Statement of Agricultural Benefit – Ffrwdwenith Ganol & Rhosygadair Fawr

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:

Ffrwdwenith Ganol, Felinwynt, Cardigan, Ceredigion, SA43 1RW
Rhosygadair Fawr, Blaenannerch, Cardigan, Ceredigion, SA43 1SW

Wastes to be applied:

Waste Code	Waste Description	Physical Form	Waste Producer
02 05 02	Waste from the dairy products industry – sludges from on-site effluent treatment	Liquid	Dairy Partners, Newcastle Emlyn
02 05 02	Waste from the dairy products industry – sludges from on-site effluent treatment	Liquid	Volac/Sensient, Felinfach
02 05 02	Waste from the dairy products industry – sludges from on-site effluent treatment	Liquid	First Milk, Haverfordwest

Application:

- The fields will be spread in February – April 2026 prior to first cut silage, and following silage cuts May – September 2026. Spreading of these grass fields may be split into up to 4 applications & the total of all applications will not exceed the max application rate for each field as listed in table 1. 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).
- The liquid wastes are delivered by HGV road tankers which are discharged into a nurse tank. The liquid waste is either spread from a nurse tank, or for Ffrwdwenith Ganol pumped from nurse tank via umbilical hose to the self-supporting slurry bag for temporary storage prior to spreading. The wastes aren't mixed and are spread on separate fields. Only wastes as specified in this deployment are to be stored in the nurse tanks & slurry bag prior to spreading.
- The nurse tanks are purpose built AW Trailers nurse tanks with designated fill and empty valves that can be shut by gate valves and locked off in the event of temporary overnight storage if the tank contains liquid to ensure secure storage. 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 lifting axle in the middle allows the tank to positioned and lowered so the whole tank is on the ground.
- The Labaronne Citaf self-supporting slurry bag is for temporary storage and is purpose built, sealed, can be vented and has designated fill and empty valves and is sited on a suitable flat area. The bag has a 10 year manufacturer guarantee: 100% against all material (technical fabric) and manufacturing (welding) defects. The technical fabric is composed of polyester coated with PVC and protected with an anti UV treatment on both sides. The bag has a life expectancy of 20 years +. The liquid is pumped across to the bag from a nurse tank or pumped from a lorry using a pump and umbilical hose across field connected to the bag fill valve. There are 2 gate valves in sequence over a metre apart and a non return valve. The bag features a number of degassers with anti-odour filters. The slurry bag will have a soil bund around the perimeter and will be fenced to prevent access & damage.
- Each liquid waste is spread from a nurse tank or the slurry bag onto the deployed fields at the required timings as stated above. This is done by either umbilical method with the liquid delivered to tractor in deployed fields pumped through hose and spread by dribble bar applicator mounted onto the back of the tractor, or a tractor and vacuum tanker with dribble bar applicator. The dribble bar applicator places the liquid in bands onto the surface of the ground. This spread method is effective in limiting odour generation & nutrient losses associated with higher trajectory spread methods such as splash plate. Spreading is undertaken with the use of flow meters to ensure correct rates are applied.

- 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 maximum application rate in Table 1 for each field will be split into multiple applications where it's over 50t/ha. 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).
- **Waste will not be stored or spread in combination (i.e. only one waste stream per field).**

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, sodium, calcium 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 80-120kg SO_3/ha. The amount of available sulphur supplied by the wastes at the proposed maximum application rates is 2-8kg SO_3/ha.
- The addition of sodium will improve the palatability of grass and is important in the diet for livestock health.
- The recommended maximum application rates are shown in Table 1 and have been made on a field by field basis using The Nutrient Management Guide (RB209).

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:

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
Dairy Partners liquid sludge @ 44 t/ha	106	21	64	38	15	12	3	0	17	3
Dairy Partners liquid sludge @ 55 t/ha	132	26	80	48	19	15	4	0	21	4
Dairy Partners liquid sludge @ 100 t/ha	240	48	145	87	34	27	8	1	39	8
Volac/Sensient liquid sludge @ 54 t/ha	59	12	65	39	69	55	8	1	11	2
Volac/Sensient liquid sludge @ 66 t/ha	73	15	79	48	84	67	10	1	13	3
Volac/Sensient liquid sludge @ 131 t/ha	144	29	157	94	167	133	20	2	27	5
Volac/Sensient liquid sludge @ 150 t/ha	165	33	180	108	191	153	23	2	30	6
First Milk liquid sludge @ 67 t/ha	127	25	64	38	16	12	3	0	20	4
First Milk liquid sludge @ 83 t/ha	158	32	79	48	19	15	4	0	24	5
First Milk liquid sludge @ 126 t/ha	239	48	121	72	29	23	5	1	37	7
Estimated Availability	20%		60%		80%		10%		20%	

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)**
F Ganol 1	Medium soils	5.90	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	0	140	80	0	370	282	2	0
F Ganol 2	Medium soils	4.50	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	0	140	80	1	320	282	2	0
F Ganol 3	Medium soils	2.20	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	1	110	80	0	370	282	2	0
F Ganol 4	Medium soils	2.30	Grass 3 cuts silage	Grass 2 cuts silage	Moderate	175	1	95	65	0	320	228	2	0
F Ganol 6	Medium soils	1.90	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	1	110	80	0	370	282	2	0
F Ganol 7	Medium soils	2.40	Spring wheat	Grass 3 cuts silage	Moderate	250	0	140	80	0	370	282	2	0
F Ganol 8	Medium soils	4.60	Spring wheat	Grass 3 cuts silage	Moderate	250	1	110	80	0	370	282	2	0
F Ganol 9	Medium soils	1.70	Grass 3 cuts silage + grazing	Grass 3 cuts silage + grazing	Moderate	250	3	20	80	0	370	282	2	0
F Ganol 10	Medium soils	2.00	Grass 3 cuts silage + grazing	Grass 3 cuts silage + grazing	Moderate	250	2	80	80	1	320	282	2	0
F Ganol 11	Medium soils	2.20	Grass 3 cuts silage + grazing	Grass 3 cuts silage + grazing	Moderate	250	2	80	80	1	320	282	3	0
F Ganol 12	Medium soils	2.70	Grass 3 cuts silage + grazing	Grass 3 cuts silage + grazing	Moderate	250	2	80	80	1	320	282	3	0
F Ganol 13	Medium soils	1.90	Grass 2 cuts silage	Grass 2 cuts silage	Moderate	175	3	20	65	1	270	228	2	0
Camp 1	Medium soils	7.30	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	0	140	80	1	320	282	2	0
Camp 2	Medium soils	1.20	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	1	110	80	1	320	282	2	0
Camp 3	Medium soils	1.40	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	1	110	80	1	320	282	1	0
Camp 4	Medium soils	0.70	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	1	110	80	1	320	282	2	0
Camp 5	Medium soils	0.70	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	1	110	80	1	320	282	1	0
TOTAL		**45.60**												

Nutrient requirements based on: Grass 2 cuts silage (23t FW/ha at 1st cut, 15t FW/ha at 2nd cut), silage 25% DM, totalling 1.7kg/t P2O5 and 6.0kg/t K2O removed in offtake
Grass 3 cuts silage (23t FW/ha at 1st cut, 15t FW/ha at 2nd cut, 9t FW/ha at 3rd cut), silage 25% DM, totalling 1.7kg/t P2O5 and 6.0kg/t K2O removed in offtake
Grass 3 cuts silage (23t FW/ha at 1st cut, 15t FW/ha at 2nd cut, 9t FW/ha at 3rd cut), silage 25% DM, totalling 1.7kg/t P2O5 and 6.0kg/t K2O removed in offtake + grazing
Expected DM yields of grass 9-12t/ha, good grass growth class

	Dairy Partners, Newcastle Emlyn - liquid sludge						Volac/Sensient, Felinfach - liquid sludge						First Milk, Haverfordwest - liquid 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**	**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**
F Ganol 1	**48	**87	**27	*8	100	590	**33	**108	**153	*23	150	885	**48	**72	**23	*5	126	743
F Ganol 2	**48	**87	**27	*8	100	450	**33	**108	**153	*23	150	675	**48	**72	**23	*5	126	567
F Ganol 3	**48	**87	**27	*8	100	220	**33	**108	**153	*23	150	330	**48	**72	**23	*5	126	277
F Ganol 4	**48	**87	**27	*8	100	230	**29	**94	**133	*20	131	301	**48	**72	**23	*5	126	290
F Ganol 6	**48	**87	**27	*8	100	190	**33	**108	**153	*23	150	285	**48	**72	**23	*5	126	239
F Ganol 7	**48	**87	**27	*8	100	240	**33	**108	**153	*23	150	360	**48	**72	**23	*5	126	302
F Ganol 8	**48	**87	**27	*8	100	460	**33	**108	**153	*23	150	690	**48	**72	**23	*5	126	580
F Ganol 9	**26	*80	**15	*4	55	93	**15	*79	**67	*10	66	112	**32	*79	**15	*4	83	141
F Ganol 10	**26	*80	**15	*4	55	110	**15	*79	**67	*10	66	132	**32	*79	**15	*4	83	166
F Ganol 11	**26	*80	**15	*4	55	121	**15	*79	**67	*10	66	145	**32	*79	**15	*4	83	183
F Ganol 12	**26	*80	**15	*4	55	149	**15	*79	**67	*10	66	178	**32	*79	**15	*4	83	224
F Ganol 13	**21	*64	**12	*3	44	84	**12	*65	**55	*8	54	103	**25	*64	**12	*3	67	127
Camp 1	**48	**87	**27	*8	100	730	**33	**108	**153	*23	150	1095	**48	**72	**23	*5	126	920
Camp 2	**48	**87	**27	*8	100	120	**33	**108	**153	*23	150	180	**48	**72	**23	*5	126	151
Camp 3	**48	**87	**27	**1	100	140	**33	**108	**153	**2	150	210	**48	**72	**23	**1	126	176
Camp 4	**48	**87	**27	*8	100	70	**33	**108	**153	*23	150	105	**48	**72	**23	*5	126	88
Camp 5	**48	**87	**27	**1	100	70	**33	**108	**153	**2	150	105	**48	**72	**23	**1	126	88
TOTAL						**4067**						**5891**						**5262**

<u>Waste will NOT be spread or stored in combination</u> <u>(i.e. one waste stream per field)</u>

* 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 liquid sludges are N 20%, P_2O_5 60%, K_2O 80%, MgO 10%, SO_3 20%

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 significantly 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.
- Oils, fats & grease: The Dairy Partners liquid sludge contains 1.77% oils, fats & grease. Application at this percentage is unlikely to have detrimental effects on plant growth which can be seen with wastes containing 4% content or more. As a precaution the sludge will be surface applied with low trajectory dribble bar applicator which places the liquid sludge in bands on surface to reduce leaf contact, and the max application rate for each grass field will be split into up to 4 applications.
- Waste pH: Although the Dairy Partners & First Milk liquid sludges are slightly acidic, they're weakly buffered and unlikely to result in a change in soil pH. The slightly acidic nature is most probably associated with the presence of food based organic acids. Acidic food-based wastes are routinely applied to agricultural land without adverse effects on crop health, or significant decreases in soil pH. Use of the wastes will be carefully monitored, through low rates of individual application and close monitoring of crop health, for any adverse signs resulting from acidity around roots.
- BOD: The BOD of the Volac / Sensient liquid sludge is low and below the range for cattle slurry (10-20,000 mg/l). The BOD of the First Milk liquid sludge is within the range for cattle slurry. The BOD of the Dairy Partners liquid sludge is in the range for pig slurry (20-40,000 mg/l). Consequently, the environmental risks applying these wastes will be similar to that of the materials mentioned. To mitigate the pollution risk to watercourses the wastes will not be applied at a rate greater than 50 t/ha in a single application (or the maximum application rate given in Table 1 where lower). The proposed method of application, no-spread zones and precautions as stated in this document should be sufficient to minimise the pollution risk to manageable levels.
- Soils have been sampled to 7.5cm depth for permanent grass fields & to 15cm depth for temporary 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.
- Fields F Ganol 11 & 12 have a soil magnesium index of 3. 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 wastes also apply greater levels of calcium which will help soil aggregation and structure. 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'.
  Application of liquid sludges at the proposed application rates with much greater potassium than magnesium being applied in the sludges and the balance of crop potassium requirements being applied as fertiliser makes it very unlikely there will be a reduction in potassium availability. Reduced potassium availability can be seen in soils where the magnesium index is 5 or above.

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. 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 over 50t/ha 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 precision spreading dribble bar equipment 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.
- Odour may potentially be emitted from the spreading of the wastes – to mitigate odour generation all handling of waste will be done in accordance to current regulations and relevant mitigation strategies will be adopted. Waste will be spread with low trajectory dribble bar applicator. This is an efficient method to prevent odour transmission & nutrient losses associated with higher trajectory spread methods such as splash plate. If any odour complaints are received, further odour mitigation methods will be implemented in accordance with the site-specific odour management plan.

- The Volac / Sensient liquid sludge has high readily available nitrogen (over 30% RAN). Spreading is in line with good practice and regulations with the liquid sludge spread into the growing grass crops at stated timings with a low trajectory precision dribble bar applicator which places the liquid sludge in bands on the surface of the ground. This method of application minimises contact with the air reducing ammonia volatilization. The fields are all in a nitrate vulnerable zone (areas designated as being at risk from agricultural nitrate pollution) which applies across Wales. The closed period for spreading organic manures with high readily available nitrogen (Volac / Sensient liquid sludge) on the grass fields is 15th October – 15th January under The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021. The stated spreading timings in this deployment for all fields with all liquid sludges are from February to September when there is crop nutrient requirement and not in the closed periods. The liquid sludges apply far less than the crop requirements for nitrogen with the balance required to grow the crops applied as fertiliser by the farmer.
- 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.
- Waste will be spread on delivery (or securely stored as stated above). 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 and/or lifted out of the soil 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 F Ganol 11 & 12 to the southern field boundaries which are buffered by no spread areas.
- 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:** 16/11/2025