



Your Ref: DP3733BK

Our Ref: (332510026)/49428/3501/CBH/VKR/NC/AREA 2 GW & LEACHATE

10th November 2021

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

Attn: Tyrone Ward

Dear Tyrone,

Re: DP3733BK – Docksway Disposal Site. Latest Area 2 Groundwater and Leachate Quality Monitoring Report, Round 211, September 2021.

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 Environmental Permit (DP3733BK). In addition this report includes the annual screen for hazardous substances, in compliance with Tables S3.6 and S3.7 of the permit. This report includes discussion on results obtained from monitoring during September 2021.

We enclose with this letter report, Figure 2, 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 211 are presented in Table 1, together with depths to groundwater and leachate.

Table 1 Field Testing Results and Observations - September 2021

Monitoring Point	Dates Monitored	Depth to Groundwater/ Leachate (m)	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}$)	Temperature ($^{\circ}\text{C}$)	Dissolved Oxygen (%)
GW06_39	23/09/2021	3.97	8.8	8263	13.4	19.4
GW07_40	23/09/2021	5.3	9.6	2201	13.09	32.2
GW12_30	23/09/2021	4.69	8.6	2741	13.2	36.5
GW09_31	23/09/2021	6.09	8.7	4383	13.5	21.1
GW03_09	23/09/2021	8.4	9.1	12535	14.8	29.4
GW09_32	23/09/2021	9.15	8.9	18650	14.6	22.1
GW12_33	23/09/2021	8.16	8.8	20555	13.5	23.1

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Monitoring Point	Dates Monitored	Depth to Groundwater/ Leachate (m)	pH	Electrical Conductivity (µS/cm)	Temperature (°c)	Dissolved Oxygen (%)
GW06_34	23/09/2021	8.62	9.1	8490	14.2	35.7
GW09_35	23/09/2021	8.70	8.8	15700	15.6	24.4
GW09_36	23/09/2021	8.60	9.1	11690	15.6	17.2
GW06_37	29/09/2021	8.07	8.9	10960	13.6	4.8
GW06_13	29/09/2021	7.55	9.1	11240	12.7	24.0
GW12_38	29/09/2021	7.80	8.7	13310	11.8	8.0
GW06_14a	29/09/2021	4.30	Insufficient sample			
LF08_07	17/09/2021	14.98	8.7	11900	20.7	36.6
C1A	24/09/2021	N/A	No field testing undertaken			
C1B	24/09/2021	21.55				
C1D	24/09/2021	10.58				
C1E	24/09/2021	23.40				
C2A	27/09/2021	13.43				
C2C	16/09/2021	18.39	9.0	22420	29.97	37.6
C3B	16/09/2021	12.92	8.1	18250	21.65	0.7
C4	16/09/2021	9.10	9.4	17270	22.07	23.5

Groundwater 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
	µg/l	µg/l	µg/l	µg/l	µg/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
	µg/l	µg/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

Priority Contaminants

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 2021 and were recorded either below the method detection limit or below the Control Level and Compliance Limits.

Other Hazardous Substances (Annual Screen)

A full hazardous substance screen was carried out during September 2021 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 2021 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 (SVOVs), mercury, phenols, pesticides and organotins were not detected above the laboratory method detection limits in the Area 2 groundwater samples during Round 211. The exceptions are as follows:

Table 4 Annual Screen Recorded Concentrations (hazardous substances) - September 2021

Component	Measured Values (ug/l)	Borehole
Dichlobenil	0.0547	GW06_39
Terbutryn	0.019	GW09_31
n-Dibutyl phthlate	65.7	GW03_09
	206	GW06_34
	222	GW06_36
	201	GW06_39
	127	GW07_40
	278	GW09_31
	212	GW09_32
	222	GW09_35
	224	GW12_30
	195	GW12_33
	193	GW06_13
	185	GW06_37
164	GW12_38	
Carbon disulphide	1.02	GW06_34
2(3H)-Benzothiazolone (SVOC TIC)	203	GW09_31
Triisopropylphosphate (SVOC TIC)	715	GW09_31
Unknown 1 (SVOC TIC)	138	GW09_31

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 211 with the exception of the following.

Table 5 Annual Screen Recorded Concentrations (non haz substances) - September 2021

Component	Measured Values	Borehole	Control Level/Compliance Limit
Potassium	70.5 mg/l	GW12_38	65/70 mg/l
	108 mg/l	GW12_33	50/55 mg/l
Nickel	9.52 ug/l	GW09_31	8/10 ug/l
Ammoniacal Nitrogen	54.5 mg/l	GW12_33	15/18 mg/l

Leachate Laboratory Testing Results

An annual hazardous substance screen of the Area 2 leachate was carried out during September 2021, 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 2021 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 Annual Screen Recorded Concentrations (Leachate) - September 2021

Component	C3	C4	C2	LF08/07
Phenol (mg/l)	0.55			
Cresols (mg/l)	0.56			
Xylenols (mg/l)	0.3			
Atrazine (ug/l)			0.225	
Simazine (ug/l)	1.27		1.30	
2,4-Dimethylphenol (ug/l)	32.2			
2 Methylphenol (ug/l)	180			
4 Methylphenol (ug/l)	295			
Total SVOC TIC (ug/l)	41200	10700	7850	3680
Benzothiazolone (ug/l)	2300	2680		
Bis(methylethylidene) Phenol (ug/l)			198	
Dimethylbenzenemethanol (ug/l)	2460	200		
Ditert Butyl hydroxyphenylpropionic acid (ug/l)				215
Ethylheptonic acid (ug/l)	3300			
Isomer of Bis(methylethylidene) Phenol (ug/l)	16700	108	608	
Isomer of Ditert Butyl hydroxyphenylpropionic acid (ug/l)	2200	159	616	
Isomer of Methyl(methylpropyl)Benzeneacetic acid (ug/l)			262	
Isomer of tert-butyl benzoic acid (ug/l)			369	
Isomer of Terbutylphenol (ug/l)			138	
Methyl(methylpropyl)Benzeneacetic acid (ug/l)				121
Methylbenzoic acid (ug/l)	1440			
Terbutyl-benzoic acid (ug/l)				234
Triisopropylphosphate (ug/l)		4730	3140	1010
Trimethylbenzoic acid (ug/l)		149	141	
Trimethylhexanoic acid (ug/l)	4060	670	1270	1490
Unknowns (max) (ug/l)	4560	1330	808	299

Leachate Measurements

Leachate levels were recorded at C1A, C1B, C1D, C1E, C2A, C2B, C2C, C3B, C4 and LF08_07 in September 2021 and the leachate head levels are indicated to be as follows:

Table 7 Leachate Head

Monitoring Location	Leachate Head (m)
C1B	1.37
C1D	1.33
C1E	1.26
C2A	1.67
C2C	1.91
C3A	2.31
C3B	1.88
C4A	0.87
C4B	2.00
LF08_07 (Cell 1)	1.51

Of the ten monitoring points, only C3A was slightly above the permitted level of 2m. At the remaining monitoring points, leachate head levels were below the permitted level.

Leachate Removed

During July to September 2021, a total of 5,096,720 kg of leachate was removed from Area 2 (Cells 1 to 4 combined).

Concluding Remarks

All of the hazardous 'priority contaminants' were recorded at concentrations in the groundwater below the LOD or well specific Compliance Limits in Area 2 during September 2021. There were some exceedances of the Compliance limits for non hazardous 'priority contaminants' as shown in table 5.

The majority of the 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 considered to be general background levels representative of the wider groundwater regime rather than resulting from the landfill site.

Stantec 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
on behalf of Stantec UK Ltd

Encls: Laboratory Certificates
Figure 2

CC: Silvia Gonzalez-Lopez – Newport City Council (NCC)
Robert Hughes – NCC (Docksway Disposal Site)
Luke Embrey - NCC