

Your ref: DP3733BK

Our ref: 14739/075/CBH/VKR



20th February 2018

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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 166, December 2017.

Please find enclosed the results of the groundwater and leachate quality monitoring undertaken at Area 2 of Docksway Disposal Site. Groundwater and leachate sampling 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 undertaken on 13th December 2017. We enclose with this letter report the laboratory analytical certificates for the testing undertaken.

Field Observations

Details of the field testing of the Area 2 groundwater samples during Round 166 are presented in Table 1.

Table 1 – Field Testing Results and Observations

Monitoring Point	Date Monitored	Depth to Groundwater/Leachate (m)	pH	Electrical Conductivity (µS/cm)	Temperature (°C)	Dissolved Oxygen (%)
GW06_39	13/12/2017	4.10	7.70	7896.00	11.27	3.10
GW07_40	13/12/2017	5.10	8.11	1902.00	10.43	4.20
GW12_30	13/12/2017	4.70	7.19	2058.00	11.32	3.00
GW09_31	13/12/2017	5.30	Not Sampled (well silted)			
GW03_09	13/12/2017	8.40	7.09	943.00	10.51	71.40
GW09_32	13/12/2017	7.65	7.06	5655.00	11.45	1.40
GW12_33	13/12/2017	7.60	7.44	6031.00	11.37	2.20
GW06_34	13/12/2017	8.10	7.62	1590.00	10.03	0.70
GW09_35	13/12/2017	7.84	7.65	14050.00	11.38	2.10
GW06_36	13/12/2017	7.30	Not Sampled (well distorted)			
GW06_37	13/12/2017	7.75	7.75	15100.00	11.28	5.60
GW06_13	13/12/2017	7.20	8.60	9063.00	10.68	43.80
GW12_38	13/12/2017	6.60	7.80	6854.00	10.50	1.90
GW06_14a	13/12/2017	5.40	Not Sampled (well silted)			
LF08_07	14/12/2017	14.10	Not Sampled (no access)			
C2A	14/12/2017	14.30	Not Sampled (no access)			
C2B**	14/12/2017	21.40	Not Monitored			

** Sampled from closest side riser due to access issues at location.

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Laboratory Testing Results

Compliance Levels

The Control and Compliance limits for Area 2 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

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), although compliance limits are currently being calculated and will be proposed for agreement by NRW in the forthcoming annual performance report.



Hazardous Substances (formally List I substances)

None of the hazardous substances agreed as “priority contaminants” exceeded the well specific Compliance Limits at the wells sampled during Round 166 with the exception of an elevated concentration (126µg/L) of arsenic in GW06_34 relative to the Compliance Limit of 65µg/L. This is the highest concentration recorded at this monitoring location and the only time there has been an exceedance of the compliance limit for arsenic since commencement of monitoring. It is proposed to review the concentrations of arsenic recorded at this location during subsequent monitoring rounds to determine if further investigation or mitigation is required.

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 166 with the exception of an elevated concentration (36.3µg/L) of ammoniacal nitrogen in GW06_37 relative to the Control and Compliance Limits of 30µg/L and 35µg/L respectively.

The previous exceedance (37.2µg/L) of the control and compliance limits for Ammoniacal Nitrogen at this monitoring location was in September 2016 – however the results have been below the limits since that time, consistently around 19µg/L.

Given that the concentration observed is only a slight exceedance of the compliance limits, and historically the exceedances at this location appear to be ephemeral 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_37 will be further reviewed and assessed in subsequent monitoring rounds.

Leachate Measurements

Leachate levels were recorded at C1B, C1D, C1E, C2A, C2B and LF08_07 in December 2017 and the leachate head levels are indicated to be as follows;

Table 4 – Leachate Head

Monitoring Location	Leachate Head (m) in December 2017
C1B	2.03
C1D	2.20
C1E	1.94
C2A	1.12
C2B	4.34
LF08_07	2.69

The volumes of leachate removed from Area 2 during October, November and December 2017 are presented in Table 5. The leachate was sampled during R166 from side risers closest to the monitoring location at C2B, and the laboratory analytical certificates are attached to this letter report.

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 (tonnes)
Round 164 October 2017	383.3
Round 165 November 2017	612.4
Round 166 December 2017	502.6

Concluding Remarks

None of the hazardous or non-hazardous substances agreed as “priority contaminants” exceeded the well specific Compliance Limits at the wells sampled during Round 166, with the exception of arsenic at GW06_34 and ammoniacal nitrogen at GW06_37. It is proposed to review subsequent monitoring data for these wells to determine if further investigation or mitigation is required.

The leachate head recorded at LF08_07 and C2B is above the permitted level of 2m, at 2.69m and 4.34m respectively.

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 Result