The **Farm Consultancy** Group



Planning Statement and Justification for covering a Maize silage store at Union Farm, Dauntsey, Chippenham, SN15 4HW

Prepared by Holly Greenman FQA MBIAC

on behalf of

E A, V and J Kidner

1. Introduction

This report has been prepared by Holly Greenman FQA MBIAC of *The Farm Consultancy Group* on behalf of A E, V & J Kidner of Union Farm, Dauntsey, Chippenham SN15 4HW to confirm agricultural justification for roofing over the existing silage storage area, which lies to the north of the farmyard and buildings.

The development is part of an on-going schedule of improvements the Kidner Family wish to make to their farm, in an effort to improve the efficiency of their herd of dairy cows, reduce wastage of food and improve the environmental effects of the farm, with particular focus on water and air quality improvements and management of their slurry. The farm is intending to cover a large proportion of the currently open yard space which currently accommodates silage storage. Planning has also recently been gained for covering the adjacent loafing area (reference PL/2023/06398).

The business has been awarded a grant through the Countryside Stewardship Scheme and supported by Catchment Sensitive Farming to improve slurry management at the farm. The roofing of the silage stores has many benefits both financially and environmentally, which will be referenced to later within this report, but the key focus of Catchment Sensitive Farming is to minimise the rainfall on this yard area which mixes with silage wastage and effluent to form a diluted effluent which must be stored on farm and has consequences for both air and water quality.

This report is produced based on information provided by the client, farm records and standard costings data where appropriate.

This application is required as part of the Rural Payments Agency grant approval under the Countryside Stewardship water catchment grant.

2. Background

Edward and Virginia Kidner, along with their son Joe (30) farm in partnership at Union Farm, and the business is now in its third generation of farming, with Joe Kidner taking a predominant role in the running and management of the farm business. With the succession of the family's business certain, they are able to invest in infrastructure and technology that improves efficiency and ensures the continued sustainability of their 240 head dairy herd. Milk is sold to Cadburys via the Selkley Vale milk group and is considered a secure and long-term contract.

The business invested in 2 milking robots in 2017, and then another in 2023 following an increase in cow numbers. In 2020 the farm built a 4,400m³ earth banked slurry lagoon to the west of the farm buildings to accommodate the slurry produced by their cows and the run- off from soiled yard areas

for the full five-month over- winter storage period in line with Nitrate Vulnerable Zone legislation. It is important to note that, currently, the farm does not lie within a Nitrate Vulnerable Zone (NVZ) but the Kidners, as is typical of them, chose to future-proof their farm and ensure that they were compliant with this requirement, assuming that the requirement will gradually become enforceable on all farms.

Alongside their herd of dairy cows, the Kidners farm circa 300 acres (in a mix of owned and rented in land- a plan of this can be seen in Appendix 1) which is planted in a rotation of grass and legume leys, and maize. All grass and maize is grown to support the dairy herd and the farm makes circa 4,000 tonnes of silage a year (roughly split 50/50 between maize and grass). As a result, the cows achieve a high milk yield from forage, reducing the reliance upon imported concentrates which is both financially beneficial and also reduces the farms carbon footprint, something that is becoming both more legislatively enforceable but is also a rising requirement of their milk buyer.

The nutrient rich excreta from their dairy herd is used as an organic fertiliser on the land, being spread mainly during the spring when the maize ground is being prepared for planting or the grass is starting to grow again after the winter, ensuring maximal use of the essential nutrients within the slurry and minimal wastage and leaching of product into the water course.

3. The Proposal

The proposal is for a steel portal framed building to cover the existing silage storage area, to the north of the existing farm sheds. A yard plan can be found in Appendix 2.

The building will be a total 517.70 m^2 of roof space, and measure 7m to the eaves, to meet and be consistent with the existing building it will lie next to, to ensure good ventilation is maintained in both. The east and west elevations (16.7 Metres in width) are largely open sided, with a small amount of Yorkshire style boarding from the eaves to the ridge. The eastern elevation will be open to allow access from a central yard point, and from this end the silage store will be accessed. The sides, or north and southern elevations, of the building will be clad with concrete panels to 3 metres high, to ensure the shed is moisture proof and compliant with the Storing Silage, Slurry and Agricultural Fuel Oil (SSAFO) Regulations. It should be noted that the plans for this building have been reviewed by the local Environment Agency representative and have been approved. They will of course be notified before the store is brought into use, as per SSAFO requirements.

The southern elevation will adjoin the covered loafing area, and the concrete panels will enable the loafing area to be properly scraped of excreta and wasted food, which is essential for cow health and for reducing ammonia emissions from the unit.

The building will be fitted with rainwater harvesting tanks that the gutters will feed into, and the water then recycled to be used for cow drinking water and cleaning the robotic milkers. This should help to reduce potential flooding events.

The floor level will remain unchanged from the existing concrete pad, and having the eastern and western elevations open enables the building to be capable of flooding without causing any further problems, as per the requirements of Advice Note 4 of the Environment Agency's Flood Risk Standing Advice.

As per the Environment Agency's directive, all yard areas that can be contaminated with excreta, silage or silage effluent must be treated as 'dirty' yards and any rain fall on these areas must be captured and stored within a SSAFO compliant store and then spread at a suitable time. The rainfall on this area is therefore contributing an additional 465 cubic metres requirement annually (roughly 240 m^3 over the five month over winter period). This calculation is demonstrated beneath and has been done using the AHDB Slurry Wizard Model.

Cubic metres		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
Days		30	31	30	31	31	28	31	30	31	30	31	31	365 days
Total excreta as slurry (m3)		0	0	0	0	0	0	0	0	0	0	0	0	0 m3
% excreta to slurry store (100% for housed)														
Excreta to slurry store (m3)		0	0	0	0	0	0	0	0	0	0	0	0	0 m3
Slurry separated (m3)	No	0	0	0	0	0	0	0	0	0	0	0	0	0 m3
Parlour washings (m3)	Yes	0	0	0	0	0	0	0	0	0	0	0	0	0 m3
STD code average rainfall (mm)		66	63	65	76	67	50	59	48	58	56	51	60	719 mm
Own average rainfall (mm)														mm
Rainfall adjusted to +25% for M5 (mm)		83	79	81	95	84	63	74	60	73	70	64	75	899 mm
Storage required		Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	
Yard run off area to slurry store (m3)	518 m2	42.7	40.8	42.1	49.2	43.4	32.4	38.2	31.1	37.5	36.2	33.0	38.8	422.6 m3
Slurry store rainfall to store (m3)	0 m2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 m3
Roof water area to store (m3)	0 m2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 m3
Total cubic metres (m3)		**43**	**41**	**42**	**49**	**43**	**32**	**38**	**31**	**38**	**36**	**33**	**39**	**465** m3
Cumulative production (m3)		**43**	**83**	**126**	**175**	**218**	**250**	**289**	**320**	**357**	**393**	**426**	**465**	**465** m3
Total storage capacity (m3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0 m3
Capacity less production (m3)		-43	-83	-126	-175	-218	-250	-289	-320	-357	-393	-426	-465	-465 m3

Cost/Benefits	Net Benefit £/year
Divert roof water	0
Divert roof water & harvest	0
Roof dirty yard	-1,835
Roof dirty yard & harvest water	-1,434

Action points

You do not have at least 5 months slurry storage to comply with NVZ regulations

You do not have at least 6 months storage as recommended for FRfW compliance

Consider slurry separation ~ see slurry strategies booklet NB solids need to be stored in accordance with SSAFO/NVZ regs

As well as the roof providing a physical barrier from the rainfall, ensuring that only effluent created from the silage needs to be stored in the lagoon, the building will also be fitted with guttering and downpipes that will channel rainwater into storage tanks that will then be recycled and used for washing down yard areas and the robotic milkers, reducing the farm's freshwater usage and combatting any potential flooding concerns.

Also as per the SSAFO requirements and the stipulations of the Environment Agency, the entire concrete pad (which already exists and which the new covered area will stand on) is fitted with an effluent channel, to ensure any effluent created by the silage is directed to the appropriate store and does not spill- over to the adjacent land to be filtered away into the watercourse. This effluent channel measures 110 mm deep and be 225 mm in width. The channel will lie outside of the concrete panels that will serve as the 'wall' to the proposed erection that is the subject of this application.

The effluent channel feeds into to a submerged effluent containment tank, which is located to the east of the existing concrete storage pad. The tank has an 80 Litre storage capacity for silage effluent, and is fitted with an alarm so that it does not overflow. This tank then feeds into the existing slurry store, via underground channels. All other requirements of SSAFO have been fulfilled by the proposed project, for example, it is more than 10 Metres from a watercourse.

It is a requirement under SSAFO that all silage stores have an effluent collection system. For stores over 1,500 cubic metres in capacity, this is 30 cubic metres plus 6.7 litres for each cubic metre of capacity over 1,500 cubic metres.
Grass and Maize silage at 30% dry matter requires 1.6 Cubic metres per tonne. The cubic metre capacity of the proposed store (measuring 3 metres tall, 16.7 metres wide and 31 metres in length) is 1,553 M^3, so this covered storage area can hold 970 tonnes of silage. This means, when including the total surface area of silage storage on the site (including the uncovered areas), that the total amount of silage effluent that Union Farm should be storing equates to 61.6 cubic Metres per annum, an amount that their effluent tank and slurry store is more than capable of holding, particularly once the proposed roof is built and the silage store is covered (owing to the savings in rainwater collection on this area).

4. Agricultural and Environmental Justification

Government policy is moving away from supporting farmers through direct subsidies linked to their production or farmed area, and is instead focusing funding on improving agricultural businesses,

encouraging efficiency and rewarding environmental benefits and improvements. The grant funding that has been secured for the Kidners through Catchment Sensitive Farming forms part of this initiative. In particular, the covering of the loafing and feed area will specifically support governmental intentions for air and water quality improvements, by reducing run off and soiled yard areas.

Cattle slurry is rich in many essential nutrients for growth, hence it makes an excellent organic fertiliser, but these nutrients can also be extremely harmful to air and water when not managed correctly.

Large open yard areas, as well as big slurry stores, can result in high ammonia emissions, owing to the increased surface area and exposure of excreta and silage particles to the air. When excreta is diluted on a yard by rain water, it obviously takes up a larger area as the water and dung mixes together, and the nitrogen within the slurry can, under the right conditions, turn into ammonium nitrate which volatilises into the atmosphere. This poses a threat to human health when found in concentrated and high quantities and is something that the government are targeting for reduction, particularly from the agricultural sector.

The Clean Air Strategy sets out that all slurry lagoons should be covered by 2027 (though this has not yet been adopted into any policy) and the Kidners recognise that they too will need to cover their new store. Whilst the store was built of sufficient size to ensure it is capable of holding all of the excreta produced by their cattle, as well as the run-off from their existing dirty yard areas, they also are aware that by reducing the amount of run-off entering the store, they are able to make more room for slurry produced by cows, thus future-proofing and reducing the threat of fluctuating herd size owing to TB restrictions. Essentially, the more of the yard areas can be kept ‘clean’ or roofed, i.e. no slurry or rainwater reach these areas, then the less needs to enter their slurry store.

There is another benefit to reducing the rainwater content of their slurry, which is one that will be realised immediately and is of a major financial benefit to the farm and environmental consideration, and that is that removing water from their slurry store will result in a more pure, more nutrient rich slurry to apply to their land, and there will be less of it. This means that growing crops can benefit from the nitrogen and phosphate rich slurry without the added water causing nutrient lockage, but also the risk of the slurry leaching straight through the earth into the water course or running off over the ground is also minimised. This is something that farmers need to be more considerate of, timing their applications and using lower amounts of organic fertiliser to reduce the effect on the water bodies.

Organic fertilisers are essential to the growing of forage crops, providing many of the essential nutrients and also promoting soil structure and organic matter development, something which provides a benefit not only to the growing crop but continues to promote yields and benefit soils for years to come. More organic matter rich soils are less prone to erosion, more drought resistant and provide a better base for biodiversity than soils that don't receive regular applications of manure. They also do not have the cost of chemical fertilisers, and so proper use of this essentially waste product can have a huge benefit to the profitability of a dairy enterprise, as well as of course being a more carbon neutral approach than spreading inorganic fertilisers.

All of this is clearly being adopted into farming policy and the new Environmental Land Management Scheme sees subsidy payments focusing around better use and management of nutrients. This all starts with infrastructure improvements such as the Kidners are planning here, and is the subject of this application.

There are additional benefits to the covering of the yard area besides reducing the need for storing rain as slurry. By reducing rainfall onto the silage store, they can also ensure that the silage is kept fresh and does not begin fermenting or rotting (as can happen when stored silage is too wet) thereby reducing wastage of the silage, which is a benefit to both their financial efficiency and also their carbon footprint.

5. Planning Policy

The National Planning Policy Framework (2021) outlines under Section 84 that planning decisions should enable sustainable growth and expansion of businesses in rural areas, and that development of agricultural businesses should be encouraged.

In the county of Wiltshire, the Wiltshire Core Policy 34 states that development that enables sustainable farming and that allows adaptation of business to modern practices should be supported. Given that the proposal is largely addressing the farm's environmental responsibilities, and has been given the support through grant funding, it should be supported by the local council also.

6. Financial Viability of the unit

The business is financially sound, despite heavy investment in recent years in new technology. The herd has expanded in recent years and despite the turbulent milk price the Kidners are able to achieve

consistent profits. This is achieved through careful management of the herd, inputs and commodities purchased, and achieving high milk yields from forage. The proposed improvements have been awarded grant funding for circa 40% of the project costs.

7. Access

Access to the site will be via the existing access point on to the main yard.

8. Design and External Appearance

The design and appearance of the barn is typical of an agricultural building and indeed will be consistent with other buildings already in situ on the yard. The roof area will be fibre cement sheeting with some Yorkshire style boarding visible at the east and west ends. The design of the building has been done to consider cow health, maximising air flow from the dominant wind direction to maintain an airy, cool environment which is most favourable to high yielding milking cows such as those housed at Union Farm.

9. Conclusion

This proposal forms a vital next step in the Kidners continued progression and improvement at Union Farm, and one that will provide huge environmental benefits to the farm as well as promoting animal welfare and good slurry management. The Kidners are acting upon advice given to them by both the Environment Agency and Catchment Sensitive Farming, both whom support the project and have approved grant funding for the project (pending planning permission). A copy of the approval for the building by the local CSFO can be found in Appendix 4. The farm lies in an area identified at High Risk of water pollution from agriculture, and it is understood that the covering of the loafing yard and subsequent improvements this will give for nutrient management is essential in ensuring that the Kidners are farming in the most sustainable way that they can.

The Kidners are hardworking, conscientious farmers who have a resilient and robust agricultural business and are trying to make the necessary improvements that the government is asking of them.

Kidner
Farmed Area

Land App



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200 m
Scale 1:6470 (at A4)

N

Union Farm - Building Use Plan



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50 m

Scale 1:1310 (at A4)

N