

Your ref: DP3733BK

Our ref: 14739/075/CBH/VKR/NC

06 December 2019

PPC Team  
 Natural Resources Wales  
 Rivers House  
 Fortran Road  
 St. Mellons Business Park  
 Cardiff  
 CF3 0EY

**Attn: Mr David Willey**

Dear David,

**RE: DP3733BK - Docksway Disposal Site. Latest Area 2 Groundwater and Leachate Quality Monitoring Report, Round 187, including Annual Screen.**

Please find enclosed the results of the groundwater and leachate quality monitoring undertaken at Area 2 of Docksway Disposal Site. Groundwater and leachate monitoring is required quarterly at the site in order to comply with Conditions 3.6.1 and 3.6.2 of the site PPC Permit. This report includes discussion on results obtained from monitoring during September 2019, and the results of the annual screen which was also carried out during this round.

We enclose with this letter report, Figure A, a plan showing the locations of the available monitoring points. We also enclose the laboratory analytical certificates.

**Field Observations**

Details of the field testing of the Area 2 groundwater and leachate samples during Round 187 are presented in Table 1, together with depths to groundwater and leachate.

Table 1 Field Testing Results and Observations September

Monitoring Point	Dates Monitored	Depth to Groundwater/Leachate	pH	Electrical Conductivity (µS/cm)	Temperature (°c)	Dissolved Oxygen (%)
GW06_39	17/09/2019	6.16	7.89	5002	13.99	5.30
GW07_40	17/09/2019	7.02	8.69	2211	15.19	9.70
GW12_30	17/09/2019	5.98	7.85	3235	13.63	32.70
GW09_31	17/09/2019	6.53	8.18	2227	12.61	1.60
GW03_09	17/09/2019	8.06	8.33	11070	13.32	0.30
GW09_32	17/09/2019	6.10	7.94	2309	13.60	1.40
GW12_33	17/09/2019	8.16	7.99	3225	13.55	0.80
GW06_34	17/09/2019	9.06	8.31	1482	14.01	1.10
GW09_35	17/09/2019	9.09	8.15	14920	14.05	0.30

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GW09_36	17/09/2019	9.00	8.26	12620	14.42	2.20
GW06_37	18/09/2019	8.60	8.57	15140	13.55	3.90
GW06_13	18/09/2019	6.13	8.51	10530	13.13	11.80
GW12_38	18/09/2019	7.77	8.44	5274	16.04	1.70
GW06_14a	18/09/2019	5.65	8.26	21760	14.18	50.00
LF08_07	25/09/2019	14.56	8.27	11370	20.55	38.20
C1B	25/09/2019	21.55	n/a	n/a	n/a	n/a
C1D	25/09/2019	11.85	n/a	n/a	n/a	n/a
C1E	25/09/2019	24.35	n/a	n/a	n/a	n/a
C2A	25/09/2019	14.02	n/a	n/a	n/a	n/a
C2B	24/09/2019	23.98	8.52	17890	19.21	39.60
C3B	24/09/2019	10.88	8.27	16690	32.02	20.10
C4	25/09/2019	4.66	8.05	11470	18.54	9.60

n/a = no access

## Laboratory Testing Results

### Compliance Levels

The agreed Control levels and Compliance limits for Area 2 'priority contaminants' are reproduced in Tables 2 and 3 below.

Table 2 PPC Permit Compliance Levels for Emissions to Groundwater (Hazardous Substances)

Monitoring Well	Benzene	Naphthalene	Xylene	EPH	Arsenic
	Compliance Limit	Compliance Limit	Compliance Limit	Compliance Limit	Compliance Limit
	ug/l	ug/l	ug/l	ug/l	ug/l
GW03_09	2	5	3	Not Required	35
GW06_13	2	5	3	Not Required	50
GW06_14a	2	5	3	Not Required	25
GW06_34	2	5	3	Not Required	65
GW06_36	2	5	3	Not Required	30
GW06_37	2	5	3	Not Required	60
GW06_39	2	5	3	Not Required	50
GW07_40	2	5	3	Not Required	35
GW09_31	13	5	3	Not Required	80
GW09_32	3	5	3	Not Required	30
GW09_35	2	5	3	Not Required	50
GW12_30	1	1	1	Not Required	160
GW12_33	1	1	1	Not Required	560
GW12_38	1	1	1	Not Required	26

Table 3 PPC Permit Compliance Levels for Emissions to Groundwater (Non-Hazardous Substances)

Monitoring Well	Nickel		Potassium		Ammoniacal Nitrogen	
	Control Level	Compliance Limit	Control Level	Compliance Limit	Control Level	Compliance Limit
	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l
GW03_09	8	10	160	180	30	35
GW06_13	12	14	100	110	30	35
GW06_14a	12	14	160	180	53	60
GW06_34	12	14	310	350	30	35
GW06_36	8	10	100	110	20	23
GW06_37	8	10	100	110	30	35
GW06_39	26.4	30	100	110	20	23
GW07_40	8	10	39.6	45	20	23
GW09_31	8	10	100	110	50	50
GW09_32	8	10	160	180	50	50
GW09_35	8	10	100	110	30	35
GW12_30	25	30	35	40	10	12
GW12_33	5	6	50	55	15	18
GW12_38	25	30	65	70	10	12

#### Hazardous Substances (formally List I substances)

All the hazardous substances specified as “priority contaminants” in the Area 2 Hydrogeological Risk Assessment were monitored in groundwater samples from compliance wells in September 2019 and were recorded below the Control Level and Compliance Limits.

#### Other Hazardous Substances (Annual Screen)

A full hazardous substance screen was carried out during September 2019 in accordance with Condition 3.6.1 of the PPC Permit. The majority of the hazardous substances tested for during this annual round at Area 2 are not designated Priority Contaminants for Docksway Disposal Site and therefore compliance limits are not required to be set. The results of the additional testing undertaken during September 2019 are presented in the enclosed analytical certificates and are summarised below.

The results indicate that with limited exceptions, volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), mercury, phenols, pesticides and organotins were not detected above the laboratory method detection limits in the Area 2 groundwater samples during Round 187. The exceptions are as follows;

*Table Error! No text of specified style in document.4 Annual Screen Recorded Concentrations - September 2019*

Component	Measured values	Borehole
Dichlobenil	0.215 ug/l	GW03_09
	0.329 ug/l	GW06_39
	0.0649 ug/l	GW03_02
	0.0744 ug/l	GW07_07
Terbutryn	0.0352 ug/l	GW09_32
Azinphos ethyl	0.149 ug/l	GW09_15A

## Non-hazardous Substances

None of the non-hazardous substances agreed as “priority contaminants” exceeded the well specific Compliance Limits in the groundwater sampled during Round 187.

## **Leachate Measurements and Laboratory Test Results**

Leachate levels were recorded at C1B, C1D, C1E C2A, C2B, C2C, C3B, C4 and LF08\_07 in September 2019 and the leachate head levels are indicated to be as follows:

Table 5 Leachate Head

<b>Monitoring Location</b>	<b>Leachate Head (m) in September</b>
C1A	No Access
C1B	1.37
C1D	0.06
C1E	0.31
C2A	1.36
C2B	1.76
C2C	0.66
C3B	1.02
C4	0.34
LF08_07 (Cell 1)	1.93

All leachate head levels recorded are below the permitted level of 2m.

An annual hazardous substance screen of the Area 2 leachate was carried out during September 2019, in addition to the quarterly monitoring, in accordance with Condition 3.6.1 of the PPC Permit. The results of the quarterly and annual screen testing undertaken during September 2019 are presented in the enclosed analytical certificates with the annual screen results summarised below.

The majority of the annual screen results were below the detection limits with the following exceptions;

Table 6 Area 2 Annual Screen Leachate Data

<b>Component</b>	<b>C2B (ug/l)</b>	<b>C3 (ug/l)</b>	<b>C4 (ug/l)</b>	<b>LF08_07 (ug/l)</b>
Simazine	-	-	0.81	-
2-Methylphenol	-	38.9	-	-
4-Methylphenol	-	-	407	-
Terbutryn	0.269	0.212	-	-
<b>SVOC TICs</b>				
Benzothiazolone	-	7520	1350	-
Benzenemethanol	-	-	119	-
Dimethylheptanoic acid	-	-	184	-
Ditertbutylhydroxyphenylpropionic acid	613	1560	145	416
Ethylheptanoic acid	-	672	-	-
Hexadecanoic acid	-	377	-	559

Mercaptobenzothiazole	-	-	121	-
Methylbenzoic acid	-	-	337	-
Methylmethylpropylbenzeneacetic acid	223	-		
Mixed Hydrocarbons	1290	2130	1290	-
Neodecanoic acid	-	520	-	-
Octadecanoic acid	-	216	-	427
Tertbutylbenzoic acid	254	-		
Triethyl phosphate	-	-	162	-
Triisopropylphosphate	2170	2750	2380	706
Trimethylbenzoic acid	-	331	-	-
Trimethylhexanoic acid	-	653	-	658

During this monitoring round VOCs, Benzene and O-Xylene were not included as part of the testing suite.

#### Leachate Removed

The volume of leachate removed from Area 2 (Cells 1 to 3 combined) between July and September 2019 is summarised in Table 7 below:

Table 7 Area 2 Leachate Removed

Monitoring Round	Leachate Removed (kg)
July 2019	1,127,380
August 2019	867,360
September 2019	572,840

#### Concluding Remarks

All of the 'priority contaminants' were recorded at concentrations in the groundwater below the well specific Compliance Limits in Area 2 during September 2019.

The majority of annual screen results were recorded at concentrations in the groundwater below the MDL, however some components were detected at relatively low levels. The parameters detected are all pesticides/herbicides and it is considered likely that these represent general background levels representative of the wide groundwater regime rather than resulting from the landfill site.

PBA will continue to monitor and comment on the groundwater quality and leachate within subsequent reports. If you have any questions regarding the data, then please do not hesitate to contact us.

Yours sincerely



Kate Riley  
**Associate**  
 For and on behalf of  
**PETER BRETT ASSOCIATES LLP**

CC Robert Hughes – NCC (Docksway Disposal Site)  
 Silvia Gonzalez Lopez - NCC