Statement of Agricultural Benefit – Pengelli Fawr Farm & Cwm Carno Farm

Applicant: Mr Daniel James and Mrs Carys James (Stepside Agricultural Contractors)
Permit: SR2010 No4: mobile plant for land-spreading
Permit number: EPR/AB3891CX

Agricultural benefit statement is prepared by:

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This agricultural benefit statement has been prepared based on information provided by Stepside Agricultural Contractors. It is made on the understanding that all information provided is correct and representative of the fields to which the material is to be applied and of the waste material to be applied.

Farm addresses:

Pengelli Fawr Farm, Vaynor, Merthyr Tydfil, CF48 2TT
Cwm Carno Farm, Rhymney, Tredegar, NP22 5QY

Wastes to be applied:

Waste Code	Waste Description	Physical Form	Waste Producer
19 09 02	Sludge from water clarification	Sludge cake (stackable)	Dwr Cymru Welsh Water Pontsticill WTW
19 09 02	Sludge from water clarification	Liquid sludge	Dwr Cymru Welsh Water Pontsticill WTW

Application:

- The fields will be spread in March – September 2026. For the hay + grazing fields this is in March – May 2026 before hay is cut in the summer & June – September 2026 in advance of periods of grazing. For the grazing only fields this is in advance of periods of grazing March – September 2026. Spreading of these grass fields may be split into up to 5 separate applications for liquid sludge & the total of all applications will not exceed the max application rate for each field as listed in table 1. For liquid sludge each individual application will not exceed 50t/ha in any one application to a field (or the maximum application rate given in Table 1 where lower). For sludge cake, spreading will be split into 2 or 3 separate applications.
- Spreading of the waste will be carried out in accordance with the Code of Good Agricultural Practice, The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 and in accordance with the requirements of the deployment and Environmental Permitting Regulations.
- NRW will be informed at least 48 hours prior to any spreading commencing and no spreading will occur within 48 hours of forecasted heavy rainfall.
- The stackable water clarification sludge cake is delivered to the spreading fields and stockpiled in temporary field heaps prior to spreading. Spreading of the sludge cake is undertaken with rear discharge muck spreaders.
- The liquid sludge may be discharged into nurse tank prior to spreading. Liquid sludge is either directly spread with tractor and tanker or spread from a nurse tank onto the deployed fields at the required timings as stated above. This is done by tractor and vacuum tanker with dribble bar applicator. The dribble bar applicator places the liquid in bands onto the surface of the ground.
- Should the ground or weather conditions mean it's unsuitable for spreading then temporary storage of liquid sludge in a nurse tank may be required. This potential location is detailed on the attached field maps & within the LPD1 form.
- The nurse tank does not have secondary containment, but is an impermeable purpose built AW Trailers alloy nurse tank featuring internal bracing, an anti-corrosive interior coating, designated fill and empty valves that can be shut by gate valves. These valves can be locked off in the event of temporary overnight temporary storage if the tank contains liquid to ensure secure temporary storage. The tank is only for temporary storage and is normally rarely in use other than just prior to or when spreading activity is being undertaken. In most cases the nurse tank is unlikely to contain liquid overnight. The tank fills from the top via internal pipework with a 'swanneck' reducing chances off any spills when decoupling connecting pipes after filling. The empty valve allows the tank to be completely emptied to the bottom. The tank is sealed with roof to prevent odour, rainwater entering the tank and for safety, and can be vented if required. A hydraulic lifting axle in the middle allows the tank to positioned and lowered, then locked into position so the whole tank is on the ground.

Application (continued):

- The nurse tank will be completely empty before use. Only liquid sludge as specified in this deployment will be stored in the nurse tank.
- For liquid sludge the maximum application rate in Table 1 for each field will be split into multiple applications. Each individual application will not exceed 50t/ha in any one application to a field.
- The liquid water clarification sludge and sludge cake may be applied separately or in combination.
- The maximum application rates for each field listed in Table 1 apply to an individual waste being applied to a field and have been made on a field by field basis using The Nutrient Management Guide (RB209).

Benefits from waste application:

- The analysis and nutrient content of the wastes are shown in the waste analysis attachments.
- The wastes are a source of nitrogen, phosphate, potassium, sulphur and organic matter. The wastes can be beneficially used to replace a proportion of bagged mineral fertiliser.
- The risk of sulphur deficiency has been estimated as 'High' based on the soil texture and expected winter rainfall (RB209). The crop requirements are approximately 40kg SO_3/ha. The amount of available sulphur supplied by the wastes at the proposed maximum application rates is 7-11kg SO_3/ha.
- The addition of organic matter to the soil will help 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.

Materials applied in previous 12 months:

The fields within this deployment application have received the rates (t/ha) of materials as in 'Table 4 - Previous Land Treatment' within the previous 12 months.

It's considered that the nutrients applied from these applications were for the requirements of the previous crops before the material within this deployment is applied for the next crops.

Nutrients supplied by this application:

The maximum application rates of each of the DCWW liquid water clarification sludges & water clarification sludge cakes applied on their own to a field are shown in Table 1 and are listed below:

Rates of application (t/ha)	Nitrogen kg/ha		Phosphate (P_2O_5) kg/ha		Potash (K_2O) kg/ha		Magnesium (MgO) kg/ha		Sulphur (SO_3) kg/ha	
	Total	Available	Total	Available	Total	Available	Total	Available	Total	Available
DCWW Pontsticill WTW sludge cake @ 70 t/ha	134	13	47	9	4	1	4	1	68	7
DCWW Pontsticill WTW liquid sludge @ 250 t/ha	105	10	66	13	5	1	8	2	113	11
Estimated Availability	10%		20%		20%		20%		10%	

Application of wastes in combination:

When the Dwr Cymru Welsh Water Pontsticill water clarification sludge cake and liquid water clarification sludge are both applied to a field in seperate applications the maximum application rates will be set so that for the total combined amount applied the total nitrogen loading will be less than 250 kg/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 (as listed in Table 1), whichever is the greater, and PTEs applied will remain below annual addition limits.

The following example shows the maximum rate of application and nutrient content where 50 t/ha DCWW Pontsticill water clarification sludge cake and 50 t/ha Pontsticill WTW liquid water clarification sludge are both spread on a field. (No more than 50t/ha of liquid water clarification sludge spread in a single application)

Example:

	Rate of application (t/ha)	Nitrogen kg/ha		Phosphate (P_2O_5) kg/ha		Potash (K2O) kg/ha		Magnesium (MgO) kg/ha		Sulphur (SO3) kg/ha	
		Total	Available	Total	Available	Total	Available	Total	Available	Total	Available
DCWW Pontsticill WTW sludge cake	50	96	10	33	7	3	1	3	1	48	5
DCWW Pontsticill WTW liquid sludge	50	21	2	13	3	1	0	2	0	23	2
TOTAL	**100**	**117**	**12**	**46**	**10**	**4**	**1**	**5**	**1**	**71**	**7**

Table 1: Field, Soil & Cropping Details, Fertiliser Recommendations and Application Rates

					Nitrogen		Phosphate			Potash			Magnesium	
Field Ref.	**Soil Type**	**Spreadable Area (ha)**	**Previous Crop**	**Next Crop**	**SNS**	**N Required (kg/ha)**	**P Index**	**P_2O_5 Required (kg/ha)**	**Crop Use (Offtake) (kg/ha)**	**K Index**	**K_2O Required (kg/ha)**	**Crop Use (Offtake) (kg/ha)**	**Mg Index**	**MgO Required (kg/ha)**
Pengelli Fawr Farm														
PENGELLI FAWR 1	Medium soils	1.00	Grass grazing	Grass grazing	Moderate	130	0	80	#10	1	30	#9	2	0
PENGELLI FAWR 2	Medium soils	1.30	Grass grazing	Grass grazing	Moderate	130	0	80	#10	0	60	#9	2	0
PENGELLI FAWR 5	Medium soils	1.20	Grass grazing	Grass grazing	Moderate	130	0	80	#10	1	30	#9	3	0
PENGELLI FAWR 6	Medium soils	1.80	Grass grazing	Grass grazing	Moderate	130	0	80	#10	1	30	#9	2	0
PENGELLI FAWR 7	Medium soils	2.40	Grass grazing	Grass grazing	Moderate	130	0	80	#10	1	30	#9	3	0
PENGELLI FAWR 10	Medium soils	1.40	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	4	0
PENGELLI FAWR 11	Medium soils	1.80	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	3	0
PENGELLI FAWR 12	Medium soils	1.40	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	4	0
PENGELLI FAWR 13	Medium soils	1.60	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	4	0
PENGELLI FAWR 14	Medium soils	0.60	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	4	0
PENGELLI FAWR 15	Medium soils	1.00	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	3	0
PENGELLI FAWR 16	Medium soils	0.90	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	1	115	90	2	0
PENGELLI FAWR 17	Medium soils	1.10	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	2	0
PENGELLI FAWR 18	Medium soils	1.00	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	1	55	30	0	140	90	2	0
PENGELLI FAWR 19	Medium soils	1.00	Grass grazing	Grass grazing	Moderate	130	0	80	#10	1	30	#9	2	0
PENGELLI FAWR 21	Medium soils	0.30	Grass grazing	Grass grazing	Moderate	130	1	50	#10	0	60	#9	1	0
PENGELLI FAWR 22	Medium soils	0.60	Grass grazing	Grass grazing	Moderate	130	1	50	#10	0	60	#9	2	0
PENGELLI FAWR 23	Medium soils	1.00	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	1	55	30	1	115	90	2	0
PENGELLI FAWR 24	Medium soils	0.70	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	1	55	30	1	115	90	2	0
PENGELLI FAWR 25	Medium soils	1.00	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	1	0
PENGELLI FAWR 26	Medium soils	0.60	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	2	0
PENGELLI FAWR 27	Medium soils	2.60	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	1	0
PENGELLI FAWR 28	Medium soils	3.00	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	0	140	90	1	0
Cwm Carno Farm														
CWM CARNO 1	Medium soils	2.10	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	1	55	30	1	115	90	4	0
CWM CARNO 7	Medium soils	3.70	Grass 1 cut hay & grazing	Grass 1 cut hay & grazing	Moderate	100	0	80	30	1	115	90	5	0
TOTAL		**35.10**												

Nutrient requirements based on: Grazing grass 35t/ha FW/ha over season, fresh grass (20% DM), totalling 1.4kg/t P_2O_5 and 4.8kg/t K_2O removed in offtake
For grazing this calculation assumes approximately 80% of the P2O5 and 95% of the K2O is recycled in field by the animal through its dung and urine
Grass 1 cut hay (86% DM) + grazing
Expected DM yields of grass 7-9t/ha, good grass growth class

	Dwr Cymru Welsh Water Pontsticill WTW - water clarification sludge cake						Dwr Cymru Welsh Water Pontsticill WTW - liquid water clarification sludge					
Field Ref.	**N Applied - Waste (kg/ha)**	**P_2O_5 Applied - Waste (kg/ha)**	**K_2O Applied - Waste (kg/ha)**	**MgO Applied - Waste (kg/ha)**	**Application Rate (t/ha)**	**Total Tonnes**	**N Applied - Waste (kg/ha)**	**P_2O_5 Applied - Waste (kg/ha)**	**K_2O Applied - Waste (kg/ha)**	**MgO Applied - Waste (kg/ha)**	**Application Rate (t/ha)**	**Total Tonnes**
Pengelli Fawr Farm												
PENGELLI FAWR 1	**13	**9	**1	*4	70	70	**10	**13	**1	*8	250	250
PENGELLI FAWR 2	**13	**9	**1	*4	70	91	**10	**13	**1	*8	250	325
PENGELLI FAWR 5	**13	**9	**1	*4	70	84	**10	**13	**1	*8	250	300
PENGELLI FAWR 6	**13	**9	**1	*4	70	126	**10	**13	**1	*8	250	450
PENGELLI FAWR 7	**13	**9	**1	*4	70	168	**10	**13	**1	*8	250	600
PENGELLI FAWR 10	**13	**9	**1	*4	70	98	**10	**13	**1	*8	250	350
PENGELLI FAWR 11	**13	**9	**1	*4	70	126	**10	**13	**1	*8	250	450
PENGELLI FAWR 12	**13	**9	**1	*4	70	98	**10	**13	**1	*8	250	350
PENGELLI FAWR 13	**13	**9	**1	*4	70	112	**10	**13	**1	*8	250	400
PENGELLI FAWR 14	**13	**9	**1	*4	70	42	**10	**13	**1	*8	250	150
PENGELLI FAWR 15	**13	**9	**1	*4	70	70	**10	**13	**1	*8	250	250
PENGELLI FAWR 16	**13	**9	**1	*4	70	63	**10	**13	**1	*8	250	225
PENGELLI FAWR 17	**13	**9	**1	*4	70	77	**10	**13	**1	*8	250	275
PENGELLI FAWR 18	**13	**9	**1	*4	70	70	**10	**13	**1	*8	250	250
PENGELLI FAWR 19	**13	**9	**1	*4	70	70	**10	**13	**1	*8	250	250
PENGELLI FAWR 21	**13	**9	**1	**1	70	21	**10	**13	**1	**2	250	75
PENGELLI FAWR 22	**13	**9	**1	*4	70	42	**10	**13	**1	*8	250	150
PENGELLI FAWR 23	**13	**9	**1	*4	70	70	**10	**13	**1	*8	250	250
PENGELLI FAWR 24	**13	**9	**1	*4	70	49	**10	**13	**1	*8	250	175
PENGELLI FAWR 25	**13	**9	**1	**1	70	70	**10	**13	**1	**2	250	250
PENGELLI FAWR 26	**13	**9	**1	*4	70	42	**10	**13	**1	*8	250	150
PENGELLI FAWR 27	**13	**9	**1	**1	70	182	**10	**13	**1	**2	250	650
PENGELLI FAWR 28	**13	**9	**1	**1	70	210	**10	**13	**1	**2	250	750
Cwm Carno Farm												
CWM CARNO 1	**13	**9	**1	*4	70	147	**10	**13	**1	*8	250	525
CWM CARNO 7	**13	**9	**1	*4	70	259	**10	**13	**1	*8	250	925
TOTAL						**2457**						**8775**

* Total nutrient content of waste used on P, K or Mg index 2 or above
** Available nutrient content of waste used on P, K or Mg index 0 or 1
The assumed availability of total nutrients in the DCWW water clarification sludges are N 10%, P_2O_5 20%, K_2O 20%, MgO 20%, SO_3 10%

Potential negative impacts from this application and mitigation measures planned:

Waste composition & receiving soils

- Potentially Toxic Elements: The supplied concentrations at the proposed application rates are all lower than the maximum permissible levels detailed in the Sludge (Use in Agriculture) Regulations for biosolids applied to agricultural land, which is believed to be a suitable comparison for wastes applied to agricultural land.
- Physical contaminants: The wastes are produced by managed processes. The wastes do not contain physical contaminants.
- Dwr Cymru Welsh Water Pontsticill water treatment works uses aluminium-based coagulants to condition the water. The liquid sludges will only be spread on fields with a soil pH of 6.0 or above.
- The pH of the receiving soils ranges from pH 6.0 to 7.8.
- Soils have been sampled to 7.5cm depth for permanent grass fields with a 'half cheese' corer soil sampler walking a 'W' pattern across each field collecting approx. 25 sub samples per field.
- Receiving soils have been analysed and are suitable for application at the proposed application rates.
- Some of the fields have soil magnesium indices from 3 to 5. The magnesium applied by the wastes is less than is likely to be removed by the next crop so there should be no increase to soil magnesium levels with greater crop offtake than that applied. The amount of magnesium being applied is unlikely to have any noticeable difference on soil structure and the fields are all in grass cropping.
- Grass is not responsive to magnesium however herbage levels should be maintained to prevent 'Grass Staggers' in lactating animals. Potassium applications can reduce magnesium uptake resulting in 'Staggers'. Fields with a magnesium index of 1 will be monitored and magnesium fertiliser applied / livestock provided with magnesium supplements if required regardless of applications which are unlikely to have any effect due to low levels of potassium and magnesium being applied through the wastes.
- On the other hand, high magnesium soils can reduce potassium availability. Application of liquid sludge at the proposed application rates with little magnesium being applied and potassium also being applied in the sludge (plus the balance of crop requirements for potassium applied as manufactured fertiliser by the farmer) is unlikely to reduce potassium availability.

Operations

The fields in this deployment have been designated as 'high risk' following site checks on the proximity to surrounding protected areas (e.g. SSSIs) and groundwater source protection zones with Nant Glais Caves SSSI and Cwm Taf Fechan Woodlands SSSI within 500 metres of some of the Pengelli Fawr Farm fields. The Pengelli Fawr Farm fields are also located within the Bannau Brycheiniog Brecon Beacons National Park. On the basis of 'high risk' the proposed operation will be subject to a site-specific risk assessment for deploying mobile plant under a SR2010 No.4. The potential risks associated with the application of waste on this deployment have been identified as;

- Potential run-off after application: The wastes will be applied following the Code of Good Agricultural Practice. The maximum application rate for each field where spread with liquid sludge will be split into multiple applications and will not exceed 50t/ha in any one application to a field (or the maximum application rate given in Table 1 where lower). The fields will be spread using dribble bar equipment for liquid sludge and with rear discharge muck spreaders for sludge cake, with no spreading areas enforced as per maps.
- All handling of the wastes will be in accordance to current regulations and relevant mitigation strategies will be adopted. The Dwr Cymru Welsh Water liquid water clarification sludge and water clarification sludge cake are considered to have no noticeable odour.
- Spillages: all spillages will be reported immediately to NRW.
- No waste will be spread within 10m of any ditch, pond or surface water, within 50m of any spring, well, borehole, or reservoir that supplies water for human consumption or farm dairies.
- Liquid sludge will be spread on delivery or temporarily securely stored as stated above. The water clarification sludge cake will be stockpiled in field heaps prior to being spread. Operators will aim to empty spreading equipment before the end of each working day to avoid overnight storage of waste in machinery.

- Regular servicing of all machinery is conducted and spreading equipment is annually calibrated. To prevent waste being held in faulty machinery replacement spreading equipment will be available.
- Spreading machinery will travel over the field in a direction which will most easily allow the machinery to turn within the boundaries of the field. Any spreading equipment will be turned off prior to turning at the end of each run.
- Machinery turns will be routed to avoid rutting and wheel slip. The turns will not be executed on any buffer strips.
- There will be sufficient trained staff available to ensure that the operation continues throughout operational hours (i.e. there will be sufficient cover for illness, holiday etc.).
- Rights of way have been marked on the spread risk maps. There are public rights of way in fields Pengelli Fawr 11, 12, 15, 19, 27 and Cwm Carno 1 & 7 to be spread.
- Weather conditions will be monitored prior to spreading with wind speed and direction assessed.
- Consideration for the public and local residential receptors will be taken into account.

Signed: Robert Tucker	**Date:** 26/01/2026