

NYMNP

26/09/2022

**PROPOSED SLURRY STORE AT
BUTTER PARK FARM, EGTON GRANGE,
WHITBY, YO22 5AZ**

FOR

MR. S.J. & MRS. J.E. WELFORD

PLANNING DESIGN AND ACCESS STATEMENT



bhd
partnership

Address: Airy Hill Manor,
Whitby,
North Yorkshire,
YO21 1QB

INTRODUCTION

S.J. & J.E. Welford are a local family who have farmed in Egton Grange for many years and currently the further generation Peter Welford is also farming at Butter Park Swang Farm.

Butter Park is located approximately 500 metres to the South of a hamlet known as The Delves on Smiths Lane, located approximately 2 miles South West of Egton Bridge.

Butter Park consists of approximately 220 hectares of land with 160 cows and young stock on 156 hectares of manure spreadable land. Consisting of 150 dairy cows on a sand-based slurry system and the rest on straw.

The family are making every effort to maintain Dairy Farming in the Esk Valley during these very difficult times which also adds a varied scene to the local landscape. But to continue farming in this way there is a need for an additional slurry store which will be a critical factor in order to ensure their future.

EXISTING ARRANGEMENT

At Butter Park there are 160 dairy cows and no sheep housed on a slurry-based system. 150 cows are housed in cubicles on a sand bedding and slurry system. The remaining livestock are bedded on straw which is predominantly produced on the farm. The milking cows are fed outdoors in troughs and the concrete area has been factored into the slurry storage system.

The existing slurry stores are shown on the Block Plan with approximate dimensions and the new feed area has been added to the South and East of the main farm building.

PROPOSED ARRANGEMENT

This application seeks consent for a slurry store to the East of the existing buildings. This will be screened by the existing farm buildings from the North and West.

The slurry store will be 45 metres long x 40 metres wide and 4 metres deep which includes a free board depth of 0.75 metre giving a working depth of 3.25 metres.

These figures and calculations regarding the cubic capacity required have been prepared by Paul Robinson Agriculture Ltd of Cottingham and calculated using AHAB Slurry Wizard and a copy is attached to this document. The proposed slurry store will provide additional storage which is needed to comply with Government Regulations requiring at least six months storage.

The proposed slurry store will be in addition to the existing storage facility and also provide storage for water run-off and wash dilution from the parlour and rainfall on stores and concrete feed areas.

Therefore, this is considered to be a highly significant and necessary additional facility.

SUSTAINABILITY

The applicants are proposing to make the business more resilient by submitting this application which will ensure they can spread the slurry when the nutrients are highest and by doing this reduce the amount of nitrogen that is bought.

In addition, this additional storage facility is essential to comply with government regulations to provide just over six months slurry storage for current stock numbers.

VISUAL APPEARANCE

It is proposed that the slurry store will be “dug-into” the field adjacent to the track and building to the South East of the farmyard and adjacent to the two existing slurry stores immediately to the North and North West which are at the rear of the main farm buildings. The total depth will be approximately 4 metres and constructed using the excavated materials to form compacted earth bund walls with a flattened top of approximately 4 metres wide.

The store will then be lined with an impervious rubber liner with welded joints to ensure it forms a totally sealed lining to the bottom and sides of the store.

A new collection chamber will be constructed adjacent to the existing farm buildings and a 600mm diameter pipe to discharge the slurry into the store being laid below the existing farm track.

An outfall pipe will be installed to the south end of the store with a valve and access for a slurry spreader to connect to this.

The earth banking will be graded to the levels of the existing field and finished with top soil and grass seed to the applicants’ specification.

A dark green safety fence and gate will be erected around the perimeter of the earth bund to comply with Health and Safety legislation.

Given the rising land on this side of the farmstead, the fact that the proposed store will be cut out of the field and built into the cut area, along with a backdrop of existing buildings, means this will not stand above the skyline or be a visual intrusion in the landscape.

The structure will be constructed in accordance and compliance with all Environmental Agency legislation and landscaping of the site would be considered by the applicants in discussion with NYMNPA Officers.

POLICIES

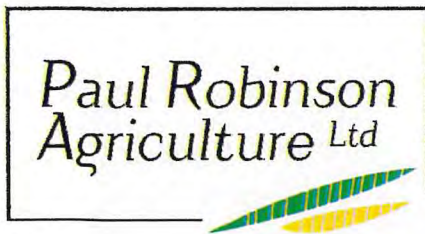
This proposal is an essential improvement for the farm and its future livelihood and is considered to comply with the following policies:

Strategic Policy A	Achieving National Park Purposes and Sustainable Development
Strategic Policy K Policy BL 5	The Rural Economy Agricultural Development
Item 2	There is a functional need for the development to sustain the existing primary agricultural activity and the scale of the development is commensurate with that need.
Item 5	The site is related physically and functionally to the existing buildings associated with the business (unless there is an exceptional agricultural need for a more isolated location).
Item 7	In the absence of existing screening a landscaping scheme will be provided which is appropriate to the character of the locality and retains existing and/or introduces new planting to reduce the visual impact of the proposal on the wider landscape and encourage biodiversity.

Note: The authority will support development proposals that will enable farm businesses to comply with changing legislation and associated guidance.

This is also considered to be an Agri-Environment Scheme whereby Natural England's Environmental Stewardship Scheme and the North York Moors Farm Scheme seek to encourage farmers to manage their land in a way which delivers environmental benefits.

Therefore, for these reasons it is requested that this application be considered for approval.



Bridge House
1 Mill Walk
Cottingham
East Yorkshire
HU16 4RP

SJ & JE Welford
Butter Park Farm
Egton Grange
Whitby
YO22 5AZ

NYMNP

26/09/2022

21st August 2022

Steve, Jennifer and Peter Welford farm at Butter Park Farm, running a 160 cow dairy herd plus followers. The farmed area covers 156ha of manure spreadable land, 42ha of rough grazing and 23ha of moorland. Within the 156ha, 47ha of wheat are usually grown, 99ha silage and 10ha of haylage. Milk is sold to the farmer owned cooperative ARLA on a constituent quality contract.

Cow numbers have been stable at 160 for the past 5 years and there are no plans to expand milking cow numbers. 150 cows are housed in cubicles on a sand bedding and slurry system. The remaining livestock are bedded on straw, which is predominately produced on farm. The milking cows are fed outdoors in troughs and this concrete area has been factored into the slurry storage capacity.

A current building plan is attached with approximate dimensions and current use described. The current slurry lagoons have also been indicated on the plan along with approximate dimensions. The new feed area has been added to the right of the main building.

Methane production

According to Garnsworthy, P.C, The Environmental Impact of fertility in dairy cows: a modelling approach to predict methane and ammonia emissions, a 9000 litre herd with good fertility will produce approximately 145kg of methane per cow per year, i.e. 23.2 tonnes per annum for 160 milking cows.

Proposed additional slurry store

Slurry storage requirements have been calculated using AHDB's slurry wizard (see attached). Additional storage is needed to comply with Government regulations requiring at least 6 months storage. This storage will also to make better use of Nitrogen during the crop growing period. The proposed slurry store and current storage will provide just over 6 months storage for current stock numbers, including wash water from the parlour, rainfall on stores and the concrete feed areas.

The proposed earth bank store should be 4m deep (3.25 working depth), 45m in length and 40m wide. The required width of the clay bund walls will be determined by a structural engineer. A store any deeper than 4m will be difficult to empty with a conventional slurry tanker. The new store can be covered with a butyl liner at a later date if required.

Slurry capacity calculations

Table 1 – Volumes of excreta produced on the farm

Livestock type on slurry or part-slurry based systems	Number of livestock units on slurry or part-slurry based systems	Proportion of excreta collected as slurry	Volume per livestock unit per month ¹	Volume produced each month
Dairy Cows	150	1.0	1.92	288
Total of volume of slurry produced per month				288m ³
Livestock type on solid or part-solid based systems	Number of livestock units on solid or part-solid based systems	Proportion of excreta collected as solid manure	Volume per livestock unit per month	Volume per month
Young Stock 3-13 months	60	1	0.6	36
Followers 13 – 1 st calf	83	1	1.2	100
Total volume of solid manure produced per month -				136m ³ ~170tonne

Table 2 – Summary of dirty water produced on the farm

Concrete areas	Feed Area	Roof areas	Total	Monthly rainfall ²	Average volume entering stores each month
Current lagoons	Assumed excluded	880m ²	1800m ²	90.8mm	79.9m ³
New lagoon		660m ²			60m ³
Dirty water/yard areas					

Table 3 – Wash water

Number of Cows	Wash water per month	Monthly wash water m ³
150	0.9	140

¹ Assume 9000 litre yield

² Rainfall taken from AHDB slurry wizard including M5 120 values

Table 4 – Silo capacity

Silo Capacity	Minimum Effluent Tank Capacity
1500 m ³	30,000 litres plus 7.7 litres for every 1m ³ silo capacity in excess of 1500 m ³
Separate tank is adequate	30m ³ /annum

Table5-Summary Information

	Volumes produced / month m ³	Volumes Produced during 6 Month Storage Period m ³	Storage available on farm m ³	Deficit	Comment
Slurry	288	1728	2508		Lagoon
Dirty Water	60	360	Lagoon		Lagoon
Wash Water	140	840	Lagoon		Lagoon
All lagoons	243	1460	Lagoon		Lagoon
Silage Effluent		30	Tank		Store
TOTAL	731	4386	4645		Including new store

The proposed new store combined with the current stores will provide up to 7 months storage for all slurry, dirty water and parlour washings.

Paul Robinson BSc (hons), N.Sch

Slurry Wizard - Data entry

Total farmable area	158	hectares
Telephone STD code	D1547	will be used to give typical rainfall values
Cows in herd	160	cows
Cows in milk	150	cows
Depreciation buildings	5	%
Depreciation machinery	10	%
Interest rate	5	%
Electricity cost	12	p/kWh
Water cost	1	£/cubic metre
Slurry spreading cost	3	£/cubic metre
Water storage cost	0.5	£/cubic metre
Divert water cost	5	£/square metre
Reefing cost	60	£/square metre
Slurry storage cost	40	£/cubic metre

Slurry storage capacity for earth bank stores

Do NOT deduct freeboard from the total depth	Total Depth metres	*Slope factor (see below)	Top length metres	Bottom length metres	Top width metres	Bottom width metres	Total volume (m ³)	750mm volume (m ³)	Working volume (m ³)	
Store 1	2	3	30	24	20	14	924	409	515	
Store 2	1.5	3	15	10.5	10	5.5	151	95	59	
Store 3	4	3	45	39	40	28	5352	1260	4072	
Store 4							0	0	0	
Store 5							0	0	0	
Store 6							0	0	0	
*Slope factor : 2 = bank slope 1:1, 3 = 1:1.5, 4 = 1 to 2, 5 = 1:2.5							Totals	6427	1781	4646
							Total area	2550		

NEW STORE 0.75m FREEBOARD

Slurry storage capacity for rectangular & circular stores

	Length m	Width m	Circumference of circular store m	Depth m (less freeboard)	Capacity m ³	Area m ²	Tick if Covered Store
Store 1					0	0	<input type="checkbox"/>
Store 2					0	0	<input type="checkbox"/>
Store 3					0	0	<input type="checkbox"/>
Store 4					0	0	<input type="checkbox"/>
store 5 - circular					0	0	<input type="checkbox"/>
store 6 - circular					0	0	<input type="checkbox"/>
Total existing capacity					0	0	

Freeboard : reduce the depth to allow for freeboard (0.3 metres for a steel or concrete store and 0.75 metres for a lagoon)

Slurry separator

Do you operate a separator	No	For the slurry entering the store(s)
% reduction in slurry	25	Adjust the % to reflect the average reduction in slurry volume

Parlour washings to slurry store

Parlour washings to slurry store	Yes
High volume washing	<input type="checkbox"/>
Low volume washing	<input type="checkbox"/>
Literate/dirty (e.g. 20 to 30)	30

Uncovered dirty yard area to slurry store

	Length m	Width m	Area m ²
Yard 1	30	10	300
Yard 2	30	12	360
Yard 3			0
Yard 4			0
Yard 5			0
Yard 6			0
Yard 7			0
Yard 8			0
Yard 9			0
Yard 10			0
Yard 11			0
Yard 12			0
Total yard area			660

Roof water area to slurry store

	Length m	Width m	Area m ²
Roof 1	0	0	0
Roof 2			0
Roof 3			0
Roof 4			0
Roof 5			0
Roof 6			0
Roof 7			0
Roof 8			0
Roof 9			0
Roof 10			0
Total roof area			0

Butterpark

Slurry Report

Cubic metres	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Days	31	30	31	31	28	31	30	31	30	31	31	30	365
Total excreta as slurry	298	288	298	298	278	298	288	298	288	298	298	288	3514
% excreta to slurry store	50	100	100	100	100	100	20	20	20	20	20	20	
Excreta to slurry store	149	288	298	298	278	298	58	60	58	60	60	58	1959
Slurry separated	0	0	0	0	0	0	0	0	0	0	0	0	0
Parlour washings	140	135	140	140	126	140	135	140	135	140	140	135	1643
Typical rainfall (metres)	0.065	0.078	0.073	0.068	0.049	0.057	0.052	0.056	0.054	0.055	0.069	0.058	0.734
Winter rainfall adjusted to M5	0.089	0.104	0.098	0.093	0.070								
Own value rainfall (metres)													0.000
Yard run off area to slurry store	59	69	65	61	46	38	34	37	36	36	46	38	564
Slurry store area	227	266	251	236	179	145	133	143	138	140	176	148	2181
Roof water area to store	0	0	0	0	0	0	0	0	0	0	0	0	0
Total cubic metres	574	758	753	734	629	620	360	379	366	376	421	379	6347
Cumulative production	574	1332	2085	2819	3448	4068	4428	4806	5172	5548	5969	6347	
Total storage capacity	4645	4645	4645	4645	4645	4645	4645	4645	4645	4645	4645	4645	
Capacity less production	4072	3314	2561	1826	1197	577	218	-161	-527	-903	-1323	-1702	

Cost/Benefits	Net Benefit £/year
Divert roof water	0
Divert roof water & harvest	0
Roof dirty yard	-2,387
Roof dirty yard & harvest water	-1,851

Action points

The cost/benefit is based on a slurry storage cost of £40/cubic metre

DairyCo

DairyCo Limited recommends seeking clarification of the specific requirements of Nitrate Vulnerable Zones (NVC) regulations for your farm. The calculations carried out using this tool will be based on figures provided by the user and DairyCo Limited cannot take responsibility for decisions made as a result.

Livestock data entry ~ Enter all livestock below

Livestock	Age	Liveweight/milk yield	Number	% collected as slurry	Daily excreta	Total collected as slurry	Annual N output kg/year	Total N
Cattle								
Dairy Cow	After first calf	High (>9000)	160	100%	84	10240	115	18400
Dairy Cow	After first calf	Medium (6000-9000)	0	50%	53	0	101	0
Dairy Cow	After first calf	Low (<6000)		100%	42	0	77	0
Dairy heifer replacement	13 mths to calving		83	0%	40	0	61	5063
Dairy heifer replacement	3<13 months		60	0%	20	0	29	1740
Beef Suckler	>25 months	Large (>500)		100%	45	0	83	0
Beef Suckler	>25 months	Small (<500)		100%	32	0	61	0
Grower	>25 months			100%	32	0	50	0
Grower	13<25 months			100%	26	0	50	0
Grower	3<13 months			100%	20	0	34	0
Bull Beef	>3 months			100%	26	0	54	0
Bulls for breeding	>25 months			100%	26	0	48	0
Bulls for breeding	3<25 months			100%	26	0	50	0
Calf	< 3 months			100%	7	0	8.4	0
Pigs								
1 sow place inc. litters	Litter up to 7kg	with syn amino acid		100%	11.0	0	16	0
1 sow place inc. litters	Litter up to 7kg	no syn amino acid		100%	11.0	0	18	0
Weaner place		7 to 13kg		100%	1.0	0	1	0
Weaner place		13 to 31kg		100%	1.7	0	4.2	0
Grower place	Dry fed	31 to 66kg		100%	3.3	0	7.7	0
Grower place	Liquid fed	31 to 66kg		100%	6.0	0	7.7	0
Finisher place	Dry fed	>66kg		100%	4.3	0	10.6	0
Finisher place	Liquid fed	>66kg		100%	8.7	0	10.6	0
Maiden gilt place		>66kg		100%	4.3	0	11.1	0
Boar	66kg to 150kg			100%	5.0	0	12.0	0
Boar	Above 150kg			100%	8.7	0	17.5	0
Sheep								
Ewe	Lamb < 6 months	<60kg		0%	3.3	0	7.6	0
Ewe	Lamb < 6 months	>60kg		0%	5.0	0	11.9	0
Lamb	6 to 9 months			0%	1.7	0	0.5	0
Lamb	> 9 months			0%	1.7	0	0.7	0
Goats								
Goat				0%	3.7	0	15.0	0
Deer								
Breeding hinds				0%	5.0	0	15.2	0
Other deer				0%	3.7	0	12.0	0
Horses								
Horse				0%	24.7	0	21.0	0
Layers								
Replacement layer pullets	<17 weeks			0%	0.04	0	0.21	0
Laying hens - cages	>17 weeks			0%	0.12	0	0.40	0
Laying hens - free range	>17 weeks			0%	0.10	0	0.46	0
Broilers								
Broiler places				0%	0.05	0	0.33	0
Broiler breeder pullets	<25 weeks			0%	0.04	0	0.29	0
Broiler breeders	>25 weeks			0%	0.11	0	0.70	0
Turkeys								
Male				0%	0.14	0	1.23	0
Female				0%	0.11	0	0.91	0
Other								
Ducks				0%	0.08	0	0.75	0
Ostriches				0%	0.001	0	1.4	0
TOTAL						10240		25203

Farm Nitrogen Loading

Kg Nitrogen per Ha	162
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This is the nitrogen loading BEFORE the import or export of manure

DairyCo

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