

# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of water clarification sludge cake

Sampling Point No: 120038

Sample ID: 8444337

Date: 10/07/2025

Application rate (t/ha)	34.0
Application rate (t/acre)	13.8
pH	6.7
Dry solids (%)	15.6

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.27	0.20	%	2.0	67	0.2	7
Ammonium N	82.6	12.89	mg/kg	0.0	0		
Phosphorus (P)	3430	535.08	mg/kg	0.5	18		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	42	0.2	8
Potassium (K)	482	75.19	mg/kg	0.1	3		
Potash (K <sub>2</sub> O)		0.00		0.1	3	0.0	1
Magnesium (Mg)	717	111.85	mg/kg	0.1	4		
Magnesium (MgO)		0.00		0.2	6	0.0	1
Sulphur (S)	5120	798.72	mg/kg	0.8	27		
Sulphur (SO <sub>3</sub> )		0.00		2.0	68	0.2	7

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	83	12.95	mg/kg	12.95	0.44	15.00	3%
Copper	47.5	7.41	mg/kg	7.41	0.25	7.50	3%
Nickel	23.2	3.62	mg/kg	3.62	0.12	3.00	4%
Lead	20.4	3.18	mg/kg	3.18	0.11	15.00	1%
Cadmium	0.36	0.06	mg/kg	0.06	0.00	0.15	1%
Chromium	14.1	2.20	mg/kg	2.20	0.07	15.00	0%
Arsenic	20.6	3.21	mg/kg	3.21	0.11	0.70	16%
Mercury	0.66	0.10	mg/kg	0.10	0.00	0.10	4%
<b>Other Elements</b>							
Iron	17700	2761.20	mg/kg	2761.20	94		
Aluminium	168000	26208.00	mg/kg	26208.00	891		

# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of water clarification sludge cake

Sampling Point No: 120038

Sample ID: 8444337

Date: 10/07/2025

Application rate (t/ha)	40.0
Application rate (t/acre)	16.2
pH	6.7
Dry solids (%)	15.6

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.27	0.20	%	2.0	79	0.2	8
Ammonium N	82.6	12.89	mg/kg	0.0	1		
Phosphorus (P)	3430	535.08	mg/kg	0.5	21		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	49	0.2	10
Potassium (K)	482	75.19	mg/kg	0.1	3		
Potash (K <sub>2</sub> O)		0.00		0.1	4	0.0	1
Magnesium (Mg)	717	111.85	mg/kg	0.1	4		
Magnesium (MgO)		0.00		0.2	7	0.0	1
Sulphur (S)	5120	798.72	mg/kg	0.8	32		
Sulphur (SO <sub>3</sub> )		0.00		2.0	80	0.2	8

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	83	12.95	mg/kg	12.95	0.52	15.00	3%
Copper	47.5	7.41	mg/kg	7.41	0.30	7.50	4%
Nickel	23.2	3.62	mg/kg	3.62	0.14	3.00	5%
Lead	20.4	3.18	mg/kg	3.18	0.13	15.00	1%
Cadmium	0.36	0.06	mg/kg	0.06	0.00	0.15	1%
Chromium	14.1	2.20	mg/kg	2.20	0.09	15.00	1%
Arsenic	20.6	3.21	mg/kg	3.21	0.13	0.70	18%
Mercury	0.66	0.10	mg/kg	0.10	0.00	0.10	4%
<b>Other Elements</b>							
Iron	17700	2761.20	mg/kg	2761.20	110		
Aluminium	168000	26208.00	mg/kg	26208.00	1048		

# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of water clarification sludge cake

Sampling Point No: 120038

Sample ID: 8444337

Date: 10/07/2025

Application rate (t/ha)	53.0
Application rate (t/acre)	21.4
pH	6.7
Dry solids (%)	15.6

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.27	0.20	%	2.0	105	0.2	11
Ammonium N	82.6	12.89	mg/kg	0.0	1		
Phosphorus (P)	3430	535.08	mg/kg	0.5	28		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	65	0.2	13
Potassium (K)	482	75.19	mg/kg	0.1	4		
Potash (K <sub>2</sub> O)		0.00		0.1	5	0.0	1
Magnesium (Mg)	717	111.85	mg/kg	0.1	6		
Magnesium (MgO)		0.00		0.2	10	0.0	2
Sulphur (S)	5120	798.72	mg/kg	0.8	42		
Sulphur (SO <sub>3</sub> )		0.00		2.0	106	0.2	11

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	83	12.95	mg/kg	12.95	0.69	15.00	5%
Copper	47.5	7.41	mg/kg	7.41	0.39	7.50	5%
Nickel	23.2	3.62	mg/kg	3.62	0.19	3.00	6%
Lead	20.4	3.18	mg/kg	3.18	0.17	15.00	1%
Cadmium	0.36	0.06	mg/kg	0.06	0.00	0.15	2%
Chromium	14.1	2.20	mg/kg	2.20	0.12	15.00	1%
Arsenic	20.6	3.21	mg/kg	3.21	0.17	0.70	24%
Mercury	0.66	0.10	mg/kg	0.10	0.01	0.10	5%
<b>Other Elements</b>							
Iron	17700	2761.20	mg/kg	2761.20	146		
Aluminium	168000	26208.00	mg/kg	26208.00	1389		

# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of water clarification sludge cake

Sampling Point No: 120038

Sample ID: 8444337

Date: 10/07/2025

Application rate (t/ha)	65.0
Application rate (t/acre)	26.3
pH	6.7
Dry solids (%)	15.6

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.27	0.20	%	2.0	129	0.2	13
Ammonium N	82.6	12.89	mg/kg	0.0	1		
Phosphorus (P)	3430	535.08	mg/kg	0.5	35		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	80	0.2	16
Potassium (K)	482	75.19	mg/kg	0.1	5		
Potash (K <sub>2</sub> O)		0.00		0.1	6	0.0	1
Magnesium (Mg)	717	111.85	mg/kg	0.1	7		
Magnesium (MgO)		0.00		0.2	12	0.0	2
Sulphur (S)	5120	798.72	mg/kg	0.8	52		
Sulphur (SO <sub>3</sub> )		0.00		2.0	130	0.2	13

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	83	12.95	mg/kg	12.95	0.84	15.00	6%
Copper	47.5	7.41	mg/kg	7.41	0.48	7.50	6%
Nickel	23.2	3.62	mg/kg	3.62	0.24	3.00	8%
Lead	20.4	3.18	mg/kg	3.18	0.21	15.00	1%
Cadmium	0.36	0.06	mg/kg	0.06	0.00	0.15	2%
Chromium	14.1	2.20	mg/kg	2.20	0.14	15.00	1%
Arsenic	20.6	3.21	mg/kg	3.21	0.21	0.70	30%
Mercury	0.66	0.10	mg/kg	0.10	0.01	0.10	7%
<b>Other Elements</b>							
Iron	17700	2761.20	mg/kg	2761.20	179		
Aluminium	168000	26208.00	mg/kg	26208.00	1704		

<b>Sampling Point No:</b>	120038	<b>Location:</b>	BOLTON HILL Sludge Tankering Point
<b>Date Sampled:</b>	10/07/2025	<b>Time Taken:</b>	10:09
<b>Laboratory:</b>	ALS	<b>Sample ID:</b>	8444337
<b>No. of Results:</b>	20		
<b>Sampling Reason:</b>	WTW Sludge - Product Monitoring (SW_ME)		
<b>Type:</b>	WTW Sludge (SW)		

## Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	717	mg/kg		
288 Aluminium	168000	mg/kg		
357 Arsenic	20.6	mg/kg		
4620 pH	6.7	pH		
7774 Mercury	0.66	mg/kg	<	
8241 Volatile solids	45.9	%		
9233 Ammoniacal nitrogen	82.6	mg/kg		
9234 Sulphur	5120	mg/kg		
9271 Cadmium	0.36	mg/kg	<	
9272 Chromium	14.1	mg/kg	<	
9273 Copper	47.5	mg/kg		
9275 Nickel	23.2	mg/kg		
9276 Lead	20.4	mg/kg	<	
9277 Zinc	83.0	mg/kg		
9278 Iron	17700	mg/kg		
9281 % Dry solids	15.6	%		
9282 % Minerals	54.1	%		
9283 % K (dry weight)	0.0482	mg/kg		
9284 % P (dry weight)	0.343	%		
9285 % N (dry weight)	1.27	%		

## Comments:

## Signed:

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**Approved by:**

**Position:**

Upper Limit

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# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100506

Sample ID: 8443875

Date: 10/07/2025

Application rate (t/ha)	38.0
Application rate (t/acre)	15.4
pH	7.1
Dry solids (%)	13.30

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.3	0.17	%	1.7	66	0.2	7
Ammonium N	275	36.58	mg/kg	0.0	1		
Phosphorus (P)	3550	472.15	mg/kg	0.5	18		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.1	41	0.2	8
Potassium (K)	336	44.69	mg/kg	0.0	2		
Potash (K <sub>2</sub> O)		0.00		0.1	2	0.0	0
Magnesium (Mg)	626	83.26	mg/kg	0.1	3		
Magnesium (MgO)		0.00		0.1	5	0.0	1
Sulphur (S)	8040	1069.32	mg/kg	1.1	41		
Sulphur (SO <sub>3</sub> )		0.00		2.7	102	0.3	10

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	215	28.60	mg/kg	28.60	1.09	15.00	7%
Copper	52.3	6.96	mg/kg	6.96	0.26	7.50	4%
Nickel	37.3	4.96	mg/kg	4.96	0.19	3.00	6%
Lead	22.8	3.03	mg/kg	3.03	0.12	15.00	1%
Cadmium	1.01	0.13	mg/kg	0.13	0.01	0.15	3%
Chromium	15.8	2.10	mg/kg	2.10	0.08	15.00	1%
Arsenic	12.1	1.61	mg/kg	1.61	0.06	0.70	9%
Mercury	0.37	0.05	mg/kg	0.05	0.00	0.10	2%
<b>Other Elements</b>							
Iron	13800	1835.40	mg/kg	1835.40	70		
Aluminium	124000	16492.00	mg/kg	16492.00	627		

# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100506

Sample ID: 8443875

Date: 10/07/2025

Application rate (t/ha)	46.0
Application rate (t/acre)	18.6
pH	7.1
Dry solids (%)	13.30

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.3	0.17	%	1.7	80	0.2	8
Ammonium N	275	36.58	mg/kg	0.0	2		
Phosphorus (P)	3550	472.15	mg/kg	0.5	22		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.1	50	0.2	10
Potassium (K)	336	44.69	mg/kg	0.0	2		
Potash (K <sub>2</sub> O)		0.00		0.1	2	0.0	0
Magnesium (Mg)	626	83.26	mg/kg	0.1	4		
Magnesium (MgO)		0.00		0.1	6	0.0	1
Sulphur (S)	8040	1069.32	mg/kg	1.1	49		
Sulphur (SO <sub>3</sub> )		0.00		2.7	123	0.3	12

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	215	28.60	mg/kg	28.60	1.32	15.00	9%
Copper	52.3	6.96	mg/kg	6.96	0.32	7.50	4%
Nickel	37.3	4.96	mg/kg	4.96	0.23	3.00	8%
Lead	22.8	3.03	mg/kg	3.03	0.14	15.00	1%
Cadmium	1.01	0.13	mg/kg	0.13	0.01	0.15	4%
Chromium	15.8	2.10	mg/kg	2.10	0.10	15.00	1%
Arsenic	12.1	1.61	mg/kg	1.61	0.07	0.70	11%
Mercury	0.37	0.05	mg/kg	0.05	0.00	0.10	2%
<u>Other Elements</u>							
Iron	13800	1835.40	mg/kg	1835.40	84		
Aluminium	124000	16492.00	mg/kg	16492.00	759		

# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100506

Sample ID: 8443875

Date: 10/07/2025

Application rate (t/ha)	60.0
Application rate (t/acre)	24.3
pH	7.1
Dry solids (%)	13.30

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.3	0.17	%	1.7	104	0.2	10
Ammonium N	275	36.58	mg/kg	0.0	2		
Phosphorus (P)	3550	472.15	mg/kg	0.5	28		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.1	65	0.2	13
Potassium (K)	336	44.69	mg/kg	0.0	3		
Potash (K <sub>2</sub> O)		0.00		0.1	3	0.0	1
Magnesium (Mg)	626	83.26	mg/kg	0.1	5		
Magnesium (MgO)		0.00		0.1	8	0.0	2
Sulphur (S)	8040	1069.32	mg/kg	1.1	64		
Sulphur (SO <sub>3</sub> )		0.00		2.7	160	0.3	16

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	215	28.60	mg/kg	28.60	1.72	15.00	11%
Copper	52.3	6.96	mg/kg	6.96	0.42	7.50	6%
Nickel	37.3	4.96	mg/kg	4.96	0.30	3.00	10%
Lead	22.8	3.03	mg/kg	3.03	0.18	15.00	1%
Cadmium	1.01	0.13	mg/kg	0.13	0.01	0.15	5%
Chromium	15.8	2.10	mg/kg	2.10	0.13	15.00	1%
Arsenic	12.1	1.61	mg/kg	1.61	0.10	0.70	14%
Mercury	0.37	0.05	mg/kg	0.05	0.00	0.10	3%
<u>Other Elements</u>							
Iron	13800	1835.40	mg/kg	1835.40	110		
Aluminium	124000	16492.00	mg/kg	16492.00	990		

# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100506

Sample ID: 8443875

Date: 10/07/2025

Application rate (t/ha)	73.0
Application rate (t/acre)	29.5
pH	7.1
Dry solids (%)	13.30

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.3	0.17	%	1.7	126	0.2	13
Ammonium N	275	36.58	mg/kg	0.0	3		
Phosphorus (P)	3550	472.15	mg/kg	0.5	34		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.1	79	0.2	16
Potassium (K)	336	44.69	mg/kg	0.0	3		
Potash (K <sub>2</sub> O)		0.00		0.1	4	0.0	1
Magnesium (Mg)	626	83.26	mg/kg	0.1	6		
Magnesium (MgO)		0.00		0.1	10	0.0	2
Sulphur (S)	8040	1069.32	mg/kg	1.1	78		
Sulphur (SO <sub>3</sub> )		0.00		2.7	195	0.3	20

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	215	28.60	mg/kg	28.60	2.09	15.00	14%
Copper	52.3	6.96	mg/kg	6.96	0.51	7.50	7%
Nickel	37.3	4.96	mg/kg	4.96	0.36	3.00	12%
Lead	22.8	3.03	mg/kg	3.03	0.22	15.00	1%
Cadmium	1.01	0.13	mg/kg	0.13	0.01	0.15	7%
Chromium	15.8	2.10	mg/kg	2.10	0.15	15.00	1%
Arsenic	12.1	1.61	mg/kg	1.61	0.12	0.70	17%
Mercury	0.37	0.05	mg/kg	0.05	0.00	0.10	4%
<b>Other Elements</b>							
Iron	13800	1835.40	mg/kg	1835.40	134		
Aluminium	124000	16492.00	mg/kg	16492.00	1204		

<b>Sampling Point No:</b>	100506	<b>Location:</b>	PRESELI WTW SLUDGE Tankering Point (New Works)
<b>Date Sampled:</b>	10/07/2025	<b>Time Taken:</b>	09:58
<b>Laboratory:</b>	ALS	<b>Sample ID:</b>	8443875
<b>No. of Results:</b>	20		
<b>Sampling Reason:</b>	WTW Sludge - Product Monitoring (SW_ME)		
<b>Type:</b>	WTW Sludge (SW)		

## Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	626	mg/kg		
288 Aluminium	124000	mg/kg		
357 Arsenic	12.1	mg/kg		
4620 pH	7.1	pH		
7774 Mercury	0.37	mg/kg	<	
8241 Volatile solids	99.8	%		
9233 Ammoniacal nitrogen	275	mg/kg		
9234 Sulphur	8040	mg/kg		
9271 Cadmium	1.01	mg/kg		
9272 Chromium	15.8	mg/kg	<	
9273 Copper	52.3	mg/kg		
9275 Nickel	37.3	mg/kg		
9276 Lead	22.8	mg/kg	<	
9277 Zinc	215	mg/kg		
9278 Iron	13800	mg/kg		
9281 % Dry solids	13.3	%		
9282 % Minerals	0.20	%	<	
9283 % K (dry weight)	0.0336	mg/kg		
9284 % P (dry weight)	0.355	%		
9285 % N (dry weight)	1.30	%		

## Comments:

## Signed:

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**Approved by:**

**Position:**

Upper Limit

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# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100504

Sample ID: 8557181

Date: 14/10/2025

Application rate (t/ha)	34.0
Application rate (t/acre)	13.8
pH	5.8
Dry solids (%)	16.40

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.919	0.15	%	1.5	51	0.2	5
Ammonium N	62.4	10.23	mg/kg	0.0	0		
Phosphorus (P)	3240	531.36	mg/kg	0.5	18		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	41	0.2	8
Potassium (K)	551	90.36	mg/kg	0.1	3		
Potash (K <sub>2</sub> O)		0.00		0.1	4	0.0	1
Magnesium (Mg)	1420	232.88	mg/kg	0.2	8		
Magnesium (MgO)		0.00		0.4	13	0.1	3
Sulphur (S)	3780	619.92	mg/kg	0.6	21		
Sulphur (SO <sub>3</sub> )		0.00		1.5	53	0.2	5

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	126	20.66	mg/kg	20.66	0.70	15.00	5%
Copper	38.6	6.33	mg/kg	6.33	0.22	7.50	3%
Nickel	17	2.79	mg/kg	2.79	0.09	3.00	3%
Lead	22.1	3.62	mg/kg	3.62	0.12	15.00	1%
Cadmium	0.34	0.06	mg/kg	0.06	0.00	0.15	1%
Chromium	16.3	2.67	mg/kg	2.67	0.09	15.00	1%
Arsenic	22.1	3.62	mg/kg	3.62	0.12	0.70	18%
Mercury	0.31	0.05	mg/kg	0.05	0.00	0.10	2%
<b>Other Elements</b>							
Iron	187000	30668.00	mg/kg	30668.00	1043		
Aluminium	7180	1177.52	mg/kg	1177.52	40		

# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100504

Sample ID: 8557181

Date: 14/10/2025

Application rate (t/ha)	41.0
Application rate (t/acre)	16.6
pH	5.8
Dry solids (%)	16.40

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.919	0.15	%	1.5	62	0.2	6
Ammonium N	62.4	10.23	mg/kg	0.0	0		
Phosphorus (P)	3240	531.36	mg/kg	0.5	22		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	50	0.2	10
Potassium (K)	551	90.36	mg/kg	0.1	4		
Potash (K <sub>2</sub> O)		0.00		0.1	4	0.0	1
Magnesium (Mg)	1420	232.88	mg/kg	0.2	10		
Magnesium (MgO)		0.00		0.4	16	0.1	3
Sulphur (S)	3780	619.92	mg/kg	0.6	25		
Sulphur (SO <sub>3</sub> )		0.00		1.5	64	0.2	6

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	126	20.66	mg/kg	20.66	0.85	15.00	6%
Copper	38.6	6.33	mg/kg	6.33	0.26	7.50	3%
Nickel	17	2.79	mg/kg	2.79	0.11	3.00	4%
Lead	22.1	3.62	mg/kg	3.62	0.15	15.00	1%
Cadmium	0.34	0.06	mg/kg	0.06	0.00	0.15	2%
Chromium	16.3	2.67	mg/kg	2.67	0.11	15.00	1%
Arsenic	22.1	3.62	mg/kg	3.62	0.15	0.70	21%
Mercury	0.31	0.05	mg/kg	0.05	0.00	0.10	2%
<b>Other Elements</b>							
Iron	187000	30668.00	mg/kg	30668.00	1257		
Aluminium	7180	1177.52	mg/kg	1177.52	48		

# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100504

Sample ID: 8557181

Date: 14/10/2025

Application rate (t/ha)	53.0
Application rate (t/acre)	21.4
pH	5.8
Dry solids (%)	16.40

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.919	0.15	%	1.5	80	0.2	8
Ammonium N	62.4	10.23	mg/kg	0.0	1		
Phosphorus (P)	3240	531.36	mg/kg	0.5	28		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	64	0.2	13
Potassium (K)	551	90.36	mg/kg	0.1	5		
Potash (K <sub>2</sub> O)		0.00		0.1	6	0.0	1
Magnesium (Mg)	1420	232.88	mg/kg	0.2	12		
Magnesium (MgO)		0.00		0.4	20	0.1	4
Sulphur (S)	3780	619.92	mg/kg	0.6	33		
Sulphur (SO <sub>3</sub> )		0.00		1.5	82	0.2	8

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	126	20.66	mg/kg	20.66	1.10	15.00	7%
Copper	38.6	6.33	mg/kg	6.33	0.34	7.50	4%
Nickel	17	2.79	mg/kg	2.79	0.15	3.00	5%
Lead	22.1	3.62	mg/kg	3.62	0.19	15.00	1%
Cadmium	0.34	0.06	mg/kg	0.06	0.00	0.15	2%
Chromium	16.3	2.67	mg/kg	2.67	0.14	15.00	1%
Arsenic	22.1	3.62	mg/kg	3.62	0.19	0.70	27%
Mercury	0.31	0.05	mg/kg	0.05	0.00	0.10	3%
<b>Other Elements</b>							
Iron	187000	30668.00	mg/kg	30668.00	1625		
Aluminium	7180	1177.52	mg/kg	1177.52	62		

# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of water clarification sludge cake

Sampling Point No: 100504

Sample ID: 8557181

Date: 14/10/2025

Application rate (t/ha)	65.0
Application rate (t/acre)	26.3
pH	5.8
Dry solids (%)	16.40

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.919	0.15	%	1.5	98	0.2	10
Ammonium N	62.4	10.23	mg/kg	0.0	1		
Phosphorus (P)	3240	531.36	mg/kg	0.5	35		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		1.2	79	0.2	16
Potassium (K)	551	90.36	mg/kg	0.1	6		
Potash (K <sub>2</sub> O)		0.00		0.1	7	0.0	1
Magnesium (Mg)	1420	232.88	mg/kg	0.2	15		
Magnesium (MgO)		0.00		0.4	25	0.1	5
Sulphur (S)	3780	619.92	mg/kg	0.6	40		
Sulphur (SO <sub>3</sub> )		0.00		1.5	101	0.2	10

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	126	20.66	mg/kg	20.66	1.34	15.00	9%
Copper	38.6	6.33	mg/kg	6.33	0.41	7.50	5%
Nickel	17	2.79	mg/kg	2.79	0.18	3.00	6%
Lead	22.1	3.62	mg/kg	3.62	0.24	15.00	2%
Cadmium	0.34	0.06	mg/kg	0.06	0.00	0.15	2%
Chromium	16.3	2.67	mg/kg	2.67	0.17	15.00	1%
Arsenic	22.1	3.62	mg/kg	3.62	0.24	0.70	34%
Mercury	0.31	0.05	mg/kg	0.05	0.00	0.10	3%
<b>Other Elements</b>							
Iron	187000	30668.00	mg/kg	30668.00	1993		
Aluminium	7180	1177.52	mg/kg	1177.52	77		

<b>Sampling Point No:</b>	100504	<b>Location:</b>	LLECHRYD WTW SLUDGE TANKERING POINT
<b>Date Sampled:</b>	14/10/2025	<b>Time Taken:</b>	12:59
<b>Laboratory:</b>	ALS	<b>Sample ID:</b>	8557181
<b>No. of Results:</b>	20		
<b>Sampling Reason:</b>	WTW Sludge - Product Monitoring (SW_ME)		
<b>Type:</b>	WTW Sludge (SW)		

## Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	1420	mg/kg		
288 Aluminium	7180	mg/kg		
357 Arsenic	22.1	mg/kg		
4620 pH	5.8	pH		
7774 Mercury	0.31	mg/kg	<	
8241 Volatile solids	45.7	%		
9233 Ammoniacal nitrogen	62.4	mg/kg		
9234 Sulphur	3780	mg/kg		
9271 Cadmium	0.34	mg/kg	<	
9272 Chromium	16.3	mg/kg		
9273 Copper	38.6	mg/kg		
9275 Nickel	17.0	mg/kg		
9276 Lead	22.1	mg/kg		
9277 Zinc	126	mg/kg		
9278 Iron	187000	mg/kg		
9281 % Dry solids	16.4	%		
9282 % Minerals	54.3	%		
9283 % K (dry weight)	0.0551	mg/kg		
9284 % P (dry weight)	0.324	%		
9285 % N (dry weight)	0.919	%		

## Comments:

## Signed:

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**Approved by:**

**Position:**

Upper Limit

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# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 120038

Sample ID: 8443907

Date: 10/07/2025

Application rate (t/ha)	50.0
Application rate (t/acre)	20.2
pH	6.6
Dry solids (%)	3.34

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.21	0.04	%	0.4	20	0.0	2
Ammonium N	183	6.11	mg/kg	0.0	0		
Phosphorus (P)	3470	115.90	mg/kg	0.1	6		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	13	0.1	3
Potassium (K)	865	28.89	mg/kg	0.0	1		
Potash (K <sub>2</sub> O)		0.00		0.0	2	0.0	0
Magnesium (Mg)	1490	49.77	mg/kg	0.0	2		
Magnesium (MgO)		0.00		0.1	4	0.0	1
Sulphur (S)	6120	204.41	mg/kg	0.2	10		
Sulphur (SO <sub>3</sub> )		0.00		0.5	26	0.1	3

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	108	3.61	mg/kg	3.61	0.18	15.00	1%
Copper	60.8	2.03	mg/kg	2.03	0.10	7.50	1%
Nickel	30.3	1.01	mg/kg	1.01	0.05	3.00	2%
Lead	36.8	1.23	mg/kg	1.23	0.06	15.00	0%
Cadmium	0.65	0.02	mg/kg	0.02	0.00	0.15	1%
Chromium	25.5	0.85	mg/kg	0.85	0.04	15.00	0%
Arsenic	16.4	0.55	mg/kg	0.55	0.03	0.70	4%
Mercury	0.59	0.02	mg/kg	0.02	0.00	0.10	1%
<b>Other Elements</b>							
Iron	24000	801.60	mg/kg	801.60	40		
Aluminium	140000	4676.00	mg/kg	4676.00	234		

# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 120038

Sample ID: 8443907

Date: 10/07/2025

Application rate (t/ha)	100.0
Application rate (t/acre)	40.5
pH	6.6
Dry solids (%)	3.34

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.21	0.04	%	0.4	40	0.0	4
Ammonium N	183	6.11	mg/kg	0.0	1		
Phosphorus (P)	3470	115.90	mg/kg	0.1	12		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	27	0.1	5
Potassium (K)	865	28.89	mg/kg	0.0	3		
Potash (K <sub>2</sub> O)		0.00		0.0	3	0.0	1
Magnesium (Mg)	1490	49.77	mg/kg	0.0	5		
Magnesium (MgO)		0.00		0.1	8	0.0	2
Sulphur (S)	6120	204.41	mg/kg	0.2	20		
Sulphur (SO <sub>3</sub> )		0.00		0.5	51	0.1	5

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	108	3.61	mg/kg	3.61	0.36	15.00	2%
Copper	60.8	2.03	mg/kg	2.03	0.20	7.50	3%
Nickel	30.3	1.01	mg/kg	1.01	0.10	3.00	3%
Lead	36.8	1.23	mg/kg	1.23	0.12	15.00	1%
Cadmium	0.65	0.02	mg/kg	0.02	0.00	0.15	1%
Chromium	25.5	0.85	mg/kg	0.85	0.09	15.00	1%
Arsenic	16.4	0.55	mg/kg	0.55	0.05	0.70	8%
Mercury	0.59	0.02	mg/kg	0.02	0.00	0.10	2%
<b>Other Elements</b>							
Iron	24000	801.60	mg/kg	801.60	80		
Aluminium	140000	4676.00	mg/kg	4676.00	468		

# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 120038

Sample ID: 8443907

Date: 10/07/2025

Application rate (t/ha)	200.0
Application rate (t/acre)	80.9
pH	6.6
Dry solids (%)	3.34

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.21	0.04	%	0.4	81	0.0	8
Ammonium N	183	6.11	mg/kg	0.0	1		
Phosphorus (P)	3470	115.90	mg/kg	0.1	23		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	53	0.1	11
Potassium (K)	865	28.89	mg/kg	0.0	6		
Potash (K <sub>2</sub> O)		0.00		0.0	7	0.0	1
Magnesium (Mg)	1490	49.77	mg/kg	0.0	10		
Magnesium (MgO)		0.00		0.1	17	0.0	3
Sulphur (S)	6120	204.41	mg/kg	0.2	41		
Sulphur (SO <sub>3</sub> )		0.00		0.5	102	0.1	10

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	108	3.61	mg/kg	3.61	0.72	15.00	5%
Copper	60.8	2.03	mg/kg	2.03	0.41	7.50	5%
Nickel	30.3	1.01	mg/kg	1.01	0.20	3.00	7%
Lead	36.8	1.23	mg/kg	1.23	0.25	15.00	2%
Cadmium	0.65	0.02	mg/kg	0.02	0.00	0.15	3%
Chromium	25.5	0.85	mg/kg	0.85	0.17	15.00	1%
Arsenic	16.4	0.55	mg/kg	0.55	0.11	0.70	16%
Mercury	0.59	0.02	mg/kg	0.02	0.00	0.10	4%
<b>Other Elements</b>							
Iron	24000	801.60	mg/kg	801.60	160		
Aluminium	140000	4676.00	mg/kg	4676.00	935		

# DWR CYMRU WELSH WATER - BOLTON HILL WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 120038

Sample ID: 8443907

Date: 10/07/2025

Application rate (t/ha)	250.0
Application rate (t/acre)	101.2
pH	6.6
Dry solids (%)	3.34

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.21	0.04	%	0.4	101	0.0	10
Ammonium N	183	6.11	mg/kg	0.0	2		
Phosphorus (P)	3470	115.90	mg/kg	0.1	29		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	66	0.1	13
Potassium (K)	865	28.89	mg/kg	0.0	7		
Potash (K <sub>2</sub> O)		0.00		0.0	9	0.0	2
Magnesium (Mg)	1490	49.77	mg/kg	0.0	12		
Magnesium (MgO)		0.00		0.1	21	0.0	4
Sulphur (S)	6120	204.41	mg/kg	0.2	51		
Sulphur (SO <sub>3</sub> )		0.00		0.5	128	0.1	13

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	108	3.61	mg/kg	3.61	0.90	15.00	6%
Copper	60.8	2.03	mg/kg	2.03	0.51	7.50	7%
Nickel	30.3	1.01	mg/kg	1.01	0.25	3.00	8%
Lead	36.8	1.23	mg/kg	1.23	0.31	15.00	2%
Cadmium	0.65	0.02	mg/kg	0.02	0.01	0.15	4%
Chromium	25.5	0.85	mg/kg	0.85	0.21	15.00	1%
Arsenic	16.4	0.55	mg/kg	0.55	0.14	0.70	20%
Mercury	0.59	0.02	mg/kg	0.02	0.00	0.10	5%
<u>Other Elements</u>							
Iron	24000	801.60	mg/kg	801.60	200		
Aluminium	140000	4676.00	mg/kg	4676.00	1169		

<b>Sampling Point No:</b>	120038	<b>Location:</b>	BOLTON HILL Sludge Tankering Point
<b>Date Sampled:</b>	10/07/2025	<b>Time Taken:</b>	10:10
<b>Laboratory:</b>	ALS	<b>Sample ID:</b>	8443907
<b>No. of Results:</b>	20		
<b>Sampling Reason:</b>	WTW Sludge - Product Monitoring (SW_ME)		
<b>Type:</b>	WTW Sludge (SW)		

## Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	1490	mg/kg		
288 Aluminium	140000	mg/kg		
357 Arsenic	16.4	mg/kg		
4620 pH	6.6	pH		
7774 Mercury	0.59	mg/kg	<	
8241 Volatile solids	40.7	%		
9233 Ammoniacal nitrogen	183	mg/kg	<	
9234 Sulphur	6120	mg/kg		
9271 Cadmium	0.65	mg/kg	<	
9272 Chromium	25.5	mg/kg	<	
9273 Copper	60.8	mg/kg		
9275 Nickel	30.3	mg/kg	<	
9276 Lead	36.8	mg/kg	<	
9277 Zinc	108	mg/kg		
9278 Iron	24000	mg/kg		
9281 % Dry solids	3.34	%		
9282 % Minerals	59.3	%		
9283 % K (dry weight)	0.0865	mg/kg		
9284 % P (dry weight)	0.347	%	<	
9285 % N (dry weight)	1.21	%		

## Comments:

## Signed:

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**Approved by:**

**Position:**

Upper Limit

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# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100506

Sample ID: 8443873

Date: 10/07/2025

Application rate (t/ha)	50.0
Application rate (t/acre)	20.2
pH	6.6
Dry solids (%)	2.50

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.11	0.03	%	0.3	14	0.0	1
Ammonium N	245	6.13	mg/kg	0.0	0		
Phosphorus (P)	4700	117.50	mg/kg	0.1	6		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	13	0.1	3
Potassium (K)	767	19.18	mg/kg	0.0	1		
Potash (K <sub>2</sub> O)		0.00		0.0	1	0.0	0
Magnesium (Mg)	1040	26.00	mg/kg	0.0	1		
Magnesium (MgO)		0.00		0.0	2	0.0	0
Sulphur (S)	6590	164.75	mg/kg	0.2	8		
Sulphur (SO <sub>3</sub> )		0.00		0.4	21	0.0	2

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	119	2.98	mg/kg	2.98	0.15	15.00	1%
Copper	63.4	1.59	mg/kg	1.59	0.08	7.50	1%
Nickel	41	1.03	mg/kg	1.03	0.05	3.00	2%
Lead	49.9	1.25	mg/kg	1.25	0.06	15.00	0%
Cadmium	0.88	0.02	mg/kg	0.02	0.00	0.15	1%
Chromium	34.6	0.87	mg/kg	0.87	0.04	15.00	0%
Arsenic	34.5	0.86	mg/kg	0.86	0.04	0.70	6%
Mercury	0.8	0.02	mg/kg	0.02	0.00	0.10	1%
<u>Other Elements</u>							
Iron	15400	385.00	mg/kg	385.00	19		
Aluminium	158000	3950.00	mg/kg	3950.00	198		

# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100506

Sample ID: 8443873

Date: 10/07/2025

Application rate (t/ha)	100.0
Application rate (t/acre)	40.5
pH	6.6
Dry solids (%)	2.50

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.11	0.03	%	0.3	28	0.0	3
Ammonium N	245	6.13	mg/kg	0.0	1		
Phosphorus (P)	4700	117.50	mg/kg	0.1	12		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	27	0.1	5
Potassium (K)	767	19.18	mg/kg	0.0	2		
Potash (K <sub>2</sub> O)		0.00		0.0	2	0.0	0
Magnesium (Mg)	1040	26.00	mg/kg	0.0	3		
Magnesium (MgO)		0.00		0.0	4	0.0	1
Sulphur (S)	6590	164.75	mg/kg	0.2	16		
Sulphur (SO <sub>3</sub> )		0.00		0.4	41	0.0	4

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	119	2.98	mg/kg	2.98	0.30	15.00	2%
Copper	63.4	1.59	mg/kg	1.59	0.16	7.50	2%
Nickel	41	1.03	mg/kg	1.03	0.10	3.00	3%
Lead	49.9	1.25	mg/kg	1.25	0.12	15.00	1%
Cadmium	0.88	0.02	mg/kg	0.02	0.00	0.15	1%
Chromium	34.6	0.87	mg/kg	0.87	0.09	15.00	1%
Arsenic	34.5	0.86	mg/kg	0.86	0.09	0.70	12%
Mercury	0.8	0.02	mg/kg	0.02	0.00	0.10	2%
<b>Other Elements</b>							
Iron	15400	385.00	mg/kg	385.00	39		
Aluminium	158000	3950.00	mg/kg	3950.00	395		

# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100506

Sample ID: 8443873

Date: 10/07/2025

Application rate (t/ha)	200.0
Application rate (t/acre)	80.9
pH	6.6
Dry solids (%)	2.50

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.11	0.03	%	0.3	56	0.0	6
Ammonium N	245	6.13	mg/kg	0.0	1		
Phosphorus (P)	4700	117.50	mg/kg	0.1	24		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	54	0.1	11
Potassium (K)	767	19.18	mg/kg	0.0	4		
Potash (K <sub>2</sub> O)		0.00		0.0	5	0.0	1
Magnesium (Mg)	1040	26.00	mg/kg	0.0	5		
Magnesium (MgO)		0.00		0.0	9	0.0	2
Sulphur (S)	6590	164.75	mg/kg	0.2	33		
Sulphur (SO <sub>3</sub> )		0.00		0.4	82	0.0	8

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	119	2.98	mg/kg	2.98	0.60	15.00	4%
Copper	63.4	1.59	mg/kg	1.59	0.32	7.50	4%
Nickel	41	1.03	mg/kg	1.03	0.21	3.00	7%
Lead	49.9	1.25	mg/kg	1.25	0.25	15.00	2%
Cadmium	0.88	0.02	mg/kg	0.02	0.00	0.15	3%
Chromium	34.6	0.87	mg/kg	0.87	0.17	15.00	1%
Arsenic	34.5	0.86	mg/kg	0.86	0.17	0.70	25%
Mercury	0.8	0.02	mg/kg	0.02	0.00	0.10	4%
<u>Other Elements</u>							
Iron	15400	385.00	mg/kg	385.00	77		
Aluminium	158000	3950.00	mg/kg	3950.00	790		

# DWR CYMRU WELSH WATER - PRESELI WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100506

Sample ID: 8443873

Date: 10/07/2025

Application rate (t/ha)	250.0
Application rate (t/acre)	101.2
pH	6.6
Dry solids (%)	2.50

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	1.11	0.03	%	0.3	69	0.0	7
Ammonium N	245	6.13	mg/kg	0.0	2		
Phosphorus (P)	4700	117.50	mg/kg	0.1	29		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.3	67	0.1	13
Potassium (K)	767	19.18	mg/kg	0.0	5		
Potash (K <sub>2</sub> O)		0.00		0.0	6	0.0	1
Magnesium (Mg)	1040	26.00	mg/kg	0.0	7		
Magnesium (MgO)		0.00		0.0	11	0.0	2
Sulphur (S)	6590	164.75	mg/kg	0.2	41		
Sulphur (SO <sub>3</sub> )		0.00		0.4	103	0.0	10

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	119	2.98	mg/kg	2.98	0.74	15.00	5%
Copper	63.4	1.59	mg/kg	1.59	0.40	7.50	5%
Nickel	41	1.03	mg/kg	1.03	0.26	3.00	9%
Lead	49.9	1.25	mg/kg	1.25	0.31	15.00	2%
Cadmium	0.88	0.02	mg/kg	0.02	0.01	0.15	4%
Chromium	34.6	0.87	mg/kg	0.87	0.22	15.00	1%
Arsenic	34.5	0.86	mg/kg	0.86	0.22	0.70	31%
Mercury	0.8	0.02	mg/kg	0.02	0.01	0.10	5%
<u>Other Elements</u>							
Iron	15400	385.00	mg/kg	385.00	96		
Aluminium	158000	3950.00	mg/kg	3950.00	988		

<b>Sampling Point No:</b>	100506	<b>Location:</b>	PRESELI WTW SLUDGE Tankering Point (New Works)
<b>Date Sampled:</b>	10/07/2025	<b>Time Taken:</b>	09:57
<b>Laboratory:</b>	ALS	<b>Sample ID:</b>	8443873
<b>No. of Results:</b>	20		
<b>Sampling Reason:</b>	WTW Sludge - Product Monitoring (SW_ME)		
<b>Type:</b>	WTW Sludge (SW)		

## Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	1040	mg/kg		
288 Aluminium	158000	mg/kg		
357 Arsenic	34.5	mg/kg		
4620 pH	6.6	pH		
7774 Mercury	0.80	mg/kg	<	
8241 Volatile solids	47.6	%		
9233 Ammoniacal nitrogen	245	mg/kg	<	
9234 Sulphur	6590	mg/kg		
9271 Cadmium	0.88	mg/kg	<	
9272 Chromium	34.6	mg/kg	<	
9273 Copper	63.4	mg/kg		
9275 Nickel	41.0	mg/kg	<	
9276 Lead	49.9	mg/kg	<	
9277 Zinc	119	mg/kg		
9278 Iron	15400	mg/kg		
9281 % Dry solids	2.50	%		
9282 % Minerals	52.4	%		
9283 % K (dry weight)	0.0767	mg/kg		
9284 % P (dry weight)	0.470	%	<	
9285 % N (dry weight)	1.11	%		

## Comments:

## Signed:

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**Approved by:**

**Position:**

Upper Limit

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# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100504

Sample ID: 8511042

Date: 04/09/2025

Application rate (t/ha)	50.0
Application rate (t/acre)	20.2
pH	6.9
Dry solids (%)	3.06

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.976	0.03	%	0.3	15	0.0	1
Ammonium N	200	6.12	mg/kg	0.0	0		
Phosphorus (P)	5550	169.83	mg/kg	0.2	8		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.4	19	0.1	4
Potassium (K)	572	17.50	mg/kg	0.0	1		
Potash (K <sub>2</sub> O)		0.00		0.0	1	0.0	0
Magnesium (Mg)	841	25.73	mg/kg	0.0	1		
Magnesium (MgO)		0.00		0.0	2	0.0	0
Sulphur (S)	3160	96.70	mg/kg	0.1	5		
Sulphur (SO <sub>3</sub> )		0.00		0.2	12	0.0	1

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	133	4.07	mg/kg	4.07	0.20	15.00	1%
Copper	51.3	1.57	mg/kg	1.57	0.08	7.50	1%
Nickel	33.5	1.03	mg/kg	1.03	0.05	3.00	2%
Lead	40.8	1.25	mg/kg	1.25	0.06	15.00	0%
Cadmium	0.72	0.02	mg/kg	0.02	0.00	0.15	1%
Chromium	28.3	0.87	mg/kg	0.87	0.04	15.00	0%
Arsenic	28.2	0.86	mg/kg	0.86	0.04	0.70	6%
Mercury	0.66	0.02	mg/kg	0.02	0.00	0.10	1%
<b>Other Elements</b>							
Iron	314000	9608.40	mg/kg	9608.40	480		
Aluminium	3080	94.25	mg/kg	94.25	5		

# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100504

Sample ID: 8511042

Date: 04/09/2025

Application rate (t/ha)	100.0
Application rate (t/acre)	40.5
pH	6.9
Dry solids (%)	3.06

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.976	0.03	%	0.3	30	0.0	3
Ammonium N	200	6.12	mg/kg	0.0	1		
Phosphorus (P)	5550	169.83	mg/kg	0.2	17		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.4	39	0.1	8
Potassium (K)	572	17.50	mg/kg	0.0	2		
Potash (K <sub>2</sub> O)		0.00		0.0	2	0.0	0
Magnesium (Mg)	841	25.73	mg/kg	0.0	3		
Magnesium (MgO)		0.00		0.0	4	0.0	1
Sulphur (S)	3160	96.70	mg/kg	0.1	10		
Sulphur (SO <sub>3</sub> )		0.00		0.2	24	0.0	2

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	133	4.07	mg/kg	4.07	0.41	15.00	3%
Copper	51.3	1.57	mg/kg	1.57	0.16	7.50	2%
Nickel	33.5	1.03	mg/kg	1.03	0.10	3.00	3%
Lead	40.8	1.25	mg/kg	1.25	0.12	15.00	1%
Cadmium	0.72	0.02	mg/kg	0.02	0.00	0.15	1%
Chromium	28.3	0.87	mg/kg	0.87	0.09	15.00	1%
Arsenic	28.2	0.86	mg/kg	0.86	0.09	0.70	12%
Mercury	0.66	0.02	mg/kg	0.02	0.00	0.10	2%
<u>Other Elements</u>							
Iron	314000	9608.40	mg/kg	9608.40	961		
Aluminium	3080	94.25	mg/kg	94.25	9		

# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100504

Sample ID: 8511042

Date: 04/09/2025

Application rate (t/ha)	143.0
Application rate (t/acre)	57.9
pH	6.9
Dry solids (%)	3.06

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.976	0.03	%	0.3	43	0.0	4
Ammonium N	200	6.12	mg/kg	0.0	1		
Phosphorus (P)	5550	169.83	mg/kg	0.2	24		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.4	56	0.1	11
Potassium (K)	572	17.50	mg/kg	0.0	3		
Potash (K <sub>2</sub> O)		0.00		0.0	3	0.0	1
Magnesium (Mg)	841	25.73	mg/kg	0.0	4		
Magnesium (MgO)		0.00		0.0	6	0.0	1
Sulphur (S)	3160	96.70	mg/kg	0.1	14		
Sulphur (SO <sub>3</sub> )		0.00		0.2	35	0.0	3

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	133	4.07	mg/kg	4.07	0.58	15.00	4%
Copper	51.3	1.57	mg/kg	1.57	0.22	7.50	3%
Nickel	33.5	1.03	mg/kg	1.03	0.15	3.00	5%
Lead	40.8	1.25	mg/kg	1.25	0.18	15.00	1%
Cadmium	0.72	0.02	mg/kg	0.02	0.00	0.15	2%
Chromium	28.3	0.87	mg/kg	0.87	0.12	15.00	1%
Arsenic	28.2	0.86	mg/kg	0.86	0.12	0.70	18%
Mercury	0.66	0.02	mg/kg	0.02	0.00	0.10	3%
<u>Other Elements</u>							
Iron	314000	9608.40	mg/kg	9608.40	1374		
Aluminium	3080	94.25	mg/kg	94.25	13		

# DWR CYMRU WELSH WATER - LLECHRYD WTW

## Analysis of liquid water clarification sludge

Sampling Point No: 100504

Sample ID: 8511042

Date: 04/09/2025

Application rate (t/ha)	200.0
Application rate (t/acre)	80.9
pH	6.9
Dry solids (%)	3.06

### NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.976	0.03	%	0.3	60	0.0	6
Ammonium N	200	6.12	mg/kg	0.0	1		
Phosphorus (P)	5550	169.83	mg/kg	0.2	34		
Phosphate (P <sub>2</sub> O <sub>5</sub> )		0.00		0.4	78	0.1	16
Potassium (K)	572	17.50	mg/kg	0.0	4		
Potash (K <sub>2</sub> O)		0.00		0.0	4	0.0	1
Magnesium (Mg)	841	25.73	mg/kg	0.0	5		
Magnesium (MgO)		0.00		0.0	9	0.0	2
Sulphur (S)	3160	96.70	mg/kg	0.1	19		
Sulphur (SO <sub>3</sub> )		0.00		0.2	48	0.0	5

### POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	133	4.07	mg/kg	4.07	0.81	15.00	5%
Copper	51.3	1.57	mg/kg	1.57	0.31	7.50	4%
Nickel	33.5	1.03	mg/kg	1.03	0.21	3.00	7%
Lead	40.8	1.25	mg/kg	1.25	0.25	15.00	2%
Cadmium	0.72	0.02	mg/kg	0.02	0.00	0.15	3%
Chromium	28.3	0.87	mg/kg	0.87	0.17	15.00	1%
Arsenic	28.2	0.86	mg/kg	0.86	0.17	0.70	25%
Mercury	0.66	0.02	mg/kg	0.02	0.00	0.10	4%
<b>Other Elements</b>							
Iron	314000	9608.40	mg/kg	9608.40	1922		
Aluminium	3080	94.25	mg/kg	94.25	19		

<b>Sampling Point No:</b>	100504	<b>Location:</b>	LLECHRYD WTW SLUDGE TANKERING POINT
<b>Date Sampled:</b>	04/09/2025	<b>Time Taken:</b>	09:26
<b>Laboratory:</b>	ALS	<b>Sample ID:</b>	8511042
<b>No. of Results:</b>	20		
<b>Sampling Reason:</b>	WTW Sludge - Product Monitoring (SW_ME)		
<b>Type:</b>	WTW Sludge (SW)		

## Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	841	mg/kg		
288 Aluminium	3080	mg/kg		
357 Arsenic	28.2	mg/kg		
4620 pH	6.9	pH		
7774 Mercury	0.66	mg/kg	<	
8241 Volatile solids	42.6	%		
9233 Ammoniacal nitrogen	200	mg/kg	<	
9234 Sulphur	3160	mg/kg		
9271 Cadmium	0.72	mg/kg	<	
9272 Chromium	28.3	mg/kg	<	
9273 Copper	51.3	mg/kg	<	
9275 Nickel	33.5	mg/kg	<	
9276 Lead	40.8	mg/kg	<	
9277 Zinc	133	mg/kg		
9278 Iron	314000	mg/kg		
9281 % Dry solids	3.06	%		
9282 % Minerals	57.4	%		
9283 % K (dry weight)	0.0572	mg/kg	<	
9284 % P (dry weight)	0.555	%		
9285 % N (dry weight)	0.976	%		

## Comments:

## Signed:

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**Approved by:**

**Position:**

Upper Limit

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# EPR/DP3590ZP MIDDLE WOODSTOCK LAGOONS

## Analysis of liquid sludge

Sample Ref: EPR DP3590ZP MW

Report Number: 32312

Sample Number: 174802

Date: 08/12/2025

Application rate (t/ha)      100.0  
 Application rate (t/acre)    40.5  
 pH                                    5.72  
 Dry solids (%)                 1.50

### NUTRIENT CONTENT

	result	units	Total		Available	
			(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.01	%	0.1	10	0.0	1
Ammonium-N	25.00	mg/kg	0.0	3		
Phosphorus (P)	5.00	mg/kg	0.0	1		
Phosphate (P <sub>2</sub> O <sub>5</sub> )			0.0	1	0.0	0
Potassium (K)	10.00	mg/kg	0.0	1		
Potash (K <sub>2</sub> O)			0.0	1	0.0	0
Magnesium (Mg)	10.00	mg/kg	0.0	1		
Magnesium (MgO)			0.0	2	0.0	0
Sulphur (S)	138.00	mg/kg	0.1	14		
Sulphur (SO <sub>3</sub> )			0.3	35	0.0	3

### POTENTIALLY TOXIC ELEMENTS

	result	units	Rate		Limit	% of Annual Addition Limit
			(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	1.00	mg/kg	1.00	0.10	15.00	1%
Copper	0.47	mg/kg	0.47	0.05	7.50	1%
Nickel	0.20	mg/kg	0.20	0.02	3.00	1%
Lead	0.50	mg/kg	0.50	0.05	15.00	0%
Cadmium	0.01	mg/kg	0.01	0.00	0.15	1%
Chromium	0.20	mg/kg	0.20	0.02	15.00	0%
Arsenic	0.68	mg/kg	0.68	0.07	0.70	10%
Mercury	0.05	mg/kg	0.05	0.01	0.10	5%
Molybdenum	0.05	mg/kg	0.05	0.01	0.20	3%
Selenium	0.05	mg/kg	0.05	0.01	0.15	3%
Flouride	10.00	mg/kg	10.00	1.00	20.00	5%
<b>Other Elements</b>						
Iron	74.20	mg/kg	74.20	7		
Aluminium	2248.00	mg/kg	2248.00	225		

All results expressed on sample as received.

# EPR/DP3590ZP MIDDLE WOODSTOCK LAGOONS

## Analysis of liquid sludge

Sample Ref: EPR DP3590ZP MW

Report Number: 32312

Sample Number: 174802

Date: 08/12/2025

Application rate (t/ha)      250.0  
 Application rate (t/acre)    101.2  
 pH                                    5.72  
 Dry solids (%)                    1.50

### NUTRIENT CONTENT

	result	units	Total		Available	
			(kg/t)	( kg/ha)	(kg/t)	( kg/ha)
Nitrogen (N)	0.01	%	0.1	25	0.0	3
Ammonium-N	25.00	mg/kg	0.0	6		
Phosphorus (P)	5.00	mg/kg	0.0	1		
Phosphate (P <sub>2</sub> O <sub>5</sub> )			0.0	3	0.0	1
Potassium (K)	10.00	mg/kg	0.0	3		
Potash (K <sub>2</sub> O)			0.0	3	0.0	1
Magnesium (Mg)	10.00	mg/kg	0.0	3		
Magnesium (MgO)			0.0	4	0.0	1
Sulphur (S)	138.00	mg/kg	0.1	35		
Sulphur (SO <sub>3</sub> )			0.3	86	0.0	9

### POTENTIALLY TOXIC ELEMENTS

	result	units	Rate		Limit	% of Annual Addition Limit
			(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	1.00	mg/kg	1.00	0.25	15.00	2%
Copper	0.47	mg/kg	0.47	0.12	7.50	2%
Nickel	0.20	mg/kg	0.20	0.05	3.00	2%
Lead	0.50	mg/kg	0.50	0.13	15.00	1%
Cadmium	0.01	mg/kg	0.01	0.00	0.15	2%
Chromium	0.20	mg/kg	0.20	0.05	15.00	0%
Arsenic	0.68	mg/kg	0.68	0.17	0.70	24%
Mercury	0.05	mg/kg	0.05	0.01	0.10	13%
Molybdenum	0.05	mg/kg	0.05	0.01	0.20	6%
Selenium	0.05	mg/kg	0.05	0.01	0.15	8%
Flouride	10.00	mg/kg	10.00	2.50	20.00	13%
<b>Other Elements</b>						
Iron	74.20	mg/kg	74.20	19		
Aluminium	2248.00	mg/kg	2248.00	562		

All results expressed on sample as received.

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LIQUID WASTE

## SLURRY/SLUDGE ANALYSIS RESULTS

Sample Reference :

EPR DP3590ZP MW

Sample Matrix : SLURRY/SLUDGE

Laboratory References

Report Number	32312
Sample Number	174802

Date Received	08-DEC-2025
Date Reported	13-JAN-2026

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

### ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	1.50	%
E Coli [Fresh]	<10	cfu/g
Conductivity 1:6	29.0	uS/cm
Total Kjeldahl Nitrogen	0.01	% w/w
Nitrate Nitrogen	<10	mg/kg
Ammonium Nitrogen	<25	mg/kg
Total Phosphorus (P)	<5	mg/kg
Total Potassium (K)	<10	mg/kg
Total Magnesium (Mg)	<10	mg/kg
Total Copper (Cu)	0.47	mg/kg

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### ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Zinc (Zn)	1.00	mg/kg
Total Sulphur (S)	138	mg/kg
Total Calcium (Ca)	19.4	mg/kg
Total Iron (Fe)	74.2	mg/kg
Total Molybdenum (Mo)	<0.05	mg/kg
Total Manganese (Mn)	10.8	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg

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### ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Chromium (Cr)	<0.2	mg/kg
Total Sodium (Na)	<15	mg/kg
pH 1:6 [Fresh]	5.72	
Organic Matter LOI	0.90	% w/w
Total Aluminium	2248	mg/kg
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	0.68	mg/kg
Total Selenium (Se)	0.05	mg/kg
B.O.D. [fresh]	50	mg/l
C.O.D. [fresh]	8700	mg/kg

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### ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oils,Fats and Grease	<200	mg/kg
Salmonella spp [fresh]	Negative	in 25g
EC [Neat]	103	uS/cm

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Date *13/01/26*