

# Agricultural Benefit Statement

## For the application of beneficial wastes to fields at;

Bryn Drofa & Plas Newydd, Llanbabo, Rhosgoch, Anglesey, LL66 0BN

23<sup>rd</sup> April 2026

## 1 Person with appropriate technical expertise and permit details

This benefit statement has been compiled by Dawn Loos (Lead Consultant at 4R Group) who has the following qualifications and experience:

- B.Agric – Plant production
- PGDip – Agronomy
- MSc - Sustainable Agriculture
- 3 years of agronomic experience
- 4R Group Deployment Training Course
- Facts Qualified Advisor (FE/7676)

Verified by Jonathan Lloyd; FACTS Qualified Advisor (No. FE/ 4524)

Permit number under which this deployment application is being made: EPR/GP3792SK

## 2 Where the waste is to be spread

Table 1. Where the waste is to be spread

<i>Farm address:</i>	Bryn Drofa & Plas Newydd, Llanbabo, Rhosgoch, Anglesey, LL66 0BN	
<i>Stockpile grid reference:</i>	Refer to Table 4	
<i>Area of the receiving land:</i>	20.97 ha	
<i>Quantity to be stored at any one time:</i>	Stackable: 3000	Non-Stackable: 1250
<i>Total maximum quantity to be spread:</i>	3,709 t	
<i>Location map document reference:</i>	2. Spreading Maps_Bryn Dofra (2026)	

### 3 What is the waste to be spread

Table 2. Description of waste(s) to be applied

<b>Waste</b>	<b>EWC Code</b>	<b>Description</b>	<b>Waste Producer</b>	<b>Additional Information</b>
1	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Alaw	Stackable alum sludge cake
2	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Cefni	Non-stackable alum sludge
3	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Cwellyn	Non-stackable alum sludge
4	19 09 02	Sludges from water clarification. Potable water treatment effluent	DCWW Dolbenmaen	Non-stackable alum sludge
5	19 09 02	Sludges from water clarification. Potable water treatment effluent	DCWW Garreglwyd	Non-stackable ferric sludge
6	19 09 02	Sludges from water clarification. Potable water treatment effluent	DCWW Llyn Conwy	Non-stackable ferric sludge
7	19 09 02	Sludges from water clarification. Potable water treatment effluent	DCWW Mynydd Llandegai	Non-stackable alum sludge

### 4 Operational details

#### 4.1 Cropping details

Table 3. Cropping details

<i>Current crop including projected yield if known:</i>	Refer to tables 6-12
<i>Is straw removed?</i>	Y <input type="checkbox"/> N <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
<i>Following crop and any sensitive crops within rotation which you are amending the soil for in good time:</i>	Refer to tables 6-12
<i>When do you intend to apply this waste; e.g. post harvest – pre-ploughing, during seed bed cultivations, on the stubble over winter:</i>	<p>Spreading will only take place subject to ground conditions and following the Code of Good Agricultural Practice (Defra, 2011), Farming Rules for Water, NVZ regulations and the permit holder's Environmental Management System (EMS).</p> <p>Spreading will also comply with the Water Resources (Control of Agricultural Pollution) Wales Regulations 2021,</p>

	<p>Targeted periods of spreading DCWW wastes on grass fields are from February, through May and after cutting of silage (June-October) as per the RB209 (2023).</p> <p>No more than 50t/ha of sludge will be spread on a field in any 3-week period in accordance with CoGAP, and no more than 250t/ha will be spread within any 12-month period.</p> <p>Wastes application will commence from the deployment issue date, as soon as ground, weather, and crop conditions are favourable. For wastes with application rates higher than 50 tons per hectare (see tables 6-12), this will be split into applications of 50 tons per hectare, as explained above, until the capacity is reached. This is in order to reduce the chances of run off.</p> <p>Notification will be given prior to the commencement of spreading.</p>
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#### 4.2 Waste storage

Table 4. Waste storage

<p><i>How is the waste to be stored?</i>  <i>e.g. mobile tank, field heap, spread on delivery</i></p>	<p>Field stockpiles for solid wastes. Lagoon storage for liquid wastes.</p>
<p><i>Where is the waste to be stored prior to spreading?</i></p>	<p>Storage Locations:</p> <ul style="list-style-type: none"> <li>A. Lagoon A - SH 37499 86248</li> <li>B. Stockpile B - SH 37561 86279</li> <li>C. Stockpile C - SH 37880 86376</li> <li>D. Stockpile D - SH 37948 86434</li> <li>E. Stockpile E - SH 37558 86562</li> <li>F. Stockpile F - SH 37622 86121</li> <li>G. Stockpile G - SH 37698 86161</li> </ul>
<p><i>Why were these storage locations chosen?</i></p>	<p>The stockpile locations were chosen due to their suitable location relative to the spreading fields and availability for use. It is not within 10m of any ditch, watercourse, or footpath, not within a SPZ1, and is at least 50m from any well spring or borehole.</p>
<p><i>Additional storage information</i></p>	<p>Only waste as specified in this deployment will be stored in the proposed storage location.</p>

### 4.3 Waste application

Table 5. Waste application

<p><i>How is the waste to be spread and why is it to be spread that way?</i></p>	<p>The sludge cake will be surface spread by rear discharge spreader.</p> <p>The liquid sludges will be spread with a vacuum tanker with low trajectory spread pattern.</p>
<p><i>How do you plan to incorporate the waste following application?</i></p>	<p>There is no requirement for further incorporation of wastes on grass fields due to low ammonia content and minimal odour.</p>
<p><i>With liquid wastes is there any mole draining or sub-soiling planned? Are there land drains in the field?</i></p>	<p>No</p> <p>No</p>
<p><i>Other relevant operational information:</i></p>	<p>The wastes may be applied separately or in combination. If the wastes are applied in combination the total combined amount applied will not exceed 250t/ha, the total nitrogen loading will be less than 250kg/ha, and the amount of available nitrogen and total or available phosphate and potash (whichever is appropriate) will not exceed the fertiliser recommendation or the amount removed in crop offtake, whichever is the greater.</p>

Table 6. DCWW Alaw

Nutrient Charts

Field Ref	Total Area	Spread Area	Previous Crop	Next Crop	Soil pH	N			P <sub>2</sub> O <sub>5</sub>				K <sub>2</sub> O				Mg			Rate t/ha	Totals tonnes
						SNS	Req	*In	P	Req	Crop Use	*In	K	Req	Crop Use	*In	Mg	Req	*In		
						kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha		
<b>Bryn Drofa</b>						M	235	3.6	3	30	75	37.5*	2-	255	248	3.3*	2	0	1.2	56	347
1	7.3	6.2	Grass	Grass	8.2	M	235	3.6	3	30	75	37.5*	2+	180	248	3.3*	2	0	1.2	56	189
2	3.9	3.37	Grass	Grass	8.1	M	235	3.6	3	30	75	37.5*	2+	180	248	3.3*	2	0	1.2	56	189
3	4.9	4.6	Grass	Grass	8.4	M	235	7.3	2	97	75	75*	2-	255	248	6.6*	2	0	2.3	112	515
4	2.6	2.3	Grass	Grass	8.4	M	235	7.3	2	97	75	75*	2-	255	248	6.6*	2	0	2.3	112	258
<b>Plas Newydd</b>						M	235	3.6	3	30	75	37.5*	2-	255	248	3.3*	2	0	1.2	56	101
1	2.3	1.8	Grass	Grass	8.1	M	235	3.6	3	30	75	37.5*	2-	255	248	3.3*	2	0	1.2	56	101
2	3.4	2.7	Grass	Grass	8.2	M	235	3.6	3	30	75	37.5*	2-	255	248	3.3*	2	0	1.2	56	151
<b>Ha</b>	<b>24.40</b>	<b>20.97</b>																			<b>1561</b>

Nutrient requirement based on values for grass with 2 cuts of silage with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2023).

Crop use based on 2 cut (25%DM) plus grazing totalling 38t/ha yield where 1.7kg/t P<sub>2</sub>O<sub>5</sub> and 6.0kg/t K<sub>2</sub>O removed in offtake (RB209, 2023).

To accommodate for aftermath grazing, half of the P & K is added to the recommendation and 10kg/ha for P and 20kg/ha for K to the crop use.

N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and Mg stated are **available** concentrations in units of kg/ha

\*Total P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O stated where soil indices ≥2

Total N supplied at an application rate of 112 t/ha is 193.6 kg/ha

Table 7. DCWW Cefni

Nutrient Charts

Field Ref	Total Area	Spread Area	Previous Crop	Next Crop	Soil pH	N			P <sub>2</sub> O <sub>5</sub>				K <sub>2</sub> O				Mg			Rate t/ha	Totals tonnes		
						SNS	Req	*In	Ind	Req	Crop Use	*In	Wst	Ind	Req	Crop Use	*In	Wst	Mg Ind			Req	*In
						kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha			kg/ha	kg/ha
<b>Bryn Drofa</b>						M	235	1.8	3	30	75	37.3*	2-	255	248	2.9*	2	0	1.1	139	862		
1	7.3	6.2	Grass	Grass	8.2	M	235	1.8	3	30	75	37.3*	2+	180	248	2.9*	2	0	1.1	139	468		
2	3.9	3.37	Grass	Grass	8.1	M	235	1.8	3	30	75	37.3*	2+	180	248	2.9*	2	0	1.1	139	468		
3	4.9	4.6	Grass	Grass	8.4	M	235	3.2	2	97	75	67.1*	2-	255	248	5.3*	2	0	2	250	1150		
4	2.6	2.3	Grass	Grass	8.4	M	235	3.2	2	97	75	67.1*	2-	255	248	5.3*	2	0	2	250	575		
<b>Plas Newydd</b>						M	235	1.8	3	30	75	37.3*	2-	255	248	2.9*	2	0	1.1	139	250		
1	2.3	1.8	Grass	Grass	8.1	M	235	1.8	3	30	75	37.3*	2-	255	248	2.9*	2	0	1.1	139	250		
2	3.4	2.7	Grass	Grass	8.2	M	235	1.8	3	30	75	37.3*	2-	255	248	2.9*	2	0	1.1	139	375		
<b>Ha</b>	<b>24.40</b>	<b>20.97</b>																			<b>3681</b>		

Nutrient requirement based on values for grass with 2 cuts of silage with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2023).

Crop use based on 2 cut (25%DM) plus grazing totalling 38t/ha yield where 1.7kg/t P<sub>2</sub>O<sub>5</sub> and 6.0kg/t K<sub>2</sub>O removed in offtake (RB209, 2023).

To accommodate for aftermath grazing, half of the P & K is added to the recommendation and 10kg/ha for P and 20kg/ha for K to the crop use.

N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and Mg stated are **available** concentrations in units of kg/ha

\***Total** P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O stated where soil indices ≥2

Total N supplied at an application rate of 250 t/ha is 77.4 kg/ha

Table 8. DCWW Cwellyn

Nutrient Charts

Field Ref	Total Area	Spread Area	Previous Crop	Next Crop	Soil pH	N			P <sub>2</sub> O <sub>5</sub>				K <sub>2</sub> O				Mg			Rate t/ha	Totals tonnes	
						SNS	Req	*In	Ind	Req	Use	*In	Ind	Req	Use	*In	Ind	Req	*In			
						kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha			
<b>Bryn Drofa</b>																						
1	7.3	6.2	Grass	Grass	8.2	M	235	1.5	3	30	75	37.4*	2-	255	248	2.9*	2	0	1.1	138	856	
2	3.9	3.37	Grass	Grass	8.1	M	235	1.5	3	30	75	37.4*	2+	180	248	2.9*	2	0	1.1	138	465	
3	4.9	4.6	Grass	Grass	8.4	M	235	2.7	2	97	75	67.8*	2-	255	248	5.3*	2	0	2.1	250	1150	
4	2.6	2.3	Grass	Grass	8.4	M	235	2.7	2	97	75	67.8*	2-	255	248	5.3*	2	0	2.1	250	575	
<b>Plas Newydd</b>																						
1	2.3	1.8	Grass	Grass	8.1	M	235	1.5	3	30	75	37.4*	2-	255	248	2.9*	2	0	1.1	138	248	
2	3.4	2.7	Grass	Grass	8.2	M	235	1.5	3	30	75	37.4*	2-	255	248	2.9*	2	0	1.1	138	373	
<b>Ha</b>	<b>24.40</b>	<b>20.97</b>																			<b>3667</b>	

Nutrient requirement based on values for grass with 2 cuts of silage with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2023).

Crop use based on 2 cut (25%DM) plus grazing totalling 38t/ha yield where 1.7kg/t P<sub>2</sub>O<sub>5</sub> and 6.0kg/t K<sub>2</sub>O removed in offtake (RB209, 2023).

To accommodate for aftermath grazing, half of the P & K is added to the recommendation and 10kg/ha for P and 20kg/ha for K to the crop use.

N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and Mg stated are **available** concentrations in units of kg/ha

\***Total** P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O stated where soil indices ≥2

Total N supplied at an application rate of 250 t/ha is 129.4\* kg/ha

Table 9. DCWW Dolbenmaen

Nutrient Charts

Field Ref	Total Area	Spread Area	Previous Crop	Next Crop	Soil pH	N			P <sub>2</sub> O <sub>5</sub>				K <sub>2</sub> O				Mg			Rate t/ha	Totals tonnes	
						SNS	Req	*In	P	Req	Crop Use	*In	K	Req	Crop Use	*In	Mg	Req	*In			
						kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha			
<b>Bryn Drofa</b>																						
1	7.3	6.2	Grass	Grass	8.2	M	235	1.8	3	30	75	37.4*	2-	255	248	2.9*	2	0	0.6	141	874	
2	3.9	3.37	Grass	Grass	8.1	M	235	1.8	3	30	75	37.4*	2+	180	248	2.9*	2	0	0.6	141	475	
3	4.9	4.6	Grass	Grass	8.4	M	235	3.2	2	97	75	66.4*	2-	255	248	5.2	2	0	1.1	250	1150	
4	2.6	2.3	Grass	Grass	8.4	M	235	3.2	2	97	75	66.4*	2-	255	248	5.2	2	0	1.1	250	575	
<b>Plas Newydd</b>																						
1	2.3	1.8	Grass	Grass	8.1	M	235	1.8	3	30	75	37.4*	2-	255	248	2.9*	2	0	0.6	141	254	
2	3.4	2.7	Grass	Grass	8.2	M	235	1.8	3	30	75	37.4*	2-	255	248	2.9*	2	0	0.6	141	381	
<b>Ha</b>	<b>24.40</b>	<b>20.97</b>																			<b>3709</b>	

Nutrient requirement based on values for grass with 2 cuts of silage with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2023).

Crop use based on 2 cut (25%DM) plus grazing totalling 38t/ha yield where 1.7kg/t P<sub>2</sub>O<sub>5</sub> and 6.0kg/t K<sub>2</sub>O removed in offtake (RB209, 2023).

To accommodate for aftermath grazing, half of the P & K is added to the recommendation and 10kg/ha for P and 20kg/ha for K to the crop use.

N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and Mg stated are **available** concentrations in units of kg/ha

\*Total P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O stated where soil indices ≥2

Total N supplied at an application rate of 250 t/ha is 92.4 kg/ha

Table 10. DCWW Garreglwyd

Nutrient Charts

Field Ref	Total Area	Spread Area	Previous Crop	Next Crop	Soil pH	N			P <sub>2</sub> O <sub>5</sub>				K <sub>2</sub> O				Mg			Rate t/ha	Totals tonnes	
						SNS	Req	*In	P	Req	Crop Use	*In	K	Req	Crop Use	*In	Mg	Req	*In			
						kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha			
<b>Bryn Drofa</b>																						
1	7.3	6.2	Grass	Grass	8.2	M	235	0.9	3	30	75	37.5*	2-	255	248	3*	2	0	1.4	141	874	
2	3.9	3.37	Grass	Grass	8.1	M	235	0.9	3	30	75	37.5*	2+	180	248	3*	2	0	1.4	141	475	
3	4.9	4.6	Grass	Grass	8.4	M	235	1.5	2	97	75	66.5*	2-	255	248	5.2*	2	0	2.4	250	1150	
4	2.6	2.3	Grass	Grass	8.4	M	235	1.5	2	97	75	66.5*	2-	255	248	5.2*	2	0	2.4	250	575	
<b>Plas Newydd</b>																						
1	2.3	1.8	Grass	Grass	8.1	M	235	0.9	3	30	75	37.5*	2-	255	248	3*	2	0	1.4	141	254	
2	3.4	2.7	Grass	Grass	8.2	M	235	0.9	3	30	75	37.5*	2-	255	248	3*	2	0	1.4	141	381	
<b>Ha</b>	<b>24.40</b>	<b>20.97</b>																			<b>3709</b>	

Nutrient requirement based on values for grass with 2 cuts of silage with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2023).

Crop use based on 2 cut (25%DM) plus grazing totalling 38t/ha yield where 1.7kg/t P<sub>2</sub>O<sub>5</sub> and 6.0kg/t K<sub>2</sub>O removed in offtake (RB209, 2023).

To accommodate for aftermath grazing, half of the P & K is added to the recommendation and 10kg/ha for P and 20kg/ha for K to the crop use.

N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and Mg stated are **available** concentrations in units of kg/ha

\*Total P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O stated where soil indices ≥2

Total N supplied at an application rate of 250 t/ha is 118.9 kg/ha

Table 11. DCWW Llyn Conwy

Nutrient Charts

Field Ref	Total Area	Spread Area	Previous Crop	Next Crop	Soil pH	N			P <sub>2</sub> O <sub>5</sub>				K <sub>2</sub> O				Mg			Rate t/ha	Totals tonnes	
						SNS kg/ha	Req kg/ha	*In Wst kg/ha	P Ind	Req kg/ha	Crop Use kg/ha	*In Wst kg/ha	K Ind	Req kg/ha	Crop Use kg/ha	*In Wst kg/ha	Mg Ind	Req kg/ha	*In Wst kg/ha			
<b>Bryn Drofa</b>																						
1	7.3	6.2	Grass	Grass	8.2	M	235	0.3	3	30	75	37.3*	2-	255	248	2.9*	2	0	0.4	55	341	
2	3.9	3.37	Grass	Grass	8.1	M	235	0.3	3	30	75	37.3*	2+	180	248	2.9*	2	0	0.4	55	185	
3	4.9	4.6	Grass	Grass	8.4	M	235	0.7	2	97	75	74.7*	2-	255	248	5.9*	2	0	0.9	110	506	
4	2.6	2.3	Grass	Grass	8.4	M	235	0.7	2	97	75	74.7*	2-	255	248	5.9*	2	0	0.9	110	253	
<b>Plas Newydd</b>																						
1	2.3	1.8	Grass	Grass	8.1	M	235	0.3	3	30	75	37.3*	2-	255	248	2.9*	2	0	0.4	55	99	
2	3.4	2.7	Grass	Grass	8.2	M	235	0.3	3	30	75	37.3*	2-	255	248	2.9*	2	0	0.4	55	149	
<b>Ha</b>	<b>24.40</b>	<b>20.97</b>																			<b>1533</b>	

Nutrient requirement based on values for grass with 2 cuts of silage with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2023).

Crop use based on 2 cut (25%DM) plus grazing totalling 38t/ha yield where 1.7kg/t P<sub>2</sub>O<sub>5</sub> and 6.0kg/t K<sub>2</sub>O removed in offtake (RB209, 2023).

To accommodate for aftermath grazing, half of the P & K is added to the recommendation and 10kg/ha for P and 20kg/ha for K to the crop use.

N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and Mg stated are **available** concentrations in units of kg/ha

\*Total P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O stated where soil indices ≥2

Total N supplied at an application rate of 110 t/ha is 32 kg/ha

Table 12. DCWW Mynydd Llandegaai

Nutrient Charts

Field Ref	Total Area	Spread Area	Previous Crop	Next Crop	Soil pH	N			P <sub>2</sub> O <sub>5</sub>				K <sub>2</sub> O				Mg			Rate t/ha	Totals tonnes
						SNS	Req	*In	P	Req	Crop Use	*In	K	Req	Crop Use	*In	Mg	Req	*In		
						kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha	kg/ha	Ind	kg/ha	kg/ha		
<b>Bryn Drofa</b>																					
1	7.3	6.2	Grass	Grass	8.2	M	235	0.7	3	30	75	37.4*	2-	255	248	2.3*	2	0	1.1	113	701
2	3.9	3.37	Grass	Grass	8.1	M	235	0.7	3	30	75	37.4*	2+	180	248	2.3*	2	0	1.1	113	381
3	4.9	4.6	Grass	Grass	8.4	M	235	1.4	2	97	75	74.8*	2-	255	248	4.7*	2	0	2.1	226	1040
4	2.6	2.3	Grass	Grass	8.4	M	235	1.4	2	97	75	74.8*	2-	255	248	4.7*	2	0	2.1	226	520
<b>Plas Newydd</b>																					
1	2.3	1.8	Grass	Grass	8.1	M	235	0.7	3	30	75	37.4*	2-	255	248	2.3*	2	0	1.1	113	203
2	3.4	2.7	Grass	Grass	8.2	M	235	0.7	3	30	75	37.4*	2-	255	248	2.3*	2	0	1.1	113	305
<b>Ha</b>	<b>24.40</b>	<b>20.97</b>																			<b>3149</b>

Nutrient requirement based on values for grass with 2 cuts of silage with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2023).

Crop use based on 2 cut (25%DM) plus grazing totalling 38t/ha yield where 1.7kg/t P<sub>2</sub>O<sub>5</sub> and 6.0kg/t K<sub>2</sub>O removed in offtake (RB209, 2023).

To accommodate for aftermath grazing, half of the P & K is added to the recommendation and 10kg/ha for P and 20kg/ha for K to the crop use.

N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and Mg stated are **available** concentrations in units of kg/ha

\*Total P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O stated where soil indices ≥2

Total N supplied at an application rate of 226 t/ha is 96.1 kg/ha

## 5 Compliance with NVZ regulations

Table 14. Compliance with NVZ regulations

<p><i>Does the site fall within a designated NVZ?</i></p>	<p>Y <input checked="" type="checkbox"/>    N <input type="checkbox"/> (skip to section 6)</p>																														
<p><i>Do closed periods apply for the wastes to be applied?</i></p>	<p>Y <input type="checkbox"/>    N <input checked="" type="checkbox"/></p> <p>Applicable to:</p> <p>If yes, please indicate the appropriate period:</p> <table border="1" data-bbox="706 632 1344 856"> <thead> <tr> <th>Start Date</th> <th>End Date</th> <th>Land Use</th> <th>Soil Type</th> <th></th> </tr> </thead> <tbody> <tr> <td>1st Aug</td> <td>31st Dec</td> <td>Tillage Land</td> <td>Shallow/Sandy</td> <td><input type="checkbox"/></td> </tr> <tr> <td>1st Sept</td> <td>31st Dec</td> <td>Grassland</td> <td>Shallow/Sandy</td> <td><input type="checkbox"/></td> </tr> <tr> <td>16th Sept</td> <td>31st Dec</td> <td>Tillage Land*</td> <td>Shallow/Sandy</td> <td><input type="checkbox"/></td> </tr> <tr> <td>1st Oct</td> <td>31st Jan</td> <td>Tillage Land</td> <td>All Other Soils</td> <td><input type="checkbox"/></td> </tr> <tr> <td>15th Oct</td> <td>31st Jan</td> <td>Grassland</td> <td>All Other Soils</td> <td><input type="checkbox"/></td> </tr> </tbody> </table> <p>*For Tillage Land with crops sown on or before 15th September</p> <p>If no, applications will be carried out as per CoGAP <i>i.e.</i> when ground conditions are suitable and when no heavy rain is forecast.</p>	Start Date	End Date	Land Use	Soil Type		1st Aug	31st Dec	Tillage Land	Shallow/Sandy	<input type="checkbox"/>	1st Sept	31st Dec	Grassland	Shallow/Sandy	<input type="checkbox"/>	16th Sept	31st Dec	Tillage Land*	Shallow/Sandy	<input type="checkbox"/>	1st Oct	31st Jan	Tillage Land	All Other Soils	<input type="checkbox"/>	15th Oct	31st Jan	Grassland	All Other Soils	<input type="checkbox"/>
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<p><i>Will application rates comply with crop requirement and field/whole farm limit?</i></p>	<p>Yes, refer to table 6 – 12</p>																														
<p><i>Previous applications:</i></p>	<p>None</p>																														

## 6 Benefits and nutrients supplied to the soil or crop from this application

### 6.1 Receiving soils

The nutrient status of individual fields to be registered are provided in tables 6-12 above. General soil type(s) for the fields to be registered are:

Table 15. Soil type

Light sand soils	Soils which are sand, loamy sand or sandy loam to 40cm depth and are sand or loamy sand between 40 and 80 cm, or over sandstone rock.	<input type="checkbox"/>
Shallow soils	Soils over impermeable subsoils and those where the parent rock (chalk, limestone or other rock) is within 40cm of the soil surface. Sandy soils developed over sandstone rock should be regarded as light sand soils.	<input type="checkbox"/>
Medium soils	Mostly medium-textured mineral soils that do not fall into any other soil category. This includes sandy loams over clay, deep loams, and silty or clayey topsoils that have sandy or loamy subsoils.	<input checked="" type="checkbox"/>
Deep clayey soils	Soils with predominantly sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay or clay topsoil overlying clay subsoil to more than 40cm depth. Deep clayey soils normally need artificial field drainage.	<input type="checkbox"/>
Deep silty soils	Soils of sandy silt loam, silt loam or silty clay loam textures to 100 cm depth or more. Silt soils formed on marine alluvium, warp soils (river alluvium) and brickearth soils are in this category. Silty clays of low fertility should be regarded as other mineral soils.	<input type="checkbox"/>
Organic soils	Soils that are predominantly mineral but with between 10 and 20% organic matter to depth. These can be distinguished by darker colouring that stains the fingers black or grey.	<input type="checkbox"/>
Peat soils	Soils that contain more than 20% organic matter derived from sedge or similar peat material.	<input type="checkbox"/>

The soil analyses (Soil Analysis) show the soils to have acceptable background concentrations of Mg (i.e. ADAS Index of 2). For livestock management, if grass magnesium concentration is low, animals can be at risk of hypomagnesaemia, so applying small amounts of Mg to the soil can raise herbage Mg content to safer levels and keep soil Mg levels at target.

### 6.2 Waste characterisation

Full characterisations of individual wastes with total and available nutrients at the recommended rates for each waste stream are supplied in **Waste Analysis**. This information is further summarised against the nutrient requirements for proposed crops in tables 6-12 above.

Limiting factors for the different wastes are the P content and max 250t/ha application rate.

#### Important information

- DCWW report all their analysis on a dry matter basis, including the liquid treatment sludges, unless otherwise stated.

### 6.3 Summary of benefits

These wastes are a source of essential elements N, P, K, macronutrients Mg, Ca, S and provide trace amounts of micronutrients. Wastes are beneficially used to replace a proportion of the bagged mineral fertiliser used by farmers. The recommended application rates shown in Tables 6-12 are based on the crop requirement and soil analysis.

Additions of organic matter to soil will improve soil structural stability, biological activity, water and nutrient holding capacity, i.e., resistance to drought, and reduction of localised flooding, reduced leaching of nutrients, and improved workability in soil. Organic matter is a particularly good source of N and S, and organic acids that aid nutrient solubility and uptake, as well as enhancing microbial activity for enhanced nutrient cycling in soils.

## 7 Potential negative impacts to the soil or crop from this application

### 7.1 Potentially Toxic Elements (PTEs)

The wastes contain traces of PTEs, however concentrations applied to the receiving soils are below maximum upper limits for heavy metal applications described in the Sludge (Use in Agriculture) Regulations 1989 (SI, 1989). Refer to interpretations in **Waste Analysis**.

### 7.2 Other waste characteristics

The pH levels in the wastes range from 5.8-7.

It is unlikely that soil pH will decrease following the application detailed here due to the buffering capacity of the receiving soils. The pH levels of the receiving soils are between 8.1-8.4, therefore it is unlikely that availability of any naturally occurring heavy metals present in these soils will become more available after application of these wastes.

Potable water treatment sludges contain varying amounts of Al and Fe due to the flocculation process in the water treatment. At low pH (<6.0), aluminium can potentially transform into the toxic  $Al^{3+}$  species, it is therefore necessary to avoid spreading Al flocculated wastes on fields with pH <6.0 as this can cause stunt root growth and induced phosphate deficiency in crops. Additionally, care will be taken to prevent the waste entering a watercourse because aluminium can harm aquatic life. This will be achieved through observing buffer zones as per the location plan and the SSRA. Also, watercourses will be checked before, during and following spreading.

Iron flocculated wastes also have potential disbenefits if applied to inappropriate soils. Spreading high Fe wastes onto soils with pH < 5.0 is not recommended. Spreading onto fields with soil pH between 5.0- 5.5 requires consideration and possible mitigation. Due to potential for Fe-oxide formation which can reduce  $P_2O_5$  mobility, spreading of Fe-flocculated wastes onto fields that are pH 5.0-5.5 has been avoided.

### 7.3 Operational factors

1. Wastes will be spread according to the methods outlined in table 5.
2. Potential compaction of receiving soil will be mitigated by suitable adjustment of tyres/tyre pressure to match soil conditions, direction of spreading and load to be spread.

3. Sampling methods will be consistent with those set out in the RB209, and the analysis for PTEs are consistent with the code of agricultural practice.
4. Wastes will be applied when ground and weather conditions are suitable, following CoGAP to avoid soil damage including wheel ruts, compaction, structural damage, erosion and run-off.

## 8 Practices to reduce the impacts of the operation on identified sensitive receptors

All sensitive receptors have been marked as no spread zones with sufficient buffering for the prevention of potential negative impacts. The wastes intended to be spread are low risk in terms of odour and being carried by wind.

Please see SSRA for descriptions.

Generic measures (in addition to permit requirements and following the EMS) to reduce potential negative impacts of the proposed spreading operation will be as follows:

1. Spreading will only be undertaken when weather conditions are suitable within restrictions outlined in CoGAP and any relevant closed periods.
2. Spreading will not be carried out in any areas of a field that will be sub-soiled.
3. Machinery operations will take account of soil conditions, slopes *etc.*
4. Machinery will be checked daily when in use, regularly serviced and spreading equipment calibrated. Umbilical hoses will be regularly checked for damage to prevent leaks.
5. Machinery turns will not be executed in the buffer strips.
6. Waste deliveries to field/stores will be supervised.
7. All spillages will be reported immediately to NRW.

## 9 Contingency planning

Replacement spreading machinery will be available to prevent waste being retained in faulty machinery. Hire vehicles will be used if required. All machinery will be fully serviced.

There will be a sufficient number of trained staff available to ensure that the operation continues throughout operational hours (*i.e.* there will be sufficient cover for illness, holiday *etc.*).

In adverse weather, storage is available until ground/weather conditions become favourable for land application.

In circumstances where the wastes cannot be stored or spread beyond normal capacities, wastes will be diverted to a local alternative deployment or point of origin.