

Your ref: DP3733BK

Our ref: 14739/075/CBH/KR/



21st October 2015

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Attn: Mr David Willey

Dear David

RE: DP3733BK - Docksway Disposal Site. Latest Area 2 Groundwater Quality Monitoring Report, Round 151, September 2016, including Annual Screen.

Please find enclosed the results of the groundwater quality monitoring undertaken at Area 2 of Docksway Disposal Site. Groundwater 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 2016, 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 groundwater monitoring points. We also enclose the laboratory analytical certificates.

Field Observations

Details of the field testing of the Area 2 groundwater samples during Round 151 are presented in Table 1.

Table 1 – Field Testing Results and Observations

Monitoring Point	Date Monitored	Depth to Groundwater (mbgl)	pH	Electrical Conductivity (µS/cm)	Temperature (°c)	Dissolved Oxygen (%)
GW06_39	27/09/2016	4.55	7.6	4337	13.7	1.7
GW07_40	27/09/2016	4.60	7.3	2428	15.4	8.9
GW12_30	27/09/2016	4.90	7.9	9339	13.6	1.4
GW09_31	27/09/2016	5.50	8.5	2023	13.5	0.7
GW03_09	27/09/2016	8.40	7.5	2626	14.3	3.0
GW09_32	27/09/2016	7.95	8.0	5653	12.9	0.6
GW12_33	27/09/2016	8.65	8.0	8741	13.4	2.4
GW06_34	27/09/2016	8.50	7.6	2335	13.5	1.1
GW09_35	27/09/2016	9.01	7.7	4832	13.4	1.2
GW09_36	27/09/2016	7.70	7.8	1415	13.3	1.2
GW06_37	27/09/2016	6.20	7.9	13860	13.7	1.4
GW06_13	27/09/2016	7.30	8.0	12010	14.3	0.0
GW12_38	27/09/2016	7.00	No data – equipment failure			
GW06_14a	27/09/2016	7.80	No data – equipment failure			

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Laboratory Testing Results

Compliance Levels

The Control and Compliance limits proposed in the Hydrogeological Risk Assessment for Area 2 produced in March 2012, were accepted by NRW on the 5th August 2013. The agreed Control levels and Compliance limits are reproduced in Tables 2 and 3.

Table 2 –PPC Permit Compliance Levels for Emissions to Groundwater

Monitoring Well	Benzene	Naphthalene	Xylene	Arsenic
	Compliance Limit	Compliance Limit	Compliance Limit	Compliance Limit
	ug/l	ug/l	ug/l	ug/l
GW03_09	2	5	3	35
GW06_13	2	5	3	50
GW06_14a	2	5	3	25
GW06_34	2	5	3	65
GW06_36	2	5	3	30
GW06_37	2	5	3	60
GW06_39	2	5	3	50
GW07_40	2	5	3	35
GW09_31	13	5	3	80
GW09_32	3	5	3	30
GW09_35	2	5	3	50

Table 3 –PPC Permit Compliance Levels for Emissions to Groundwater

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 2016 and with two exceptions were recorded below the well specific Compliance limits. The two exceptions are as follows;

Table 4 – Hazardous Substances Priority Contaminant Exceedances – R151

Monitoring Well	Benzene (ug/l)	
	Measured Value	Compliance Limit
GW09/31	1.16	1.00
GW09/32	1.12	1.00

Other Hazardous Substances (Annual Screen)

A full hazardous substance screen was carried out during September 2016 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 2016 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 151. The two exceptions are as follows;

Table 5 – Annual Screen Recorded Concentrations – September 2016

	GW03/09	GW06/34
Component	Measured values (ug/l)	
Dichlobenil	0.014	-
Malathion	-	0.029



Non-hazardous Substances

Neither of the non-hazardous substances (Ammoniacal Nitrogen, Nickel) agreed as “priority contaminants” were recorded above the well specific Compliance Limits during this round, with two exceptions, as follows.

Table 6 – Non-hazardous priority contaminant exceedances – R151

Monitoring Well	Nickel (ug/l)		Ammoniacal Nitrogen (mg/l)	
	Measured Value	Compliance Limit	Measured Value	Compliance Limit
GW06/37	-	-	37.2	35
GW07/40	15.1	10	-	-

Potassium

No exceedances of the Control and Compliance levels for Potassium were identified in any of the Area 2 wells during Round 151.

Leachate Measurements and Laboratory Test Results

Leachate levels were not monitored during Round 151, or since March 2016 due to access problems to the monitoring locations and into the headworks.

Leachate Removed

The volume of leachate removed from Area 2 (both Cell 1 and Cell 2 combined) is summarised in Table 7 below:

Table 7 – Quarterly Leachate Data from Area 2

Monitoring Round	Leachate Removed (kg)
Round 146 – Apr 2016	927720
Round 147 – May 2016	1147900
Round 148 – June 2016	1767760
Round 149 – July 2016	1401260
Round 150 – Aug 2016	1113980
Round 151 – Sept 2016	1157940

An annual hazardous substance screen of the Area 2 leachate was carried out during September 2016 in accordance with Condition 3.6.1 of the PPC Permit. Samples of leachate were obtained from the side risers closest to LF08_07 and C2B. The results of the annual screen testing undertaken during September 2016 are presented in the enclosed analytical certificates and are summarised below.

The results of the additional testing for the annual screen indicate that whilst Mercury was not detected above Method Detection Limit (MDL), total Phenols were recorded at concentrations of 0.04 and 0.06 mg/l respectively.

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

Table 8 – Area 2 Annual Screen Leachate Data

Component	Measured Value (C2B)	Measured Value (LF08_07)
Terbutryn	0.49	-
Naphthalene	1.39	0.92



Methyl tertiary butyl ether	1.24	3.31
Benzene	5.21	3.27
Toluene	1.40	1.46
Ethylbenzene	7.13	4.56
m,p-Xylene	5.65	5.07
o-Xylene	5.84	4.69
1,2,4-Trimethylbenzene	3.28	3.40

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 2016. There were exceedances of the well specific Compliance Limits for three parameters at three 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