

Your ref: EAWML30058

Our ref: 14739/075H/CBH/RHT/VKR/AREA 1GW

12 December 2018

Natural Resources Wales
Hadnock Road
Monmouth
Monmouthshire
NP25 3NQ

Attn: David Willey

Dear David

RE: EAWML30058 - DOCKSWAY DISPOSAL SITE. AREA 1 GROUNDWATER & LEACHATE MONITORING REPORT, ANNUAL SCREEN – OCT - NOV 2018

Please find enclosed a summary of the results for the groundwater and leachate quality annual screen 2018, carried out at Area 1 of Docksway Disposal Site, in accordance with the aftercare plan, following definitive closure of Area 1 in October 2014. The monitoring was undertaken between October and November 2018.

We enclose with this letter report, a plan showing the locations of the primary groundwater monitoring points, (Figure A) and the results of the laboratory testing carried out on the three compliance wells (GW03_05, GW07_07 and GW03_02).

Field Observations

Details of the field testing results obtained during the 2018 annual screen are presented in Table 1.

Table 1 – Field Testing and Observations

Monitoring Point	Groundwater/Leachate Level (mbgl)	pH	Electrical Conductivity (µS/cm)	Temperature (°C)	Dissolved Oxygen (%)
GW07_07	5.2	7.5	2370	12.2	0.4
GW03_02	10.2	7.2	1767	12.0	1.9
GW03_05	10.0	7.4	2521	11.8	34.2
LF11_02	13.4	7.5	7465	13.7	37.3
LF11_04	11.5	8.2	26060	17.2	50.3
LF11_07	26.1	8.0	19710	25.5	27.7

The monitoring undertaken was an annual screen which comprises the following determinands (* is groundwater only);

Table 2 – Testing Determinands

Total Alkalinity*	Chromium*	Total Oxidised Nitrogen*	Total Organic Carbon*
Ammoniacal Nitrogen	Copper*	Calcium*	VOCs
COD*	Lead*	Magnesium*	SVOCs
Conductivity*	Manganese*	Potassium	Organochlorine and Organophosphorous Pesticides
EPH	Nickel	Sodium*	
Mercury	Zinc*	pH*	Cyanide Total
Arsenic	Chloride*	Organotins*	Cyanide Free
Cadmium*	Sulphate*	Phenols	

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Groundwater

Control Levels and Compliance Limits

The Hydrogeological Risk Assessment (HRA) for Area 1 was revised and issued in October 2011, and contains the Control Levels and Compliance Limits that were set and used to assess the groundwater quality across the Area 1 site, prior to formal closure. The annual screen results for the Area 1 groundwater have been assessed against the well specific Compliance Limits contained in the HRA.

The current laboratory limit of detection (LDL) has been used as the Control level and Compliance limit for Benzene, Naphthalene, Xylene, Phenols and Mercury. This may however be subject to change as the laboratory limit of detection changes.

Hazardous Substances (formerly List I substances)

All the Priority Contaminants specified as 'hazardous substances' in the Area 1 Hydrogeological Risk Assessment (EPH, Arsenic, Benzene, Naphthalene, Xylene and Mercury) were monitored at the compliance wells in October or November 2018 and all were recorded below the well specific Compliance Limits with the exception of EPH at GW03_02 and GW03_05 where the recorded concentrations of 263ug/l and 191ug/l respectively exceed the Compliance Limits for each location (142.5ug/l and 161.3ug/l).

Other Hazardous Substances

The results of the testing for hazardous substances other than the priority contaminants undertaken during October and November 2018 are presented in the enclosed analytical certificates and are summarised below.

In general, volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), pesticides and organotins were not detected above the LDL in the majority of the Area 1 groundwater samples tested with the exception of the following.

Table 2 – Summary of Parameters Recorded Above the Lab Detection Limit.

Monitoring Point	Contaminant	Lab Detection Limit	Recorded Value
GW03_02	Dichlobenil (pesticide/herbicide)	<0.01ug/l	2.12ug/l
GW07_07	Dichlobenil (pesticide/herbicide)	<0.01ug/l	0.0809ug/l
GW03_02	Azinphos Ethyl (pesticide/herbicide)	<0.02ug/l	0.11ug/l
GW03_02	Bis(2-Ethylhexyl)phthalate (SVOC)	<2ug/l	4.41ug/l

Dichlobenil was also recorded marginally above the LDL at GW03_02 during the previous three annual screens. Given the general groundwater flow direction at the site (towards the south or south east), it is considered that the presence of these parameters in GW03_02 (up hydraulic gradient of the landfills) indicates that the source of these specific parameters is off site.

Non-Hazardous Substances

All of the "priority contaminants" specified as non-hazardous substances in the Area 1 Hydrogeological Risk Assessment (Ammoniacal Nitrogen, Nickel, Potassium and Phenols) were monitored at the compliance wells as part of the annual screen and with the exception of Nickel, were recorded below the well specific Compliance limits.

The concentration of Nickel recorded at GW03_02 (5.4ug/l) is marginally above the Compliance Limit of 4.6ug/l.

Chloride and Chemical Oxygen Demand (COD)

Chloride concentrations at GW03_02, GW03_05 and GW07_07 were recorded at 67.7mg/l, 197mg/l and 353mg/l respectively during this round and these are within the range of data recorded for these monitoring wells.

COD concentrations of 39mg/l, 89.4mg/l and 64.4mg/l were recorded at GW03_02, GW03_05 and GW07_07 respectively during this round. The concentrations recorded are within the range of results that have been recorded at these locations.

Leachate Dip Measurements and Laboratory Test Results

The level of leachate across Area 1 was monitored in LF03_01, LF11_01 to LF11_04 and LF11_06 to LF11_07 in November 2018 and was recorded at levels of between about 6.2m AOD and 17.3 m AOD.

An annual hazardous substance screen was carried out during November 2018 in accordance with the aftercare plan (EAWML 30058). Samples of leachate were obtained and submitted for laboratory testing, from LF11_02, LF11_04, and LF11_07. Compliance Limits are not required to be set for the leachate at Area 1, and the results of the testing undertaken during September 2018 are presented in the enclosed analytical certificates and are summarised below.

Free Cyanide was not detected at concentrations above the LDL in the leachate wells sampled during this round.

Pesticides were not detected above the laboratory method detection limit (MDL) in any of the Area 1 leachate samples tested, with the exception of 1,2,4-Trichlorobenzene at LF11_02 and LF11_04 where concentrations of 0.0365ug/l and 0.0208ug/l respectively were recorded.

A number of results were recorded above the lab limit of detection for volatile organic compounds (VOCs) and semi volatile organic compounds (SVOCs) at each of the monitoring locations, as shown in the table below.

Table 3 – Summary of Parameters Recorded Above the Lab Method Detection Limit.

Parameter (MDL <1ug/l)	Concentrations (ug/l)		
	LF11_02	LF11_04	LF11_07
Bis(2-Ethylhexyl)phthalate (SVOC)	90.30	285	1240
Methyl Tertiary Butyl Ether (VOC)	n/a	1.23	n/a
Cis-1,2-Dichloroethene (VOC)	n/a	n/a	1.76
Benzene (VOC)	3.63	5.04	3.90
Toluene (VOC)	1.33	10.50	n/a
Chlorobenzene (VOC)	3.12	n/a	n/a
Ethylbenzene (VOC)	1.37	10.00	n/a
m,p-xylene (VOC)	11.80	21.20	9.57
o-xylene (VOC)	3.31	12.20	12.00
Isopropylbenzene (VOC)	1.35	n/a	n/a
1,3,5-Trimethylbenzene (VOC)	n/a	3.03	2.83
1,2,4-Trimethylbenzene (VOC)	4.32	11.70	6.01
4-iso-Propyltoluene (VOC)	n/a	3.54	<1
1,2-Dichlorobenzene (VOC)	1.56	n/a	n/a
Naphthalene (VOC)	n/a	2.01	3.06

In previous reports (Sept 2017, Sept 2016 and Sept 2015), we have reported an increasing trend in EPH concentrations in LF11_05. A sample was not obtained from LF11_05 during November 2018 and instead this leachate monitoring well will be sampled during December 2018 and subsequently reported in the early part of 2019.

Yours sincerely

A handwritten signature in black ink, appearing to read 'V Kate Riley', is positioned above the typed name.

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

Cc. Jonathan Davey – NCC (Docksway Disposal Site)