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

11th November 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

Farm address:	Great House Farm, Newport, NP18 1LU Cassandra Farm, Claerleon, Newport, NP18 1 LR Coles Land – Cassandra, Caerleon, Newport, NP18 1QQ	
Stockpile grid reference:	Refer to Table 4.	
Area of the receiving land:	44.17 ha	
Quantity to be stored at any one time:	Stackable: 3,000t ***No more than 3000t in total will be stored across***	Non-Stackable: N/A

	all storage locations at any one time.	
Total maximum quantity to be spread:	8,407 t	
Location map document reference:	2. Spreading Map_GH, CF, CL (2025)	

3 What is the waste to be spread

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

Waste	***EWC Code***	***Description***	***Waste Producer***	***Additional Information***
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

Current crop including projected yield if known:	Refer to table 6
Is straw removed?	Y ☒ N ☐ N/A ☐
Following crop and any sensitive crops within rotation which you are amending the soil for in good time:	Refer to table 6
When do you intend to apply this waste, e.g. post-harvest – pre-ploughing, during seed bed cultivations, on the stubble over winter:	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. Targeted periods of spreading on grass fields include early spring (late February – May), after cutting of silage, and prior to grazing through summer and autumn (August- October). Targeted periods for winter wheat are spring (February - May).

	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.

4.2 Waste storage

Table 4. Waste storage

How is the waste to be stored? *e.g. mobile tank, field heap, spread on delivery*	Field stockpiles.
Where is the waste to be stored prior to spreading?	*Field Stockpiles:* *A. ST 37458 93470* *B. ST 37158 93477* C. ST 37018 93699 D. ST 36834 93669 E. ST 36589 93669 F. ST 36814 93843 G. ST 36741 94101 H. ST 36752 94286 I. ST 35190 91810 J. ST 35160 91760 K. ST 35047 91660 L. ST 34916 91826 M. ST 3600794996
Why were these storage locations chosen?	The stockpile locations are accessible by delivering vehicle, near field entrances so the potential damage to fields by delivering vehicles is minimal. 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.

4.3 Waste application

Table 5. Waste application

How is the waste to be spread and why is it to be spread that way?	The cake will be spread using conventional rear discharge spreaders as this equipment is readily available to the farmer/contractor and the most appropriate for the material and rates it is to be applied at.

How do you plan to incorporate the waste following application?	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.
With liquid wastes is there any mole draining or sub-soiling planned? *Are there land drains in the field?*	N/A
Other relevant operational information:	Ferric Sludge cake will not be spread on fields with a pH below 5.

Table 6. DCWW Court Farm Cake

						N			P2O5				K2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Current Crop**	**Next Crop**	**pH**	**SNS**	**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**	**Rate t/ha**	**Totals tonnes**
Great House																					
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**
Coles																					
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**
Cassandra																					
1	3.0	2.7	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	2.0	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	3.9	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	2.5	mustard	WW	7.1	1	220	1.2	1	85	56	69.1	1	115	84	29	2	0	25	209	**523**
Ha	**47.7**	**44.17**																			**8407**

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_2O_5, K_2O and Mg stated are **available** concentrations in units of kg/ha

* Total P_2O_5 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

<table>
<tr><td>Does the site fall within a designated NVZ?</td><td>Y ☒ N ☐ (Please skip to section 6)</td></tr>
<tr><td>Do closed periods apply for the wastes to be applied?</td><td>Y ☐ N ☒

Applicable to:

If yes, please indicate the appropriate period:

<table>
<tr><th>Start Date</th><th>End Date</th><th>Land Use</th><th>Soil Type</th><th></th></tr>
<tr><td>1st Aug</td><td>31st Dec</td><td>Tillage Land</td><td>Shallow/Sandy</td><td>☐</td></tr>
<tr><td>1st Sept</td><td>31st Dec</td><td>Grassland</td><td>Shallow/Sandy</td><td>☐</td></tr>
<tr><td>16th Sept</td><td>31st Dec</td><td>Tillage Land*</td><td>Shallow/Sandy</td><td>☐</td></tr>
<tr><td>1st Oct</td><td>31st Jan</td><td>Tillage Land</td><td>All Other Soils</td><td>☐</td></tr>
<tr><td>15th Oct</td><td>31st Jan</td><td>Grassland</td><td>All Other Soils</td><td>☐</td></tr>
</table>

*For Tillage Land with crops sown on or before 15th September

If no, applications will be carried out as per CoGAP i.e. when ground conditions are suitable and when no heavy rain is forecast.</td></tr>
<tr><td>Will application rates comply with crop requirement and field/whole farm limit?</td><td>Please refer to table 6.</td></tr>
<tr><td>Previous applications:</td><td>4t/ha FYM spread on Cassandra Farm fields 1, 5 and 6.</td></tr>
</table>

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.	☐
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.	☐
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.	☒
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.	☐
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.	☐
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.	☐
Peat soils	Soils that contain more than 20% organic matter derived from sedge or similar peat material.	☐

Phosphate

The soil P indices are at and below target levels. At P index 2, the total phosphate applied will not exceed the crop offtake.

Magnesium

The soil analysis shows the soils to have ample background concentrations of Mg (*i.e.,* ADAS Index 2-3).

Fields 1, 2 ,3 ,4 ,5, 6, 3 Coles, 1 Cassandra, 5 Cassandra & 6 Cassandra have Mg soil indices of 3, indicating the magnesium supply is above the optimum range for most crops. Although soil magnesium levels are already high, the application of the waste at index 3 will help maintain soil nutrient balance and support crop and livestock health on the receiving land. Particularly where grass is cut for silage, the land will benefit from higher magnesium inputs. Ensuring adequate magnesium prevents hypomagnesaemia in grazing livestock (grass especially in spring when rapidly growing grass can be magnesium-deficient despite high soil Mg level).

Also, as the magnesium is being applied in the form of an organic manure, the nutrient input is part of a balanced recycling of nutrients rather than as a targeted fertiliser application. Magnesium also contributes to long-term soil fertility and the maintenance of base saturation, which supports pH buffering capacity and nutrient stability.

To mitigate any residual risk, spreading will be conducted in accordance with the Codes of Good Agricultural Practice (CoGAP), SR2010 No. 4 Environmental Management System (EMS), and Environmental Permitting Regulations (EPR) requirements.

Applications will be made only under suitable weather and soil conditions (avoiding wet, waterlogged, or frozen ground) and buffer zones will be strictly observed as shown in the attached site plans.

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.

Ancient Woodlands

There are several ancient woodlands either located near or bordering some of the spreading fields. 10m no spread buffers will be in place where the field borders an ancient woodland. The fields in question are located at Great House Farm (fields F4, F5 and F8) and Coles Land (field 3). This has been addressed in the SSRA.

Flood risk

Areas known to flood include fields 15, 16, 22, 13, 5, 4, 3 and 2. There will be no spreading on flood risk areas between October and April (refer to spreading map). This has also been addressed in the SSRA.

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 enough 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.