

Pat Mcgrath
Cardiff City Council
Waste Management
Lamby Way
Rumney
Cardiff
CF3 2HP

Decus Research Limited
ExCAL House
Capel Hendre Industrial Estate
Ammanford
Carmarthenshire
SA18 3SJ

Tel: 01269 844558
Fax: 01269 841867
Email: info@decusuk.co.uk

Certificate of Analysis Number: 2737

Project/Site name:	Lamby Way	Samples Taken:	16-11-2018 to 30-11-2018
Job Number:	-	Samples Received:	03-12-2018
Order Number:	-	Date Instructed:	04-12-2018
Quotation Number:	DS 170612	Analysis Complete:	20-12-2018
Sample Matrix:	Groundwater, Surface Water, Leachate Water	Report Issued:	08-01-2019
		Sampled By:	Client

Disposal Times:

All water samples will be retained for a period of two weeks and all soil samples retained for a period of one month following the date of the issued certificate.

Approved by: Adam Whitehouse
Signature: 
Title: Quality Manager



Client: Cardiff City Council
FAO: Pat Mcgrath

CERTIFICATE OF ANALYSIS 2737

Results of analysis of 28 samples received
on the 04/01/18

Report Date
08th January 2019

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218001	041218002	041218003	041218004
Client Sample Reference:				C1	C2	C3	C5
Sample Date:				30/11/18	30/11/18	16/11/18	16/11/18
Sample Matrix:				Groundwater	Groundwater	Groundwater	Groundwater
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	0.18	0.05	3.8	3.8
INORG-L13	Chloride	mg.l ⁻¹	A	31.6	31.3	12.7	6.6
INORG-L01	pH	pH units	A	8.0	7.8	7.7	7.6
1450	Cadmium	µg.l ⁻¹	S - N	<0.080	0.12	<0.080	0.61
METALS-L	Nickel	µg.l ⁻¹	A	1.2	5.6	25.5	4.3
ORL-L17	Mecoprop	µg.l ⁻¹	A	<0.1	<0.1	<0.1	<0.1
ORG-L05	m&p-Xylene	µg.l ⁻¹	N	<1.0	<1.0	<1.0	<1.0

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218005	041218006	041218007	041218008
Client Sample Reference:				C6	C8	C12	C13
Sample Date:				20/11/18	20/11/18	16/11/18	16/11/18
Sample Matrix:				Groundwater	Groundwater	Groundwater	Groundwater
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	0.62	3.8	9.9	8.6
INORG-L13	Chloride	mg.l ⁻¹	A	3.3	2.9	2.7	4.7
INORG-L01	pH	pH units	A	7.4	7.3	7.3	7.5
1450	Cadmium	µg.l ⁻¹	S - N	0.15	<0.080	0.56	<0.080
METALS-L	Nickel	µg.l ⁻¹	A	2.3	4.5	1.2	2.9
ORL-L17	Mecoprop	µg.l ⁻¹	A	<0.1	<0.1	<0.1	<0.1
ORG-L05	m&p-Xylene	µg.l ⁻¹	N	<1.0	<1.0	<1.0	<1.0

* Accreditation Status

Tests marked 'A' hold UKAS accreditation

Tests marked 'N' do not hold UKAS accreditation

Tests marked 'S - A' were sub-contracted to an approved laboratory with accreditation on the specific method

Tests marked 'S - N' were sub-contracted to an approved laboratory without accreditation on the specific method

Any comments or interpretations are beyond the scope of UKAS accreditation



Client: Cardiff City Council
FAO: Pat Mcgrath

CERTIFICATE OF ANALYSIS 2737

Results of analysis of 28 samples received
on the 04/01/18

Report Date
08th January 2019

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218009	041218010	041218011	041218012
Client Sample Reference:				C16	C18	C19	C20
Sample Date:				16/11/18	16/11/18	16/11/18	16/11/18
Sample Matrix:				Groundwater	Groundwater	Groundwater	Groundwater
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	1.0	0.75	1.3	1.1
INORG-L13	Chloride	mg.l ⁻¹	A	3.6	5.4	22.4	3.7
INORG-L01	pH	pH units	A	7.2	7.4	7.6	7.2
1450	Cadmium	µg.l ⁻¹	S - N	0.79	0.18	0.10	0.50
METALS-L	Nickel	µg.l ⁻¹	A	2.1	2.7	3.9	4.2
ORL-L17	Mecoprop	µg.l ⁻¹	A	<0.1	<0.1	<0.1	<0.1
ORG-L05	m&p-Xylene	µg.l ⁻¹	N	<1.0	<1.0	<1.0	<1.0

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218013	041218014	041218015	041218016
Client Sample Reference:				C21	C22	SW2	SW3
Sample Date:				16/11/18	16/11/18	20/11/18	20/11/18
Sample Matrix:				Groundwater	Groundwater	Surface Water	Surface Water
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	0.75	0.65	0.03	0.01
INORG-L12	Ammonia as N	mg.l ⁻¹ as N	A	0.58	0.50	0.02	0.01
INORG-L13	Chloride	mg.l ⁻¹	A	4.2	2.6	32.7	17.3
INORG-L01	pH	pH units	A	7.5	7.4	8.4	8.0
INORG-L02	Conductivity	µS.cm ⁻¹	A	-	-	713	677
INORG-L06.1	BOD	mg.l ⁻¹ as O ₂	A	-	-	3.1	4.0
INORG-L06.1	BOD ATU	mg.l ⁻¹ as O ₂	A	-	-	3.5	4.7
INORG-L10	Suspended Solids	mg.l ⁻¹	A	-	-	78.4	19.2
INORG-L05	COD	mg.l ⁻¹ O ₂	A	-	-	713	677
-	TON	mg.l ⁻¹ as N	A	-	-	<0.1	0.2
1450	Cadmium	µg.l ⁻¹	S - N	0.20	<0.080	-	-
METALS-L	Nickel	µg.l ⁻¹	A	2.0	1.8	-	-
ORL-L17	Mecoprop	µg.l ⁻¹	A	<0.1	<0.1	-	-
ORG-L05	m&p-Xylene	µg.l ⁻¹	N	<1.0	<1.0	-	-

*** Accreditation Status**

Tests marked 'A' hold UKAS accreditation

Tests marked 'N' do not hold UKAS accreditation

Tests marked 'S - A' were sub-contracted to an approved laboratory with accreditation on the specific method

Tests marked 'S - N' were sub-contracted to an approved laboratory without accreditation on the specific method

Any comments or interpretations are beyond the scope of UKAS accreditation



Client: Cardiff City Council
FAO: Pat McGrath

CERTIFICATE OF ANALYSIS 2737
Results of analysis of 28 samples received
on the 04/01/18

Report Date
08th January 2019

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218017	041218018	041218019	-
Client Sample Reference:				SW4	SW5	SW6	-
Sample Date:				20/11/18	20/11/18	20/11/18	-
Sample Matrix:				Surface Water	Surface Water	Surface Water	-
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	0.57	0.72	0.01	-
INORG-L12	Ammonia as N	mg.l ⁻¹ as N	A	0.44	0.55	0.01	-
INORG-L13	Chloride	mg.l ⁻¹	A	31.1	32.0	22.2	-
INORG-L01	pH	pH units	A	7.5	7.5	7.8	-
INORG-L02	Conductivity	μS.cm ⁻¹	A	1766	2.10	671	-
INORG-L06.1	BOD	mg.l ⁻¹ as O ₂	A	5.7	4.9	3.5	-
INORG-L06.1	BOD ATU	mg.l ⁻¹ as O ₂	A	6.2	5.9	3.4	-
INORG-L10	Suspended Solids	mg.l ⁻¹	A	94.8	32.8	43.2	-
INORG-L05	COD	mg.l ⁻¹ O ₂	A	1,766	210	671	-
INORG-L14	TON	mg.l ⁻¹ as NO ₂	A	0.7	7.5	0.3	-

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218020	041218021	041218022	041218023
Client Sample Reference:				L2	L4	SL4	SL5
Sample Date:				30/11/18	30/11/18	30/11/18	30/11/18
Sample Matrix:				Leachate	Leachate	Leachate	Leachate
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	1,508	1,664	468	234
INORG-L13	Chloride	mg.l ⁻¹	A	183	177	16.3	17.9
METALS-L	Nickel	μg.l ⁻¹	A	182	154	9.7	9.1
1450	Cadmium	μg.l ⁻¹	S-N	0.68	<0.080	<0.080	0.18
ORG0L17	Mecoprop	μg.l ⁻¹	A	21.6	<0.1	<0.1	<0.1
ORG-L05	m&p-Xylene	μg.l ⁻¹	N	5.6	14.3	1.6	<1.0

* Accreditation Status

Tests marked 'A' hold UKAS accreditation

Tests marked 'N' do not hold UKAS accreditation

Tests marked 'S - A' were sub-contracted to an approved laboratory with accreditation on the specific method

Tests marked 'S - N' were sub-contracted to an approved laboratory without accreditation on the specific method

Any comments or interpretations are beyond the scope of UKAS accreditation



Client: Cardiff City Council
FAO: Pat Mcgrath

CERTIFICATE OF ANALYSIS 2737
Results of analysis of 28 samples received
on the 04/01/18

Report Date
08th January 2019

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218024	041218025	041218026	-
Client Sample Reference:				SL6	SL7	SL8	-
Sample Date:				30/11/18	30/11/18	30/11/18	-
Sample Matrix:				Leachate	Leachate	Leachate	-
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	91	1,170	1,456	-
INORG-L13	Chloride	mg.l ⁻¹	A	23.6	10.8	17.8	-
METALS-L	Nickel	µg.l ⁻¹	A	6.7	21.3	99.8	-
1450	Cadmium	µg.l ⁻¹	S-N	0.16	<0.080	<0.080	-
ORGOL17	Mecoprop	µg.l ⁻¹	A	<0.1	<0.1	<0.1	-
ORG-L05	m&p-Xylene	µg.l ⁻¹	N	1.6	4.1	3.5	-

* Accreditation Status

Tests marked 'A' hold UKAS accreditation

Tests marked 'N' do not hold UKAS accreditation

Tests marked 'S - A' were sub-contracted to an approved laboratory with accreditation on the specific method

Tests marked 'S - N' were sub-contracted to an approved laboratory without accreditation on the specific method

Any comments or interpretations are beyond the scope of UKAS accreditation



Client: Cardiff City Council
FAO: Pat Mcgrath

CERTIFICATE OF ANALYSIS 2737

Results of analysis of 28 samples received
on the 04/01/18

Report Date
08th January 2019

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				041218027	041218028	-	-
Client Sample Reference:				LTP1	L7	-	-
Sample Date:				16/11/18	20/11/18	-	-
Sample Matrix:				Leachate	Leachate	-	-
INORG-L12	Ammonia	mg.l ⁻¹ as NH ₄	A	2,080	260	-	-
INORG-L13	Chloride	mg.l ⁻¹	A	26.7	18.0	-	-
INORG-L31	Cyanide	mg.l ⁻¹	N	<0.1	<0.1	-	-
INORG-L20	Mono Phenols	mg.l ⁻¹	A	<0.02	0.67	-	-
INORG-L21	Ortho-Phosphate	mg.l ⁻¹ P	A	14	2.9	-	-
METALS-L	Sulphate	mg.l ⁻¹	A	70.8	110	-	-
INORG-L10	Suspended Solids	mg.l ⁻¹	A	23.4	37.8	-	-
INORG-L05	COD	mg.l ⁻¹ O ₂	A	53	294	-	-
1450	Arsenic	µg.l ⁻¹	S-N	41	15	-	-
METALS-L	Chromium	µg.l ⁻¹	A	171	23.7	-	-
METALS-L	Copper	µg.l ⁻¹	A	79.8	2.2	-	-
METALS-L	Nickel	µg.l ⁻¹	A	211	35.6	-	-
METALS-L	Zinc	µg.l ⁻¹	A	47.9	5.7	-	-
METALS-L	Sulphur	mg.l ⁻¹	A	23.6	36.6	-	-
1630	Dissolved Methane	mg.l ⁻¹	S-N	0.73	<0.050	-	-
INORG-L01	pH	pH units	A	7.5	7.5	-	-
INORG-L06.1	BOD	mg.l ⁻¹ as O ₂	A	1.6	2.3	-	-

*** Accreditation Status**

Tests marked 'A' hold UKAS accreditation

Tests marked 'N' do not hold UKAS accreditation

Tests marked 'S - A' were sub-contracted to an approved laboratory with accreditation on the specific method

Tests marked 'S - N' were sub-contracted to an approved laboratory without accreditation on the specific method

Any comments or interpretations are beyond the scope of UKAS accreditation



Client: Cardiff City Council
FAO: Pat McGrath

CERTIFICATE OF ANALYSIS 2737
Results of analysis of 28 samples received
on the 04/01/18

Report Date
08th January 2019

Analytical Method	Method Code	Accreditation Status
Determination of pH in waters by electrode probe meter (In-house method)	INORG-L01	ISO 17025
Determination of ammonia in waters by colorimetric photometer (In-house method)	INORG-L12	ISO 17025
Determination of chloride by colorimetric photometer (In-house method)	INORG-L13	ISO 17025
Determination of BOD in waters by titration (In-house method)	INORG-L06.1	ISO 17025
Determination of metals (Cr, Ni, Cu, Zn, S) in waters by ICP-OES (In-house method)	METALS-L	ISO 17025
Determination of metals (As, Cd) in waters by colorimetric analysis (In-house method)	1450	None
Determination of Cyanide in water by colorimetric analysis (In-house method)	INORG-L31	None
Determination of COD in waters by colorimetric photometer (In-house method)	INORG-L05	ISO 17025
Determination of Ortho-Phosphates in waters by colorimetric photometer (In-house method)	INORG-L21.1	ISO 17025
Determination of suspended solids in waters by gravimetric (In-house method)	INORG-L10	ISO 17025
Determination of Dissolved Methane in waters by GC-MS (Sub-Contracted method)	1630	None
Determination of mecoprop in waters by GC-MS (In-house method)	ORG-L17	ISO 17025
Determination of xylene in waters by GC-MS (In-house method)	ORG-L05	None

* Accreditation Status

Tests marked 'A' hold UKAS accreditation

Tests marked 'N' do not hold UKAS accreditation

Tests marked 'S - A' were sub-contracted to an approved laboratory with accreditation on the specific method

Tests marked 'S - N' were sub-contracted to an approved laboratory without accreditation on the specific method

Any comments or interpretations are beyond the scope of UKAS accreditation



Client: Cardiff City Council
FAO: Pat Mcgrath

CERTIFICATE OF ANALYSIS 2737
Results of analysis of 28 samples received
on the 04/01/18

Report Date
08th January 2019

All results only relate to the items tested.

This report supersedes any previous versions issued by the laboratory.

A full list of determinants relating to abbreviations such as PAHs, VOCs, SVOCs, PCBs etc. is available upon request.

Where results have been labelled as deviating for any reason, the data may not be representative of the sample at the point of sampling:

[I/S]: Insufficient Sample

[U/S]: Unsuitable Sample

[A]: Date of Sampling not supplied

[B]: Sample age exceeds recommended storage time

[C]: Samples not received in appropriate containers

[D]: Broken Container

< "Less Than"

> "Greater Than"

Where any sub-contracted results have been noted as deviating by the laboratory in question, their deviations codes will be applied and detailed.

Accreditation statements are correct at the time of issue.

This report shall not be reproduced in part without the approval of Decus Research Ltd, nor used in any way as to lead to misrepresentation of the results or their implications.

*****END OF REPORT*****

* Accreditation Status

Tests marked 'A' hold UKAS accreditation

Tests marked 'N' do not hold UKAS accreditation

Tests marked 'S - A' were sub-contracted to an approved laboratory with accreditation on the specific method

Tests marked 'S - N' were sub-contracted to an approved laboratory without accreditation on the specific method

Any comments or interpretations are beyond the scope of UKAS accreditation

