

**SURFACE WATER DRAINAGE SCHEME**

**for**

**Mr ROGER HILDRETH**

**PROPOSED SLURRY TANK WITH CANOPY**

**at**

**CURLEW FIELDS FARM**

**NEW ROAD, HESSAY, YORK**

**MAY 2023**

**REFORD**

**Consulting Engineers Limited**

7 Hall Road, Fulwood, Preston, PR2 9QD

Mobile: 07970 265334      Email: [r.e.ford@virginmedia.com](mailto:r.e.ford@virginmedia.com)

Company number: 09620365      VAT Reg. 215 5638 12

# CONTENTS

SECTION	TITLE	PAGE
1	INTRODUCTION	3
2	BASE INFORMATION	4
3	PROPOSED DRAINAGE STRATEGY	5
4	SUMMARY AND CONCLUSIONS	7

## APPENDICES

A	Location plan
---	---------------

# 1. INTRODUCTION

---

1.1 This surface water drainage scheme has been produced on behalf of Mr Roger Hildreth to discharge Condition 3 of the planning approval from the City of York Council (Reference 22/01137/FUL) for the erection of a slurry tank with canopy at Curlew Fields Farm, New Road, Hessay, York, YO26 8JS. A location plan is included within Appendix A.

1.2 Condition 3 states the following:

*No development shall take place until details of the proposed means of surface water drainage, including details of any balancing works and off site works, have been submitted to and approved by the Local Planning Authority. The approved drainage shall be fully implemented prior to the development coming into first use.*

1.3 This surface water drainage scheme is produced to discharge Condition 3 of the planning approval. It describes the existing site conditions and proposed development. It assesses the potential impact of proposals on existing drainage and includes a proposed scheme for the provision of new drainage to serve the proposed development.

## 2. BASE INFORMATION

---

### Existing site

- 2.1 The site is located within the existing Curlew Fields Farm that lies at Hessay to the west of York.
- 2.2 The area of the farm on which the proposed slurry tank with canopy is to be located comprises the existing slurry store, which has insufficient storage capacity and is therefore not compliant with SSAFO Regulations issued by the Environment Agency.

### Understanding of existing drainage local to the site

- 2.3 A drainage ditch lies approx. 50m to the north of the proposed location of the slurry tank with canopy. The ditch flows to the west and passes under New Road in culvert.
- 2.4 A pond lies adjacent to New Road approx. 130m to the southwest of the slurry tank location and takes surface water runoff from the existing buildings that lie within the farm. The pond has a surface area that has been measured as 700m<sup>2</sup> and a freeboard in the order of 1m.

### Proposed development

- 2.5 The proposed development is for a concrete slurry tank with canopy replacing an existing earth banked store. The roof area of the canopy has been measured as 790m<sup>2</sup>.

### Site geology

- 2.6 The online Soilscales Viewer has identified that the geology that may be encountered as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage.
- 2.7 As such, based upon the ground conditions identified, infiltration is unlikely to provide a viable drainage solution for surface water runoff generated by the site.

### 3. PROPOSED DRAINAGE STRATEGY

---

- 3.1 In accordance with the National Standards for Sustainable Drainage, the drainage strategy should incorporate the use of Sustainable Drainage (SUDS) where possible. The approach promotes the use infiltration features in the first instance. If drainage cannot be achieved solely through infiltration due to site conditions or contamination risks, the preferred options are (in order of preference):
- (i) a controlled discharge to a local waterbody or watercourse, or
  - (ii) a controlled discharge into the public sewer network (depending on availability and capacity).
- 3.2 The rates and volume of discharge should be restricted to the pre-development values as far as practicable.
- 3.3 The nature of the geology of the site means that infiltration is unlikely to provide a viable drainage solution for surface water runoff generated by the site.
- 3.4 A pond lies adjacent to New Road approx. 130m to the southwest of the slurry tank location and takes surface water runoff from the existing buildings that lie within the farm. The pond has a surface area that has been measured as 700m<sup>2</sup> and a freeboard in the order of 1m.
- 3.5 The roof area of the canopy over the concrete slurry tank has been measured as 790m<sup>2</sup>.
- 3.6 It is intended that surface water runoff from the slurry tank canopy will be collected by a drainage system and a discharge made into the existing pond that lies adjacent to New Road approx. 130m to the southwest of the slurry tank location.
- 3.7 The volume of water to be stored on site for various storm events has been calculated using the storage estimate within the 'Causeway Flow' design programme. The results of the calculations are provided below along with an estimate as to the increase in the depth of the pond for each storm event from surface water runoff arising from the slurry tank canopy.

<u>Storm event</u>	<u>Volume of water</u>	<u>Additional depth of water in the pond</u>
1 year	18m <sup>3</sup>	23mm
30 year	38m <sup>3</sup>	49mm
100 year	48m <sup>2</sup>	61mm
100 year plus 45% cc	70m <sup>3</sup>	89mm

3.8 For the 100 year plus 45% added for climate change storm event, the additional depth of water within the pond resulting from the surface water runoff from the slurry tank canopy has been calculated as being 89mm. As such it can be seen that the pond will have sufficient freeboard in order to accommodate the surface water runoff arising from the slurry tank canopy for the 100 year plus 45% added for climate change storm event.

3.9 The calculation for the 100 year plus 45% added for climate change storm event is below.

**Storage Estimate**

<b>Return Period (years)</b>	<input type="text" value="100"/>
<b>Climate Change (%)</b>	<input type="text" value="45"/>
<b>Impermeable Area (ha)</b>	<input type="text" value="0.079"/>
<b>Peak Discharge (l/s)</b>	<input type="text" value="0.000"/>
<b>Infiltration Coefficient (m/hr) (leave blank if no infiltration)</b>	<input type="text"/>
<b>Required Storage (m<sup>3</sup>)</b>	<input type="button" value="Calc"/>
<b>from</b>	<input type="text" value="70"/>
<b>to</b>	<input type="text" value="70"/>
<b>With infiltration (m<sup>3</sup>)</b>	
<b>from</b>	<input type="text"/>
<b>to</b>	<input type="text"/>

Additional depth of water within the pond is  $70\text{m}^3 / 790\text{m}^2 = 0.089\text{m}$

## 4. SUMMARY AND CONCLUSIONS

---

- 4.1 This surface water drainage scheme has been produced on behalf of Mr Roger Hildreth to discharge Condition 3 of the planning approval from the City of York Council (Reference 22/01137/FUL) for the erection of a slurry tank with canopy at Curlew Fields Farm, New Road, Hessay, York, YO26 8JS.
- 4.2 The nature of the geology of the site means that infiltration is unlikely to provide a viable drainage solution for surface water runoff generated by the site.
- 4.3 It is intended that surface water runoff from the slurry tank canopy will be collected by a drainage system and a discharge made into the existing pond that lies adjacent to New Road approx. 130m to the southwest of the slurry tank location. It has been demonstrated that the pond will have sufficient freeboard in order to accommodate the surface water runoff arising from the slurry tank canopy for the 100 year plus 45% added for climate change storm event.

## APPENDIX A

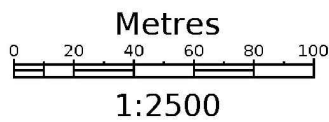
---





Produced 10 Jun 2022 from the Ordnance Survey MasterMap(Topography)Database and incorporating surveyed revision available at this date.

The representation of a road, track or path is no evidence of a right of way. The representation of features as lines is no evidence of a property boundary.



Curlew Fields Farm, New Rd, Hessay  
YO26 8JS

Supplied by: Stanfords 10 Jun 2022  
© Crown copyright and database rights 2022 OS 100035409  
Reference: OI1544847  
Centre coordinates: 452472 453909