

# Statement of Agricultural Benefit – Login Farm



**Applicant:** Stepside Agri Contractors

**Permit:** SR2010 No4: mobile plant for land-spreading

**Permit number:** EPR/AB3891CX

**Person with appropriate technical expertise:**

Mr David Powell

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**Farm address:**

Login Farm, Ferwig, Cardigan, Ceredigion, SA43 1RU - Holding No. 55/226/0011

**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 sludge	Volac, Felinfach
19 09 02	Sludges from water clarification	Liquid sludge	Dwr Cymru Welsh Water Bolton Hill WTW, Haverfordwest

**Application:**

- **Waste will not be stored or spread in combination (i.e. only one waste stream per field).**
- Grass fields 7849, 0876, 4165, 4993 & 6210 will be spread subject to ground conditions being suitable and when there is a significant crop nutrient requirement (i.e. early spring, after a silage cut, in advance of periods of grazing). Spreading of the grass fields may be split applications and the total of all applications will not exceed the max application rates for the fields as listed in table 1.
- Fields 1561, 3683B & 3683A, 7795 will be spread in autumn 2022 prior to cultivations and planting of the winter wheat crops with Bolton Hill water clarification sludge only, or in spring 2023 into the growing winter wheat crops with either Bolton Hill water clarification sludge or Volac sludge from dairy waste treatment. The Bolton Hill water clarification sludge will be soil incorporated as soon as possible and within 24 hours where spread prior to cultivations and planting of the winter wheat crops in autumn 2022.
- Fields 6240, 0252, 5565, 6959 & 8065 will be spread in spring 2023 prior to cultivations and planting of the spring barley crops or into the growing spring barley crops in spring 2023. The waste will be soil incorporated as soon as possible and within 24 hours where spread prior to cultivations and planting of the spring barley crops in spring 2023.
- Spreading of the waste will be carried out in accordance with the Code of Good Agricultural Practice 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.
- All fields are intended to be spread via surface placement through trailing hose applicator (dribble bar) assuming ground conditions are suitable at the time of waste receipt. This intended spread method applies to either waste type. The trailing hose applicator (dribble bar) places the liquid in bands onto the surface of the ground. A shallow slot injector may be used instead for the grass fields if grass growth dictates it's a more suitable spread method at specific timing and ground conditions are suitable for use. Should the ground or weather conditions mean it's unsuitable for spreading then temporary storage in nurse tanks may also be required. These potential locations are detailed on the attached field map and within the LPD1 form.
- The maximum application rate for each field may be split into multiple applications and will not exceed 50t/ha in any one application to a 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 50 – 120kg SO<sub>3</sub>/ha. The amount of available sulphur supplied by the wastes is 2 - 7kg SO<sub>3</sub>/ha
- The addition of sodium will improve the palatability of grass and is important in the diet for livestock health. The crop requirements for the fields are up to 140kg Na<sub>2</sub>O /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.
- 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 <sub>2</sub> O <sub>5</sub> ) kg/ha		Potash (K <sub>2</sub> O) kg/ha		Magnesium (MgO) kg/ha		Sulphur (SO <sub>3</sub> ) kg/ha	
	Total	Available	Total	Available	Total	Available	Total	Available	Total	Available
Volac liquid sludge @ 24 t/ha	17	3	39	23	24	19	6	1	9	2
Volac liquid sludge @ 34 t/ha	24	5	55	33	34	27	9	1	13	3
Volac liquid sludge @ 39 t/ha	27	5	63	38	39	31	10	1	15	3
Volac liquid sludge @ 49 t/ha	34	7	79	47	48	39	13	1	19	4
Volac liquid sludge @ 95 t/ha	67	13	153	92	94	75	25	2	37	7
Estimated Availability	20%		60%		80%		10%		20%	

Rates of application (t/ha)	Nitrogen kg/ha		Phosphate (P <sub>2</sub> O <sub>5</sub> ) kg/ha		Potash (K <sub>2</sub> O) kg/ha		Magnesium (MgO) kg/ha		Sulphur (SO <sub>3</sub> ) kg/ha	
	Total	Available	Total	Available	Total	Available	Total	Available	Total	Available
DCWW Bolton Hill WTW liquid sludge @ 50 t/ha	63	6	39	8	8	2	41	8	27	3
DCWW Bolton Hill WTW liquid sludge @ 80 t/ha	101	10	63	13	13	3	65	13	43	4
Estimated Availability	10%		20%		20%		20%		10%	

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

Field Ref.	Soil Type	Spreadable Area (ha)	Previous Crop	Next Crop	Nitrogen		Phosphate			Potash			Magnesium	
					SNS	N Required (kg/ha)	P Index	P <sub>2</sub> O <sub>5</sub> Required (kg/ha)	Crop Use (Offtake) (kg/ha)	K Index	K <sub>2</sub> O Required (kg/ha)	Crop Use (Offtake) (kg/ha)	Mg Index	MgO Required (kg/ha)
6240	Medium soils	4.60	Winter wheat	Spring barley	1	140	2	54	55	2-	77	78	2	0
7849	Medium soils	3.30	Winter wheat	Grass 3 cuts silage	Moderate	250	2	80	80	1	320	282	2	0
0252	Medium soils	1.80	Spring barley	Spring barley	1	140	3	0	55	2+	47	78	2	0
0876	Medium soils	3.00	Grass 1 cut silage + grazing	Grass 1 cut silage + grazing	Moderate	190	2	40	39	1	170	138	2	0
1561	Medium soils	2.70	Grass 3 cuts silage	Winter wheat	1	220	1	92	63	1	126	95	2	0
3683 B	Medium soils	1.60	Winter wheat	Winter wheat	1	220	1	92	63	1	126	95	1	0
3683 A	Medium soils	2.30	Winter wheat	Winter wheat	1	220	2	62	63	3	0	95	2	0
4165	Medium soils	2.80	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	2	80	80	2-	280	282	1	0
5565	Medium soils	3.50	Spring barley	Spring barley	1	140	2	54	55	2+	47	78	2	0
6959	Medium soils	3.60	Spring barley	Spring barley	1	140	2	54	55	1	107	78	1	0
4993	Medium soils	3.10	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	2	80	80	1	320	282	2	0
6210	Medium soils	2.90	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	3	20	80	3	90	282	2	0
7795	Medium soils	4.20	Spring barley	Winter wheat	1	220	2	62	63	2-	96	95	2	0
8065	Medium soils	8.60	Spring barley	Spring barley	1	140	2	54	55	2-	77	78	2	0
TOTAL		48.00												

Nutrient requirements based on:

Winter wheat 9t/ha straw removed, spring barley 6.5t/ha straw removed

Grass 1 cuts silage (23t FW/ha at 1st cut), silage 25% DM, totalling 1.7kg/t P2O5 and 6.0kg/t K2O removed in offtake + grazing

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

Expected DM yields of grass 9-12t/ha, good grass growth class

	Volac, Felinfach - liquid sludge						Dwr Cymru Welsh Water, Bolton Hill WTW - liquid sludge						
Field Ref.	N Applied - Waste (kg/ha)	P <sub>2</sub> O <sub>5</sub> Applied - Waste (kg/ha)	K <sub>2</sub> O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes	N Applied - Waste (kg/ha)	P <sub>2</sub> O <sub>5</sub> Applied - Waste (kg/ha)	K <sub>2</sub> O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes	
6240	**5	*55	*34	*9	34	156	**6	*39	*8	*41	50	230	
7849	**7	*79	**39	*13	49	162	**6	*39	**2	*41	50	165	
0252	**5	*55	*34	*9	34	61	**6	*39	*8	*41	50	90	
0876	**3	*39	**19	*6	24	72	**6	*39	**2	*41	50	150	
1561	**13	**92	**75	*25	95	257	**10	**13	**3	*65	80	216	
3683 B	**13	**92	**75	**2	95	152	**10	**13	**3	**13	80	128	
3683 A	**5	*63	*39	*10	39	90	**10	*63	*13	*65	80	184	
4165	**7	*79	*48	**1	49	137	**6	*39	*8	**8	50	140	
5565	**5	*55	*34	*9	34	119	**6	*39	*8	*41	50	175	
6959	**5	*55	**27	**1	34	122	**6	*39	**2	**8	50	180	
4993	**7	*79	**39	*13	49	152	**6	*39	**2	*41	50	155	
6210	**7	*79	*48	*13	49	142	**6	*39	*8	*41	50	145	
7795	**5	*63	*39	*10	39	164	**10	*63	*13	*65	80	336	
8065	**5	*55	*34	*9	34	292	**6	*39	*8	*41	50	430	
TOTAL						2078							2724

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

\* 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 Volac liquid sludge are N 20%, P<sub>2</sub>O<sub>5</sub> 60%, K<sub>2</sub>O 80%, MgO 10%, SO<sub>3</sub> 20%

The assumed availability of total nutrients in the DCWW Bolton Hill liquid WTW sludge are N 10%, P<sub>2</sub>O<sub>5</sub> 20%, K<sub>2</sub>O 20%, MgO 20%, SO<sub>3</sub> 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 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 sludges do not contain physical contaminants.
- Receiving soils are below the limits set for grassland & arable soils under the Sludge (Use in Agriculture) Regulations.
- Soils have been sampled to 7.5cm depth for permanent grass fields & to 15cm depth for arable & temporary grass fields with a 'half cheese' corer soil sampler walking a 'W' pattern across each field collecting approx. 25 sub samples per field.

### Operations

The fields in this deployment have been designated as 'medium risk' following site checks on the proximity to surrounding protected areas (e.g. SSSIs) and groundwater source protection zones. On the basis of 'medium risk' the proposed operation will be subject to the generic 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 may be split into multiple applications and will not exceed 50t/ha in any one application to a field.
- Handling: All handling of the wastes will be done in accordance to current regulations and relevant mitigation strategies will be adopted.
- Odour may potentially be emitted from the spreading of the Volac liquid sludge – 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 trailing hose (dribble bar) applicator, waste will be sub-surface injected, or soil incorporated which are efficient methods 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. A site-specific odour management plan has been included with this deployment application.
- The DCWW Bolton Hill WTW sludge is 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.
- 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. Spreading will be carried out at times of low use & waste will be rapidly soil incorporated prior to winter wheat and spring barley crops being planted with the footpath reinstated where a footpath crosses within a field spread area for these fields. Where a footpath crosses within a field spread area for the grass fields a 5m no spread buffer to the footpath will be enforced and this will also apply where spread into the growing arable crops in the spring.
- 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:** David Powell

**Date:** 22/07/2022