DRAINAGE STRATEGY

for

PAM JONES

PROPOSED COMMERCIAL EQUESTRIAN LIVERY YARD

at

GREENS LANE FARM

GREENS LANE, LYDIATE

JANUARY 2024

REFORD

Consulting Engineers Limited

7 Hall Road, Fulwood, Preston, PR2 9QD

Mobile: 07970 265334   Email: refordcel@hotmail.com

Company number: 09620365   VAT Reg. 215 5638 12

CONTENTS

1. INTRODUCTION

1.1 This drainage strategy has been produced on behalf of Pam Jones in support of a part retrospective planning application for a proposed commercial equestrian livery yard at Greens Lane Farm, Greens Lane, Lydiate. A location plan is included within Appendix A.

1.2 In 2016 planning approval was granted at the site for private equestrian facilities including stables and an outdoor riding arena. In 2018 following construction of the approved facilities the yard expanded through the use of temporary stable buildings and began to operate as a commercial livery yard without the benefit of planning consent. The equestrian facilities has continued to expand as the livery business grew more successful and now comprises 21no. stables together with ancillary storage, staff/customer welfare and associated equestrian outdoor facilities.

1.3 The drainage strategy describes the existing site conditions and proposed development. It assesses the potential impact of proposals on existing drainage and includes a proposed strategy for the provision of new drainage to serve the proposed development.

2. BASE INFORMATION

Existing site

2.1 The site lies to the east of Greens Lane, immediately to the north of Rimmer's Bridge which runs over the Leeds Liverpool Canal that lies on average approx. 40m to the west of the site.

2.2 The site is occupied by an operating commercial livery and comprises primarily stable buildings, paddocks, a menage and car parking for visitors.

Understanding of existing drainage local to the site

2.3 There are no watercourse within the vicinity of the site.

2.4 There are no public sewers within the vicinity of the site.

2.5 There is no positive drainage within the development site. Surface water from the stable buildings and outdoor riding arena constructed under the 2016 planning approval discharges to ground, and from the facilities as expansion has continued also to ground.

Site geology

2.6 The online Soilscapes Viewer has identified the geology of the site is to comprise naturally wet very acid sandy and loamy soils that drains to shallow groundwater.

2.7 Infiltration testing has been carried out within the development site. A single test pit was dug within the site. The test was carried out during a period of prolonged rainfall and the water drained from the test pit. From the result of the infiltration testing, a conservative soil infiltration co-efficient of 2.26×10^{-6} m/s (0.00812 m/hr) has been calculated. The calculation is included within Appendix B.

Topographical Survey

2.8 A topographical survey has been carried out for this site. The site has a fall to the southwest.

Proposed development

2.9 The proposed development is for the change of use of the existing private equestrian yard to a commercial equestrian livery yard.

2.10 In addition to the change of use, the development includes the erection of outbuildings consisting of six stable blocks comprising a total 21no. stables, storage container, open front hay barn, two tack rooms and a stable yard office. There is also the addition of a 34.5m x 17.5m all-weather turn-out paddock, stoned-up yards for horsebox and visitor car park provisions and post and rail fenced grass paddocks accessed via a stoned-up access track.

3. PROPOSED DRAINAGE STRATEGY

Surface Water Drainage

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 rate and volume of discharge should be restricted to the pre-development values as far as practicable.

Surface water drainage discharges from the developed site

3.3 There is no positive drainage within the development site. Surface water from the development discharges to ground, and it is not intended for any positive drainage to be installed.

3.4 Infiltration testing has been carried out within the development site. A single test pit was dug within the site. The test was carried out during a period of prolonged rainfall and the water drained from the test pit. From the infiltration testing, a conservative soil infiltration co-efficient of 2.26×10^{-6} m/s (0.00812 m/hr) has been calculated.

3.5 The topographical survey has identified the site has a fall to the southwest and the areas of stoned-up yards and the all-weather and grassed paddocks.

3.6 Gutters and downpipes are installed on the stable buildings enabling surface water runoff from the roofs to be collected and discharged into rainwater butts placed on each downpipe. The water collected is to be reused within the site for washdown, etc. Any runoff from the buildings roofs in excess of that collected will be discharged onto the ground and the areas of stoned-up yards and the all-weather and grassed paddocks where it will be retained within the developed site allowing it to infiltrate into the ground, as the infiltration testing has shown will happen.

3.7 Drainage channels collect surface water from the hardstanding areas and are also discharged to ground, the surface water runoff also being retained within the developed site, allowing it to infiltrate into the ground.

3.8 The all-weather turn-out paddock, stoned-up yards for horsebox and visitor car park provisions and post and rail fenced grass paddocks accessed via a stoned-up access track will allow surface water to soak away into the ground naturally thus dealing with it at source and mirroring the Greenfield characteristics of the site.

Foul Water Drainage

3.9 There are no public sewers within the vicinity of the site.

3.10 Within the development there is one WC and wash hand basin located in the Stable Yard Office building. A drain has been installed to enable a discharge of foul water into an existing septic tank that lies within the back garden of the applicant's house, which is the neighbouring property to the north of the development site.

Washdown water from the stable operations

3.11 Washdown water from the stable operations is to be collected by a sealed drainage system and discharged into a tank that is to be emptied on a regular basis and taken off site.

3.12 As an alternative to washing down the stables, sawdust is to be laid on the floor of the stables, as it is able to absorb liquids, and is then swept out. No water is involved in the process and as such there will be no washdown water to be collected.

4. CONCLUSIONS

4.1 This drainage strategy has been produced on behalf of Pam Jones in support of a part retrospective planning application for a proposed commercial equestrian livery yard at Greens Lane Farm, Greens Lane, Lydiate.

4.2 Infiltration testing has been carried out within the development site and a conservative soil infiltration co-efficient of 2.24×10^{-6} m/s (0.00806 m/hr) calculated.

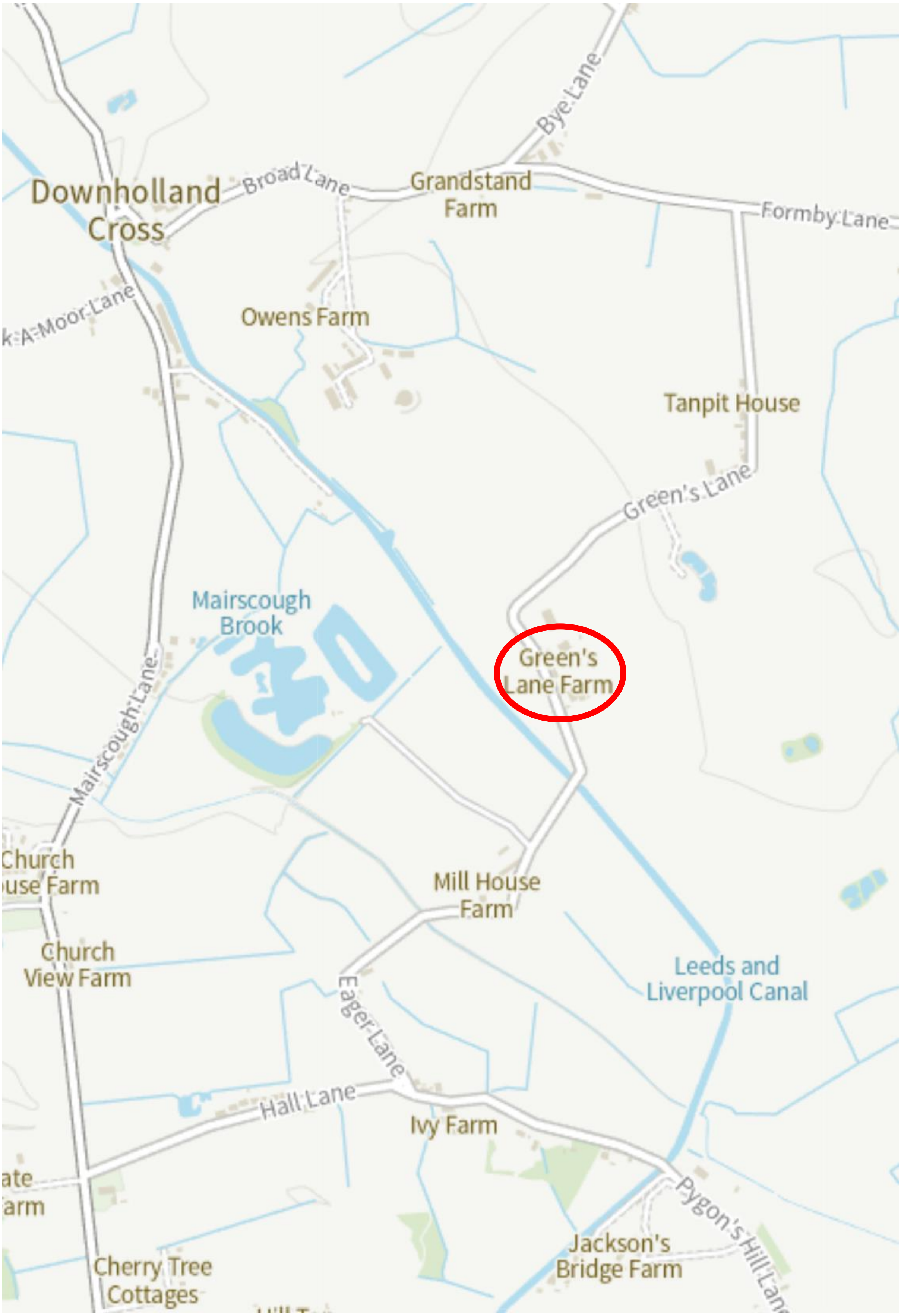
4.3 Surface water runoff from the roofs is to be collected and discharged into rainwater butts placed on each downpipe. The water collected is to be reused within the site for washdown, etc. Any runoff from the buildings roofs in excess of that collected will be discharged onto the ground and the areas of stoned-up yards and the all-weather and grassed paddocks where it will be retained within the developed site allowing it to infiltrate into the ground, as the infiltration testing has shown will happen.

4.4 Drainage channels collect surface water from the hardstanding areas and are discharged to ground, the surface water runoff also being retained within the developed site, allowing it to infiltrate into the ground.

4.5 The all-weather turn-out paddock, stoned-up yards for horsebox and visitor car park provisions and post and rail fenced grass paddocks accessed via a stoned-up access track will allow surface water to soak away into the ground naturally thus dealing with it at source and mirroring the Greenfield characteristics of the site.

4.6 Foul water from the WC and wash hand basin located in the Stable Yard Office building discharges into an existing septic tank that lies within the back garden of the applicant’s house, which is the neighbouring property to the north of the development site.

APPENDIX A



LOCATION PLAN

APPENDIX B

Information provided from the infiltration testing

The testing was carried out 16th and 17th January 2024.

Weather conditions - rain

Test Pit 1

The size of the test pit is 3.0m long × 1.5m wide x 1.5m deep. Depth of water 0.46m.

Pit drained in 39 hours. t_{p75-25} = 29.0 – 9.6 hours = 19.4 hours.

Calculation

Volume outflowing between 75% and 25% effective depth:

V_{p75-25} = 3.0 x 1.5 x 0.23 = 1.035m^3

Mean surface area through which outflow occurs:

a_{p50} = (3.0 x 0.23 x 2) + (1.5 x 0.23 x 2) + (3.0 x 1.5) = 6.57m^2

The conservative infiltration rate from the testing is a drain time of 39 hours.

t_{p75-25} = 19.4 hours = 69,840 secs

Soil infiltration rate is therefore 1.035 / (6.57 x 69,840) = 2.26×10^{-6} m/s (0.00812 m/hr)