

Your ref: DP3733BK

Our ref: 14739/0751/CBH/KR/

7th December 2017

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Attn: Mr David Willey

Dear David

RE: DP3733BK - Docksway Disposal Site. Latest Area 2 Groundwater and Leachate Quality Monitoring Report, Round 163, September 2017, 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 2017, 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 163 are presented in Table 1.

Table 1 – Field Testing Results and Observations

Monitoring Point	Dates Monitored	Depth to Groundwater/Leachate (mbgl) in Jul/Aug/Sep	pH	Electrical Conductivity (µS/cm)	Temperature (°c)	Dissolved Oxygen (%)
GW06_39	25/07/2017 21/08/2017 20/09/2017	3.50	7.64	8138	12.48	64.80
GW07_40	25/07/2017 21/08/2017 20/09/2017	4.40	8.21	1977	12.54	22.50
GW12_30	25/07/2017 21/08/2017 20/09/2017	4.95	7.04	1878	13.76	3.90
GW09_31	25/07/2017 21/08/2017 20/09/2017	5.40	7.53	2970	12.56	0.40
GW03_09	25/07/2017 21/08/2017 20/09/2017	8.70	6.69	1399	13.08	62.20
GW09_32	25/07/2017 21/08/2017 20/09/2017	7.85	6.91	1766	13.07	2.80

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GW12_33	25/07/2017 21/08/2017 20/09/2017	8.50	7.35	5235	13.23	0.60
GW06_34	25/07/2017 21/08/2017 20/09/2017	8.00	7.43	1499	13.58	20.10
GW09_35	25/07/2017 21/08/2017 20/09/2017	7.80	7.55	14150	13.57	8.00
GW09_36	25/07/2017 21/08/2017 20/09/2017	7.25	7.60	10660	14.08	2.30
GW06_37	25/07/2017 21/08/2017 20/09/2017	6.50	7.70	12920	14.31	43.70
GW06_13	25/07/2017 21/08/2017 20/09/2017	7.36	8.01	9655	13.58	0.10
GW12_38	25/07/2017 21/08/2017 20/09/2017	Data lost – operator error				
GW06_14a	25/07/2017 21/08/2017 20/09/2017	7.35	7.29	9112	15.90	26.70
LF08_07	25/07/2017 21/08/2017 20/09/2017	16.20 16.25 15.70	No access for sampling			
C2A	25/07/2017 21/08/2017 20/09/2017	14.00 14.78 14.00	No access for sampling			
C2B	25/07/2017 21/08/2017 20/09/2017	19.25 19.10 N/M	No access for sampling			

N/M = Not Measured

Laboratory Testing Results

Compliance Levels

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

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
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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

Compliance Limits have not yet been set for three replacement monitoring wells (GW12_30, GW12_33 and GW12_38).

Hazardous Substances (formally List I substances)

All the hazardous substances, specified as “priority contaminants” in the Area 2 Hydrogeological Risk Assessment were monitored at the compliance wells in September 2017 and with one exception were recorded below the well specific Compliance limits. The exception occurred in borehole GW06_34 and was an exceedance of the arsenic compliance limit (65µg/l) of 192µg/l.

Other Hazardous Substances (Annual Screen)

A full hazardous substance screen was carried out during September 2017 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 2017 are presented in the enclosed analytical certificates, and summarised below.

The results indicate that with two exceptions, volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), mercury, phenols, pesticides and organotins were not detected in the Area 2 groundwater samples during Round 163. The two exceptions are as follows;



Table 4 – Annual Screen Recorded Concentrations – September 2017

Component	Measured values	Borehole
Dichlobenil	0.04µg/l	GW06_39
Phenols (Total Monohydric)	6.09 mg/l	GW06_14A

Non-hazardous Substances

None of the non-hazardous substances agreed as “priority contaminants” exceeded the well specific Compliance Limits at the wells sampled during Round 163 with the exception of Ammoniacal Nitrogen at GW06_14A. The control and compliance limit for Ammoniacal Nitrogen at GW06_14A are 53mg/l and 60mg/l respectively, and the recorded concentration in September 2017 was 73.6mg/l. There has been no previous exceedance of the compliance limit for Ammoniacal Nitrogen at this monitoring location, and only a single exceedance of the control limit (23/11/2013), and results since that time have all been below 30mg/l. In isolation, this exceedance is not considered to be a significant environmental risk and no mitigation measures are currently proposed. The concentrations of Ammoniacal Nitrogen at GW06_14A will be further reviewed and assessed in subsequent monitoring rounds, to determine whether this exceedance is representative of an adverse trend developing.

Leachate Measurements and Laboratory Test Results

Leachate levels were recorded at C1A, C1B, C1D, C2A, C2B and LF08_07 in July, August and September 2017 and the leachate head levels are indicated to be as follows;

Table 4 – Leachate Head

Monitoring Location	Leachate Head (m) in July/Aug/Sept
C1A	1.60/1.85/NM
C1B	1.84/2.02/1.97
C1D	0.42/0.50/0.85
C2A	1.42/0.64/1.42
C2B	2.41/2.56/NM
LF08_07	0.59/0.54/1.09

The volumes of leachate removed from Area 2 during July, August and September 2017 are presented in Table 5. Samples of leachate were not obtained from Area 2 for testing as part of the quarterly sampling or annual screen as there is no access to the leachate wells for sampling.

The leachate head levels recorded indicate a slight exceedance of the permitted level (2m) at C2B.

Leachate Removed

The volume of leachate removed from Area 2 (both Cell 1 and Cell 2 combined) is summarised in Table 5 below:

Table 5 – Quarterly Leachate Data from Area 2

Monitoring Round	Leachate Removed (kg)
Round 161 – Jul 2017	876920
Round 162 – Aug 2017	1117480
Round 163 – Sep 2017	418720



Concluding Remarks

The majority of 'priority contaminants' were recorded at concentrations in the groundwater below the well specific Compliance Limits in Area 2 during September 2017. There were exceedances of the well specific Compliance Limits for two parameters at two monitoring locations as described above. These are not considered to be representative of a significant risk to groundwater at this time and it is recommended that this is reviewed as part of the Annual Environmental Report to determine if there are any trends developing.

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 as described above.

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

Yours sincerely

Kate Riley

For and on behalf of

PETER BRETT ASSOCIATES LLP

Cc. Gwyn Jones – NCC (Docksway Disposal Site)

Enc. Laboratory Analytical Testing Results