

Project Design & Access Statement

**Site
address:**

Cefn Uchaf, Nantyr, Llangollen,
Wrexham

Date:

18/10/23

Contact details

Applicant

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Nantyr
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Agent

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Description of development

Earth banked nutrient storage lagoon to comply with The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021,

Design and Access Policy standards followed.

Approved Document M (2004):
BS8300 (2001) Access for Disabled People:
BS5502 Agricultural Building Design Standard:
Tan 12 JUDP Policies 76 & 61 Biodiversity and 100 Access to Development:
JMU Sign design guide:
Disability Design Standards:
DIT Inclusive Mobility:
Good Design Guide:
This application is for full \planning consent purposes only; it is confirmed during the detailed design stage of the project and will fully comply with the above guidelines.

Design Philosophy of Proposed Structure.

The existing nutrient storage facilities at Cefn Uchaf farm do not provide sufficient slurry storage capacity to allow total nutrient containment throughout the 5-month winter period as required by CoAPR. The existing slurry store will remain in situ and act as a reception pit for all slurry/dirty water. The additional nutrient storage lagoon is proposed below the existing structure to allow the holding to provide total winters nutrient storage and fully comply with **The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021**. This will be run in conjunction with the current slurry storage facilities.

The separation of the silage clamp runoff will ensure there is sufficient storage capacity within the existing slurry storage and the proposed new slurry lagoon to provide 5 months winters storage capacity. This will allow the farm to fully comply with **The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021**.

The proposed **slurry** lagoon will provide 5 winter months slurry storage capacity, in conjunction with existing storage, for all stock producing slurry plus dirty yard runoff and parlour washings at **Cefn Uchaf**. The proposed slurry lagoon will reduce current slurry transportation/spreading, labour costs, ammonia emissions plus reduce the carbon footprint.

There will be NO stock increase at the holding.

The existing slurry storage will continue to act as initial slurry collection facility. The proposed lagoon will then provide the regulatory required additional storage capacity and allow the farm to access all land maximising the nutrient benefit of the material stored also reducing fertiliser costs.

The proposed store will improve nutrient value of the material produced by the stock and allowing greater control of application to maximise the effect on the land of the stored nutrients. This will significantly reduce the pollution risk of contaminated runoff during wet weather periods, reduce the frequency of slurry mixing/spreading and associated ammonia emissions, whilst ensuring regulatory compliance. The spreading cost reduction will also improve the viability of the farm as a business.

The farm will follow the recommendations of application of nutrients provided in the farm's nutrient management plan ensuring nitrogen application from the slurries produced is carried out in accordance with the regulations and does not exceed maximum N loading (170 kg/h) unless a licenced derogation to 250kg/h is received.

The slurry lagoon will allow all slurry to be stored throughout the winter period and be spread to the land only when land and weather conditions are suitable, allowing the maximum benefit to be achieved by the nutrients. Importantly, there will be a significant reduction in stirring/agitating of the existing slurry storage, reducing current ammonia emission caused by the constant need

to empty the existing storage facility throughout the winter period. The slurry will form a crust within the lagoon when not agitated, reducing ammonia emissions. A SCAIL assessment will also be supplied as part of the planning application if required by NRW.

Currently the slurry must be mixed and spread on a regular basis throughout the winter due to limited storage capacity, each time releasing ammonia emissions into the atmosphere. The slurry lagoon will only be emptied at the end of the winter and outside of the non-spreading period (15th Oct 24 – 15th Jan 25). Application of nutrient will take place when the land requires the nutrients. The lagoon will also ensure the farm has enough overall storage capacity to store all slurry /dirty water from 1st Oct to 1st March and to comply with the NON-Spreading period for slurry/dirty water running from 15th-October to 15th-January. Both are a requirement of **The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021**. The lagoon provides the regulatory required 5 months winters storage capacity for all slurry and dirty water produced at the farm.

This construction will be carried out in order to meet the required storage capacity of slurry storage system and will need to be in place by 1st August 24 as required by the **Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021**.

Farm management	Volume
100 dairy cows on cubicles producing 53 litres/cow/day for 30 days.	159m ³
Parlour washings @ 20 litres/cow/day for 30 days.	60m ³
56 youngstock housed on cubicles producing 32 litres/cow/day for 30 days	54m ³
Remaining stock loose housed on straw producing FYM only.	0m ³
Open feed/loafing yard area and remaining collecting/handling yard areas @ 468m ² collecting 150mm surface rainfall each winters month, after proposed roofing works are completed	71m ³
All silage clamp runoff diverted to new effluent collection tank and stored in isolation.	0m ³
Total current monthly production of slurry/dirty water	344m³

Figures based on average winters monthly rainfall of 150mm.

Over a 5-month winter storage period required under the Water Resources (Control of Agricultural Pollution Regulations) (Wales), this equates to **344m³x 5 = 1,720m³ (378,400 gallons)**.

The existing store provides **101m³** storage capacity after taking the relevant deductions into account, leaving a shortfall in regulatory slurry storage capacity of approx. **1,619m³ (356,180 gallons)**.

The business is looking at installing an earth banked lagoon and retaining the existing store as a reception pit. The existing store can be linked to the proposed new lagoon via a float switch pump. Based on a depth of **4.5m (15ft)** and assuming an embankment angle of approx. 45°, this equates to a slurry lagoon of approx. **42m x 21m x 4.5m** deep. This takes into account the 750mm freeboard requirement and the 571mm surface rainfall collected. A shallower embankment angle will reduce the capacity.

The proposed capacity and nutrient production at the farm have been calculated based on regulatory requirements. The store will be designed to comply fully with BS5502 and to comply with The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021. NRW will be informed of construction works 14 days prior to beginning on site and a Pre-Notification form will be provided upon completion of works using the link below.

[Preconstruction notification of new slurry store and silage store](#)

Prior to constructing the new lagoon, soils be tested at the site to establish clay content to ensure the impermeability of the structure. The soils need to have approx. between 18-32% clay content to achieve the required impermeability. If they do not achieve this level, then a geo textile liner can be used, or clay imported to the site to create an impermeable structure.

Soil test results indicate a clay content of 25%.



Site for proposed slurry lagoon

The embankments of the new lagoons will be designed by someone suitably qualified, and the structure built to satisfy BS5502. The structural integrity of the new embankments will be designed and constructed correctly to ensure there is no risk of movement, slippage, or seepage from the structure. Ideally, the embankments will be designed around a 30-45° slope depending on site condition and topography.

Any new facility constructed and installed will need to comply fully with CoAPR21. The recently introduced Welsh Agricultural Pollution Regulations, require 5 months winters storage capacity for all slurry/dirty water running from 1st Oct to 1st March annually and a closed spreading period for slurry between the beginning 15th October to 15th January.

Once completed and signed off by NRW the new slurry store combined with the existing facility will have enough capacity to meet **The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021**

This development aims to reduce the frequency, and/ or volume of phosphorus losses to the river catchments by investing in new farm infrastructure to minimise the volume of slurry produced first, and to drive resource efficiency through better management of nutrients held in farm slurry.

This development is **not** linked to an increase in livestock numbers or the capacity for an increase in livestock numbers through provision of additional infrastructure.

The new lagoon will be designed and constructed to meet the Water Resources Control of Agricultural Pollution Regulations and BS 5502 (Building and structures for Agriculture Code of Practice and Design, Construction and Loading).

The increase in slurry storage capacity will improve control and reduce the frequency of slurry applications as at present there is limited slurry storage capacity on the farm. The expansion of slurry storage facilities on the farm will allow spreading at times when there is a low risk of runoff and when there is an actively grown crop to utilise the nutrients applied in the slurry. In effect there will be fewer occasions when the lack of storage capacity forces slurry application to land when there is a high risk of surface runoff or when there is a risk of drain flow losses to water when the soils are wet. This mitigation will give rise to a 20 % reduction of particulate and soluble phosphorous losses.

If the slurry store is covered in the future or if there is a reduction in the volume of slurry produced on the farm, the losses of particulate and soluble phosphorous are also reduced by around 2%. The principal action is that when the overall available slurry storage capacity is optimised there is less risk of applying slurry to land during unfavourable weather conditions, to wet and frozen soils, rapid preferential flow to field drains and when there is a high rate of surface water flow. The optimisation of applying slurry to land i.e., avoid high risk times. can reduce the loss particulate and soluble phosphorous by as much as 50%.

In addition to the above the farm business will endeavour to maximise the benefit of applying the nutrients to land by loosening compacted soils in grassland fields. This will minimise the risk of surface water runoff and reduce the loss particulate and soluble phosphorous by as much as 50%.

Access

The proposed site for the store is located ideally for spreading to the land owned by the farm to ensure ease of disposal and to keep the site away from the surrounding community. Access to the store will be via existing farm gates and farm tracks which are already in place.

The location is chosen to allow slurry to be spread in accordance with the regulations throughout the farms available land with the lagoon located as close as possible to the existing infrastructure.

The lagoon will be emptied using an umbilical pumping system which will pump the nutrients produced directly to the land in a controlled manner. The spreading of slurry will reduce in frequency due to the additional storage capacity. This will reduce the need to mix the product allowing ammonia emissions to held within the crusted surface. The crust will only be broken then the tank is emptied and not monthly as is currently the case.

The site will be accessed using the existing farm tracks and gateways. All access to the farmland is only accessible by the farmer and there is no public access permitted.

Character

The existing hedge and fence boundaries to the fields will be maintained and provide natural visual screening of the lagoon. The lagoon will be kept at least 10m away from any watercourses/ditches. The lagoon has been designed to comply with agricultural slurry storage standards, **The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 and BS5502.**

Community Safety

There will be no access to the store permitted to the community. The lagoons are located within the land boundary of **Cefn Uchaf** farm and public access to the land is strictly forbidden. A mandatory perimeter 1.5m safety fence will be installed around the boundary of the lagoons and a locked gate to any access ladder, to ensure compliance with the Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021.

Environmental Sustainability

The lagoon will ensure total winters storage of all nutrients and dirty water produced by the stock. This will give environmental benefit due to the fact nutrients will not need to be spread during wet weather periods winter periods risking potential runoff. This will reduce ammonia emissions, odour emissions and current noise pollution.

This will reduce vehicle movements over the winter months as the facilities will not need to be emptied so regularly. There will be reduced damage to fields and tracks and greatly reduce the pollution risk when spreading nutrients and far greater control of spreading times.

The improved control of nutrients will also help reduce fertiliser costs improving the viability of the farm. There will also be a reduction in costs of spreading of the slurries due to the reduced frequency of emptying the facility.

The above store will not need to be “stirred/mixed” as often as it is currently the case with the existing facilities greatly reducing any potential odour issues from the facility. This is due to the increased available capacity and the capability to store the nutrients and dirty water for a longer period as required by the regulations, thus reducing the frequency of emptying the facilities. The material stored will also have greater opportunity to “crust” over further reducing any potential odour/emission issues.

Movement

Movement to and from the site will be via existing field entrances and gateways. This will only be available to the farmer and agricultural contractors when emptying the store. The general public prevented from access to the site.

Deviation from accepted design guidance

It is not envisaged that the proposed application proves technically unfeasible to conform to the contemporary design criteria.

Site Analysis

- The Access points to the site will remain unchanged.
- The existing entrances to the site will remain as will the existing boundary hedge lines.
- The existing site features will remain unchanged with the proposed embankments blending in with existing topography.
- The proposed site enables nutrient application to all land, reducing pressure on the land around the existing slurry storage.

Context Analysis

- The character of the lagoon is typical of nutrient storage facilities common in Wales and throughout the United Kingdom.
- The proposed store will have no visual effect on the local community or its facilities and cannot be seen from any neighbouring properties.
- The lagoon will be cut into the existing topography.

Character of development

- The proposed lagoon is typical in character of agricultural storage facilities common in this area.
- It is designed to blend in with the existing topography.
- The scale of the proposal sits comfortably with the surrounding agricultural environment.

Enhancing Biodiversity

The proposed site and access to and from the site will have no environmental impact on the surrounding habitat. The decision to utilise the proposed site will cause no disturbance to the surrounding habitat during the construction process or during the use.

There will be no energy consumption whilst using the lagoon.

Planning Policy

Our Design Statement is not a justification of a pre-determined design solution. There were several design options available to us; however, the chosen design incorporates and reconciles the constraints and opportunities arising out of the site appraisal. In this way, our development will be unique, its layout and appearance engendering a distinctive sense of place.

The proposals will respect and seek to achieve the thrust of Policies of Development Plan, which in themselves stem from National Assembly guidance in the form of Planning Policy Wales (2002) and Technical Advice Note 12 “Design”. Throughout the design and construction process the intent is to ensure an inclusive formula and a development that is as far as practical, accessible to all.

Local Development Plan Policy “Sustainable Development” encourages environmentally sustainable proposals which reduce car usage and utilise vacant, underused, or previously developed land.

Community Safety

There will be no access to the farm permitted to the community. The store is located within the land boundary of **Cefn Uchaf** farm and access to the land is strictly forbidden.

Deviation from accepted design guidance

It is not envisaged that the proposed application proves technically unfeasible to conform to the contemporary design criteria.

Signed:

Date:

18th October 2023