4010	4630						
	Total Aliphatics & Aromatics	TM174	µg/l	<10	**14600**	**95000**	**10400**	**29000**	**42200**	**180000**	**25700**	**9230**	**31200**	**18700**	**15200**	**18500**					**5000**	
Polyaromatic Hydrocarbons																				
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.2	<0.01	**6.46**	0.01	**18.5**	<0.1	0.0853	**8.1**	0.125	**6.17**	1.93		**2**	130			

Hydrocarbons (PAHs)	Acenaphthene (aq)	TM178	µg/l	<0.005	12.2	91.3	1.77	48.9	0.005	274	<0.05	0.74	58.1	2.97	36.5	200						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	0.553	3.56	0.36	2.15	0.005	2.88	<0.05	0.267	2.13	0.721	1.1	9.64						
	Fluoranthene (aq)	TM178	µg/l	<0.005	4.46	30.9	3.7	10.6	<0.005	64.6	0.256	3.05	11	9.63	4.16	0.665		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	3.37	38.1	2.44	16.4	<0.005	98.7	<0.05	0.869	17.8	2.95	8.16	8.8		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	2.99	61	1.35	25.8	<0.005	227	<0.05	0.554	41	2.04	18.9	23.7						
	Fluorene (aq)	TM178	µg/l	<0.005	7.21	92.4	1.52	46.1	<0.005	282	<0.05	0.653	57.4	2.9	33.9	176						
	Chrysene (aq)	TM178	µg/l	<0.005	2.24	15	2.36	5.33	0.0283	33.9	<0.05	1.65	5.03	3.39	2.18	3.19						
	Pyrene (aq)	TM178	µg/l	<0.005	7.36	36.2	6.06	14.1	<0.005	84.2	0.639	4.77	11.8	12.8	4.14	<0.005						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	1.53	9.11	1.7	4.31	0.0128	22	<0.05	1.05	3.19	3.84	1.57	1.72						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	1.34	7.54	1.62	4.69	0.0179	18.9	0.135	1.07	2.9	3.71	<0.005	1.63	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.536	2.75	0.497	1.32	0.0055	5.89	<0.05	0.365	1.02	0.779	<0.005	0.791	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	1.22	6.12	1.5	3.17	0.0191	15.1	0.124	0.816	2.59	2.76	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	0.185	<0.1	0.228	0.433	<0.005	2.12	<0.05	0.12	0.425	0.409	<0.005	<0.002						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.728	<0.1	0.6	1.62	<0.005	9.85	0.0868	0.441	1.57	1.39	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.502	<0.1	0.645	1.66	<0.005	6.07	0.053	0.412	1.15	2.22	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA	TM178	µg/l	<0.082	46.4	394	26.3	193	0.0836	1160	1.29	16.9	225	52.7	117	428						
EPH CWG (Speciated)	Aliphatics >C16-C35 Aqueo	TM174	µg/l	<10	7310	47700	4770	12800	23000	92100	11800	3940	15300	8650	6460	9270						

ALS

	March	April	May	June	July	August
Customer Sample ID	CBH52	CBH52	CBH52	CBH52	CBH52	CBH52
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id						
Sample Type	GROUND_WATER	GROUND_WATER	OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021
Sample Received Date	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021
Final Instruction Date	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021
Report Completed Date	06/04/2021	10/05/2021	14/06/2021	21/07/2021	23/08/2021	06/09/2021
SDG	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133
Lab Sample Number	23968691	24193349	24398232	24603635	24798252	24876497
Sample Temperature	6.8	6.2	17.4	18.2	18.2	11.8
Sample Time						

Analysis	Test	Method	Units	LOD						UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorganics															
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*0.684*	*1.6*	*1.05*	<0.2	<0.2	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00	7.51	7.79	7.34	7.45	7.4	7.46						
	Chloride	TM184	mg/l	<2	22.1	27.4	27.4	21.3	18.9	19.1	250		300			
Filtered (Dissolved) Met															
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	0.0579	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	2.29	2.31	2.18	2.08	3.91	2.74	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	69	79.6	73.4	64.8	94.3	103	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	0.496	0.892	<0.3	12.8	<0.3	1.92	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	0.25	<0.2	<0.2	<0.2	0.296	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	1.29	1.01	1.21	2.02	1.88	0.92	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	1.84	<1	<1	1.26	2.58		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	6.43	4.02	3.75	28.5	7.82	14.6		**10.9**				***79.03***
Unfiltered (Total) Metals															
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	<0.02	0.0609	0.02	<0.02	0.0669	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	6.39	17.3	4.05	3.79	8.98	7.44						
	Boron (tot.unfilt)	TM152	µg/l	<20	66	85.1	86.9	70.9	101	103						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	<0.5	0.841	0.5	<0.5	<0.5	0.536						
	Chromium (tot.unfilt)	TM152	µg/l	<3	<3	**7.94**	**4.86**	<3	<3	3.4		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	9.22	74.5	4.32	20.5	26.2	54.5						
	Lead (tot.unfilt)	TM152	µg/l	<1	17.1	148	4.58	3.34	23.3	21.6						
	Nickel (tot.unfilt)	TM152	µg/l	<1	2.22	13.2	3.65	2	3.72	5.34						
	Selenium (tot.unfilt)	TM152	µg/l	<1	<1	1.05	1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	5.02	37.3	5	<5	16.1	10.6						
	Zinc (tot.unfilt)	TM152	µg/l	<5	37	339	11.8	37.1	76.4	162						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	411	522	385	324	395	458						
TPH Criteria Working Gı															
	GRO Surrogate % recovery**	TM245	%		114	96	114	92	96	97						
	GRO >C5-C12	TM245	µg/l	<50	<50	970	50	<50	191	133						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	7	<7	<1	1.6	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	19	<10	<10	<10	11						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	94	<10	<10	23	13						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	473	10	<10	85	56						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	1660	5460	506	271	20700	2280						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	2740	8100	946	446	30700	4110						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	9240	24600	3420	1460	94400	14400						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	13600	38200	4870	2180	146000	20800						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	63	10	<10	16	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	315	10	<10	57	37						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	267	1120	147	62	5360	494						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	1450	4220	547	238	17900	2430						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	5660	14300	1780	899	61100	10100						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	7380	19700	2470	1200	84300	13000						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	21000	58800	7380	3380	230000	33900					5000	
Polyaromatic Hydrocart															

	Naphthalene (aq)	TM178	µg/l	<0.01	0.0239	<0.01	0.0304	<0.01	<1	0.0542		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	0.0632	4.19	0.137	<0.005	<0.5	0.416						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	0.192	0.692	0.0769	<0.005	<0.5	0.362						
	Fluoranthene (aq)	TM178	µg/l	<0.005	2.04	12	1.31	<0.005	4.5	3.47		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	2.86	0.0978	<0.005	<0.5	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.47	6.14	0.005	<0.005	3.89	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	4.85	0.005	<0.005	2.97	0.318						
	Chrysene (aq)	TM178	µg/l	<0.005	2.17	14	1.76	0.717	<0.5	2.75						
	Pyrene (aq)	TM178	µg/l	<0.005	6.34	28	3.08	<0.005	11.5	10.2						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	1.88	8.11	1.02	0.266	2.09	2.73						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	2.2	5.94	1.01	0.315	2.04	3.05	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.54	4.1	0.205	0.0818	0.795	0.98	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	1.77	<0.002	**0.002**	0.242	1.96	2.69	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	0.396	<0.005	0.005	<0.005	<0.5	0.544						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.743	<0.005	0.27	0.149	0.884	1.45	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.799	<0.005	0.005	0.0838	0.679	1.18	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	19.6	90.8	9	1.85	31.3	30.1						
EPH CWG (Speciated)																
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	12000	32700	4370	1910	125000	18500						

ALS

	January	February	March	April	May	June	July	August	September	October	November	December
Customer Sample ID	CBH57	CBH57	CBH57	CBH57	CBH57	CBH57	CBH57	CBH57	CBH57	CBH57	CBH57	CBH57
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id												
Sample Type	OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date	27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	21/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021	05/01/2022
SDG	210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number	23630446	23794684	23968631	24193321	24398212	24603586	24798214	24876470	25122045	25288372	25417006	25559775
Sample Temperature	7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2	11.2
Sample Time												

Analysis	**Test**	**Method**	**Units**	**LOD**												**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Emission Limit**	**MBAT Values**
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	*0.329*	*1.3*	*2.45*	*1.6*	*2.07*	*3.33*	*3.72*	<0.2	<0.2	*1.68*	<0.2						
	pH	TM256	pH Units	<1.00		7.12	7.05	7.24	6.97	7.2	7.06	7.33	7.21	6.93	6.87	7.07						
	Chloride	TM184	mg/l	<2	6.4	8.1	14.1	22.2	23.4	23.1	26.7	24.8	15.6	11	17.1	29.4	250		300			
Filtered (Dissolved) Metals	Mercury (diss.filt)	TM183	µg/l	<0.01	0.0184	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	6.66	3.25	5.28	5.06	6.16	1.1	6.32	7.35	4.14	5.08	5.08	4.53	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	11.7	<10	15.7	16.4	10	20.6	27.4	18.6	17.9	24	25.9	<10	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	**0.249**	**0.135**	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	1.19	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	***53.6***	1.83	<0.3	<0.3	<0.3	1.81	0.484	3.15	0.676	<0.3	<0.3	0.366	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	**19.7**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.354	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	3.31	1.38	0.989	0.436	0.66	<0.4	0.835	<0.4	2.14	<0.4	0.716	1.4	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	5.18	<1	1.43	<1	<1	<1	<1	<1	1.17	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	44.1	71.5	9.52	1.46	1.44	5.67	3.67	2.32	2.53	4.18	1.75	1.89		**10.9**				***79.03***
Unfiltered (Total) Metals	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	0.987	<0.02	0.0281	0.286	0.549	0.381	<0.02	0.0357	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	19.9	17.5	6.8	24.6	38.6	17.2	10.3	6.45	5.63	6.28	5.73						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	34.6	22.9	<20	27.2	23.8	37.8	22.2	<20	21.8	47	<20						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	0.884	0.911	<0.5	0.876	2.02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	**13.1**	**40.2**	<3	**17.8**	**25.9**	3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	247	176	26.3	169	277	73.8	1.55	13.6	2.52	3.72	<1						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	98.6	72.9	9.6	86.6	144	29.3	<1	5.92	1.05	3	<1						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	21.5	23.3	4.05	27.7	43.3	6.35	<1	4.42	2.08	1.66	1.4						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	1.24	<1	1	1.87	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	26.3	33.6	<5	19.4	39.9	8.31	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	197	199	33.4	182	369	55.1	5.75	15.3	15.8	14	<5						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	154	197	213	243	269	266	254	209	202	235	209						
TPH Criteria Working Group (TPH CWG)	GRO Surrogate % recovery**	TM245	%		128	105	103	101	110	97	95	88	98	103	103	112						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	75	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	<10	26	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	20	<10	<10	150	<10	<10	<10	<10	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	15	<10	37	<10	<10	268	<10	<10	20	<10	<10	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	81	49	155	124	<10	947	<10	<10	53	<10	<10	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	96	49	212	124	<10	1370	<10	<10	73	<10	<10	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	17	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	48	<10	<10	<10	<10	<10	<10						

	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	14	<10	<10	100	<10	<10	<10	<10	<10	<10						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	38	23	167	<10	13	504	<10	<10	<10	<10	<10	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	38	23	181	<10	13	652	<10	<10	<10	<10	<10	<10						
	Total Aliphatics & Aromatics >C5-35 (aq)	TM174	µg/l	<10	134	72	393	138	13	2090	<10	<10	73	<10	<10	<10					**5000**	
Polyaromatic Hydrocarbons (PAHs)	Naphthalene (aq)	TM178	µg/l	<0.01	0.0177	<0.01	0.0217	0.0592	0.0177	0.017	0.0486	0.0157	<0.01	<0.01	<0.01	<0.01		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	0.00971	0.00704	0.0316	0.0576	0.0463	<0.005	0.058	0.0716	0.0141	0.0115	0.0253	0.0097						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.00715	<0.005	0.005	<0.005	0.00737	0.011	<0.005	<0.005	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	**0.038**	**0.044**	0.111	**0.0308**	**0.0454**	<0.05	**0.0378**	**0.0448**	**0.0134**	**0.0075**	**0.0075**	<0.005		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	0.00877	<0.005	0.0165	0.00664	0.0115	<0.005	0.00813	0.00899	<0.005	<0.005	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.0401	0.0356	0.174	0.042	0.0753	0.209	0.0431	0.0267	<0.005	0.0059	0.0092	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	0.00802	0.0102	0.0518	0.0608	0.0508	<0.005	0.0471	0.0906	0.0172	0.0097	0.029	0.0075						
	Chrysene (aq)	TM178	µg/l	<0.005	0.0419	0.049	0.187	<0.005	0.0694	0.238	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Pyrene (aq)	TM178	µg/l	<0.005	0.0401	0.0482	0.16	0.0391	0.0597	0.211	0.0394	0.0482	0.0169	0.0081	0.0093	<0.005						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	0.026	0.0272	0.074	<0.005	0.0228	0.0651	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.061	0.0523	0.14	0.0262	0.0367	0.0783	0.0262	<0.005	<0.005	0.0079	<0.005	<0.005	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.024	0.0218	0.0412	0.015	0.0172	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.0373	0.0266	0.0788	0.0197	0.0235	<0.002	0.0142	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	0.0188	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.0374	0.0379	0.0752	0.0211	0.0182	<0.005	0.0342	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.0275	0.0247	0.0714	0.0106	0.005	<0.005	0.0137	<0.005	<0.005	<0.005	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	0.436	0.385	1.24	0.389	0.494	0.979	0.378	0.318	<0.082	<0.082	<0.082	<0.082						
EPH CWG (Speciated)	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	96	49	192	124	10	1220	<10	<10	73	<10	<10	<10						

ALS

		January	February	March	April	May	June	July	August	September	October	November
Customer Sample ID		CBH64	CBH64	CBH64	CBH64	CBH64	CBH64	CBH64	CBH64	CBH64	CBH64	CBH64
Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id												
Sample Type		OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date		27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021
Sample Received Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021
Final Instruction Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date		05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	23/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021
SDG		210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80
Lab Sample Number		23630467	23794706	23968655	24193339	24398222	24603608	24798237	24876484	25122055	25288383	25417019
Sample Temperature		7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2
Sample Time												

Analysis	Test	Method	Units	LOD											UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorganics																				
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*1.11*	*0.937*	*3.17*	*3.24*	*1.31*	<0.2	0.236	*2.16*	*0.358*	*1.65*	*3.46*				*0.3*		
	pH	TM256	pH Units	<1.00		7.43	7.64	7.74	7.42	7.5	7.81	7.58	7.7	7.4	7.45						
	Chloride	TM184	mg/l	<2	27.6	20.5	32.4	33.6	24.7	12.4	19.9	24.1	23.1	22.3	32.8	250		300			
Filtered (Dissolved) Metals																				
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	2.42	2.55	22.7	**50.8**	18.8	5.91	7.53	7.48	5.57	9.85	14.2	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	138	137	142	117	126	114	105	116	86.7	85.9	129	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	**0.218**	**0.22**	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	2.42	<1	1.34	<1	<1	1.55	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	21.1	20.8	1.04	1.47	0.612	6.83	<0.3	<0.3	3.88	2.01	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	1.13	**2.54**	<0.2	**1.44**	0.669	**1.72**	0.869	<0.2	**1.3**	0.884	0.369	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	10	11.1	7.76	6.03	5.7	3.73	5.64	2.5	4.96	3.37	3.17	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	1.23	2.72	1.98	<1	1.23	2.06	<1	1.35	1.47		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	***99.9***	***132***	11.3	20.9	7.65	56.3	6.23	7.82	22	9.82	2.81		**10.9**				***79.03***
Unfiltered (Total) Metals																				
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	0.107	<0.02	0.104	0.109	<0.02	0.245	<0.02	0.119	0.0396	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	19.1	48.1	101	53	23.4	30.6	11.9	38.9	36.6	29.9						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	158	120	114	135	123	111	124	99.4	85.8	163						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	0.759	<0.5	2.3	0.558	<0.5	0.953	<0.5	0.575	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	**9.14**	**7.48**	4.28	**4.95**	<3	3.27	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	79.3	6.98	158	76.5	44.9	95.4	22.3	61.1	27.1	23.3						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	166	18.9	454	186	102	246	51.2	179	72.8	76.9						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	16.3	7.46	24.2	14.3	9.3	14.3	4.63	10.8	7.17	6.83						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	1.08	1	<1	1.15	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	5.5	<5	16.6	10.1	<5	7.84	<5	6.37	5.54	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	316	34.7	581	229	221	410	88.7	189	87.7	87.3						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	1010	841	887	761	693	613	662	537	685	748						
TPH Criteria Working Group (TPH CWG)																				
	GRO Surrogate % recovery**	TM245	%		120	103	103	91	111	94	89	90	101	100	105						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	<10	<20	<10	<10	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	12	<20	<10	<10	<10	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	44	<20	<10	24	<10	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	56	<20	<10	24	<10	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						

	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	<10	<20	<10	<10	<10	<10					
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	<10	<20	<10	<10	<10	<10					
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	32	<20	<10	19	<10	<10					
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	32	<20	<10	19	<10	<10					
	Total Aliphatics & Aromatics >C5-35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	<10	94	<20	<10	43	<10	<10					5000
Polyaromatic Hydrocarbons (PAHs)																				
	Naphthalene (aq)	TM178	µg/l	<0.01	0.0209	<0.01	<0.01	<0.05	0.0278	<0.01	<0.2	<0.01	<0.01	<0.01	<0.01		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.00926	0.0707	0.0108	0.0158	<0.1	0.201	0.00748	0.0051	0.0125						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.0061	<0.005	<0.1	<0.005	<0.005	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	**0.0124**	**0.0287**	**0.0251**	0.24	**0.0791**	**0.0851**	<0.1	**0.117**	**0.0762**	**0.0186**	**0.031**		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.0531	0.0143	0.02	<0.1	0.0171	0.0102	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.00833	0.024	0.0118	0.228	0.081	0.0868	<0.1	0.0749	0.0845	0.0191	0.0254						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.0425	0.0109	0.0206	<0.1	0.0174	0.00665	<0.005	<0.005						
	Chrysene (aq)	TM178	µg/l	<0.005	0.0108	0.0247	0.0219	0.316	0.078	0.0981	<0.1	0.078	0.0711	0.0162	0.0237						
	Pyrene (aq)	TM178	µg/l	<0.005	0.011	0.0259	0.0226	0.258	0.0761	0.0827	<0.1	0.109	0.0808	0.0182	0.0291						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	0.0108	0.0213	0.0106	0.211	0.0446	0.0543	<0.1	0.0539	0.0406	<0.005	0.0173						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.0211	0.0388	0.0298	0.429	0.0978	0.11	<0.1	0.102	0.0682	0.0207	0.0242	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.0108	0.0156	0.0105	0.148	0.0319	0.0487	<0.1	0.041	0.0215	0.0081	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.015	0.016	0.015	0.19	0.0496	0.0804	<0.04	0.0621	0.0428	0.0129	0.0151	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.0162	<0.005	<0.1	<0.005	0.00682	0.0051	<0.005						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.0146	0.0257	0.0121	0.256	0.0641	<0.005	<0.1	0.0586	0.0507	0.0056	0.0137	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.012	0.0153	0.0151	0.227	0.0487	<0.005	<0.1	0.0536	0.0392	0.0176	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	0.148	0.236	0.184	2.67	0.737	0.703	<1.64	0.986	0.607	0.147	0.192						
EPH CWG (Speciated)																				
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	<10	<10	<50	10	56	<20	<10	24	<10	<10						

ALS

		January	February	March	April	May
Customer Sample ID		MSMW091	MSMW091	MSMW091	MSMW091	MSMW091
Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id						
Sample Type		OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date		27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021
Sample Received Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021
Final Instruction Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021
Report Completed Date		05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021
SDG		210129-40	210225-101	210325-86	210501-32	210605-41
Lab Sample Number		23630481	23794580	23968502	24193462	24398277
Sample Temperature		7.2	7.8	6.8	6.2	17.4
Sample Time						

Analysis	Test	Method	Units	LOD						UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT Values
Inorganics															
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	<0.2	<0.2	*0.42*	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00		7.28	7.44	7.42	7.17						
	Chloride	TM184	mg/l	<2	12.3	9.1	10	11.5	17.9	250		300			
Filtered (Dissolved) Metals															
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	2.04	2.02	3.24	1.2	9.88	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	53	52.7	55.6	66.1	70.9	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	0.798	<0.3	0.401	<0.3	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	0.23	0.694	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	1.96	1.62	1.61	6.86	3.58	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	13.7	14.2	3.62	4.75	19.6		**10.9**				***79.03***
Unfiltered (Total) Metals															
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	0.276	0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	16.1	7.03	30.9	12.4						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	64.5	55.5	63	89.2						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	0.988	0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	**6.89**	3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	3.24	4.53	67.3	5.99						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	6.21	11.3	172	17.9						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	1.87	3.16	27.5	6.07						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	1.38	1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	16.4	5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	30.5	45.8	409	97.5						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	384	431	576	559						
TPH Criteria Working Group (TPH CWG)															
	GRO Surrogate % recovery**	TM245	%		123	101	118	98	111						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	280	50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	3						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	32	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	127	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	12	142	2790	234						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	377	21	196	3910	277						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	498	<10	281	6230	325						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	875	33	619	12900	836						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	22	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	85	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	41	<10	50	735	69						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	126	<10	118	2100	155						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	548	<10	319	4870	297						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	715	<10	487	7710	521						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	1590	37	1110	**20900**	1360					**5000**	

Polyaromatic Hydrocarbons (PAHs)														
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	1.49	0.0204		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.269	0.0432						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0198	0.391	0.0247						
	Fluoranthene (aq)	TM178	µg/l	<0.005	**0.0637**	<0.005	**0.0787**	4.12	0.32		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	1.28	0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005						
	Chrysene (aq)	TM178	µg/l	<0.005	0.0956	<0.005	0.147	3.26	0.229						
	Pyrene (aq)	TM178	µg/l	<0.005	0.224	<0.005	0.242	5.49	0.466						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	0.0416	<0.005	0.0693	2.98	0.179						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.2	0.00876	0.109	3.77	0.187	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.0799	<0.005	0.0266	0.982	0.0489	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.13	0.0118	0.0765	2.1	0.0994	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0227	0.466	0.005						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.152	0.0148	0.0744	1.11	0.0621	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0588	1.37	0.0565	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	0.986	<0.082	0.925	29.1	1.74						
EPH CWG (Speciated)														
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	875	21	477	10100	602						

ALS

		Janaury	February	March	April	May	June	July	September	October	November	December
Customer Sample ID		MSMW034D	MSMW34D	MSMW34D	MSMW34D	MSMW34D	MSMW34D	MSMW34D	MSMW34D	MSMW34D	MSMW34D	MSMW34D
Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id												
Sample Type		OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date		27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date		05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	23/08/2021	18/10/2021	16/11/2021	07/12/2021	06/01/2022
SDG		210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	211009-28	211106-44	211127-80	211218-53
Lab Sample Number		23630408	23794637	23968550	24193271	24398320	24603511	24798134	25122065	25288393	25417032	25559738
Sample Temperature		7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.2	11.2	11.2	11.2
Sample Time												

Analysis	**Test**	**Method**	**Units**	**LOD**											**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Emission Limit**	**MBAT Values**
Inorganics																				
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00		7.52	7.56	7.61	7.49	7.82	7.44	8.03	7.55	7.54	7.54					
	Chloride	TM184	mg/l	<2	27.4	25	26.6	26.9	27.3	26.7	26.8	26.8	26.9	27	27.6	250		300			
Filtered (Dissolved) Metals																				
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	2.79	2.62	0.623	0.664	2.99	1.18	0.956	1.42	3.03	<0.5	2.65	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	20.8	16.7	20.6	18.8	<10	<10	15.3	21.6	19.1	18.5	15.9	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	1.89	<1	<1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	<0.3	<0.3	0.336	<0.3	<0.3	<0.3	<0.3	0.35	<0.3	<0.3	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.263	<0.2	<0.2	<0.2	0.223	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	2.11	2.08	2.04	1.4	3.35	3.46	1.49	2.02	<0.4	1.82	2.62	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	2.29	2.51	24.3	11.9	5.04	7.98	2.78	10.9	2.3	4.58	3.54		**10.9**				***79.03***
Unfiltered (Total) Metals																				
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.02	0.064	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	3.52	<2	<2	3.56	6.79	2.21	2.51	4.25	3.24	3.74						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	22.5	<20	20.6	20	<20	24.3	<20	<20	36.1	23.6						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	**6.17**	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	1.24	<1	<1	1	35.2	<1	7.6	4.66	<1	<1						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	1.9	<1	<1	1.08	51.4	<1	12.4	4.31	6.03	<1						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	2.95	2.39	1.99	5.47	88	1.65	16.6	5.68	6.22	3.59						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	2.72	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	10.8	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	8.74	24.5	15.4	8.3	245	<5	86.6	28	28.9	13.6						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	309	292	286	309	325	308	324	288	303	302						
TPH Criteria Working Group (TPH CWG)																				
	GRO Surrogate % recovery**	TM245	%		118	111	115	98	120	100	108	103	96	108	87						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	22	<10	<10	<10	20	<10	<10	<10	<10	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	22	<10	<10	<10	20	<10	<10	<10	<10	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	11	<10	<10	<10	<10	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	11	<10	<10	<10	<10	<10						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	<10	22	<10	<10	<10	37	<10	<10	<10	<10	<10						**5000**
Polyaromatic Hydrocarbons																				

(PAHs)	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.00562	<0.005	<0.005	<0.005	<0.005	<0.005		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.00746	0.0223	<0.005	<0.005	<0.005	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.016	<0.005	<0.005	<0.005	<0.005						
	Pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.00539	<0.005	<0.005	<0.005	<0.005	<0.005						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00935	<0.005	<0.005	<0.005	<0.005						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.00801	0.0156	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082						
EPH CWG (Speciated)																				
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	22	<10	<10	10	20	<10	<10	<10	<10	<10					

ALS

	January	February	March	April	May	July	August	September	October	November	December
Customer Sample ID	MSMW034S	MSMW34S	MSMW34S	MSMW34S	MSMW34S	MSMW34S	MSMW34S	MSMW34S	MSMW34S	MSMW34S	MSMW34S
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00			0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id											
Sample Type	OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date	27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021		26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	23/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021	06/01/2022
SDG	210129-40	210225-101	210325-86	210501-32	210605-41	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number	23630427	23794625	23968540	24193260	24398317	24798123	24876586	25122115	25288460	25417093	25559834
Sample Temperature	7.2	7.8	6.8	6.2	17.4		11.8	11.2	11.2	11.2	11.2
Sample Time											

Analysis	**Test**	**Method**	**Units**	**LOD**	January	February	March	April	May	July	August	September	October	November	December	**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Emission Limit**	**MBAT Values**
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*2.28*	*2.9*	*1.08*	*0.876*	*0.365*	*0.626*	*0.892*	<0.2	*2.03*	<0.2	0.259				*0.3*		
	pH	TM256	pH Units	<1.00		5.88	6.59	7.26	6.88	7.15	6.94	7.8	6.18	7.05	7.1						
	Chloride	TM184	mg/l	<2	33	28.3	15.5	17.7	18.8	12	10.3	7.4	25.7	10.2	13.7	250		300			
Filtered (Dissolved) Metals	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	2.28	2.49	1.57	1.06	1.15	0.834	2.04	4.8	2.71	2.06	1.15	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	49.7	42.5	42.9	95	92.1	108	111	51.3	66.7	72.1	28.6	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**0.108**	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	0.409	<0.3	0.607	<0.3	<0.3	<0.3	6.21	1.59	<0.3	<0.3	1.84	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.237	1.07	10.4	<0.2	<0.2	**1.49**	1.06	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	1.03	0.924	1.35	1.08	1.16	2.54	2.95	1.31	<0.4	1.89	1.14	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	1.56	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	6.23	4.92	8.3	2.86	1.73	3.42	64.1	2.23	5	5.1	4.32		**10.9**				***79.03***
Unfiltered (Total) Metals	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	0.021	0.0272	0.0338	0.0375	<0.02	<0.02	<0.02	0.0215	0.034						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	5.04	11.1	7.05	31.5	3.09	62.2	2.66	6.43	6.99	7.14						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	48	28.4	82.9	120	110	133	46	53	82.8	24.7						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	3.12	<0.5	7.52	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	3.05	**13.2**	**5.32**	**84.9**	<3	**142**	<3	<3	<3	3.06		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	34.5	58.9	25.4	498	31.2	937	30.2	11	37.7	35.4						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	34.8	154	32	1070	18.3	1340	12.3	10.2	23.5	30.4						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	2.07	7.71	4.19	55.1	3.07	124	3.36	2.86	3.99	4.38						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	1.03	<1	6	1.06	6.34	<1	1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	5.1	17.7	7.82	79.8	<5	195	<5	<5	8.24	7.73						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	28.5	95.9	41.4	543	18.4	1040	14.2	13.6	27.8	28.6						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	1180	533	290	390	569	865	366	833	391	253						
TPH Criteria Working Group (TPH CWG)	GRO Surrogate % recovery**	TM245	%		100	95	100	93	111	90	87	96	92	103	96						
	GRO >C5-C12	TM245	µg/l	<50	1330	1500	696	328	124	<50	<50	<50	857	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	4	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	10	8	<7	<7	<7	<1	<1	<1	4.48	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	30	38	18	<10	<10	<10	<10	<10	17	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	90	86	46	21	<10	<10	<10	<10	48	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	490	547	236	104	36	<10	<10	<10	319	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	229	276	142	75	29	<10	<10	<10	153	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	59	<40	<10	<10	338	<20	<10	<10	<100	37	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	114	53	79	213	2620	<20	101	99	<100	158	107						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	365	398	354	469	14100	<20	465	543	<100	707	468						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	538	451	433	682	17000	<20	566	642	<100	902	575						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	327	365	157	69	24	<10	<10	<10	213	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	153	184	95	50	19	<10	<10	<10	102	<10	<10						

	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	193	159	77	78	306	<10	41	<10	<100	58	<10						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	49	<40	65	112	1380	<10	74	41	<100	104	84						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	138	119	167	327	5410	<10	289	237	<100	325	247						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	380	278	309	517	7090	<10	404	278	<100	487	331						
	Total Aliphatics & Aromatics >C5-35 (aq)	TM174	µg/l	<10	2250	2230	1440	1520	24200	<10	971	920	857	1410	906					**5000**	
Polyaromatic Hydrocarbons (PAHs)	Naphthalene (aq)	TM178	µg/l	<0.01	0.103	0.133	<0.01	0.0208	0.0646	<0.02	<0.01	<0.01	<0.1	<0.01	<0.01		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	0.495	0.46	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	0.148	0.0579	0.0089						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	0.106	0.0937	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.05	0.0239	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.264	0.151	<0.005	<0.005	0.328	<0.01	<0.005	<0.005	0.114	<0.005	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	0.531	0.434	<0.005	<0.005	0.01	<0.01	<0.005	<0.005	0.114	0.0511	<0.005						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	0.01	<0.01	<0.005	<0.005	0.0564	<0.005	<0.005						
	Pyrene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	0.01	<0.01	<0.005	<0.005	0.176	<0.005	<0.005						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.02	<0.008	<0.002	<0.002	<0.004	<0.004	<0.002	<0.002	<0.02	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.002						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	0.0268	<0.01	<0.01	0.00954	<0.005	<0.05	0.0112	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.05	<0.02	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	1.5	1.3	<0.082	<0.082	0.392	<0.164	<0.082	<0.082	<0.82	0.12	<0.082						
EPH CWG (Speciated)	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	479	451	433	682	16700	<20	566	642	<100	865	575						

ALS

		January	February	March	April	May	June	July	August	September	October	November	December
Customer Sample ID		MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S	MSMW155S
Depth		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id													
Sample Type		OUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER	GROUND_WATER
Sampled Date		27/01/2021	23/02/2021	23/03/2021	30/04/2021	04/06/2021	07/07/2021	11/08/2021	25/08/2021	07/10/2021	04/11/2021	26/11/2021	16/12/2021
Sample Received Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	09/07/2021	13/08/2021	26/08/2021	09/10/2021	06/11/2021	27/11/2021	18/12/2021
Final Instruction Date		29/01/2021	25/02/2021	25/03/2021	01/05/2021	05/06/2021	13/07/2021	13/07/2021	26/08/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Report Completed Date		05/02/2021	06/03/2021	06/04/2021	10/05/2021	14/06/2021	21/07/2021	20/08/2021	06/09/2021	18/10/2021	16/11/2021	07/12/2021	06/01/2022
SDG		210129-40	210225-101	210325-86	210501-32	210605-41	210709-150	210813-46	210826-133	211009-28	211106-44	211127-80	211218-53
Lab Sample Number		23630498	23794593	23968514	24193237	24398294	24603493	24798342	24876555	25122095	25288429	25417066	25559882
Sample Temperature		7.2	7.8	6.8	6.2	17.4	18.2	18.2	11.8	11.2	11.2	11.2	11.2
Sample Time													

Analysis	**Test**	**Method**	**Units**	**LOD**											**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Emission Limit**	**MBAT Values**
Inorganics																				
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*0.764*	*0.978*	*0.823*	*0.791*	*0.743*	*0.69*	*0.774*	*0.7*	*0.864*	*1.13*	*0.952*	*0.985*				*0.3*		
	pH	TM256	pH Units	<1.00		7.63	7.57	7.73	7.49	7.94	7.61	7.58	7.9	7.49	7.74	7.6						
	Chloride	TM184	mg/l	<2	19.9	18.6	18.9	18.1	19	18.9	19	18.9	19	21.9	21.2	20.9	250		300			
Filtered (Dissolved) Metals																				
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	2.9	2.24	1.87	1.61	2.15	2.56	3.26	3.29	5.35	3.01	2.57	2.87	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	69.6	61.4	61.3	53.5	36.3	57.3	69	60.5	72.8	65.9	75.5	61.4	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.382	<0.3	<0.3	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**4.31**	**3.28**	<0.2	<0.2	<0.2	0.59	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	0.487	<0.4	<0.4	<0.4	<0.4	<0.4	0.732	<0.4	<0.4	<0.4	<0.4	0.603	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	1.09	<1	<1	1.58	<1	<1	<1	<1	1.22		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	3.9	1.05	6.9	<1	2.58	20.5*	9.26	<1	2.38	<1	1.95	2.15		**10.9**				***79.03***
Unfiltered (Total) Metals																				
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	3.24	2.54	2.13	2.5	3.46	3.2	3.28	6.13	3.34	2.92	3.68						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	64.4	55.7	59.4	55.9	58.9	74.4	65	80.9	63.6	96.1	75.4						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1.03	2.31	<1	<1	1.1	2.1	<1	<1						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	1.23	1.12	<1	1.87	5.04	1.39	<1	1.3	2.14	<1	<1						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	2.01	1.37	<1	<1	<1	1.29	<1	<1						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	7.52	6.59	6.97	11	21	7.75	<5	17.5	17.2	5.58	6.54						
	Hardness, Total as CaCO3 unfilter	TM152	mg/l	<0.35	-	284	257	256	247	234	249	251	262	255	274	275						
TPH Criteria Working Group (TPH CWG)																				
	GRO Surrogate % recovery**	TM245	%		122	109	119	99	113	98	102	94	106	102	107	75						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	<50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	14	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	15	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	14	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	29	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	43	40	43	25	<10	27	<10	26	32	28	98	57						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	26	16	26	<10	<10	10	<10	<10	17	12	66	41						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	106	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	69	56	69	25	<10	37	<10	26	49	40	270	98						

	Total Aliphatics & Aromatics >C5-(	TM174	µg/l	<10	70	58	69	73	<10	38	<10	28	78	40	305	98					**5000**	
Polyaromatic Hydrocarbons (PAHs)																						
	Naphthalene (aq)	TM178	µg/l	<0.01	0.157	0.201	0.388	1.21	0.336	**2.36**	1.53	1.35	1.54	0.427	**5.48**	**5.27**		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	5.7	6.35	6.71	6.65	5.64	5.87	4.48	4.81	4.83	5.09	8.29	7.34						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	0.116	0.0429	0.0432	0.0269	0.005	1.78	0.0656	0.0632	0.0618	0.064	0.0468	0.0502						
	Fluoranthene (aq)	TM178	µg/l	<0.005	1.36	1.39	1.07	1.6	0.82	1.35	1.17	1.2	1.39	0.621	1.94	1.57		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	0.221	0.221	0.337	0.0834	0.303	0.142	0.0342	0.234	0.0139	0.644	0.612		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	0.108	0.117	0.216	0.0333	0.376	0.124	0.0192	0.279	0.012	1.11	1.15						
	Fluorene (aq)	TM178	µg/l	<0.005	0.251	0.504	0.398	0.726	0.258	<0.005	0.488	0.28	0.625	0.146	1.95	1.54						
	Chrysene (aq)	TM178	µg/l	<0.005	0.0316	0.0313	0.0176	0.0279	0.005	0.0463	0.0327	0.0208	0.0269	0.0285	0.0397	0.0334						
	Pyrene (aq)	TM178	µg/l	<0.005	0.937	0.717	0.544	0.826	0.467	0.688	0.607	0.772	0.708	0.479	0.89	0.794						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	0.0346	0.0213	0.0426	0.005	0.0415	0.0262	0.0217	0.0357	0.0287	0.046	0.0228						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.0113	0.013	0.0113	0.00508	<0.005	<0.005	0.0104	<0.005	0.0052	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.00908	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	**0.0054**	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	0.0069	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (a	TM178	µg/l	<0.082	8.55	9.6	9.53	11.7	7.65	12.8	8.67	8.57	9.72	6.94	20.4	18.4						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	14	<10						

ALS

		Customer Sample ID	SW4	SW4	SW4	SW4	SW4	SW4	SW4	SW4	SW4	SW4	SW4	SW4	SW4		
		Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00		
SDG(s):	211217-91	**AGS Id**															
Customer:	PJA Civil Engineering Birmingham (118	**Sample Type**	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	CE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER		
Location:	Coed Darcy, Skewen, Neath	**Sampled Date**	27/01/2021	23/02/2021	23/03/2021	30/04/2021	03/06/2021	07/07/2021	11/08/2021	24/08/2021	06/10/2021	03/11/2021	29/11/2021	16/12/2021			
Order no:	108284	**Sample Received Date**	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	09/07/2021	13/08/2021	25/08/2021	07/10/2021	05/11/2021	01/12/2021	17/12/2021			
		Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	13/07/2021	13/07/2021	25/08/2021	07/10/2021	07/10/2021	25/08/2021	07/10/2021	07/10/2021		
		Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	13/06/2021	21/07/2021	23/08/2021	03/09/2021	14/10/2021	15/11/2021	15/12/2021	05/01/2022			
		SDG	210129-40	210225-101	210325-86	210501-32	210604-41	210709-150	210813-46	210825-41	211007-53	211105-119	211201-41	211217-91			
		Lab Sample Number	23630348	23794744	23968720	24193398	24390403	24603717	24798286	24865986	25107400	25286274	25434809	25551231			
		Sample Temperature	7.2	7.8	6.8	6.2	12.9	18.2	18.2	15.8	5.8	5.8	5.8	5.8			
		Sample Time															

Analysis	**Test**	**Method**	**Units**	**LOD**												**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Emission Limit**	**MBAT PNEC**
Carbon																					
	Carbon, Organic (diss.filt)	TM090	mg/l	<3	-	-	-	-	-	-	-	-	-	-	-						
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	*0.394*	<0.2	<0.2			*0.3*		
	pH	TM256	pH Units	<1.00	-	8.01	8.17	8.09	8.03	8.15	8.18	8.09	7.8	7.8	7.75	8.11					
	Chloride	TM184	mg/l	<2	13.4	12.6	14.3	15.3	17.7	16.3	16.8	17.2	16.3	16.1	20.2	16.1	250		300		
Filtered (Dissolved) Metals	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	0.0126	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07		
	Arsenic (diss.filt)	TM152	µg/l	<0.5	0.679	0.722	0.814	0.76	1.05	1.33	1.48	1.46	1.35	1.05	1.04	0.766	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	37.9	43.3	46.4	53.2	53.9	45.8	51.7	66.5	53.4	56	56	50.5	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	2.03	1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	2.88	0.918	0.772	0.436	1.16	0.866	<0.3	1.17	1.24	1.91	1.03	0.936	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	1.36	1.18	1.18	1.01	1.1	0.535	<0.4	1.13	1.13	10.7	1.13	1.13	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	11.4	6.14	11.3	1.86	1.51	1.88	3.8	2.69	3.14	4.14	3.64	2.1		**10.9**				***79.03***
	Calcium (Dis.Filt)	TM152	mg/l	<0.2	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3	TM152	mg/l	<0.65	-	-	-	-	-	-	-	-	-	-	-	-						
Unfiltered (Total) Metals	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	<2	<2	<2	2	<2	<2	<2	<2	<2	<2	<2						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	58.1	50.3	64.1	61.1	62.1	66.4	69.8	66.8	58.2	58.4	58.8						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	2.34	<1	1.92	2.57	<1	1.42	1.13	1.89	2.32	113	<1						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	1.08	3.73	<1	1	<1	<1	<1	1.1	<1	4.45	<1						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	1.12	1.55	1.76	1.22	1.26	1.17	1.09	1.51	1.54	1.98	1.94						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	9.73	16.6	8.87	11.2	7.68	10.8	48.3	8.35	10.3	81.4	6.95						
	Calcium (Tot. Unfilt.)	TM152	mg/l	<0.057	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	198	216	225	213	221	220	219	211	206	235	221						
TPH Criteria Working Group (TPH CWG)																					
	GRO Surrogate % recovery**	TM245	%		<0.01	106	114	99	107	99	127	112	113	103	100	99						
	GRO >C5-C12	TM245	µg/l	<50	0.679	<50	<50	<50	50	<50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	37.9	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<0.08	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<1	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	2.88	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<0.2	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	1.36	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<1	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<1	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	11.4	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	29	30	<10	<10	<10	<10	<10	<20						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	50	<10	<10	<10	22	<10	<10	<10	<20						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	50	<10	30	<10	22	<10	<10	<10	<20						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<20						

	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<20						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	15	<10	<10	<10	<10	<10	<20						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	46	<10	<10	<10	<10	<10	<20						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	<10	<10	<10	50	10	76	<10	22	<10	<10	<10	<20					**5000**	
Polyaromatic Hydrocarbons (PAHs)																						
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	0.0116	0.00603	0.0152	0.0179	0.021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01						
	Fluoranthene (aq)	TM178	µg/l	<0.005	0.0496	<0.005	<0.005	0.0099	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.0179	<0.005	<0.005	0.0102	<0.005	0.0119	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	0.00612	<0.005	0.00796	0.0115	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01						
	Chrysene (aq)	TM178	µg/l	<0.005	0.0443	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01						
	Pyrene (aq)	TM178	µg/l	<0.005	0.0597	0.0138	0.011	0.00923	<0.005	<0.005	<0.005	0.0101	0.0107	0.0113	<0.005	<0.01						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	0.00987	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.0988	<0.005	0.0107	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.0352	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.0509	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.0539	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.0485	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	0.469	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.164						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	<10	<10	50	<10	<10	<10	22	22	<10	<10	<20						

ALS

			January	February	March	April	May	June	July	August	September	October	November	December
		Customer Sample ID	SW5	SW5	SW5	SW5	SW5	SW5	SW5	SW5	SW5	SW5	SW5	SW5
		Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
SDG(s):	211217-91	**AGS Id**												
Customer:	PJA Civil Engineering Birmingham (118	**Sample Type**	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	CE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER
Client Reference / Location:	Coed Darcy, Skewen, Neath	**Sampled Date**	27/01/2021	23/02/2021	23/03/2021	30/04/2021	03/06/2021	07/07/2021	11/08/2021	24/08/2021	06/10/2021	03/11/2021	29/11/2021	16/12/2021
Order no:	108284	**Sample Received Date**	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	09/07/2021	13/08/2021	25/08/2021	07/10/2021	05/11/2021	01/12/2021	17/12/2021
		Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	13/07/2021	13/07/2021	25/08/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
		Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	13/06/2021	21/07/2021	23/08/2021	03/09/2021	14/10/2021	16/11/2021	15/12/2021	05/01/2022
		SDG	210129-40	210225-101	210325-86	210501-32	210604-41	210709-150	210813-46	210825-41	211007-53	211105-119	211201-41	211217-91
		Lab Sample Number	23630339	23794756	23968736	24193409	24390425	24603755	24798296	24866004	25107420	25286310	25434823	25551250
		Sample Temperature	7.2	7.8	6.8	6.2	12.9	18.2	18.2	15.8	5.8	5.8	5.8	5.8
		Sample Time												

Analysis	Test	Method	Units	LOD												UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT PNEC
Carbon																					
	Carbon, Organic (diss.filt)	TM090	mg/l	<3	-	-	-	-	-	-	-	-	-	-	-						
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	<0.2	0.385	0.369	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.346	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00		7.86	7.28	7.72	7.57	7.44	8.23	7.43	7.5	7.43	7.42	7.97						
	Chloride	TM184	mg/l	<2	7.4	11.3	12.7	18.5	17.9	17.6	17.9	18.3	12.6	12.1	21.4	18.4	250		300			
Filtered (Dissolved) Met																					
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	0.0162	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	0.528	0.578	1.1	0.836	0.81	1.16	1.14	1.05	0.886	1.05	0.747	0.906	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	28.4	26.2	42.7	45.8	37.6	45.8	55.7	51.3	39.7	48	42.3	32	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	3.3	0.755	1.11	<0.3	1.52	<0.3	0.908	0.696	5.03	3.06	1.13	3.83	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	0.874	<0.2	0.284	0.404	0.468	<0.2	<0.2	0.207	0.201	0.244	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	1.03	0.801	2.12	0.82	1.01	0.946	1.05	0.864	1.68	<0.4	0.861	1.36	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	5.23	3.14	6.67	2.75	1.96	5.45	7.11	4.21	10.4	10.8	5.04	8.16		**10.9**				***79.03***
	Calcium (Dis.Filt)	TM152	mg/l	<0.2	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3	TM152	mg/l	<0.65	-	-	-	-	-	-	-	-	-	-	-	-						
Unfiltered (Total) Metals																					
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	0.0951	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	<2	14.7	<2	2	<2	2.05	<2	<2	<2	<2	3.19						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	40.4	36	46.9	44.9	52.3	57.5	58.7	54	49.8	44.6	30.2						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	0.839	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	17.8	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	2.4	82.7	1.66	2.3	1.15	4.19	1.13	7.03	5.89	2.42	15.6						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	<1	259	<1	2	1.08	8.55	<1	1.96	1.21	1.24	38.9						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	<1	27.6	1.01	1.25	1.01	1.95	<1	1.65	2.23	1.34	3.16						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	16.2	<5	5	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	9.34	412	9.24	16.4	9.56	49.5	31.1	15.9	16.7	10.4	68						
	Calcium (Tot. Unfilt.)	TM152	mg/l	<0.057	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	135	178	197	155	153	187	196	183	170	190	155						
TPH Criteria Working G																					
	GRO Surrogate % recovery**	TM245	%		123	110	121	102	107	95	101	113	102	99	99	100						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	<50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	31	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	<10	54	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	<10	85	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						

	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	<10	<10	85	10	10	11	<10	<10	<10	<10	<10	<10					**5000**	
Polyaromatic Hydrocart																						
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0837	0.066	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0479	0.0115						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	**0.0372**	<0.005	**0.0154**	**0.0116**	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0094**	**0.0933**		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0132		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	0.0192	<0.005	0.0728	0.0388	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0166	0.037						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.048	0.0474	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0241	0.0108						
	Chrysene (aq)	TM178	µg/l	<0.005	0.0326	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	0.0066	<0.005	0.0906						
	Pyrene (aq)	TM178	µg/l	<0.005	0.0544	<0.005	0.0202	0.0143	0.005	<0.005	<0.005	0.0104	<0.005	0.008	0.0135	0.0879						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	0.0189	<0.005	0.0623						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.0627	<0.005	<0.005	0.0119	0.005	<0.005	<0.005	<0.005	<0.005	0.0085	<0.005	0.14	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.0205	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0437	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.0298	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0767	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0212						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.038	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0639	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.0245	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0762	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	0.319	<0.082	0.24	0.19	0.082	<0.082	<0.082	<0.082	<0.082	<0.082	0.112	0.84						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	<10	85	<10	10	<10	<10	<10	<10	<10	<10	<10						

ALS

			January	February	March	April	May	June	July	August	September	October	November	December
		Customer Sample ID	SW6	SW6	SW6	SW6		SW6	SW6	SW6	SW6	SW6	SW6	SW6
		Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00		0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
SDG(s):	211217-91	**AGS Id**												
Customer:	PJA Civil Engineering Birmingham (118	**Sample Type**	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER		SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER
Client Reference / Location:	Coed Darcy, Skewen, Neath	**Sampled Date**	27/01/2021	23/02/2021	23/03/2021	30/04/2021		07/07/2021	11/08/2021	24/08/2021	06/10/2021	03/11/2021	29/11/2021	16/12/2021
Order no:	108284	**Sample Received Date**	29/01/2021	25/02/2021	25/03/2021	01/05/2021		09/07/2021	13/08/2021	25/08/2021	07/10/2021	05/11/2021	01/12/2021	17/12/2021
		Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021		13/07/2021	13/07/2021	25/08/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
		Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021		21/07/2021	23/08/2021	03/09/2021	14/10/2021	15/11/2021	15/12/2021	05/01/2022
		SDG	210129-40	210225-101	210325-86	210501-32		210709-150	210813-46	210825-41	211007-53	211105-119	211201-41	211217-91
		Lab Sample Number	23630329	23794767	23968751	24193424		24603783	24798307	24866034	25107433	25286340	25434841	25551281
		Sample Temperature	7.2	7.8	6.8	6.2		18.2	18.2	15.8	5.8	5.8	5.8	5.8
		Sample Time												

Analysis	Test	Method	Units	LOD												UK DWS	EQS Freshwater (AA)	EQS Freshwater (MAC)	EQS 90 percentile	Permit Emission Limit	MBAT PNEC
Carbon																					
	Carbon, Organic (diss.filt)	TM090	mg/l	<3	-	-	-	-	-	-	-	-	-	-	-						
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00	-	7.84	7.73	7.96	-	7.79	8.16	7.76	7.56	7.57	7.5	7.69						
	Chloride	TM184	mg/l	<2	10.3	9.8	13.5	14.2	-	13.4	12.9	12.7	12.1	11.8	12.9	11.7	250		300			
Filtered (Dissolved) Met																					
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	0.0127	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	<0.5	<0.5	0.694	0.659	-	0.646	0.768	0.764	<0.5	0.593	0.514	<0.5	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	16.3	17.7	18.8	18.1	-	14.3	25.8	25.6	23.4	24.1	28.4	20.3	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	2.15	-	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	2.13	<0.3	<0.3	<0.3	-	0.396	<0.3	0.456	1.31	1.24	0.716	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	-	0.56	0.208	<0.2	<0.2	<0.2	0.32	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	0.47	<0.4	0.41	<0.4	-	<0.4	0.662	0.562	0.442	<0.4	0.569	<0.4	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	5.2	3.23	11.8*	2.08	-	3.53	46.9	<1	2.86	2.44	2.63	2.11		**10.9**				***79.03***
	Calcium (Dis.Filt)	TM152	mg/l	<0.2	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3	TM152	mg/l	<0.65	-	-	-	-	-	-	-	-	-	-	-	-						
Unfiltered (Total) Metals																					
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	<2	<2	<2	-	<2	<2	<2	<2	<2	<2	<2						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	30.9	<20	25	-	24.9	27.5	28.1	28.4	38.1	24	30.8						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	-	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	1.37	<1	<1	-	<1	<1	<1	1.97	2.23	441	<1						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	1.61	1.01	<1	-	<1	<1	<1	<1	1.12	17.9	<1						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	-	<1	<1	<1	<1	<1	1.18	<1						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	-	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	5.27	29.9	<5	-	10.8	<5	11.7	15.4	10.6	308	6.66						
	Calcium (Tot. Unfilt.)	TM152	mg/l	<0.057	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	133	144	150	-	119	117	121	136	144	159	121						
TPH Criteria Working Gi																					
	GRO Surrogate % recovery**	TM245	%		109	108	112	100	-	94	98	107	114	104	98	98						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	-	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	-	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	-	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	-	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	-	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	-	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	-	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	-	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	14	<10	<10	81	-	<10	<10	<10	<10	<10	<10	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	14	<10	<10	81	-	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						

	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	26	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	26	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	40	<10	<10	81	-	<10	<10	<10	<10	<10	<10	<10					**5000**	
Polyaromatic Hydrocart																						
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0159		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.00537	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	0.00542	<0.005	<0.005	<0.005	<0.005	<0.005		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.032	-	<0.005	0.0166	<0.005	<0.005	<0.005	<0.005	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.00636	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Pyrene (aq)	TM178	µg/l	<0.005	0.0144	0.00923	<0.005	0.00907	-	<0.005	0.00614	0.0144	<0.005	0.0076	<0.005	0.0082						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.0188	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.0103	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.0124	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.0117	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	0.0102	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	<0.082	<0.082	<0.082	<0.082	-	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	14	<10	<10	81	-	<10	<10	<10	<10	<10	<10	<10						

ALS

SDG(s):	211217-91
Customer:	PJA Civil Engineering Birmingham (11813)
Client Reference / Location:	Coed Darcy, Skewen, Neath
Order no:	108284

Customer Sample ID	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1
Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
AGS Id												
Sample Type	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	CE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER
Sampled Date	27/01/2021	23/02/2021	23/03/2021	30/04/2021	03/06/2021	07/07/2021	11/08/2021	24/08/2021	06/10/2021	03/11/2021	29/11/2021	16/12/2021
Sample Received Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	09/07/2021	13/08/2021	25/08/2021	07/10/2021	05/11/2021	01/12/2021	17/12/2021
Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	13/07/2021	13/07/2021	25/08/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	13/06/2021	21/07/2021	20/08/2021	03/09/2021	14/10/2021	15/11/2021	16/12/2021	05/01/2022
SDG	210129-40	210225-101	210325-86	210501-32	210604-41	210709-150	210813-46	210825-41	211007-53	211105-119	211201-41	211217-91
Lab Sample Number	23630377	23794567	23968491	24193227	24390344	24603479	24798085	24865932	25107365	25286125	25434773	25551180
Sample Temperature	7.2	7.8	6.8	6.2	12.9	18.2	18.2	15.8	5.8	5.8	5.8	5.8
Sample Time												

Analysis	**Test**	**Method**	**Units**	**LOD**	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**MBAT PNEC**	**Permit Emission Limit**
Carbon																						
	Carbon, Organic (diss.filt)	TM090	mg/l	<3	-	-	-	-	-	-	-	-	-	-	-	-						
Inorganics																						
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	2.91	3.22	4.01	1.51	2.33	0.295	0.937	0.263	2.7	3.39	3.37	3.59				0.3		
	pH	TM256	pH Units	<1.00	7.27	7.21	7.29	7.77	7.18	7.67	7.92	7.15	7.04	7.24	7.25	7.32						
	Chloride	TM184	mg/l	<2	23.4	23.8	27	24.5	26.6	13.4	17.4	19.5	23	25.7	28	23.5	250		300			
Filtered (Dissolved) Metals	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.054	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	0.543	0.66	1.28	<0.5	0.5	1.18	1.48	1.43	1	0.88	0.702	0.829	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	179	180	178	170	189	105	117	151	119	167	137	141	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	1.44	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	<0.3	<0.3	1.27	<0.3	<0.3	<0.3	<0.3	2000	**1**			***49.12***	
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	**3.06**	<0.2	<0.2	<0.2	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	0.646	<0.4	0.405	0.647	0.434	<0.4	0.564	0.897	0.669	1.87	<0.4	0.459	20	**4**	34		***30.4***	
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	1.02	<1	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	15.2	5.32	11.6	12.8	2.09	15.2	13.4	17.6	5.19	1.66	3.99	14.3		**10.9**			***79.03***	
	Calcium (Dis.Filt)	TM152	mg/l	<0.2	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3	TM152	mg/l	<0.65	-	-	-	-	-	-	-	-	-	-	-	-						
Unfiltered (Total) Metals	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.024	<0.02	0.0371	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	<2	<2	3.48	4.9	<2	4.24	4.01	<2	<2	<2	2.07						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	199	163	155	181	116	121	152	145	158	147	151						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	1.63	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	1.63	6.33	1.39	5.96	3.43	<1	<1	<1	2.61						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	<1	1.54	5.75	32.1	2.62	13.6	9.93	3.66	1.31	2.29	9.11						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	<1	1.68	1.72	2.15	<1	2	3.09	<1	<1	1.5	1.43						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	<5	6.16	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	10.3	37.4	226	1460	142	285	376	29	134	83	324						
	Calcium (Tot. Unfilt.)	TM152	mg/l	<0.057	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	672	872	646	651	276	404	509	438	669	642	704						
TPH Criteria Working Group (TPH CWG)	GRO Surrogate % recovery**	TM245	%		118	94	106	96	96	93	92	114	108	83	85	99						
	GRO >C5-C12	TM245	µg/l	<50	50	118	88	73	197	79	<50	70	125	88	110	139						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	17	<10	<10	21	13	<10	<10	16	10	<10	14						
	Aliphatics >C8-C10	TM245	µg/l	<10	10	26	15	15	45	18	13	13	30	18	23	31						
	Aliphatics >C10-C12	TM245	µg/l	<10	15	33	32	25	58	20	10	22	32	26	35	42						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	10	<20	<10	176	<10	67	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	25	<20	<10	796	<10	114	30	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	252	<20	<10	2800	<10	334	140	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	277	<20	<10	3770	<10	515	170	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						

	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	17	10	10	30	12	<10	<10	20	12	15	21						
	Aromatics >EC10-EC12	TM245	µg/l	<10	10	22	21	17	39	13	<10	15	21	17	24	28						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	44	55	57	<50	59	<20	<10	111	<10	65	86	<10						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	10	13	<50	11	<20	<10	293	<10	<10	40	<10						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<50	78	<20	<10	1350	<10	<10	111	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	44	65	70	<50	148	<20	<10	1760	<10	65	237	<10						
	Total Aliphatics & Aromatics >C5-35 (aq)	TM174	µg/l	<10	94	183	158	<50	622	78	44	**5600**	124	667	517	139						**5000**
Polyaromatic Hydrocarbons (PAHs)																						
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	0.0751	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0356	0.053		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	0.0498	<0.005	0.0865	0.112	<0.005	<0.005	<0.005	<0.005	0.022	0.0752	0.0967						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.0187	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.0158						
	Fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	0.0375	<0.005	<0.005	0.0943	0.13	<0.005	<0.005	<0.005	<0.005	0.0127	0.0627	0.0834						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Pyrene (aq)	TM178	µg/l	<0.005	0.00998	<0.005	0.0107	<0.025	0.005	<0.005	0.0113	0.0153	<0.005	0.0078	<0.005	<0.005						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	<0.002	<0.002	<0.01	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.025	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	<0.082	<0.082	<0.082	<0.41	0.261	<0.082	<0.082	<0.082	<0.082	<0.082	0.185	0.249						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	<10	<10	<50	277	<20	<10	3590	3590	448	170	<10						

ALS

			January	February	March	April	May	June	July	August	September	October	November	December
		Customer Sample ID	SW2	SW2	SW2	SW2	SW2	SW2	SW2	SW2	SW2	SW2	SW2	SW2
		Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
SDG(s):	211217-91	**AGS Id**												
Customer:	PJA Civil Engineering Birmingham (118	**Sample Type**	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	CE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER
Client Reference / Location:	Coed Darcy, Skewen, Neath	**Sampled Date**	27/01/2021	23/02/2021	23/03/2021	30/04/2021	03/06/2021	07/07/2021	11/08/2021	24/08/2021	06/10/2021	03/11/2021	29/11/2021	16/12/2021
Order no:	108284	**Sample Received Date**	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	09/07/2021	13/08/2021	25/08/2021	07/10/2021	05/11/2021	01/12/2021	17/12/2021
		Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	13/07/2021	13/07/2021	25/08/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
		Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	13/06/2021	21/07/2021	23/08/2021	03/09/2021	14/10/2021	17/11/2021	31/12/2021	15/01/2022
		SDG	210129-40	210225-101	210325-86	210501-32	210604-41	210709-150	210813-46	210825-41	211007-53	211105-119	211201-41	211217-91
		Lab Sample Number	23630367	23794720	23968676	24193361	24390376	24603661	24798264	24865945	25107376	25286157	25434786	25551198
		Sample Temperature	7.2	7.8	6.8	6.2	12.9	18.2	18.2	15.8	5.8	5.8	5.8	5.8
		Sample Time												

Analysis	**Test**	**Method**	**Units**	**LOD**											**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**Permit Emission Limit**	**MBAT PNEC**
Carbon																				
	Carbon, Organic (diss.filt)	TM090	mg/l	<3	23.7	24.8	22.9	25.2	31.2	24.6	23.7	25.1	12.6	16.8	27.7	19.3						
Inorganics																						
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	*0.566*	*0.417*	0.263	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	*0.38*	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00	7.68	7.71	7.69	7.64	7.6	7.53	8.04	7.11	7.6	7.72	7.44	7.88						
	Chloride	TM184	mg/l	<2	17.1	15.7	19.1	18.9	21.8	14.6	14.1	15.4	15.6	18.2	20.4	20.7	250		300			
Filtered (Dissolved) Metals																						
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	0.0141	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	<0.5	<0.5	0.672	<0.5	0.5	0.575	<0.5	0.785	<0.5	<0.5	<0.5	<0.5	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	60.6	57.9	73.5	46	74.5	134	101	119	40.9	41.2	40.1	45.2	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	0.405	<0.3	0.455	<0.3	<0.3	<0.3	<0.3	2000	**1**				***49.12***
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4	0.423	<0.4	0.476	0.54	<0.4	0.966	<0.4	<0.4	20	**4**	34			***30.4***
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	4.2	3.98	23	1.03	7.75	11.2	2.93	10.9	2.46	3.63	2.82	1.38		**10.9**				***79.03***
	Calcium (Dis.Filt)	TM152	mg/l	<0.2	66.65	67.7	91.5	66.8	87.1	71.6	60.1	82.2	35.8	57	53	54.4						
	Hardness, Total as CaCO3	TM152	mg/l	<0.65	-	-	-	-	-	-	-	-	116	-	-	-						
Unfiltered (Total) Metals																						
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	<2	<2	<2	2	<2	<2	<2	<2	<2	<2	<2						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	73.6	73.3	41.6	81.8	164	108	123	52.3	42.4	41	50.5						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	27.9	<1	<1	<1	<1	<1	<1						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	<1	1.06	1.03	1	1.73	<1	<1	<1	<1	1.09	<1						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	1.45	<1	<1	<1	<1						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	<5	95.3	21	12	36.4	<5	6.22	<5	6.53	16	17.4						
	Calcium (Tot. Unfilt.)	TM152	mg/l	<0.057	-	65.7	94.5	70.1	85.3	74.8	62.3	85	39	60.2	59.1	59						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	217	302	225	274	240	210	277	127	196	198	195						
TPH Criteria Working Group (TPH CWG)																						
	GRO Surrogate % recovery**	TM245	%		118	93	102	95	101	94	107	102	100	92	95	102						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	<50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	<11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	<28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	27	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	27	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						

	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	31	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	<10	<10	31	<10	15	<10	<10	<10	<10	<10	<10						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	<10	27	31	<10	15	<10	<10	<10	<10	<10	<10					**5000**	
Polyaromatic Hydrocarbons (PAHs)	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	0.0201	0.0201	<0.005	0.0202	0.005	0.00535	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					
	Fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		**0.0063**	0.12		
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		**0.1**	0.1		
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	0.0355	<0.005	0.00895	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0106	<0.005					
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					
	Pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017		
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.017		
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	**0.00017**	0.27		
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1		0.0082		
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1				
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082					
EPH CWG (Speciated)	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	27	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10					

ALS

			January	February	March	April	May	June	July	August	September	October	November	December
		Customer Sample ID	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW3
		Depth	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
SDG(s):	211217-91	**AGS Id**												
Customer:	PJA Civil Engineering Birmingham (118	**Sample Type**	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	CE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER	FACE_WATER
Location:	Coed Darcy, Skewen, Neath	**Sampled Date**	27/01/2021	23/02/2021	23/03/2021	30/04/2021	03/06/2021	07/07/2021	11/08/2021	24/08/2021	06/10/2021	03/11/2021	29/11/2021	16/12/2021
Order no:	108284	**Sample Received Date**	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	09/07/2021	13/08/2021	25/08/2021	07/10/2021	05/11/2021	01/12/2021	17/12/2021
		Final Instruction Date	29/01/2021	25/02/2021	25/03/2021	01/05/2021	04/06/2021	13/07/2021	13/07/2021	25/08/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
		Report Completed Date	05/02/2021	06/03/2021	06/04/2021	10/05/2021	13/06/2021	21/07/2021	20/08/2021	03/09/2021	14/10/2021	16/11/2021	15/12/2021	05/01/2022
		SDG	210129-40	210225-101	210325-86	210501-32	210604-41	210709-150	210813-46	210825-41	211007-53	211105-119	211201-41	211217-91
		Lab Sample Number	23630357	23794731	23968703	24193374	24390388	24603692	24798274	24865963	25107390	25286172	25434797	25551220
		Sample Temperature	7.2	7.8	6.8	6.2	12.9	18.2	18.2	15.8	5.8	5.8	5.8	5.8
		Sample Time												

Analysis	**Test**	**Method**	**Units**	**LOD**												**UK DWS**	**EQS Freshwater (AA)**	**EQS Freshwater (MAC)**	**EQS 90 percentile**	**MBAT PNEC**	**Permit emission limit**
Carbon																					
	Carbon, Organic (diss.filt)	TM090	mg/l	<3	-	-	-	-	-	-	-	-	-	-	-						
Inorganics																					
	Ammoniacal Nitrogen as N	TM099	mg/l	<0.2	<0.2	<0.2	<0.2	*0.663*	0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2				*0.3*		
	pH	TM256	pH Units	<1.00	-	7.78	7.77	7.54	7.59	7.57	7.6	7.37	7.55	7.57	7.6	7.74						
	Chloride	TM184	mg/l	<2	13.6	13.2	16.8	18.3	19.6	17.3	18	18.4	14	16.6	22.5	19.6	250		300			
Filtered (Dissolved) Metals																					
	Mercury (diss.filt)	TM183	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1		0.07			
	Arsenic (diss.filt)	TM152	µg/l	<0.5	0.645	0.712	0.692	1.44	0.736	1.4	1.15	1.41	0.836	0.911	0.58	0.587	10	**50**				
	Boron (diss.filt)	TM152	µg/l	<10	28.9	27.7	34.7	57.5	39.2	42.4	58.3	73.2	32.7	41	40.5	34.9	1000					
	Cadmium (diss.filt)	TM152	µg/l	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	5	**0.08**	0.45			
	Chromium (diss.filt)	TM152	µg/l	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	50					
	Copper (diss.filt)	TM152	µg/l	<0.3	2.9	2.19	1.88	<0.3	1.52	1.05	<0.3	0.314	3.41	2.44	2	2.89	2000	**1**			***49.12***	
	Lead (diss.filt)	TM152	µg/l	<0.2	<0.2	<0.2	<0.2	**1.55**	0.2	0.514	<0.2	<0.2	<0.2	<0.2	<0.2	0.312	10	**1.2**	14			
	Nickel (diss.filt)	TM152	µg/l	<0.4	0.844	0.773	0.771	0.861	0.847	<0.4	1.12	0.816	1.04	<0.4	0.843	0.919	20	**4**	34		***30.4***	
	Selenium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	10					
	Vanadium (diss.filt)	TM152	µg/l	<1.0	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1		**20**				
	Zinc (diss.filt)	TM152	µg/l	<1.0	12.5	9.87	14.7	13.9	2.48	8.23	3.44	4.35	5.73	4.43	4.18	4.75		**10.9**			***79.03***	
	Calcium (Dis.Filt)	TM152	mg/l	<0.2	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3	TM152	mg/l	<0.65	-	-	-	-	-	-	-	-	-	-	-	-						
Unfiltered (Total) Metals																					
	Mercury (tot.unfilt)	TM183	µg/l	<0.02	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
	Arsenic (tot.unfilt)	TM152	µg/l	<2	-	<2	<2	2.3	2.4	<2	<2	<2	<2	<2	<2	<2						
	Boron (tot.unfilt)	TM152	µg/l	<20	-	42.9	34	63.7	50.7	53.5	60.5	64.2	46.6	42.5	39.6	28.4						
	Cadmium (tot.unfilt)	TM152	µg/l	<0.5	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
	Chromium (tot.unfilt)	TM152	µg/l	<3	-	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3		**4.7**				
	Copper (tot.unfilt)	TM152	µg/l	<1	-	3.96	2.5	1.27	8.92	1.52	<1	<1	5.29	3.95	61.6	4.23						
	Lead (tot.unfilt)	TM152	µg/l	<1	-	2.92	1.4	<1	13	1.04	<1	<1	2.76	<1	3.2	1.25						
	Nickel (tot.unfilt)	TM152	µg/l	<1	-	1.24	1.23	1.07	1.85	1.03	<1	<1	1.41	1.15	1.58	1.1						
	Selenium (tot.unfilt)	TM152	µg/l	<1	-	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1						
	Vanadium (tot.unfilt)	TM152	µg/l	<5	-	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5						
	Zinc (tot.unfilt)	TM152	µg/l	<5	-	18.5	46.8	18.2	43.8	15.2	11	13.8	14.8	12.7	48.7	10.4						
	Calcium (Tot. Unfilt.)	TM152	mg/l	<0.057	-	-	-	-	-	-	-	-	-	-	-	-						
	Hardness, Total as CaCO3 unfiltered	TM152	mg/l	<0.35	-	127	167	237	181	190	203	225	152	151	197	134						
TPH Criteria Working Group (TPH CWG)																					
	GRO Surrogate % recovery**	TM245	%		122	110	121	100	103	92	109	113	105	95	97	99						
	GRO >C5-C12	TM245	µg/l	<50	<50	<50	<50	<50	50	<50	<50	<50	<50	<50	<50	<50						
	Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Benzene	TM245	µg/l	<7	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	1	**10**	50			
	Toluene	TM245	µg/l	<4	<4	<4	<4	<4	4	<4	<1	<1	<1	<1	<1	<1		**74**				
	Ethylbenzene	TM245	µg/l	<5	<5	<5	<5	<5	5	<5	<1	<1	<1	<1	<1	<1						
	m,p-Xylene	TM245	µg/l	<8	<8	<8	<8	<8	8	<8	<1	<1	<1	<1	<1	<1						
	o-Xylene	TM245	µg/l	<3	<3	<3	<3	<3	3	<3	<1	<1	<1	<1	<1	<1						
	Sum of detected Xylenes	TM245	µg/l	<11	<11	<11	<11	<11	11	<11	<2	<2	<2	<2	<2	<2						
	Sum of detected BTEX	TM245	µg/l	<28	<28	<28	<28	<28	28	<28	<5	<5	<5	<5	<5	<5						
	Aliphatics >C5-C6	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C6-C8	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C8-C10	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C10-C12	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	24	<10						
	Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	39	<10						
	Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	63	<10						
	Aromatics >EC5-EC7	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC7-EC8	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC8-EC10	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC10-EC12	TM245	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						

	Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10						
	Total Aliphatics & Aromatics >C5-35 (a	TM174	µg/l	<10	<10	<10	<10	<10	10	<10	<10	15	<10	<10	63	<10						**5000**
Polyaromatic Hydrocarbons (PAHs)																						
	Naphthalene (aq)	TM178	µg/l	<0.01	<0.01	<0.01	<0.01	0.088	0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01		**2**	130			
	Acenaphthene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.0103	0.895	0.0116	<0.005	0.17	<0.05	<0.005	<0.005	<0.005	<0.005						
	Acenaphthylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.0358	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005						
	Fluoranthene (aq)	TM178	µg/l	<0.005	<0.005	0.00956	<0.005	0.0469	<0.005	<0.005	**0.0195**	<0.05	<0.005	<0.005	<0.005	<0.005		**0.0063**	0.12			
	Anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.0493	<0.005	<0.005	<0.005	<0.05	<0.005	0.0059	<0.005	<0.005		**0.1**	0.1			
	Phenanthrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.00567	0.0977	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005						
	Fluorene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	0.00737	0.702	0.0136	0.0759	0.131	<0.05	<0.005	<0.005	<0.005	<0.005						
	Chrysene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.0275	<0.005	<0.005	<0.005	<0.05	<0.005	0.0095	<0.005	<0.005						
	Pyrene (aq)	TM178	µg/l	<0.005	0.0181	0.0144	0.00645	0.0464	<0.005	<0.005	0.0196	0.253	0.0145	0.0088	0.0132	<0.005						
	Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	0.0348	<0.005	<0.005	<0.005	<0.05	<0.005	0.0202	<0.005	<0.005						
	Benzo(b)fluoranthene (aq)	TM178	µg/l	<0.005	0.0205	0.0237	<0.005	0.0103	<0.005	<0.005	<0.005	<0.05	0.0223	0.0096	<0.005	0.0092	0.1		0.017			
	Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.00852	0.00915	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	0.00991	0.0055	<0.005	<0.005	0.1		0.017			
	Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	**0.00794**	**0.00854**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.02	0.0106	**0.0064**	<0.002	<0.002	0.01	**0.00017**	0.27			
	Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005						
	Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	0.0155	<0.005	<0.005	<0.005	0.1		0.0082			
	Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	0.1					
	PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	<0.082	<0.082	<0.082	2.03	<0.082	<0.082	0.34	<0.82	<0.082	<0.082	<0.082	<0.082						
EPH CWG (Speciated)																						
	Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	63	<10						

Appendix F Landfill Gas Monitoring Data

January Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	25/01/2021	0.3	0.3	3.3	3.3	19	19	1016	0.56
MSMW155D	25/01/2021	0.3	0.3	0.7	0.5	21.2	21.2	1016	0.09
MSMW155S	25/01/2021	3.2	3.2	2	2	17.3	17.3	1016	-0.02
CBH49	25/01/2021	79.9	79.9	4	4	6.9	6.9	1015	0.36
CARW009	25/01/2021	1.4	1.4	2.6	2.6	19.9	19.9	1016	0.07
CARW008	25/01/2021	0.4	0.4	1.6	1.6	19.7	19.7	1015	0.09
CBH51	25/01/2021	0.5	0.4	5.3	2.3	19.1	19.1	1015	-0.1
CBH52	25/01/2021	0.9	0.4	0.3	0.2	20.5	20.5	1015	0.05
CBH20	25/01/2021	32.4	32.2	5.7	5.6	0.1	0.1	1015	0.1
MSMW231	25/01/2021	9.2	8.7	3.4	3.1	16.4	16.4	1015	-0.27
CBH57	25/01/2021	1.5	0.4	1.5	1.4	12.6	12.6	1015	0.05
CBH32	25/01/2021	0.3	0.3	0.2	0.2	20.6	20.6	1015	4.99
CBH23	25/01/2021	0.3	0.3	0.2	0.1	21.1	21.1	1015	0.02

February Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	26/02/2021	0.1	0.1	13.5	13.5	5.1	5.1	1020	0.03
MSMW155D	26/02/2021	0.1	0.1	0.5	0.3	20.9	20.9	1020	0.03
MSMW155S	26/02/2021	0.1	0.1	9.6	0.7	20.4	20.4	1020	-0.02
CBH49	26/02/2021	0.1	0.1	0.1	0.1	21.0	21.0	1020	-0.03
CARW009	26/02/2021	0.4	0.3	1.1	0.9	20.6	20.6	1020	0.03
CARW008	26/02/2021	1	0.1	0.8	0.6	20.7	20.7	1020	-0.03
CBH51	26/02/2021	6.9	6.2	4.5	4.5	13.4	13.4	1020	-0.05
CBH52	26/02/2021	0.2	0.1	0.2	0.1	21.0	21.0	1020	0.01
MSMW231	26/02/2021	7.8	6.6	4.6	3.7	16.2	16.2	1020	0.01
CBH20	26/02/2021	67.8	67.7	5.6	5.6	0.3	0.3	1020	-0.02
CBH57	26/02/2021	0.1	0.1	0.4	0.1	21.0	21.0	1020	0.03
CBH32	26/02/2021	0.2	0.2	0.8	0.8	20.1	20.1	1020	0.03
CBH23	26/02/2021	0.1	0.1	1	0.5	20.3	20.3	1020	0.03

March Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	23/03/2021								
MSMW155D	23/03/2021	0.3	0.2	0.5	0.5	20.8	20.8	1031	0.07
MSMW155S	23/03/2021	0.5	0.5	0.8	0.8	20.1	20.1	1031	-0.02
CBH49	23/03/2021	1.1	0.4	0.2	0.1	20.8	20.8	1030	0.02
CARW009	23/03/2021	0.5	0.4	1	0.9	20.7	20.7	1030	0.03
CARW008	23/03/2021	0.2	0.2	0.7	0.7	19.9	19.9	1030	0.09
CBH51	23/03/2021	1.2	1.2	1	1	18.9	18.9	1030	-0.05
CBH52	23/03/2021	0.3	0.3	0.3	0.2	20.3	20.3	1030	0
CBH20	23/03/2021	8.8	8.3	3.2	3	16.2	16.2	1029	0.03
MSMW231	23/03/2021	49.4	49.4	3.9	3.9	0.7	0.7	1030	0.02
CBH57	23/03/2021	5.9	5.8	5.1	5	4	4	1030	-0.27
CBH32	23/03/2021	0.4	0.3	0.4	0.3	20.4	20.4	1030	0
CBH23	23/03/2021	1	0.3	1.9	1.3	18.2	18.2	1030	0.14

April Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	24/04/2021	0	0	5.5	5.5	7.2	7.2	1027	-0.02
MSMW155D	24/04/2021	0.2	0	1.5	1.4	16.5	16.5	1027	0.02
MSMW155S	24/04/2021	0.7	0.7	1.5	1.4	16.5	16.5	1027	0.17
CBH49	24/04/2021	0.4	0.4	0.2	0.2	20.4	20.4	1027	-0.15
CARW009	24/04/2021	0.2	0.2	0.8	0.8	20.5	20.5	1027	0.02
CARW008	24/04/2021	0	0	0.8	0.6	20.7	20.7	1027	0.21
CBH51	24/04/2021	1.5	0.9	0.8	9.6	19.8	19.8	1026	-0.12
CBH52	24/04/2021	2	2	1.6	1.6	17.8	17.8	1026	
MSMW231	24/04/2021	9.2	8.7	4.2	3.9	14.5	14.5	1026	0.05
CBH20	24/04/2021	40.2	40.1	6.5	6.4	0.7	0.7	1026	-0.07
CBH57	24/04/2021	0.5	0.5	0.4	0.3	19.5	19.5	1026	0.05
CBH32	24/04/2021	0.1	0	0.1	0.1	20.1	20.1	1026	-0.12
CBH23	24/04/2021	0.3	0	0.9	0.7	19.2	19.2	1026	-2.41

May Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	27/05/2021	0	0	5.2	5.2	7.8	7.8	1033	-0.1
MSMW155D	27/05/2021	0	0	1.7	1.7	19.8	19.8	1033	-0.09
MSMW155S	27/05/2021	0.1	0.1	0	0	21.5	21.5	1033	-0.05
CBH49	27/05/2021	0	0	0.1	0.1	19.6	19.6	1031	-0.09
CARW009	27/05/2021	0.1	0.1	0.6	0.6	21.1	21.1	1035	-0.09
CARW008	27/05/2021	0	0	1	1	20.2	20.2	1035	-0.09
CBH51	27/05/2021	0	0	0.1	0.1	19.9	19.9	1031	-0.1
CBH52	27/05/2021	0	0	0.9	0.9	17.9	17.9	1031	-0.05
MSMW231	27/05/2021	2.7	2.7	1.7	1.7	17.4	17.4	1030	0.1
CBH20	27/05/2021	72.8	72.8	3.4	3.4	0.2	0.2	1029	-0.03
CBH57	27/05/2021	4.4	4.4	2.3	2.3	6.9	6.9	1029	-0.17
CBH32	27/05/2021	0.1	0.1	0.2	0.2	20.4	20.4	1030	-0.07
CBH23	27/05/2021	0	0	0.4	0.4	19.1	19.1	1030	0.02

June Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	23/06/2021	0.1	0	8.7	8.7	7.3	7.3	1024	0.03
MSMW155D	23/06/2021	0.1	0	0.1	0.1	21.9	21.9	1024	0.05
MSMW155S	23/06/2021	0.2	0.1	1	1	19.9	19.9	1024	0.09
CARW009	23/06/2021	0.3	0.3	0.8	0.7	21.3	21.3	1024	0.03
CARW008	23/06/2021	0.1	0	0.6	0.6	21.1	21.1	1024	0.07
CBH51	23/06/2021	2.4	2.4	1.3	1.3	18.5	18.5	1024	0.07
CBH52	23/06/2021	0.8	0.5	2.5	1.7	17.6	17.6	1024	0.03
MSMW231	23/06/2021	7.3	7.1	3.8	3.6	14.6	14.6	1024	0.05
CBH20	23/06/2021	28.2	28.1	7.7	7.6	0.2	0.2	1024	0.03
CBH57	23/06/2021	0.9	0.9	0.9	0.9	18.7	18.7	1024	0.02
CBH32	23/06/2021	1.3	1.3	2.9	2.9	16.3	16.3	1024	0.03
CBH23	23/06/2021	0.3	0.1	1.5	0.5	19.7	19.7	1024	-0.03

July Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	21/07/2021	0.2	0.2	13.4	13.3	2.7	2.7	1004	0.07
MSMW155D	21/07/2021	0.2	0.2	0.2	0.1	20.9	20.9	1004	-1.4
MSMW155S	21/07/2021	0.4	0.3	0.6	0.3	20.6	20.6	1004	-7.3
CBH49	21/07/2021								
CARW009	21/07/2021	0.2	0.2	1.3	1.2	19.1	19.1	1016	0
CARW008	21/07/2021	3	2.4	3	2.4	19.4	19.4	1016	-10.5
CBH51	21/07/2021	0.4	0.2	0.1	0.1	21	21	1003	0
CBH52	21/07/2021	1	0.8	0.8	0.7	17.5	17.5	1003	0
MSMW231	21/07/2021	11.7	11.7	3.9	3.9	15.1	15.1	1003	0.34
CBH20	21/07/2021	84	83.9	5.5	5.5	0.2	0.2	1002	-0.03
CBH57	21/07/2021	7.8	7.8	5.2	5.2	6.1	6.1	1003	0.02
CBH23	21/07/2021	1.1	0.2	0.3	0.2	20.2	20.2	1003	0.03

August Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	17/08/2021	0.1	0.1	13.5	13.5	5.1	5.1	1020	0.03
MSMW155D	17/08/2021	0.1	0.1	0.5	0.3	20.9	20.9	1020	0.03
MSMW155S	17/08/2021	0.1	0.1	9.6	0.7	20.4	20.4	1020	-0.02
CBH49	17/08/2021	0.1	0.1	0.1	0.1	21.0	21.0	1020	-0.03
CARW009	17/08/2021	0.4	0.3	1.1	0.9	20.6	20.6	1020	0.03
CARW008	17/08/2021	1	0.1	0.8	0.6	20.7	20.7	1020	-0.03
CBH51	17/08/2021	6.9	6.2	4.5	4.5	13.4	13.4	1020	-0.05
CBH52	17/08/2021	0.2	0.1	0.2	0.1	21.0	21.0	1020	0.01
MSMW231	17/08/2021	7.8	6.6	4.6	3.7	16.2	16.2	1020	0.01
CBH20	17/08/2021	67.8	67.7	5.6	5.6	0.3	0.3	1020	-0.02
CBH57	17/08/2021	0.1	0.1	0.4	0.1	21.0	21.0	1020	0.03
CBH32	17/08/2021	0.2	0.2	0.8	0.8	20.1	20.1	1020	0.03
CBH23	17/08/2021	0.1	0.1	1	0.5	20.3	20.3	1020	0.03

September Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	23/09/2021	0.1	0.1	2.7	2.7	17.3	17.3	1023	0.53
MSMW155D	23/09/2021	0.1	0.1	0.6	0.5	20.7	20.7	1023	0.91
MSMW155S	23/09/2021	0.1	0.1	0.2	0.2	21.1	21.1	1023	0.63
CBH49	23/09/2021	5.8	5.4	4.4	4	15.2	15.2	1023	0.56
CARW009	23/09/2021	0.1	0.1	0.6	0.6	20.7	20.7	1023	0.7
CARW008	23/09/2021	0.4	0.4	0.9	0.9	20.9	20.9	1023	0.83
CBH51	23/09/2021	0.9	0.7	0.7	0.5	20.8	20.8	1023	0.42
CBH52	23/09/2021	4.7	4.5	8.4	7.7	5.9	5.9	1023	0.15
MSMW231	23/09/2021	16.5	16.2	2.2	2.1	17.1	17.1	1023	0.31
CBH20	23/09/2021	41.2	38.7	9.5	9.2	0.5	0.5	1023	0
CBH57	23/09/2021	7.8	6.5	5.2	4.4	7.9	7.9	1023	0
CBH32	23/09/2021	5.8	5.8	13.2	13.2	1.2	1.2	1023	0.83
CBH23	23/09/2021	4.1	4	0.5	0.4	20.5	20.5	1023	0

October Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	25/10/2021	0.1	0.1	5.5	1.7	18.4	18.4	1008	0.03
MSMW155D	25/10/2021	0.1	0.1	0.5	0.3	20.9	20.9	1008	0.02
MSMW155S	25/10/2021	0.1	0.1	1.2	1.1	20.4	20.4	1008	-0.3
CBH49	25/10/2021	10.1	10	5.1	4.8	15.2	15.2	1008	0.02
CARW009	25/10/2021	0.4	0.2	0.8	0.3	20.8	20.8	1008	0.03
CARW008	25/10/2021	0.1	0.1	1.7	1.4	20.6	20.6	1008	0.02
CBH51	25/10/2021	0.2	0.1	0.2	0.2	20.2	20.2	1008	0.05
CBH52	25/10/2021	4.4	3.9	7.8	7.2	8.4	8.4	1008	0.02
MSMW231	25/10/2021	15.3	14.5	2.3	2.3	18.8	18.8	1008	0
CBH20	25/10/2021	43.5	39.7	10.1	9.5	0.8	0.8	1008	0.09
CBH57	25/10/2021	3.2	3	1.6	1.5	12.6	12.6	1008	0.03
CBH32	25/10/2021	5.3	4.8	12.5	12	2.2	2.2	1008	0
CBH23	25/10/2021	4.1	4	0.5	0.4	20.5	20.5	1008	-0.03

November Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	24/11/2021	0.6	0	5	4.9	17.6	17.6	1020	0.48
MSMW155D	24/11/2021	0	0	1	0.3	20.6	20.6	1020	0.09
MSMW155S	24/11/2021	0	0	0.8	0.8	20.8	20.8	1020	0.93
CBH49	24/11/2021	1.3	1.1	0.5	0.3	20.7	20.7	1020	0.67
CARW009	24/11/2021	0	0	0.2	0.2	20.9	20.9	1019	0.49
CARW008	24/11/2021	0.2	0.1	1.9	1.8	20.7	20.7	1019	0.92
CBH51	24/11/2021	3.7	2.6	2.9	2.9	16.4	16.4	1020	0.05
CBH52	24/11/2021	9.2	8.6	2.1	2	17.6	17.6	1020	0.32
MSMW231	24/11/2021	6.8	6.3	21.5	1.5	20.3	20.3	1020	0.15
CBH20	24/11/2021	28.7	28.7	8.5	8.5	0.1	0.1	1020	0.05
CBH57	24/11/2021	10.6	10.6	8.1	8.1	0.1	0.1	1020	0.32
CBH32	24/11/2021	5.9	4.5	13.9	10.7	5.1	5.1	1020	0.12
CBH23	24/11/2021	0.8	0.3	2.6	1.7	17.9	17.9	1020	0.12

December Gas Data

Location	Date	CH4 (%)		CO2 (%)		O2 (%)		Barometric Pressure	Relative Pressure
		Peak	Stable	Peak	Stable	Minimum	Stable		
MSMW91	28/12/2021	0.4	0	4.6	4.1	15.4	15.4	1003	-1.3
MSMW155D	28/12/2021	0	0	1.3	1.2	21.2	21.2	1003	0.17
MSMW155S	28/12/2021	0.3	0.2	0.7	0.3	21.7	21.7	1004	0.38
CBH49	28/12/2021	0.4	0.4	0.1	0.1	21.7	21.7	1001	-0.85
CARW009	28/12/2021	1	0.9	2.2	2.1	19.8	19.8	1004	-1.71
CARW008	28/12/2021	0.2	0.2	2.2	2.2	20.1	20.1	1003	0.8
CBH51	28/12/2021	4	0.1	0.2	0.1	21.3	21.3	1000	-2.32
CBH52	28/12/2021	0.2	0.1	0.1	0.1	21.6	21.6	1000	0.32
CBH20	28/12/2021	0.3	0.3	0.1	0.1	21.9	21.9	1001	1.14
MSMW231	28/12/2021	60.5	60.4	4.1	4.1	0.4	0.4	999	-0.62
CBH57	28/12/2021	0.3	0.3	0.2	0.2	21.9	21.9	1001	0.65
CBH32	28/12/2021	4.1	2.7	10.3	6.7	11.3	11.3	1001	-1.96
CBH23	28/12/2021	0.1	0.1	2	1.7	17.8	17.8	1001	-0.34