

# Agricultural Benefit Statement

**For the application of beneficial wastes to fields at:**

**Great House Farm, Newport, NP18 1LU**  
**Cassandra Farm, Claerleon, Newport, NP18 1 LR**  
**Coles Land – Cassandra, Caerleon, Newport, NP18 1QQ**

11<sup>th</sup> September 2025

## 1 Person with appropriate technical expertise and permit details

This benefit statement has been compiled by Dawn Loos (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

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>	Great House Farm, Newport, NP18 1LU Cassandra Farm, Claerleon, Newport, NP18 1 LR Coles Land – Cassandra, Caerleon, Newport, NP18 1QQ	
<i>Stockpile grid reference:</i>	Refer to Table 4.	
<i>Area of the receiving land:</i>	48.77 ha	
<i>Quantity to be stored at any one time:</i>	Stackable: 3,000t  <b>No more than 3000t in total will be stored across</b>	Non-Stackable: N/A

	<i>all storage locations at any one time.</i>
<i>Total maximum quantity to be spread:</i>	9,368 t
<i>Location map document reference:</i>	2. Spreading Map_GH, CF, CL (2025)

### 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 Court Farm	Stackable ferric sludge cake

### 4 Operational details

#### 4.1 Cropping details

Table 3. Cropping details

<i>Current crop including projected yield if known:</i>	Refer to table 6
<i>Is straw removed?</i>	Y <input checked="" type="checkbox"/> N <input type="checkbox"/> N/A <input type="checkbox"/>
<i>Following crop and any sensitive crops within rotation which you are amending the soil for in good time:</i>	Refer to table 6
<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), NVZ regulations and the permit holder's Environmental Management System (EMS). Spreading activities will also comply with The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021.</p> <p>Targeted periods of spreading on grass fields include early spring, after cutting of silage, and prior to grazing through spring and autumn (February-October).</p> <p>Targeted periods for winter wheat are spring (February - May).</p>

	No more than 50t/ha of liquid 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.
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#### 4.2 Waste storage

Table 4. Waste storage

<i>How is the waste to be stored?</i>  <i>e.g. mobile tank, field heap, spread on delivery</i>	Field stockpiles.
<i>Where is the waste to be stored prior to spreading?</i>	<p><i>Field Stockpiles:</i></p> <ul style="list-style-type: none"> <li>a. ST 37458 93470</li> <li>b. ST 37158 93477</li> <li>c. ST 37018 93699</li> <li>d. ST 36834 93669</li> <li>e. ST 36589 93669</li> <li>f. ST 36830 93875</li> <li>g. ST 36741 94101</li> <li>h. ST 36752 94286</li> <li>i. ST 35025 91888</li> <li>j. ST 35190 91810</li> <li>k. ST 35160 91760</li> <li>l. ST 35047 91660</li> <li>m. ST 34916 91826</li> <li>n. ST 35983 95117</li> <li>o. ST 35992 94981</li> </ul>
<i>Why were these storage locations chosen?</i>	<p>The stockpile locations are accessible by delivering vehicle, near field entrances so the potential damage to fields by delivering vehicles is minimal.</p> <p>The stockpiles are not within 10m of any ditch, watercourse, or footpath, not within a SPZ1, and are at least 50m from any well spring or borehole. They are also a safe distance from overhead powerlines.</p>

#### 4.3 Waste application

Table 5. Waste application

<i>How is the waste to be spread and why is it to be spread that way?</i>	The cake will be spread using conventional rear discharge spreaders as this equipment is readily available to the
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	farmer/contractor and the most appropriate for the material and rates it is to be applied at.
<i>How do you plan to incorporate the waste following application?</i>	There is no requirement for incorporation of waste.  Routine grassland management such as harrowing or rolling, in preparation for silage or grazing, will help to reduce particle size and waste to soil contact for the sludge cake proposed for application.
<i>With liquid wastes is there any mole draining or sub-soiling planned?</i>  <i>Are there land drains in the field?</i>	N/A
<i>Other relevant operational information:</i>	Ferric Sludge cake will not be spread on fields with a pH below 5.

Table 6. DCWW Court Farm Cake

**Nutrient Requirements for Land at Cassandra Farm**

Field Reference	Total Area	Sprd Area	Current Crop	Next Crop	pH	N			P2O5			K2O			Mg			Rate t/ha	Totals tonnes		
						SNS	Req	In	P	Crop	In	K	Crop	In	Mg	In					
						kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha					
<b>Great House</b>																					
1	1.9	1.8	Grass	Grass	6.3	M	175	1.2	0	125	65	69.1	1	210	228	29	3	0	25	209	385
2	1.9	1.8	Grass	Grass	5.9	M	175	1.2	1	95	65	69.1	1	210	228	29	3	0	25	209	370
3	4.4	4.2	Grass	Grass	5.7	M	175	1.2	1	95	65	69.1	2-	170	228	32.2*	3	0	25	209	884
4	2.9	2.6	Grass	Grass	5.5	M	175	1.2	0	125	65	69.1	1	210	228	29	3	0	25	209	550
5	3.4	3.4	Grass	Grass	5.9	M	175	1.2	0	125	65	69.1	1	210	228	29	3	0	25	209	711
6	3.6	3.5	Grass	Grass	5.9	M	175	1.2	0	125	65	69.1	1	210	228	29	3	0	25	209	732
7	3.7	3.7	Grass	Grass	6.1	M	175	1.2	0	125	65	69.1	1	210	228	29	2	0	25	209	773
8	10.2	9.7	Grass	Grass	5.9	M	175	1.2	0	125	65	69.1	1	210	228	29	2	0	25	209	2027
<b>Coles</b>																					
3	2.3	2.3	Grass	Grass	5.5	M	175	1.2	1	125	65	69.1	1	210	228	29	3	0	25	209	481
4	4.9	4.6	Grass	Grass	5.4	M	175	1.2	1	125	65	69.1	1	210	228	29	2	0	25	209	961
<b>Cassandra</b>																					
1	3.0	2.70	mustard	WW	7.1	1	220	0.5	2	55	56	55.6*	2+	55	84	13*	3	0	10.1	84	227
5	2.5	2.00	mustard	WW	7.5	1	220	1.2	0	115	56	69.1	2+	55	84	32.2*	3	0	25	209	418
6	4.1	3.90	mustard	WW	6.2	1	220	0.5	2	55	56	55.6*	2-	85	84	13*	3	0	10.1	84	328
13	4.0	2.50	mustard	WW	7.1	1	220	1.2	1	85	56	69.1	1	115	84	29	2	0	25	209	523
<b>Ha</b>	<b>52.6</b>	<b>48.77</b>																			<b>9368</b>

Grass = 2 cut silage, WW = winter wheat

Nitrogen requirements based on values for 2 cuts of grass for silage (target DM yield 9-12 t/ha)

Phosphate and Potash requirements based on values for 2 cuts of grass silage (RB209, 2023)

Grass Crop use based on 2 cuts of silage totalling 38t/ha yield (based on 25% dm) where 1.7 kg/t P2O5 and 6.0 kg/t K2O removed in offtake (RB209, 2023)

WW Crop use based on straw removed yield of 8t/ha where 7 kg/t P2O5 and 10.5 kg/t K2O removed in offtake (RB209, 2023)

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> stated as soil P Index ≥2

Total N at target application rate of 209 t/ha is 249.1 kg N/ha

## 5 Compliance with NVZ regulations

Table 8. 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"/> (Please 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>Please refer to table 6</p>																														
<p><i>Previous applications:</i></p>	<p>4t/ha FYM on all Great House Fields.</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 table 6 above. General soil type(s) for the fields to be registered are:

Table 9. 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"/>

### 6.2 Waste characterisation

Full characterisation of the waste with total and available nutrients at the recommended rates for each application rate are supplied in **Waste Analysis**. This information is further summarised against the nutrient requirements for proposed crops in Table 6 above.

The application rate of Court Farm cake is also limited by the max N application of 250kg/ha and the total phosphate where the P index is 2. The application rate therefore has been amended so that the amount of phosphate added from the waste does not exceed the crop offtake to keep the index at target level.

#### **Important information**

- DCWW report all their analysis on a dry matter basis, including the liquid treatment sludges, unless otherwise stated.
- The moisture content at time of analysis is indicative of whether the sludge is a cake or a liquid. Typically, the sludge cake samples contain a significantly higher dry matter content than the liquid sludges. Please refer to table 2 (page 2) which includes details of the physical state of each waste.

### 6.3 Summary of benefits

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

Clean water treatment sludges contain significant amounts of organic matter. 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 waste contains 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**.

The potable water treatment sludges contain varying amounts of Al and Fe due to the flocculation process in the water treatment.

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.

### 7.2 Other waste characteristics

The pH level of the waste is 7.1.

It is unlikely that soil pH will decrease following the application detailed here due to the extensive buffering capacity of the receiving soils. The pH levels of the receiving soils are between 5.5 and 7.1, therefore it is unlikely that availability of any naturally occurring heavy metals present in these soils will become more available after application of this waste.

### 7.3 Operational factors

1. 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.
2. 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.
3. Sampling methods will be consistent with those set out in the RB209, and the analysis for PTE's are consistent with the code of agricultural practice.
4. With regards to odour management for any potentially odorous material – the materials will only be disturbed when the material is being spread, and application to land will be done under permit conditions, following procedures in our permit EMS to minimise risk of odour emissions.

## 8 Sensitive human and environmental receptors

Please refer to site specific risk assessment. Locations of sensitive receptors are shown in the spreading maps and the SSRA. Prevailing winds are south-westerly.

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

Mitigation 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.
8. Appropriate no spread buffers have been implemented around sensitive sites (Ancient Woodlands, SINCS *etc.*).

## 10 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 DCWW sewage treatment works.