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Job No: 5992/R1

**LAND AT BIG GREEN FARM,
ELLESMERE LANE,
PENLEY, LL13 0LP**

SURFACE WATER MANAGEMENT PLAN

AUGUST 2015

Prepared By: John E Lees B.Sc., C.Eng., M.I.C.E., M.C.I.W.E.M.

Client:

**R & C Homes Ltd
Cruck Lodge
Perthy
Ellesmere
Shropshire
SY12 9HT**



REPORT DETAILS

Site Name:	Land at Big Green Farm, Ellesmere Lane, Penley, LL13 0LP
Report Title:	Surface Water Management Plan
Report Number:	5992/R1

Revision	Date	Status
-	August 2015	For Planning Approval

Client: R & C Homes Ltd
c/o Bower Edleston Architects

Prepared By: John E Lees B.Sc., C.Eng., M.I.C.E., M.C.I.W.E.M.



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Ref. 6509 06

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Lees Roxburgh Drg. No. 5992/01-01

1.0 INTRODUCTION

1.1 Lees Roxburgh Limited have been instructed by Bower Edleston Architects on behalf of R&C Homes Ltd to prepare a Surface Water Management Plan for development on land at Penley proposed for housing development.

1.2 The site is designated as lying within an area of Flood Risk Zone 1, assessed as having a less than a 1 in 1000 (<0.1%) annual probability of river flooding.

Within Wales, development is covered by Technical Advice Note 15: Development and Flood Risk (TAN 15).

The TAN 15 Development Advice Map for the area identifies that the site lies within Zone A being land deemed to be at the least risk of flooding.

1.3 This report has been prepared specifically for R&C Homes and their advisors, and is not for transmission in whole or in part to any third party without the express permission of Lees Roxburgh.

2.0 SITE DETAILS

2.1 Location

- 2.1.1 The site is centred on National Grid references E341640, N339470 and is 0.67ha in area. **(Appendix 1).**
- 2.1.2 The site lies on the southern outskirts of Penley, some 13km south east of Wrexham.

2.2 Surrounding Land Use and Access

- 2.2.1 The site is substantially surrounded by farmland, isolated farmsteads, and open countryside, with features as detailed below.
- 2.2.2 The south eastern boundary is with Ellesmere Lane. A triangle of land containing the property known as Wilmaye fronts onto Ellesmere Lane and forms the eastern boundary at the northern half of the site.
- 2.2.3 Access into the site is currently from Ellesmere Lane through a farm gate close to the southern corner of the site. Future access is proposed to be from Ellesmere Lane mid-way along the south eastern boundary.
- 2.2.4 The western boundary is unmarked, the site being part of a larger field that extends to the west. There is a substantial pond located just beyond the western edge of the larger field, some 190m from the site's boundary, with a large woodland area further to the west.
- 2.2.5 Tudor Drive runs in an east/west direction from a junction off Ellesmere Lane at a sharp bend immediately adjacent to the southern corner of the site. On the north side of Tudor Drive there is a single property known as The Lodge; to the south is a small housing estate built around Oak Avenue, Westway and Hillcrest roads.
- 2.2.6 The northern site boundary fronts onto a concrete access track passing through Big Green Farm and connecting to Ellesmere Lane. There are storage areas, a large barn and numerous farm buildings to the north and north east of the site boundary.
- 2.2.7 The main village area of Penley lies 500m to the north of the site, bordering the A539 main road running in a south east to north westerly direction. The Maeler School with associated playing fields is 300m to the north, accessed from the A539.

2.3 Site Description

- 2.3.1 The site is part of a large open field that is currently laid to grass.
- 2.3.2 The eastern/south eastern field boundaries are hedges with occasional bushes. The northern boundary is post and wire fencing.
- 2.3.3 There is an overhead HV cable route crossing the site diagonally in a south west to north easterly direction.

3.3 Land Drainage and Groundwater

- 3.3.1 No evidence of any land drainage or groundwater issues has been noted with the site appearing well drained.

4.0 SURFACE WATER RUN OFF

4.1 Requirements for Surface Water Drainage of the Site

- 4.1.1 TAN15 recommends that surface water generated by the development site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development.
- 4.1.2 Proposals should ensure that volumes and peak flow rates of surface water leaving the developed site are no greater than those prior to development, reducing surface water run off where possible and taking climate change into consideration.

4.2 Site Area

- 4.2.1 The developable site area comprises 0.675 ha.

4.3 Existing Site Run Off

- 4.3.1 The existing site is greenfield.
- 4.3.2 The site is understood to be underlain by sand.

4.4 Surface Water Run Off from the Developed Site

- 4.4.1 The development plan is incorporated in **Appendix 4**.
- 4.4.2 Uncontrolled flows from the development will exceed greenfield run off rates.
- However infiltration tests have been undertaken and have identified infiltration rates in the range of 5.17×10^{-6} to 10.09×10^{-6} m/sec.
- It is proposed therefore that surface water from the developed site be discharged to soakaways.

4.5 Comment

- 4.5.1 Geoenvironmental work has identified that ground conditions are suitable for incorporation of ground percolation based drainage techniques.
- 4.5.2 It is therefore proposed to connect surface water flows from the development to soakaways.

5.0 FLOOD MITIGATION MEASURES

- 5.1 It has been established that the site lies within a Zone 1/Zone A area of flood risk. Nonetheless floor levels will be set a minimum of 150mm above external ground level to mitigate against any low residual risk of flooding.
- 5.2 As noted, ground conditions have been identified as suitable for infiltration based drainage.
- It is therefore proposed to drain the proposed highway and houses to soakaways to be situated at suitable locations within the development layout.
- 5.3 The soakaway systems will be designed to the relevant Highways and Building Control standards, as appropriate.
- The soakaways, together with appropriate setting of development levels, will be designed to accommodate flows up to and including the 1 in 100 year event plus an allowance for climate change.
- 5.4 A preliminary scheme is incorporated in **Appendix 4**.

6.0 CONCLUSIONS

- 6.1 The site lies in an area of Zone 1/Zone A Flood Risk.
- The risk of flooding from external sources has been discounted.
- 6.2 It is proposed to connect development run off to soakaways located within the highway and private plot areas.
- 6.3 The proposed soakaway systems will be designed to the appropriate Highways and Building Control standards.
- Overall the drainage system and appropriate setting of development levels will contain on site flows generated up to the 1 in 100 year event plus an allowance for climate change thus meeting the requirements of TAN15.



APPENDIX 1

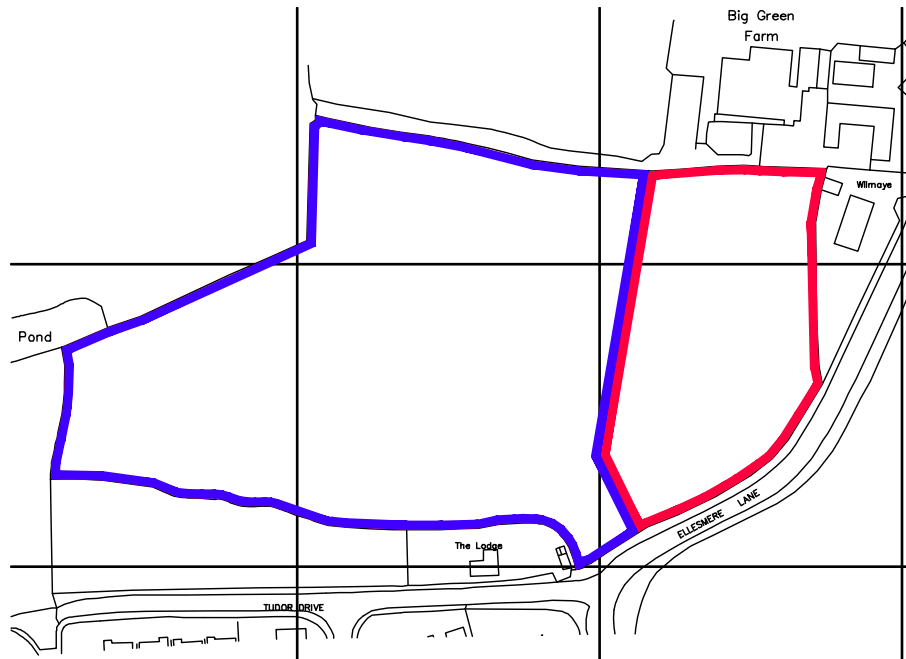
SITE LOCATION



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REVISIONS

LETTER	REVISION	DATE	BY
A	AFFORDABLE HOUSING REDUCED TO 6No.	15.04.15	ML
B	VISIBILITY SPLAYS ADDED	10.06.15	LS



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LOCATION PLAN 1:2500

bar scale 1:2500

0 50m 100m 150m 200m

BOWER EDLESTON ARCHITECTS

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PROJECT

LAND OFF ELLESMERE LN, PENLEY

TITLE

PROPOSED SITE PLAN

SCALE 1:500 & 1:2500

DATE MARCH 2015

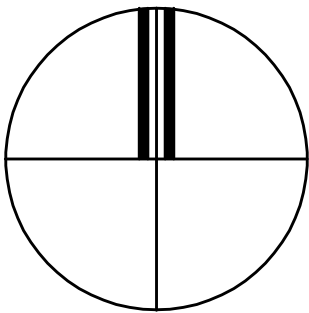
DRG.No 6509-101

DRAWN BY

STAGE

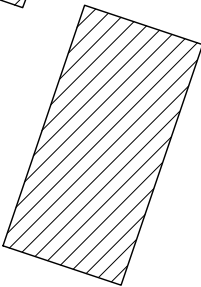
REVISION B

NORTH



new hedge and trees

Wilmaye



PARKING

2000

Existing footpath increased to 2M along entire site frontage with Ellesmere Lane

Protected Visibility Zone under control / ownership of highways

Existing Street Lighting to upgraded along entire site frontage with Ellesmere Lane

UNIT BREAKDOWN

12 No -3 BEDROOM SEMI HOUSES @ 110m² (1180ft²)ea

14 No -2 BEDROOM SEMI HOUSES @ 65m² (700ft²)ea

26 No TOTAL

AFFORDABLE HOMES 6 No FOR RENT SECURED BY LEGAL AGREEMENT (denoted AF on plan)

MARKET HOUSING 20 No

CAR PARKING 2 per 2/3 bed dwelling= 52

TOTAL SITE AREAS 6,747M² 0.675 HECTARE OR 1.67 ACRES

BLOCK PLAN 1:500

bar scale 1:500

0 10m 20m 30m 40m

Public Right of Way

ELLESMERE LANE

2.4m
at 1.05m high

43m splay



APPENDIX 2

TOPOGRAPHIC SURVEY
Ref. 6509 06



LETTER	REVISION	DATE	BY
--------	----------	------	----

1. TOPOGRAPHICAL SURVEY UNDERTAKEN ON 24.07.15

3. SURVEY IS BASED ON ARBITRARY LOCAL GRID



SCALE	1:250@A1	DRAWN BY	MLT
DATE	JULY 2015	STAGE	
DRG.No	6509 06	REVISION	



APPENDIX 3

WELSH WATER PUBLIC SEWER RECORDS



Dŵr Cymru
Welsh Water

Land south of Big Green Farm



LEGEND(Representative of most common features)

Waste networks:		
Foul chamber	Surface water chamber	Outfall
Combined chamber	Combined sewer overflow	Storm Overflow
Special purpose chamber	Treatment works	Rising main
Pumping station	Private sewer subject to Sect. 104 adoption agreement	Gravity sewer
Private sewer	Private sewer transfer	Lateral Drain
Inspection Chamber		

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

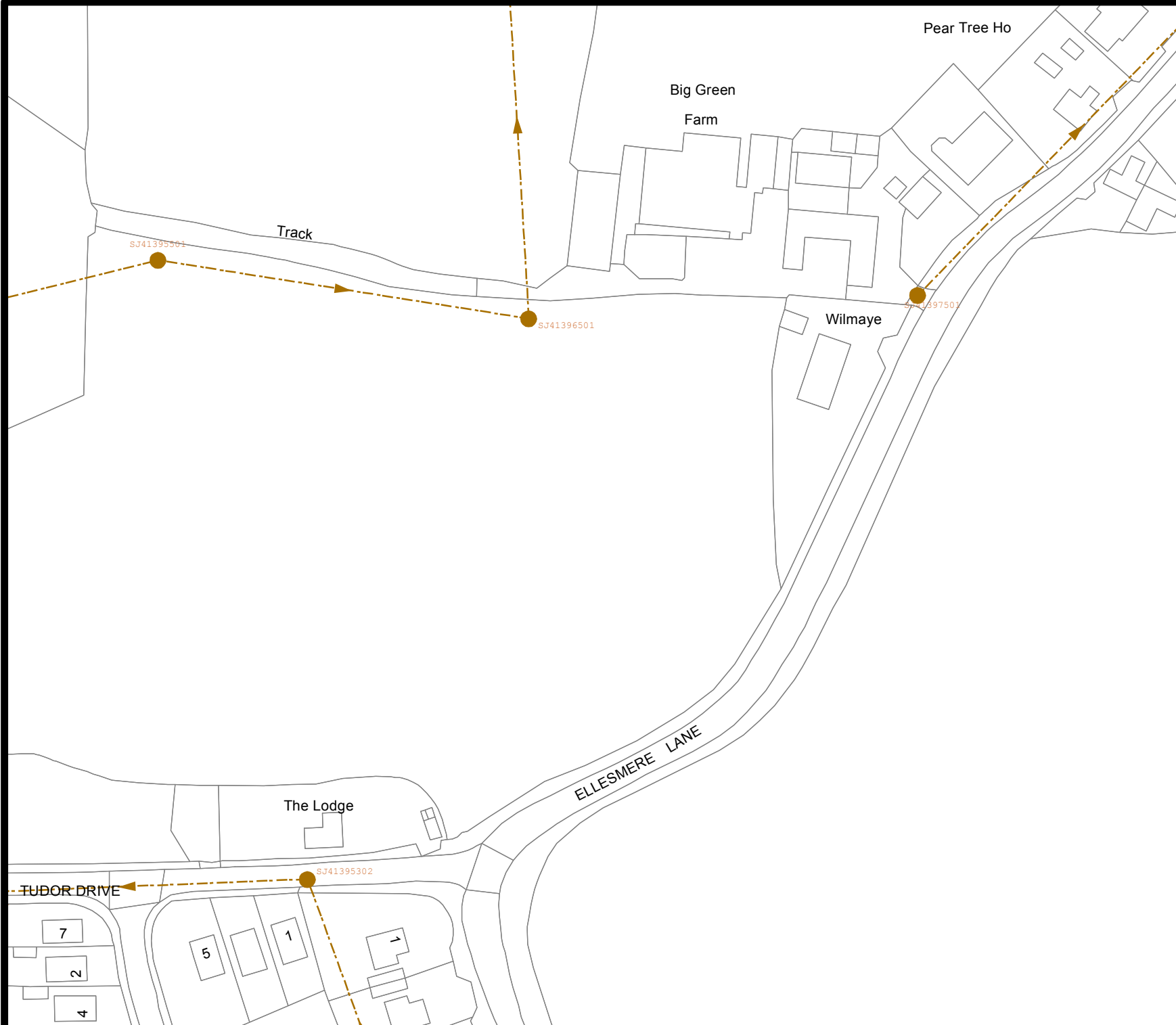
Dŵr Cymru Cyl gives this information as to the position of its underground apparatus by way of general guidance only on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the Company's apparatus and any onus of locating the apparatus before carrying out any excavations rests entirely on you. It must be understood that the furnishing of the information is entirely without prejudice to the provision of the New Roads and Streetworks Act 1991 and of the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

**EXACT LOCATIONS OF ALL APPARATUS
TO BE DETERMINED ON SITE.**

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Map Ref: 341637,339478
Map scale: 1:1,250
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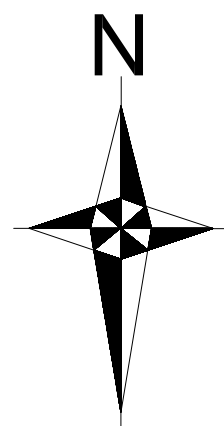




APPENDIX 4

PRELIMINARY DRAINAGE DESIGN
Lees Roxburgh Drg. No. 5992/01-01

IF IN DOUBT - ASK



DRAINAGE KEY

SITE BOUNDARY

PROPOSED SOAKAWAY

EXISTING FOUL SEWER

PROPOSED ADOPTABLE FOUL SEWER

WELSH WATER EASEMENT

ROAD GULLY

FOUL DRAGOUT

PROPOSED FINISHED FLOOR LEVEL

Notes

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015.

DRAINAGE

SURFACE WATER

ALL SURFACE WATER BASED ON INFILTRATION THROUGH SOAKAWAYS. SOAKAWAY SIZES BASED ON INITIAL PERCOLATION TESTING AND SUBJECT TO DETAILED DESIGN AND RECEIPT OF GROUND INVESTIGATION REPORT.

SA1

RING Ø 2.7m
PIT SIZE 5.1m x 5.1m
STONE DEPTH 1.2m
DEPTH TO INVERT 2.2m

SA2

RING Ø 2.7m
PIT SIZE 5.9m x 5.9m
STONE DEPTH 1.2m
DEPTH TO INVERT 2.2m

SA3

RING Ø 2.4m
PIT SIZE 5.3m x 5.3m
STONE DEPTH 1.2m
DEPTH TO INVERT 2.2m

SA4

RING Ø 1.2m
PIT SIZE 2.4m x 2.4m
STONE DEPTH 0.5m
DEPTH TO INVERT 1.75m

HSA - HIGHWAY

RING Ø 1.8m
PIT SIZE 4.5m x 4.5m
STONE DEPTH 0.75m
DEPTH TO INVERT 1.5m

FOUL WATER

FOUL TO DRAIN BY GRAVITY TO EXISTING WELSH WATER FOUL MANHOLE REF SJ41396501

NOTE - DRAINAGE AND LEVELS SUBJECT TO COMMENT FROM WELSH WATER AND LOCAL AUTHORITY.

Rev	REVISION	By	Date

BOWER EDLESTON ARCHITECTS
NANTWICH
CHESHIRE

ELLESMERE LANE
PENLEY

PRELIMINARY DRAINAGE
DESIGN

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Job No.	Drawing No.	Revision.
5992	01-01	-
Scale 1:250@A1	Date AUGUST 2015	
Drawn By	Designed By	Checked By
CB	CB	

DRAWING FILE LOCATION:-