RURAL PARTNERS LIMITED
F I N E · P L A N S

Parkhouse Farm, Harbottle, Morpeth, Northumberland, NE65 7BD
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BACKGROUND STATEMENT

Land North East of
Norfolk House Farm, Gedney Marsh
Spalding, Lincolnshire

Proposed
10 million Gallon Irrigation Reservoir

Ref No. FP/022/BS May 2021

J E Piccaver & Co (Gedny Marsh)
Norfolk House Farm
Gedney Marsh
Spalding
Lincolnshire
PE12 9PB

1. BACKGROUND

J E Piccaver & Co (Gedney Marsh) are a well established farming company farming some 910 ha from Norfolk House Farm, Gedney Marsh.

To maintain quality and continuity of production it is necessary to irrigate them, and so as to meet the demands of their customers irrigation is required to provide consistent yields and quality.

A number of reservoirs have been constructed over the years but additional capacity is still required.

2. RESERVOIR DESIGN CRITERIA

The reservoir has been designed with reference to the following:-

Small Embankment Reservoirs; Report 161; CIRIA (Construction Industry Research and Information Association)
Floods and Reservoir Safety: an Engineering Guide; The Institution of Civil Engineers. *(F&RS)*

Freeboard Height
Design Freeboard when full is 0.75m

Fetch	0.2 km	
Average Hourly annual max wind speed	18 - 20 m/s	*Fig 3 F&RS*
Once in Ten Yearly maximum wind speed	24 - 26 m/s	*Fig 4 F&RS*
Design Wind Speed assumed	25 m /s	

Using *Fig 9. F&FS* Relationship between effective fetch, wind speed and significant wave height by interpolation

Significant Wave Height 0.3 m

Design Wave Height

Using *Table 2 F & FS* Design Wave Heights

Dam Type		Earth Fill
Crest		Grass
Downstream slope		Random grass
Design wave height factor		1.3
Design wave height	=	0.3 m x 1.3
	=	0.39 m
	=	0.4 m

Wave Run Up

Using *Fig 10 F&FS* Ratio of run-up height to design wave height

Dam Slope		1 : 4
Slope characteristic		Smooth
By interpolation Run-up Ratio		1.4
Minimum Freeboard Allowance	=	0.4 m x 1.4
	=	0.56 m
	=	0.6 m

3. ARCHAEOLOGY

The are no known evidence of archaeology on the site which has been intensively cultivated over the years.

Should on stripping the site any evidence be found then Lincolnshire County Councils Historic Environment Team will be advised.

4. PLANNING LEGALISATION

The proposed development can be dealt with under the Prior Notification Procedure for the following reasons:-

The reservoir is reasonable necessary for the purposes of agriculture
The development is being carried out on an area of land of greater than 5 ha
The area of the proposed operations exceeds 0.5 ha
No part of the development is within 25 metres of a metalled part of a trunk or classified road
No excavated material will be removed from the unit. (The spoil from the excavation will be used to construct the walls of the reservoir - see appendix i)

5. CONCLUSION

Prior Approval should be granted for the proposed reservoir so as to enable J E Piccaver & Co (Gedney Marsh) Ltd to provide consistent yields and quality so that they can remain competitive against other growing areas in the country and assist in future proofing the business from the affects of climate change.

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PLANS

FP/022/125	Site Plan
FP/022/150	Location Plan
FP/022/01	Plan and typical Section of reservoir

Appendix i

Volume Calculations based on Rectangular Reservoir with

Area of Bottom = 12,500 sq m

Area of Bottom of Proposed Reservoir = 12,570 sq m

JEPCO 10m Model 26-May-2021

Client JEPCO

Site Gedney Marsh

Reservoir Volume	46,176	cu m
	10,158,720	Galls
Volume above Ground Level	26,578	cu m
	5,847,176	Galls

CALCULATION OF RESERVOIR QUANTITIES

Description	**Qty**	**Unit**
Bottom Width of Reservoir	100.00	m
Bottom Length of Reservoir	125.00	m
Ratio of Side Slopes (Wet)	4.00	
Ratio of Side Slopes (Dry)	2.50	
Depth of Water	3.00	m
Freeboard	0.75	m
Depth of Excavation below existing G.L.	1.45	m
Depth of Top Soil	0.35	m
Bulk Factor for Top Soil	0.50	
Width of Bank Top	4.00	m
Height of Bank above Ground Level	2.30	m
Width at Mid Depth of Water	112.00	m
Length at Mid Depth of Water	137.00	m
Width at Top Water Level	124.00	m
Length at Top Water Level	149.00	m
Width at Top of Bank	130.00	m
Length at Top of Bank	155.00	m
Area of Bottom	12,500.00	sq m
Area at Mid Depth	15,344.00	sq m
Area at Top Water Level	18,476.00	sq m
Width of Liner	134.92	m
Length of Liner	159.92	m
Area of Liner	21,577.38	sq m
Surface Area of Excavation @ Sub-Soil level	14,557.44	sq m
Area at Mid Depth of Excavation of Sub Soil	13,509.36	sq m
Overall Width of Reservoir Top of Bank	138.00	m
Overall Length of Reservoir Top of Bank	163.00	m
Overall Width of Reservoir @ Sub-Soil level	151.25	m
Overall Length of Reservoir @ Sub-Soil level	176.25	m
Overall Area of Reservoir @ Sub-Soil level	26,657.81	

VOLUMES

Volume of Water Storage in Gallons	10,158,720	galls
Volume above Ground Level	5,847,176	galls
Volume of Sub Soil Excavated	14,867	cu m
Volume of Top Soil Strip	4,665	cu m
Total Volume of Excavation	19,533	cu m
Volume of Bank	19,260	cu m