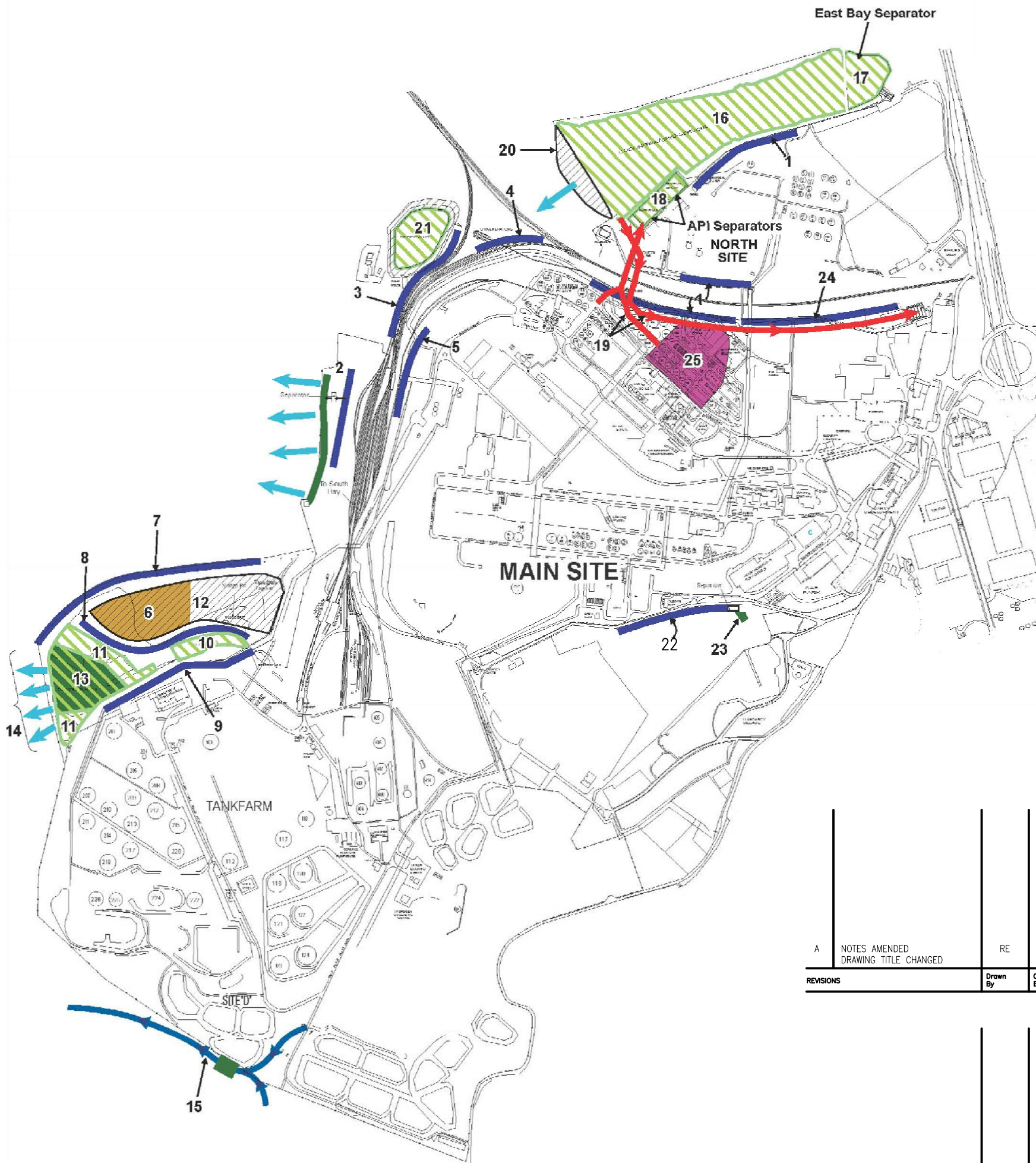
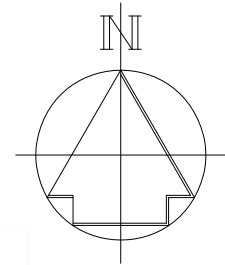




NOTES

1. THE FOLLOWING HAS BEEN AMENDED BY ATKINS – REFERENCE NUMBER 27 HAS BEEN REPLACED BY 22 FROM ORIGINAL DRAWING PROVIDED IN S106.

Key

- Diffuse Discharge
- Free product monitoring/ interception
- Free product source reduction
- Oily sludge removal & treatment
- Constructed wetland
- Earthwork/ capping/ landscaping
- Remove/reconfigure drainage
- Source reduction/ containment

A	NOTES AMENDED DRAWING TITLE CHANGED	RE	ML	10/03/10
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REVISIONS	Drawn By	Checked By	Date
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LLANDARCY BOG RAP REPORT	–	MP	02/09/09
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PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
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Atkins Ltd
Consulting Engineers
The Axis, 10 Holliday Street
Birmingham West Midlands B1 1TF

Tel 0121 483 5000
Fax 0121 483 5252

THIS DRAWING IS NOT TO BE SCALED

CLIENT

ST.MODWEN

PROJECT
COED DARCY URBAN VILLAGE

DRAWING TITLE
RAP FEATURES PLAN

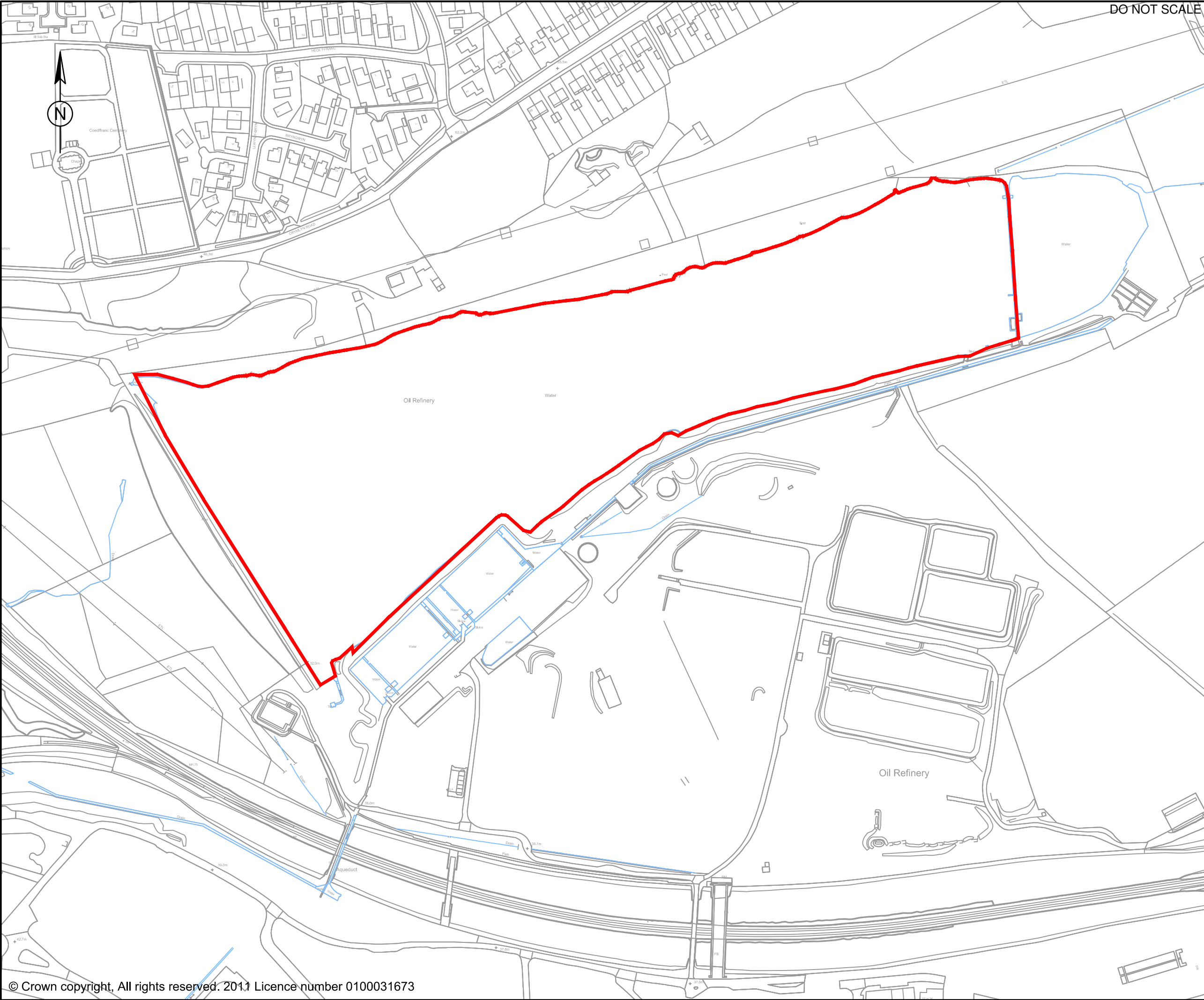
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DATE	DATE	DATE	DATE
02/09/09	02/09/09		

0	SHEET	PLOT DATE
	A3	10/03/10

DRAWING NO	REV
5041216-RAP-DWG-538	A

Drawing

5041216-ATK-DR-C-REM-DWG-2105



KEY:

— MONITOR PHASE 21 BOUNDARY

P1	26/10/15	FIRST ISSUE	MJ	CS	MP
Rev.	Date	Description	By	Chkd	App'd

Drawing Status	S2
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ATKINS

The Axis
10 Holiday Street
Birmingham
B1 1TF

Tel: +44 (0)1214 835000
Fax: +44 (0)1214 835252
www.atkinsglobal.com

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MONITOR PHASE 21

Scale	Designed	Drawn	Checked	Authorised
1:2500		MJ	MP	MP
Original Size	Date	Date	Date	Date
A3		26/10/15	26/10/15	26/10/15
Drawing Number	Revision			
5041216-ATK-DR-C-REM-DWG-2105	P 1			

Appendix A

Photo Sheet

NORTH SITE RESERVOIR PHOTOS



Photograph 1: Dredging Unit on Reservoir



Photograph 2: Typical sample of underlying material assessed at the point of collection following dredging works



Photograph 3: Geotube dewatering sludge dredged from the reservoir



Photograph 4: North Site Reservoir Land Bridge remnant infrastructure clearance



Photograph 5: North Site Reservoir remnant infrastructure clearance
(Southern Bank looking west)



Photograph 6: North Site Reservoir remnant infrastructure clearance
(Southern Bank looking east)

Technical Note

Project: Coed Darcy – North Site Reservoir

Subject: North Site Reservoir Water Inflow Summary

Client:	St. Modwen Developments Ltd	Version:	A
Project No:	04020/A	Author:	L Clark
Date:	26/08/2022	Approved:	M Poland
Document Reference: 04020-PJA-22-XX-TN-R-0075			

I Introduction

I.1 Overview

The purpose of this technical note is to provide a summary of laboratory data related to watercourses discharging to and from the North Site Reservoir (NSR) at Coed Darcy and to review the potential impact the nutrient and chemical concentrations within the watercourses may have if flows ultimately discharge to Crymlyn Bog.

I.2 Background

The NSR occupies an area of approximately 7 hectares in the north of the wider Coed Darcy development site, formerly BP Llandarcy Oil Refinery. The reservoir was created by constructing a dam at the western end of the valley to retain water for use during firefighting during the operational years of the refinery. Dewatering works commenced in late 2021 to lower water levels within the NSR.

East Bay, a second, smaller, waterbody was present directly to the east of the NSR. Until recently the area of East Bay was separated from the NSR by a bund approximately 100m in length and approximately 5 to 10m in width. East Bay has been largely dry since May and the bund was removed in June 2022 as part of the NSR dewatering works.

2 Sampling Information

2.1 Sampling Overview

Sampling of the NSR inputs and outputs has taken place since late 2020. Initially, monitoring was undertaken on a fortnightly basis at five sampling points to gather baseline data and to assess the composition of the inputs and outputs. Following commencement of dewatering the sampling frequency was increased from fortnightly to weekly in February 2022. As of April 2022,

three additional inputs understood to comprise drainage from the adjacent M4 motorway (M4 – North, M4 – Centre and M4 – South) have been sampled.

Sampling of the Trade Effluent (36”) has also been undertaken to assess water quality being discharged from the NSR to the River Neath.

This technical note assesses available laboratory data for the following sampling locations, shown on Figure 1 in Appendix A:

- East Bay In;
- NSR NE Corner);
- M4 North (600mm pipe);
- M4 Central (450mm pipe);
- M4 South (300mm inlet); and
- NSR Central Stream;
- Trade Effluent (36”).

Table 1 below summarises the laboratory analysis undertaken on surface water samples:

Table 1: Laboratory Analytical Suites

Sample Point	Period	Analysis
East Bay In	December 2020 – April 2022	• Inorganics • Total Petroleum Hydrocarbons (TPH) • Volatile Organic Compounds (VOC)
NSR NE Corner / East Bay In (NW) / East Bay NW Corner	December 2020 – April 2022	• Inorganics • TPH • Polycyclic Aromatic Hydrocarbons • VOC
	May 2022 – June 2022	• Inorganics • TPH • PAH • VOC • Total Metals • Dissolved Metals
M4 – 600mm Pipe, 450mm Pipe & 300mm Inlet	March 2022 – April 2022	• Inorganics • TPH • PAH • VOC
	May 2022 – June 2022	• Inorganics • TPH • PAH • VOC • Total Metals • Dissolved Metals
NSR Central Stream	May 2022 – June 2022	• Inorganics • TPH

Sample Point	Period	Analysis
		• PAH • VOC • Total Metals • Dissolved Metals
Trade Effluent (36")	December 2020 – June 2022	• Inorganics • TPH • PAH • VOC • SVOC • Total Metals • Dissolved Metals

2.2 Sampling Locations

2.2.1 East Bay

‘East Bay In’ is located to the east of East Bay along the western edge of a densely wooded area extending eastwards towards the M4. This drainage input comprises a small watercourse with a constant flow. ‘East Bay In’ was sampled from December 2020 to April 2022 to reflect water quality associated with M4 drainage and natural watercourses flowing through the wooded area. It is assumed the water flows northwards, from ‘East Bay In’, around East Bay before discharging into the NSR in the north eastern corner at sample point ‘NSR NE Corner’. After April 2022, sampling was carried out at individual inflows to East Bay, as summarised in sections 2.2.3 to 2.2.5.

2.2.2 NSR NE Corner

Sample location ‘NSR NE Corner’ is located in the north eastern corner of the NSR and is sampled to capture NSR inputs from M4 drainage (M4 North – 600mm Pipe, M4 – Centre 450mm Pipe) and additional inputs from within the wooded area to the north of East Bay (M4 – South 300mm Inlet).

2.2.3 M4 North – 600mm Pipe

The ‘M4 North’ sample point is situated in the north eastern region of the wooded area to the east of the NSR, where water discharges from a 600mm diameter pipe within the M4 embankment. It is thought the pipe collects water from spring flows and surface water runoff from the M4. Water from the 600mm pipe flows south through the woodland and into a stream flowing east to west from ‘M4 Centre’ to ‘East Bay In’ sampling locations.

2.2.4 M4 Centre – 450mm Pipe

The 'M4 Centre' sample point comprises a 450mm diameter pipe positioned along the eastern edge of the densely wooded area to the east of the NSR, at the base of the M4 embankment. It is understood the pipe collects surface water run-off from the M4 and from a residential area located to the east of the M4. Water flows westwards from the 450mm pipe towards sample point 'East Bay In'.

2.2.5 M4 South – 300mm Inlet

The 'M4 South' sampling point is located in the south eastern area of the woodland to the east of the NSR. The sample point comprises a 300mm inlet discharging into a catchment pit which does not appear to have any outlets. During periods of heavy rainfall water within the catchment pit overflows allowing water to flow west towards the NSR. The source of the 300mm inlet is unknown.

2.2.6 NSR Central Stream

As water levels have reduced within the NSR and the waterline has receded westwards, a stream has emerged flowing east to west through the centre of the NSR basin. The stream is predominantly sourced from remaining water draining from East Bay and water flowing west from NSR NE Corner. The water discharges into the remaining waterbody of the NSR, before being pumped out of the NSR. Visible petroleum hydrocarbon contamination has been observed in the NSR Central Stream during sampling.

2.2.7 Trade Effluent (36")

The Trade Effluent sampling point is located north of Darcy Business Park and south of the railway cutting. Prior to decommissioning, water levels within the NSR were controlled by manually operated pumps located at the south western end of the NSR. Water was pumped across the railway cutting and along the southern boundary of the railway cutting, before being discharged to the River Neath to the east. A sample is collected from a 36" pipe, immediately before the water leaves the site.

All sample locations are shown on Figure 1 in Appendix A.

3 Assessment of Laboratory Analytical Data

3.1 Assessment Criteria

Results from laboratory analysis of surface water samples have been screened against Environmental Quality Standards (EQS) set out in the Water Framework Directive (Standards and Classification) Directions England and Wales 2015 to provide an indication of potential risks to surface water quality.

Copper, manganese, nickel, and zinc concentrations have been screened against predicted no effect concentrations (PNEC) values derived using the metal bioavailability 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, manganese, nickel, and zinc. As a result, the site specific PNEC for copper was calculated using a DOC concentration of 15mg/l and a DOC concentration of 20mg/l was used for manganese, nickel, and zinc.

In the absence of an EQS and to provide broad indication of water quality, laboratory analytical data for total petroleum hydrocarbons and total suspended solids have been screened against the respective environmental permit EPR/LB3293HN emission limits which relate to consented surface water discharges from the wider Coed Darcy site to Crymlyn Bog.

Trigger concentrations for Dissolved Available Inorganic Nitrogen (DAIN), Dissolved Available Inorganic Phosphorus (DAIP) and electrolyte levels (measured as electrical conductivity) set out in the Coed Darcy Nutrient Management Plan have been used for consistency with ongoing assessments of nutrient levels in surface water discharges to Crymlyn Bog from the wider Coed Darcy site. DAIN comprises total concentrations of nitrite (NO_2), ammoniacal nitrogen (NH_4) and nitrate (NO_3). The trigger concentrations were determined based on twelve months of site data collected by the Environment Agency between 2002 and 2003. The Environment Agency Wales Report indicated that levels of these nutrients were generally similar to or lower than those observed in the wider catchment.

Adoption of EQS, permit emission limits and NMP trigger concentrations is considered to be conservative on the basis that the surface water sampling locations are some distance from the intended surface water receptor. There will realistically be attenuation and dilution of contaminant concentrations which have not been accounted for in this assessment, so the findings are representative of 'worst case' conditions.

Screened laboratory analytical data and DAIN concentration trend graph are presented in Appendix B.

3.1.1 East Bay In

Inorganics

Based on screened laboratory data presented in Appendix B, recorded contaminant concentrations at East Bay In were largely below the adopted criteria, with the exception of DAIN concentrations. The DAIN trigger concentration was exceeded in 31 of the 32 samples collected between December 2020 and April 2022, with nitrate being the primary nutrient resulting in elevated DAIN concentrations.

Recorded DAIN concentrations ranged from 6.99mg/l to 15.15mg/l compared to a trigger concentration of 2mg/l. In all instances the primary source of inorganic nitrogen was recorded as nitrate. DAIP was recorded at a maximum concentration of 0.118mg/l compared with a trigger concentration of 0.05mg/l, with the sporadic exceedances generally occurring during summer months.

3.1.2 NSR North East Corner

Inorganics

Recorded concentrations of DAIN exceeded the trigger concentration in 27 of the 28 samples collected from NSR NE Corner, with the primary source being nitrate. Elevated concentrations ranged from 6.95mg/l to 15mg/l. DAIP was recorded marginally above the trigger concentration in four of 28 samples at a maximum concentration of 0.07mg/l compared with a trigger concentration of 0.05mg/l.

A single exceedance of the adopted criteria for total suspended solids of 2mg/l was recorded in June 2021, with a concentration of 107mg/l. The exceedance may be the result of disturbance of sediments on the base of the watercourse at the time of sampling due to low water levels.

Polycyclic Aromatic Hydrocarbons (PAHs)

A single PAH exceedance of the annual average EQS (AA-EQS) for fluoranthene was recorded in May 2022, however the maximum allowable concentration (MAC) EQS screening value of 0.12µg/l was not exceeded.

3.1.3 M4 – North (600mm Pipe)

Inorganics

Exceedances of the DAIN trigger concentration were recorded in all 11 samples, with results ranging from 13.30mg/l to 18.80mg/l. As seen at previous sampling points the primary source

of inorganic nitrogen is nitrate. As mentioned in section 2.2.3, the watercourse consists of spring flows and surface water runoff from the M4.

Polycyclic Aromatic Hydrocarbons (PAHs)

Exceedances of available EQS for PAH compounds were recorded sporadically in samples collected in May and June 2022. With regard to fluoranthene three of the four AA-EQS exceedances did not exceed the MAC-EQS concentration of 0.12µg/l. PAH exceedances recorded at sample point M4 – North are summarised in Table 2 below.

Table 2: M4 – North PAH EQS Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Fluoranthene	04/05/2022	0.0127	0.0063 (AA-EQS)
	10/05/2022	0.156	
	23/05/2022	0.0118	
	07/06/2022	0.062	
Benzo(b)fluoranthene	10/05/2022	0.112	0.017 (MAC-EQS)
	07/06/2022	0.0492	
Benzo(k)fluoranthene	10/05/2022	0.0507	0.017 (MAC-EQS)
	07/06/2022	0.0284	
Benzo(a)pyrene	10/05/2022	0.0632	0.00017 (AA-EQS)
	07/06/2022	0.0273	
Benzo(g,h,i)perylene	10/05/2022	0.0527	0.0082 (MAC-EQS)
	07/06/2022	0.0285	

3.1.4 M4 – Centre (450mm Pipe)

Inorganics

Recorded concentrations of DAIN exceeded the trigger concentration in all eleven samples, with results ranging from 10.40mg/l to 15.40mg/l. As seen at sampling locations East Bay In, NSR NE Corner and M4 – North, nitrate is the primary source of inorganic nitrogen.

Metals

Of the seven samples scheduled for total and dissolved metal analysis, a single marginal exceedance of the EQS for lead was recorded in May 2022, at a concentration of 2.01µg/l compared to the AA-EQS of 1.20µg/l. It is noted that the AA-EQS relates to bioavailable lead whereas the reported concentration is of the entire dissolved fraction, so the assessment is overly conservative.

Polycyclic Aromatic Hydrocarbons (PAHs)

Exceedances of available EQS for PAH compounds were recorded sporadically in samples collected in May and June 2022. The three recorded exceedances of the AA-EQS for fluoranthene but did not exceed the maximum allowable concentration (0.12µg/l). PAH exceedances recorded at sample point M4 – Centre are summarised in Table 3 below.

Table 3: M4 – Centre PAH EQS Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Fluoranthene	04/05/2022	0.0386	0.0063 (AA-EQS)
	23/05/2022	0.0087	
	07/06/2022	0.0121	
Benzo(b)fluoranthene	04/05/2022	0.0287	0.017 (MAC-EQS)
	07/06/2022	0.0172	
Benzo(a)pyrene	04/05/2022	0.0166	0.00017 (AA-EQS)
	07/06/2022	0.0107	
Benzo(g,h,i)perylene	04/05/2022	0.0133	0.0082 (MAC-EQS)
	07/06/2022	0.0085	

3.1.5 M4 – South (300mm Inlet)

Inorganics

DAIN concentrations were recorded above the trigger concentration in seven of the eleven samples, ranging from 2.16mg/l to 7.27mg/l, compared to the trigger concentration of 2mg/l.

One marginal exceedance of the DAIP trigger concentration was recorded in May 2022, at a concentration of 0.064mg/l compared with the trigger concentration on 0.05mg/l.

On two occasions in May 2022 the recorded concentration of suspended solids exceeded the environmental permit emission limit of 50mg/l. Elevated suspended solid concentrations were reported as 100mg/l and 65.9mg/l. It is possible that the exceedances were caused by the sampling activity disturbing sediments on the base of the watercourse.

Metals

Several dissolved metal exceedances were recorded within samples collected from the M4 – South sample point as summarised in Table 4 below.

Table 4: M4 – South Metals EQS Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Cadmium	07/06/2022	0.10	0.09 (AA-EQS)
Chromium	10/05/2022	7.24	4.70 (AA-EQS)
	07/06/2022	5.40	
Lead (Dissolved)	07/06/2022	4.66	1.20 (EQS _{bioavailable})
	13/06/2022	1.59	
Manganese (Dissolved)	10/05/2022	706	282.61 (PNEC calculated using M-BAT)
	23/05/2022	807	
	30/05/2022	679	
	13/06/2022	418	
Zinc (Dissolved)	04/05/2022	87	77.2 (PNEC calculated using M-BAT)
	07/06/2022	123	
Iron (Dissolved)	10/05/2022	1,660	1,000 (AA-EQS)
	23/05/2022	1,480	
	30/05/2022	2,870	
	13/06/2022	1,150	

Polycyclic Aromatic Hydrocarbons (PAHs)

Several exceedances of available EQS for PAH compounds were recorded in samples collected in May and June 2022 from M4 – South, as summarised in Table 5 below.

Table 5: M4 – South PAH EQS Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Fluoranthene	04/05/2022	0.0664	0.0063 (AA-EQS)
	10/05/2022	0.0578	
	17/05/2022	0.216	
	23/05/2022	0.184	
	30/05/2022	0.167	
	07/06/2022	0.0813	
	13/06/2022	0.0419	
Benzo(b)fluoranthene	04/05/2022	0.0365	0.017 (MAC-EQS)
	10/05/2022	0.0242	
	17/05/2022	0.184	
	23/05/2022	0.119	
	30/05/2022	0.107	
	07/06/2022	0.0518	

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
	13/06/2022	0.0177	
Benzo(k)fluoranthene	17/05/2022	0.0584	0.017 (MAC-EQS)
	23/05/2022	0.0441	
	30/05/2022	0.0497	
	07/06/2022	0.0199	
Benzo(a)pyrene	04/05/2022	0.0147	0.00017 (AA-EQS)
	10/05/2022	0.01	
	23/05/2022	0.0618	
	30/05/2022	0.0564	
	07/06/2022	0.022	
Benzo(g,h,i)perylene	04/05/2022	0.0131	0.0082 (MAC-EQS)
	17/05/2022	0.0895	
	23/05/2022	0.0562	
	07/06/2022	0.0233	

3.1.6 NSR Central Stream

Inorganics

A single marginal exceedance of the upper pH environmental permit emission limit was recorded in the sample collected on 23 May 2022. In addition, of the six samples collected from NSR Central Stream, one sample collected on 30 May 2022 recorded a marginal exceedance of the suspended solids environmental permit emission limit. This may be a result of the sampling process disturbing sediments along the base of the watercourse.

The DAIN trigger concentration was exceeded in five of the six samples obtained from the NSR Central Stream at concentrations ranging from 3.163mg/l to 6.78mg/l.

Metals

Several dissolved metal exceedances were recorded within samples collected from the M4 – South sample point as summarised in Table 4 below.

Table 6: NSR Central Stream Metals EQS Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Cadmium	27/06/2022	0.30	0.09 (AA-EQS)
Lead	21/06/2022	1.39	1.20 (EQS _{bioavailable})
Manganese	30/05/2022	365	123 (EQS _{bioavailable})
	07/06/2022	1,000	
	21/06/2022	1,210	
	27/06/2022	1,810	

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Iron	21/06/2022	2,510	1,000 (AA-EQS)

Total Petroleum Hydrocarbons (TPHs)

Several exceedances of adopted assessment criteria for TPH were recorded, as summarised in Table 7 below. It should be noted that hydrocarbon sheens are regularly observed on the watercourse during sampling which may originate from contaminated basal sediments.

Table 7: NSR Central Stream TPH Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Total Aliphatic and Aromatics >C5-35	19/05/2022	10,100	5,000
	23/05/2022	18,800	
	30/05/2022	59,100	
	07/06/2022	34,300	

Polycyclic Aromatic Hydrocarbons (PAHs)

Exceedances of available EQS for PAH compounds were recorded in three of the six samples collected across May and June 2022. Exceedances are summarised in Table 7 below.

Table 8: NSR Central Stream PAH Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Fluoranthene	19/05/2022	0.193	0.0063 (AA-EQS)
	30/05/2022	0.264	
	07/06/2022	1.39	
Anthracene	19/05/2022	0.672	0.10 (AA-EQS and MAC-EQS)
	30/05/2022	21.30	
Benzo(b)fluoranthene	19/05/2022	0.071	0.017 (MAC-EQS)
	07/06/2022	0.298	
Benzo(k)fluoranthene	19/05/2022	0.0233	0.017 (MAC-EQS)
	07/06/2022	0.093	
Benzo(a)pyrene	19/05/2022	0.0415	0.00017 (AA-EQS)
	30/05/2022	0.801	
	07/06/2022	0.287	
Benzo(g,h,i)perylene	19/05/2022	0.018	0.0082 (MAC-EQS)
	30/05/2022	0.281	
	07/06/2022	0.0825	

3.1.7 Trade Effluent (36")

Inorganics

Of the twenty-six samples collected from the Trade Effluent, one sample collected on 6th April 2022 recorded an exceedance of the suspended solids permit emission limit. In addition, the DAIN trigger concentration was exceeded on five occasions with results ranging from 2.381mg/l to 3.25mg/l. A DAIP exceedance was also recorded on 10th May 2022.

Several metal exceedances were recorded within samples collected from the Trade Effluent sample point as summarised in Table 9 below.

Table 9: Trade Effluent Metals EQS Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Manganese (dissolved)	07/06/2022	343	282.61 (EQS _{bioavailable})
	13/06/2022	545	
	21/06/2022	302	
Cadmium (dissolved)	10/05/2022	0.256	0.09 (AA-EQS)

Total Petroleum Hydrocarbons (TPHs)

Two exceedances of the TPH NMP threshold were recorded at the Trade Effluent, as summarised in 10 below.

Table 10: Trade Effluent TPH Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Total Aliphatics & Aromatics >C5-35	06/04/2022	42,800	5,000 (NMP Threshold)
	13/06/2022	8,090	

Polycyclic Aromatic Hydrocarbons (PAHs)

Several exceedances of available EQS for PAH compounds were recorded in samples collected from the Trade Effluent, as summarised in Table 11 below.

Table 11: Trade Effluent PAH Exceedances

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
Fluoranthene	04/05/2022	0.0183	0.0063 (AA-EQS)
	07/06/2022	0.0166	
	27/06/2022	0.031	
Benzo(b)fluoranthene	07/06/2022	0.0234	0.017 (MAC-EQS)

Determinand	Date	Recorded Concentration (µg/l)	Adopted Assessment Criteria (µg/l)
	21/06/2022	0.0732	
	27/06/2022	0.0346	
Benzo(a)pyrene	07/06/2022	0.0111	0.00017 (AA-EQS)
Benzo(ghi)perylene	13/06/2022	0.0879	0.0082 (MAC-EQS)
	21/06/2022	0.0305	

4 Summary

The current dataset summarised in this technical note suggests that if NSR inflows were to discharge directly into Crymlyn Bog in their current state they may be considered by the regulators to adversely impact surface water quality, due to elevated concentrations of inorganic nitrogen, total and dissolved metals, PAHs, and TPHs.

However, it should be noted that the initial assessment above does not take into account the effect of attenuation of contaminant concentrations which would be anticipated along the approximately 1km distance to Crymlyn Bog. Attenuation ponds and/or reed beds could be installed as part of the re-design of the valley to promote natural attenuation and reduce contaminant concentrations to acceptable levels before being discharged into Crymlyn Bog.

The inflows from the M4 represent a clear source of contamination. It is assumed that South Wales Trunk Road Agent (SWTRA) is responsible for the M4 and therefore are responsible for M4 surface water runoff and may have a duty to ensure M4 runoff does not contaminate adjacent sites. Contact should be made with SWTRA to assess if they have systems in place to manage M4 runoff and any data to show the quality of the surface water runoff.

Petroleum hydrocarbon contamination has been recorded in the NSR Central Stream which is likely attributable to contaminated basal sediments exposed following dewatering, and recent works to remove an earth bund between East Bay and the NSR which released small amounts of free phase hydrocarbons. The two most recent surface water samples from the NSR Central Stream show a reduction in recorded TPH concentration. Ongoing sampling will establish whether this decreasing trend continues.

Groundwater seepages have been noted along the southern boundary of the NSR, particularly during winter months and following periods of prolonged rainfall. Following decommissioning works groundwater seepages will contribute to the natural watercourse flowing through the valley into Crymlyn Bog. PJA intend to isolate and sample a groundwater seepage to determine chemical concentrations within groundwater to assess the potential impact groundwater may have on Crymlyn Bog.

Sampling of the points discussed above will continue to be undertaken to increase the data and to assess if there are seasonal variations throughout the year. Once dewatering works are complete, we would recommend surface water sampling at the western end of the valley to be undertaken to assess the effect of natural attenuation as the water flows from east to west along the base of the valley.



Appendix A Sampling Points Plan

LOCATION

Park Point
17 High Street
Longbridge
B31 2UQ

TELEPHONE
EMAIL

+44 (0) 121 475 0234
birmingham@pja.co.uk

WEBSITE

pja.co.uk



Key

- M4 North (600mm Pipe)
- M4 Centre (450mm Pipe)
- M4 South (300mm Inlet)
- East Bay In
- NSR NE Corner
- NSR Central Stream
- Trade Effluent (36")

Client: St. Modwen Developments Ltd

Project: Coed Darcy – North Site Reservoir

Figure 1: NSR Sampling Points

PJA
Park Point, 17 High Street, Longbridge,
Birmingham, B31 2UQ
T. 0121 475 0234

Appendix B Water Quality Data

Coed Darcy NSR
Inflow Water Quality

Customer Sample ID				East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In			
Sample Type				SURFACE_WATER	FACE_WATER	FACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER			
Sampled Date				09/11/2021	22/02/2021	09/03/2021	23/03/2021	08/04/2021	29/04/2021	03/06/2021	14/06/2021	06/07/2021	21/07/2021	10/08/2021	24/08/2021	09/09/2021	06/10/2021							
Sample Received Date				11/11/2021	25/02/2021	11/03/2021	25/03/2021	09/04/2021	30/04/2021	15/06/2021	15/06/2021	09/07/2021	22/07/2021	12/08/2021	26/08/2021	10/09/2021	08/10/2021							
Final Instruction Date				11/11/2021	25/02/2021	11/03/2021	25/03/2021	09/04/2021	30/04/2021	14/06/2021	15/06/2021	09/07/2021	22/07/2021	11/08/2021	26/08/2021	10/09/2021	08/10/2021							
Report Completed Date				19/11/2021	04/03/2021	18/03/2021	01/04/2021	18/04/2021	10/05/2021	22/06/2021	22/06/2021	15/07/2021	29/07/2021	19/08/2021	05/09/2021	17/09/2021	15/10/2021							
SDG				211111-90	210225-68	210311-102	210325-87	210409-46	210430-147	210615-17	210615-58	210709-128	210722-120	210812-31	210826-130	210910-61	211008-53							
Sample Temperature				5.9	3.6	5.7	6.8	3.2	5	14.8	11.6	12.7	18.4	16.4	11.8	15.5	14.8							
Sample Time				Max	Min	Average	AA EQS (Freshwater)	MAC EQS (Freshwater)	NMP Threshold	mBAT Value	12:10													
Test	Method	Units	LOD																					
Conductivity @ 20 deg.C	TM120	mS/cm	<0.020	0.95	0.31	0.41			2.00		0.328	0.449	0.4	0.398	0.402	0.393	0.356	0.387	0.408	0.386	0.362	0.359	0.384	0.334
Nitrite as NO2	TM184	mg/l	<0.05	1.35	0.05	0.16					<0.05	<0.05	<0.05	<0.05	<0.05	0.077	0.053	<0.05	<0.05	<0.05	<0.05	<0.05	0.204	1.35
pH	TM256	pH Units	<1.00	8.89	7.17	7.87			6.5 - 8.5		7.82	7.91	7.98	7.89	7.93	7.79	7.84	7.76	7.91	7.74	7.87	7.57	7.61	8
Phosphate (Ortho as PO4)	TM184	mg/l	<0.05	0.17	0.05	0.09			0.05		<0.05	0.05	<0.05	<0.05	<0.05	0.094	0.072	0.064	0.074	0.095	<0.05	0.088	0.118	<0.05
COD, unfiltered	TM107	mg/l	<7	162.00	7.04	29.57					16.5	7.04	22	<7	15.1	10.1	<7	11.4	11.5	19.5	22.2	<7	14.3	9.48
Ammoniacal Nitrogen as NH3	TM099	mg/l	<0.2	4.14	0.29	1.63					<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	<0.2
Ammoniacal Nitrogen as NH4	TM099	mg/l	<0.3	4.38	0.31	1.72					<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	<0.3
Chloride	TM226	mg/l	<0.08	299.00	38.20	91.19		300.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity @ 20 deg.C	TM256	mS/cm	<0.020	1.48	0.32	0.53					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate as NO3	TM184	mg/l	<0.3	18.80	0.34	10.18					9.07	9.01	7.27	7.86	6.99	8.8	7.32	7.47	8.58	10.6	11.9	10.5	11.5	13.8
BOD, unfiltered	TM045	mg/l	<1	35.80	1.92	5.16					<1	<1	<1	<1	2.08	<1	<1	<1	<1	<1	<1	<1	2.09	<1
Phospate (ortho) as PO4	TM226	mg/l	<0.14	0.00	0.00	0.00			0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Suspended solids, Total	TM022	mg/l	<2	107.00	2.15	17.46			50.00		<2	<2	<2	<2	<2	<2	<2	<2	2.25	<2	<2	14.1	2.15	<2
DAIN		mg/l		18.80	0.00	9.62			2.00		9.07	9.01	7.27	7.86	6.99	8.88	7.37	7.47	8.58	10.60	11.90	10.50	11.70	15.15
Mercury (diss.filt)	TM183	µg/l	<0.01	0.01	0.01	0.01					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (diss.filt)	TM152	µg/l	<0.5	8.49	0.54	1.54	50.00				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (diss.filt)	TM152	µg/l	<10	52.50	15.20	25.96					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (diss.filt)	TM152	µg/l	<0.08	0.30	0.10	0.19	0.09				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (diss.filt)	TM152	µg/l	<1	7.24	1.18	2.93	4.70				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (diss.filt)	TM152	µg/l	<0.3	34.90	1.37	5.84	1.00			53.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (diss.filt)	TM152	µg/l	<0.2	4.66	0.20	1.04	1.20				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (diss.filt)	TM152	µg/l	<3.0	1810.00	3.23	246.69	123.00			282.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (diss.filt)	TM152	µg/l	<0.4	11.70	0.45	1.85	4.00	34.00		30.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (diss.filt)	TM152	µg/l	<1.0	1.79	1.01	1.33					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (diss.filt)	TM152	µg/l	<1.0	5.52	1.06	2.33					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (diss.filt)	TM152	µg/l	<1.0	123.00	5.18	22.74	13.70			77.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Dis.Filt)	TM152	mg/l	<0.019	2.87	0.02	0.50	1.00				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (tot.unfilt)	TM183	µg/l	<0.02	0.00	0.00	0.00		0.07			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (tot.unfilt)	TM152	µg/l	<2	14.70	2.05	5.46					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (tot.unfilt)	TM152	µg/l	<20	58.80	21.00	30.76					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (tot.unfilt)	TM152	µg/l	<0.5	0.59	0.59	0.59					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (tot.unfilt)	TM152	µg/l	<3	6.57	4.30	5.31					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (tot.unfilt)	TM152	µg/l	<1	51.40	1.01	9.53					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (tot.unfilt)	TM152	µg/l	<1	10.20	1.04	3.86					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (tot.unfilt)	TM152	µg/l	<1	2290.00	3.82	299.89					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (tot.unfilt)	TM152	µg/l	<1	16.90	1.08	4.55					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (tot.unfilt)	TM152	µg/l	<1	1.96	1.04	1.39					-	-	-	-	-	-	-	-	-	-	-	-	-	-

Coed Darcy NSR
Inflow Water Quality

Customer Sample ID				East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In
Sample Type				SURFACE_WATER	FACE_WATER	FACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER	SURFACE_WATER
Sampled Date				09/11/2021	22/02/2021	09/03/2021	23/03/2021	08/04/2021	29/04/2021	03/06/2021	14/06/2021	06/07/2021	21/07/2021	10/08/2021	24/08/2021	09/09/2021	06/10/2021				
Sample Received Date				11/11/2021	25/02/2021	11/03/2021	25/03/2021	09/04/2021	30/04/2021	15/06/2021	15/06/2021	09/07/2021	22/07/2021	12/08/2021	26/08/2021	10/09/2021	08/10/2021				
Final Instruction Date				11/11/2021	25/02/2021	11/03/2021	25/03/2021	09/04/2021	30/04/2021	14/06/2021	15/06/2021	09/07/2021	22/07/2021	11/08/2021	26/08/2021	10/09/2021	08/10/2021				
Report Completed Date				19/11/2021	04/03/2021	18/03/2021	01/04/2021	18/04/2021	10/05/2021	22/06/2021	22/06/2021	15/07/2021	29/07/2021	19/08/2021	05/09/2021	17/09/2021	15/10/2021				
SDG				211111-90	210225-68	210311-102	210325-87	210409-46	210430-147	210615-17	210615-58	210709-128	210722-120	210812-31	210826-130	210910-61	211008-53				
Sample Temperature				5.9	3.6	5,7	6.8	3.2	5	14.8	11.6	12.7	18.4	16.4	11.8	15.5	14.8				
Sample Time				Max	Min	Average	AA EQS (Freshwater)	MAC EQS (Freshwater)	NMP Threshold	mBAT Value	12:10										
Test	Method	Units	LOD																		
trans-1,3-Dichloropropene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	TM208	µg/l	<1	0.00	0.00	0.00	10.00				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	TM208	µg/l	<1	1.27	1.27	1.27					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m,p-Xylene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-Chlorotoluene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-iso-Propyltoluene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	TM208	µg/l	<1	0.00	0.00	0.00		0.60			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
tert-Amyl methyl ether (TAME)	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sum of detected Xylenes	TM208	µg/l	<2	0.00	0.00	0.00					<2	-	-	-	-	-	<2	<2	<2	<2	<2
Sum of BTEX	TM208	µg/l	<5	0.00	0.00	0.00					<5	-	-	-	-	-	<5	<5	<5	<5	<5
Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	22400.00	23.00	2123.08					<10	<10	82	<10	<10	24	<10	<10	<10	<10	<10

Coed Darcy NSR
Inflow Water Quality

Customer Sample ID							East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In				
Sample Type							SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR				
Sampled Date							18/10/2021	29/11/2021	16/12/2021	17/01/2022	31/01/2022	07/02/2022	15/02/2022	22/02/2022	02/03/2022	09/03/2022	15/03/2022	23/03/2022	30/03/2022						
Sample Received Date							19/10/2021	01/12/2021	17/12/2021	19/01/2022	02/02/2022	09/02/2022	16/02/2022	23/02/2022	03/03/2022	11/03/2022	16/03/2022	25/03/2022	01/04/2022						
Final Instruction Date							19/10/2021	01/12/2021	17/12/2021	19/01/2022	02/02/2022	09/02/2022	16/02/2022	23/02/2022	03/03/2022	10/03/2022	16/03/2022	25/03/2022	01/04/2022						
Report Completed Date							26/10/2021	08/12/2021	05/01/2022	26/01/2022	10/02/2022	19/02/2022	25/02/2022	03/03/2022	11/03/2022	17/03/2022	23/03/2022	04/04/2022	11/04/2022						
SDG							211019-80	211201-42	211217-94	220119-51	220202-53	220209-130	220216-151	220223-98	220303-49	220311-95	220316-36	220325-100	220401-147						
Sample Temperature							8.8	11.2	4.4	6.1	10.8	7.3	10.8	5.9	9.1	8.5	5.6	9.8	2.2						
Sample Time							Max	Min	Average	AA EQS (Freshwater)	MAC EQS (Freshwater)	NMP Threshold	mBAT Value												
Test	Method	Units	LOD																						
Conductivity @ 20 deg.C	TM120	mS/cm	<0.020	0.95	0.31	0.41			2.00			0.368	0.346	0.4	0.333	0.433	-	-	-	-	-	-	-	-	-
Nitrite as NO2	TM184	mg/l	<0.05	1.35	0.05	0.16						<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
pH	TM256	pH Units	<1.00	8.89	7.17	7.87			6.5 - 8.5			7.39	7.79	7.92	-	-	-	-	-	-	-	-	-	-	-
Phosphate (Ortho as PO4)	TM184	mg/l	<0.05	0.17	0.05	0.09			0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
COD, unfiltered	TM107	mg/l	<7	162.00	7.04	29.57						19	<7	11.5	<7	7.54	8.76	<7	<7	16.5	<7	<7	<7	<7	
Ammoniacal Nitrogen as NH3	TM099	mg/l	<0.2	4.14	0.29	1.63						<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	
Ammoniacal Nitrogen as NH4	TM099	mg/l	<0.3	4.38	0.31	1.72						<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	
Chloride	TM226	mg/l	<0.08	299.00	38.20	91.19			300.00			-	-	-	-	-	-	-	-	-	-	-	-	-	
Conductivity @ 20 deg.C	TM256	mS/cm	<0.020	1.48	0.32	0.53						-	-	-	-	0.571	0.504	0.384	0.384	0.363	0.378	0.337	0.351	0.351	
Nitrate as NO3	TM184	mg/l	<0.3	18.80	0.34	10.18						<0.3	9.83	12	9.65	9.32	9.35	11.3	11.3	11.1	10.6	10.8	8.54	9.82	
BOD, unfiltered	TM045	mg/l	<1	35.80	1.92	5.16						2.06	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Phospate (ortho) as PO4	TM226	mg/l	<0.14	0.00	0.00	0.00			0.05			-	-	-	-	-	-	-	-	-	-	-	-	-	
Suspended solids, Total	TM022	mg/l	<2	107.00	2.15	17.46			50.00			3.75	<2	<2	11.5	<2	<2	<2	<2	<2	7.8	<2	<2	<2	
DAIN		mg/l		18.80	0.00	9.62			2.00			0.00	9.83	12.00	9.65	9.32	9.35	11.30	11.30	11.10	10.60	10.80	8.54	9.82	
Mercury (diss.filt)	TM183	µg/l	<0.01	0.01	0.01	0.01						-	-	-	-	-	-	-	-	-	-	-	-	-	
Arsenic (diss.filt)	TM152	µg/l	<0.5	8.49	0.54	1.54	50.00					-	-	-	-	-	-	-	-	-	-	-	-	-	
Boron (diss.filt)	TM152	µg/l	<10	52.50	15.20	25.96						-	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium (diss.filt)	TM152	µg/l	<0.08	0.30	0.10	0.19	0.09					-	-	-	-	-	-	-	-	-	-	-	-	-	
Chromium (diss.filt)	TM152	µg/l	<1	7.24	1.18	2.93	4.70					-	-	-	-	-	-	-	-	-	-	-	-	-	
Copper (diss.filt)	TM152	µg/l	<0.3	34.90	1.37	5.84	1.00			53.15		-	-	-	-	-	-	-	-	-	-	-	-	-	
Lead (diss.filt)	TM152	µg/l	<0.2	4.66	0.20	1.04	1.20					-	-	-	-	-	-	-	-	-	-	-	-	-	
Manganese (diss.filt)	TM152	µg/l	<3.0	1810.00	3.23	246.69	123.00			282.61		-	-	-	-	-	-	-	-	-	-	-	-	-	
Nickel (diss.filt)	TM152	µg/l	<0.4	11.70	0.45	1.85	4.00	34.00		30.76		-	-	-	-	-	-	-	-	-	-	-	-	-	
Selenium (diss.filt)	TM152	µg/l	<1.0	1.79	1.01	1.33						-	-	-	-	-	-	-	-	-	-	-	-	-	
Vanadium (diss.filt)	TM152	µg/l	<1.0	5.52	1.06	2.33						-	-	-	-	-	-	-	-	-	-	-	-	-	
Zinc (diss.filt)	TM152	µg/l	<1.0	123.00	5.18	22.74	13.70			77.20		-	-	-	-	-	-	-	-	-	-	-	-	-	
Iron (Dis.Filt)	TM152	mg/l	<0.019	2.87	0.02	0.50	1.00					-	-	-	-	-	-	-	-	-	-	-	-	-	
Mercury (tot.unfilt)	TM183	µg/l	<0.02	0.00	0.00	0.00		0.07				-	-	-	-	-	-	-	-	-	-	-	-	-	
Arsenic (tot.unfilt)	TM152	µg/l	<2	14.70	2.05	5.46						-	-	-	-	-	-	-	-	-	-	-	-	-	
Boron (tot.unfilt)	TM152	µg/l	<20	58.80	21.00	30.76						-	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium (tot.unfilt)	TM152	µg/l	<0.5	0.59	0.59	0.59						-	-	-	-	-	-	-	-	-	-	-	-	-	
Chromium (tot.unfilt)	TM152	µg/l	<3	6.57	4.30	5.31						-	-	-	-	-	-	-	-	-	-	-	-	-	
Copper (tot.unfilt)	TM152	µg/l	<1	51.40	1.01	9.53						-	-	-	-	-	-	-	-	-	-	-	-	-	
Lead (tot.unfilt)	TM152	µg/l	<1	10.20	1.04	3.86						-	-	-	-	-	-	-	-	-	-	-	-	-	
Manganese (tot.unfilt)	TM152	µg/l	<1	2290.00	3.82	299.89						-	-	-	-	-	-	-	-	-	-	-	-	-	
Nickel (tot.unfilt)	TM152	µg/l	<1	16.90	1.08	4.55						-	-	-	-	-	-	-	-	-	-	-	-	-	
Selenium (tot.unfilt)	TM152	µg/l	<1	1.96	1.04	1.39						-	-	-	-	-	-	-	-	-	-	-	-	-	
Vanadium (tot.unfilt)	TM152	µg/l	<5	9.73	5.68	7.37						-	-	-	-	-	-	-	-	-	-	-	-	-	
Zinc (tot.unfilt)	TM152	µg/l	<5	223.00	9.09	54.43						-	-	-	-	-	-	-	-	-	-	-	-	-	
Iron (Tot. Unfilt.)	TM152	mg/l	<0.024	8.47	0.03	1.46						-	-	-	-	-	-	-	-	-	-	-	-	-	
GRO Surrogate % recovery**	TM245	%		126.00	78.00	101.57						105	95	91	100	99	98	89	91	117	115	79	95	90	
GRO >C5-C12	TM245	µg/l	<50	233.00	51.00	111.50						<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Methyl tertiary butyl ether (MTBE)	TM245	µg/l	<3	0.00	0.00	#DIV/0!						-	-	-	-	-	-	-	-	-	-	-	-	-	
Benzene	TM245	µg/l	<7	0.00	0.00	0.00	10.00					-	-	-	-	-	-	-	-	-	-	-	-	-	
Toluene	TM245	µg/l	<4	0.00	0.00	0.00	74.00					-	-	-	-	-	-	-	-	-	-	-	-	-	
Ethylbenzene	TM245	µg/l	<5	0.00	0.00	0.00						-	-	-	-	-	-	-	-	-	-	-	-	-	
m,p-Xylene	TM245	µg/l	<8	0.00	0.00	0.00						-	-	-	-	-	-	-	-	-	-	-	-	-	
o-Xylene	TM245	µg/l	<3	0.00	0.00	0.00						-	-	-	-	-	-	-	-	-	-	-	-	-	
Sum of detected Xylenes	TM245	µg/l	<11	0.00	0.00	0.00						-	-	-	-	-	-	-	-	-	-	-	-	-	
Sum of detected BTEX	TM245	µg/l	<28	0.00	0.00	0.00						-	-	-	-	-	-	-	-	-	-	-	-	-	
Aliphatics >C5-C6	TM245	µg/l	<10	0.00	0.00	#DIV/0!						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics >C6-C8	TM245	µg/l	<10	13.00	12.00	12.67						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics >C8-C10	TM245	µg/l	<10	12.00	10.00	11.00						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics >C10-C12	TM245	µg/l	<10	124.00	13.00	48.00						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics >C12-C16 (aq)	TM174	µg/l	<10	24300.00	17.00	5118.11						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics >C16-C21 (aq)	TM174	µg/l	<10	17000.00	12.00	2989.31						<10	<10	<10	<10	<10	<10	<10	<10	16	<10	<10	<10	<10	

Coed Darcy NSR Inflow Water Quality

Customer Sample ID				East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	East Bay In		
Sample Type				SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR		
Sampled Date				18/10/2021	29/11/2021	16/12/2021	17/01/2022	31/01/2022	07/02/2022	15/02/2022	22/02/2022	02/03/2022	09/03/2022	15/03/2022	23/03/2022	30/03/2022		
Sample Received Date				19/10/2021	01/12/2021	17/12/2021	19/01/2022	02/02/2022	09/02/2022	16/02/2022	23/02/2022	03/03/2022	11/03/2022	16/03/2022	25/03/2022	01/04/2022		
Final Instruction Date				19/10/2021	01/12/2021	17/12/2021	19/01/2022	02/02/2022	09/02/2022	16/02/2022	23/02/2022	03/03/2022	10/03/2022	16/03/2022	25/03/2022	01/04/2022		
Report Completed Date				26/10/2021	08/12/2021	05/01/2022	26/01/2022	10/02/2022	19/02/2022	25/02/2022	03/03/2022	11/03/2022	17/03/2022	23/03/2022	04/04/2022	11/04/2022		
SDG				211019-80	211201-42	211217-94	220119-51	220202-53	220209-130	220216-151	220223-98	220303-49	220311-95	220316-36	220325-100	220401-147		
Sample Temperature				8.8	11.2	4.4	6.1	10.8	7.3	10.8	5.9	9.1	8.5	5.6	9.8	2.2		
Test	Sample Time			Max	Min	Average	AA EQS (Freshwater)	MAC EQS (Freshwater)	NMP Threshold	mBAT Value								
	Method	Units	LOD															
trans-1,3-Dichloropropene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
cis-1,2-Trichloroethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
trans-1,3-Dichloropropane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Tetrachloroethene	TM208	µg/l	<1	0.00	0.00	0.00	10.00				<1	<1	<1	<1	<1	<1		
Dibromochloromethane	TM208	µg/l	<1	1.27	1.27	1.27					<1	<1	<1	<1	<1	<1		
cis-1,2-Dibromoethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Chlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,1,1,2-Tetrachloroethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Ethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
m,p-Xylene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
o-Xylene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Styrene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Bromoforn	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Isopropylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,1,1,2,2-Tetrachloroethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,2,3-Trichloropropane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Bromobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Propylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
2-Chlorotoluene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,3,5-Trimethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
4-Chlorotoluene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
tert-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,2,4-Trimethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
sec-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
4-iso-Propyltoluene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,3-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,4-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
n-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,2-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,2-Dibromo-3-chloropropane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,2,4-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Hexachlorobutadiene	TM208	µg/l	<1	0.00	0.00	0.00		0.60			<1	<1	<1	<1	<1	<1		
tert-Amyl methyl ether (TAME)	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Naphthalene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,2,3-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
1,3,5-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1		
Sum of detected Xylenes	TM208	µg/l	<2	0.00	0.00	0.00					<2	<2	<2	<2	<2	<2		
Sum of BTEX	TM208	µg/l	<5	0.00	0.00	0.00					<5	<5	<5	<5	<5	<5		
Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	22400.00	23.00	2123.08					<10	<10	<10	<10	<10	<10		

Coed Darcy NSR
Inflow Water Quality

Customer Sample ID							East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	M4 Centre entre - 450mm pipe	entre - 450mm pipe	entre - 450mm pipe	entre - 450mm pipe	entre - 450mm pipe	entre - 450mm pipe	entre - 450mm pipe	entre - 450mm pipe	entre - 450mm pipe											
Sample Type							SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR	SUR										
Sampled Date							06/04/2022	15/12/2020	06/01/2021	25/01/2021	09/02/2021	20/04/2022	04/05/2022	10/05/2022	17/05/2022	23/05/2022	30/05/2022	07/06/2022	13/06/2022												
Sample Received Date							08/04/2022	17/12/2020	08/01/2021	27/01/2021	11/02/2021	22/04/2022	06/05/2022	11/05/2022	18/05/2022	24/05/2022	02/06/2022	08/06/2022	15/06/2022												
Final Instruction Date							14/04/2022	17/12/2020	08/01/2021	27/01/2021	11/02/2021	22/04/2022	06/05/2022	11/05/2022	18/05/2022	24/05/2022	02/06/2022	08/06/2022	15/06/2022												
Report Completed Date							20/04/2022	24/12/2020	13/01/2021	03/02/2021	18/02/2021	29/04/2022	13/05/2022	19/05/2022	25/05/2022	06/06/2022	13/06/2022	15/06/2022	21/06/2022												
SDG							220408-138	201217-143	210108-110	210127-82	210211-102	220422-77	220506-163	220511-92	220518-71	220524-91	220602-59	220608-38	220615-65												
Sample Temperature							7.9	4.0	1.2	0.2	1.1	12.5	12.2	13.0	15.4	7.6	9.0	5.8	15.9												
Sample Time							Max	Min	Average	AA EQS (Freshwater)	MAC EQS (Freshwater)	NMP Threshold	mBAT Value																		
Test	Method	Units	LOD																												
Conductivity @ 20 deg.C	TM120	mS/cm	<0.020	0.95	0.31	0.41			2.00			-	0.323	0.391	0.724	0.371	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrite as NO2	TM184	mg/l	<0.05	1.35	0.05	0.16						<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.058	0.097	0.053	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
pH	TM256	pH Units	<1.00	8.89	7.17	7.87			6.5 - 8.5			-	7.81	7.66	7.69	7.92	8.07	8.14	8.12	7.86	7.92	8.02	7.83	7.91							
Phosphate (Ortho as PO4)	TM184	mg/l	<0.05	0.17	0.05	0.09			0.05			<0.05	-	-	-	-	0.074	0.143	0.097	0.132	0.088	0.167	0.127	0.115							
COD, unfiltered	TM107	mg/l	<7	162.00	7.04	29.57						<7	<7	10.5	<7	<7	<7	23.3	<7	7.39	8.4	<7	12.2	10.7							
Ammoniacal Nitrogen as NH3	TM099	mg/l	<0.2	4.14	0.29	1.63						<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							
Ammoniacal Nitrogen as NH4	TM099	mg/l	<0.3	4.38	0.31	1.72						<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							
Chloride	TM226	mg/l	<0.08	299.00	38.20	91.19		300.00				-	-	-	-	-	-	43.6	45.1	48.4	44.8	38.2	48.8	40.4							
Conductivity @ 20 deg.C	TM256	mS/cm	<0.020	1.48	0.32	0.53						0.6	-	-	-	-	0.366	0.374	0.393	0.405	0.386	0.362	0.405	0.377							
Nitrate as NO3	TM184	mg/l	<0.3	18.80	0.34	10.18						8.95	14.2	10.2	8.98	8.39	12.2	11.9	12.6	13.2	13.6	15.4	13	12.7							
BOD, unfiltered	TM045	mg/l	<1	35.80	1.92	5.16						<1	<1	<1	<1	2.04	<1	<1	<1	<1	<1	<1	<1	<1							
Phospate (ortho) as PO4	TM226	mg/l	<0.14	0.00	0.00	0.00			0.05			-	<0.14	<0.14	<0.14	<0.14	<0.14	-	-	-	-	-	-	-							
Suspended solids, Total	TM022	mg/l	<2	107.00	2.15	17.46			50.00			33.8	4.85	<2	<2	25.6	<2	5.45	<2	2.4	<2	<2	18	<2							
DAIN		mg/l		18.80	0.00	9.62			2.00			8.95	14.20	10.20	8.98	8.39	12.20	11.90	12.66	13.30	13.65	15.40	13.00	12.70							
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						
Arsenic (diss.filt)	TM152	µg/l	<0.5	8.49	0.54	1.54	50.00					-	-	-	-	-	-	1.9	1.98	1.69	1.44	2.21	1.89	1.68							
Boron (diss.filt)	TM152	µg/l	<10	52.50	15.20	25.96						-	-	-	-	-	-	22.8	23.9	19	16.2	25	35.4	17							
Cadmium (diss.filt)	TM152	µg/l	<0.08	0.30	0.10	0.19	0.09					-	-	-	-	-	-	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08							
Chromium (diss.filt)	TM152	µg/l	<1	7.24	1.18	2.93	4.70					-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1							
Copper (diss.filt)	TM152	µg/l	<0.3	34.90	1.37	5.84	1.00			53.15		-	-	-	-	-	-	1.56	2.22	2.45	1.47	3.65	2.1	1.37							
Lead (diss.filt)	TM152	µg/l	<0.2	4.66	0.20	1.04	1.20					-	-	-	-	-	-	<0.2	<0.2	0.202	<0.2	2.01	<0.2	<0.2							
Manganese (diss.filt)	TM152	µg/l	<3.0	1810.00	3.23	246.69	123.00			282.61		-	-	-	-	-	-	15.9	23.8	14	13.3	18.3	15.4	14.2							
Nickel (diss.filt)	TM152	µg/l	<0.4	11.70	0.45	1.85	4.00	34.00		30.76		-	-	-	-	-	-	<0.4	0.528	0.521	0.477	0.671	0.685	<0.4							
Selenium (diss.filt)	TM152	µg/l	<1.0	1.79	1.01	1.33						-	-	-	-	-	-	1.79	1.5	1.75	1.61	1.64	1.45	1.41							
Vanadium (diss.filt)	TM152	µg/l	<1.0	5.52	1.06	2.33						-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1							
Zinc (diss.filt)	TM152	µg/l	<1.0	123.00	5.18	22.74	13.70			77.20		-	-	-	-	-	-	5.18	8.13	7.25	5.44	9.06	21.8	7							
Iron (Dis.Filt)	TM152	mg/l	<0.019	2.87	0.02	0.50	1.00					-	-	-	-	-	-	0.0275	0.048	0.0298	<0.019	0.0994	0.0278	0.0211							
Mercury (tot.unfilt)	TM183	µg/l	<0.02	0.00	0.00	0.00		0.07				-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02							
Arsenic (tot.unfilt)	TM152	µg/l	<2	14.70	2.05	5.46						-	-	-	-	-	-	2.29	2.07	<2	-	2.05	<2	<2							
Boron (tot.unfilt)	TM152	µg/l	<20	58.80	21.00	30.76						-	-	-	-	-	-	-	29.8	34.7	21	26.5	22.5	30.2	31.1						
Cadmium (tot.unfilt)	TM152	µg/l	<0.5	0.59	0.59	0.59						-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Chromium (tot.unfilt)	TM152	µg/l	<3	6.57	4.30	5.31						-	-	-	-	-	-	<3	<3	<3	<3	<3	<3	<3	<3						
Copper (tot.unfilt)	TM152	µg/l	<1	51.40	1.01	9.53						-	-	-	-	-	-	2.58	3.22	2.58	1.01	3.88	1.41	<1							
Lead (tot.unfilt)	TM152	µg/l	<1	10.20	1.04	3.86						-	-	-	-	-	-	1.13	<1	<1	<1	<1	<1	1.35							
Manganese (tot.unfilt)	TM152	µg/l	<1	2290.00	3.82	299.89						-	-	-	-	-	-	27.5	30.8	17	16.8	17	19.4	20.4							
Nickel (tot.unfilt)	TM152	µg/l	<1	16.90	1.08	4.55						-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1							
Selenium (tot.unfilt)	TM152	µg/l	<1	1.96	1.04	1.39						-	-	-	-	-	-	-	1.96	1.35	1.44	-	1.6	1.57	1.86						
Vanadium (tot.unfilt)	TM152	µg/l	<5	9.73	5.68	7.37						-	-	-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5						
Zinc (tot.unfilt)	TM152	µg/l	<5	223.00	9.09	54.43						-	-	-	-	-	-	13.2	20.1	9.09											

Coed Darcy NSR
Inflow Water Quality

Customer Sample ID				East Bay In		East Bay In		East Bay In		East Bay In		East Bay In		M4 Centre entre - 450mm pipe		entre - 450mm pipe		entre - 450mm pipe		entre - 450mm pipe		entre - 450mm pipe		entre - 450mm pipe		entre - 450mm pipe				
Sample Type				SUR		SUR		SUR		SUR		SUR		SUR		SUR		SUR		SUR		SUR		SUR		SUR		SUR		
Sampled Date				06/04/2022		15/12/2020		06/01/2021		25/01/2021		09/02/2021		20/04/2022		04/05/2022		10/05/2022		17/05/2022		23/05/2022		30/05/2022		07/06/2022		13/06/2022		
Sample Received Date				08/04/2022		17/12/2020		08/01/2021		27/01/2021		11/02/2021		22/04/2022		06/05/2022		11/05/2022		18/05/2022		24/05/2022		02/06/2022		08/06/2022		15/06/2022		
Final Instruction Date				14/04/2022		17/12/2020		08/01/2021		27/01/2021		11/02/2021		22/04/2022		06/05/2022		11/05/2022		18/05/2022		24/05/2022		02/06/2022		08/06/2022		15/06/2022		
Report Completed Date				20/04/2022		24/12/2020		13/01/2021		03/02/2021		18/02/2021		29/04/2022		13/05/2022		19/05/2022		25/05/2022		06/06/2022		13/06/2022		15/06/2022		21/06/2022		
SDG				220408-138		201217-143		210108-110		210127-82		210211-102		220422-77		220506-163		220511-92		220518-71		220524-91		220602-59		220608-38		220615-65		
Sample Temperature				7.9		4.0		1.2		0.2		1.1		12.5		12.2		13.0		15.4		7.6		9.0		5.8		15.9		
Sample Time				Max	Min	Average	AA EQS (Freshwater)	MAC EQS (Freshwater)	NMP Threshold	mBAT Value																				
Test	Method	Units	LOD																											
Aliphatics >C21-C35 (aq)	TM174	µg/l	<10	5330.00	14.00	587.75						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Total Aliphatics >C12-C35 (aq)	TM174	µg/l	<10	46700.00	23.00	3966.00						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Aromatics >EC5-EC7	TM245	µg/l	<10	0.00	0.00	0.00						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Aromatics >EC7-EC8	TM245	µg/l	<10	0.00	0.00	0.00						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Aromatics >EC8-EC10	TM245	µg/l	<10	0.00	0.00	#DIV/0!						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Aromatics >EC10-EC12	TM245	µg/l	<10	83.00	15.00	40.00						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Aromatics >EC12-EC16 (aq)	TM174	µg/l	<10	4900.00	12.00	1244.63						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Aromatics >EC16-EC21 (aq)	TM174	µg/l	<10	4890.00	11.00	1420.25						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Aromatics >EC21-EC35 (aq)	TM174	µg/l	<10	2570.00	12.00	332.05						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Total Aromatics >EC12-EC35 (aq)	TM174	µg/l	<10	12400.00	12.00	1400.25						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Total Aliphatics & Aromatics >C5-35 (aq)	TM174	µg/l	<10	59100.00	28.00	5103.52						<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Naphthalene (aq)	TM178	µg/l	<0.01	1.47	0.01	0.20	2.00	130.00				-	-	-	-	-	<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	
Acenaphthene (aq)	TM178	µg/l	<0.005	4.18	0.01	0.81						-	-	-	-	-	<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	
Acenaphthylene (aq)	TM178	µg/l	<0.005	1.28	0.19	0.69						-	-	-	-	-	<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	1.39	0.01	0.17	0.0063	0.12				-	-	-	-	-	0.0386	<0.005	<0.005	<0.005	0.0087	<0.005	0.0121	<0.005	0.0121	<0.005	0.0121	<0.005	<0.005	
Anthracene (aq)	TM178	µg/l	<0.005	21.30	0.01	3.67	0.10	0.10				-	-	-	-	-	<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	
Phenanthrene (aq)	TM178	µg/l	<0.005	18.50	0.01	2.31						-	-	-	-	-	0.0174	<0.005	<0.005	<0.005	0.0114	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0114	
Fluorene (aq)	TM178	µg/l	<0.005	21.90	0.01	4.07						-	-	-	-	-	<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	
Chrysene (aq)	TM178	µg/l	<0.005	0.31	0.02	0.11						-	-	-	-	-	0.0213	<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	2.63	0.01	0.20						-	-	-	-	-	0.0341	0.00666	<0.005	0.0095	<0.005	0.0132	0.00703	0.0132	0.00703	0.0132	0.00703	0.0132	0.00703	
Benzo(a)anthracene (aq)	TM178	µg/l	<0.005	0.35	0.01	0.07						-	-	-	-	-	0.0194	<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	0.30	0.02	0.09		0.017				-	-	-	-	-	0.0287	<0.005	<0.005	<0.005	<0.005	<0.005	0.0172	<0.005	0.0172	<0.005	0.0172	<0.005	<0.005	
Benzo(k)fluoranthene (aq)	TM178	µg/l	<0.005	0.09	0.01	0.03		0.017				-	-	-	-	-	0.0089	<0.005	<0.005	<0.005	<0.005	<0.005	0.0067	<0.005	0.0067	<0.005	0.0067	<0.005	<0.005	
Benzo(a)pyrene (aq)	TM178	µg/l	<0.002	0.80	0.01	0.12	0.00017	0.27				-	-	-	-	-	0.0166	<0.002	<0.002	<0.002	<0.002	<0.002	0.0107	<0.002	0.0107	<0.002	0.0107	<0.002	<0.002	
Dibenzo(a,h)anthracene (aq)	TM178	µg/l	<0.005	0.01	0.01	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	<0.005	
Benzo(g,h,i)perylene (aq)	TM178	µg/l	<0.005	0.28	0.01	0.06		0.0082				-	-	-	-	-	0.0133	<0.005	<0.005	<0.005	<0.005	<0.005	0.0085	<0.005	0.0085	<0.005	0.0085	<0.005	<0.005	
Indeno(1,2,3-cd)pyrene (aq)	TM178	µg/l	<0.005	5.95	0.01	1.02						-	-	-	-	-	0.0107	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
PAH, Total Detected USEPA 16 (aq)	TM178	µg/l	<0.082	66.90	0.21	9.29						-	-	-	-	-	0.209	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	<0.082	
Dibromofluoromethane**	TM208	%		125.00	104.00	112.42						107	107	113	118	110	114	119	114	104	121	114	111	112	114	111	112	114		
Toluene-d8**	TM208	%		114.00	96.10	99.29						102	103	98.8	100	96.86														

Coed Darcy NSR Inflow Water Quality

Customer Sample ID				East Bay In	East Bay In	East Bay In	East Bay In	East Bay In	M4 Centre entre - 450mm pipe entre	- 450mm pipe entre	- 450mm pipe entre	- 450mm pipe entre	- 450mm pipe entre	- 450mm pipe entre	- 450mm pipe entre	- 450mm pipe entre	- 450mm pipe entre
Sample Type				SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER	SURFSURFACE_WATER
Sampled Date				06/04/2022	15/12/2020	06/01/2021	25/01/2021	09/02/2021	20/04/2022	04/05/2022	10/05/2022	17/05/2022	23/05/2022	30/05/2022	07/06/2022	13/06/2022	
Sample Received Date				08/04/2022	17/12/2020	08/01/2021	27/01/2021	11/02/2021	22/04/2022	06/05/2022	11/05/2022	18/05/2022	24/05/2022	02/06/2022	08/06/2022	15/06/2022	
Final Instruction Date				14/04/2022	17/12/2020	08/01/2021	27/01/2021	11/02/2021	22/04/2022	06/05/2022	11/05/2022	18/05/2022	24/05/2022	02/06/2022	08/06/2022	15/06/2022	
Report Completed Date				20/04/2022	24/12/2020	13/01/2021	03/02/2021	18/02/2021	29/04/2022	13/05/2022	19/05/2022	25/05/2022	06/06/2022	13/06/2022	15/06/2022	21/06/2022	
SDG				220408-138	201217-143	210108-110	210127-82	210211-102	220422-77	220506-163	220511-92	220518-71	220524-91	220602-59	220608-38	220615-65	
Sample Temperature				7.9	4.0	1.2	0.2	1.1	12.5	12.2	13.0	15.4	7.6	9.0	5.8	15.9	
Test	Sample Time			Max	Min	Average	AA EQS (Freshwater)	MAC EQS (Freshwater)	NMP Threshold	mBAT Value							
	Method	Units	LOD														
trans-1,3-Dichloropropene	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1
cis-1,1,2-Trichloroethane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropane	TM208	µg/l	<1	0.00	0.00	0.00					<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	TM208	µg/l	<1	0.00	0.00	0.00	10.00				<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	TM208	µg/l	<1	1.27	1.27	1.27					<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dibromoethane	TM208	µg/l	<1	0.00	0.00	0.00				1.27	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
m,p-Xylene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Styrene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Bromoforn	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2,2-Tetrachloroethane	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
trans-1,2,3-Trichloropropane	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Propylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
4-Chlorotoluene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
4-iso-Propyltoluene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	TM208	µg/l	<1	0.00	0.00	0.00		0.60		<1	<1	<1	<1	<1	<1	<1	<1
tert-Amyl methyl ether (TAME)	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trichlorobenzene	TM208	µg/l	<1	0.00	0.00	0.00				<1	<1	<1	<1	<1	<1	<1	<1
Sum of detected Xylenes	TM208	µg/l	<2	0.00	0.00	0.00				<2	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	TM208	µg/l	<5	0.00	0.00	0.00				<5	<5	<5	<5	<5	<5	<5	<5
Aliphatics >C16-C35 Aqueous	TM174	µg/l	<10	22400.00	23.00	2123.08					<10	<10	<10	<10	<10	<10	<10

Coed Darcy NSR Inflow Water Quality

[illegible]

Coed Darcy NSR
Inflow Water Quality

Customer Sample ID				M4 CENTRE liddle - 450mm Pipe liddle - 450mm Pipe				M4 North North - 600mm pipe North -			
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Coed Darcy NSR
Inflow Water Quality

Customer Sample ID				M4 CENTRE liddle - 450mm Pipe liddle - 450mm Pipe			M4 North North - 600mm pipe North - 6									
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