DEVELOPMENT OF A SINGLE DWELLING AT

2 MEADOW WAY

HUNTINGTON

YORK

YO32 9QD

DRAINAGE ASSESSMENT REPORT

SURVEY SITE SERVICES York Hub Peter Lane York YO1 8SU 01226 289177

1. INTRODUCTION

This drainage assessment is provided to show a means of drainage of foul water and surface water from a proposed single new house development at 2 Meadow Way, Huntington, York.

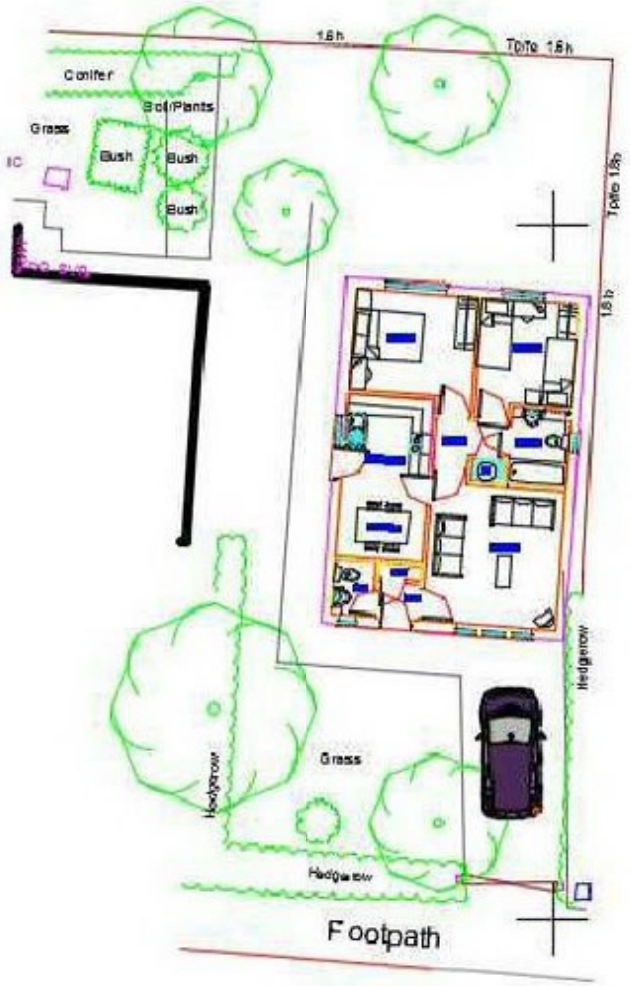
2. LOCATION PLAN

The location of the proposed house is within the garden of 2 Meadow way Huntington York and the location plan is shown below.

LOCATION PLAN

3. PROPOSALS

The proposals for this site are to construct one new house. A plan of the proposals are shown below.



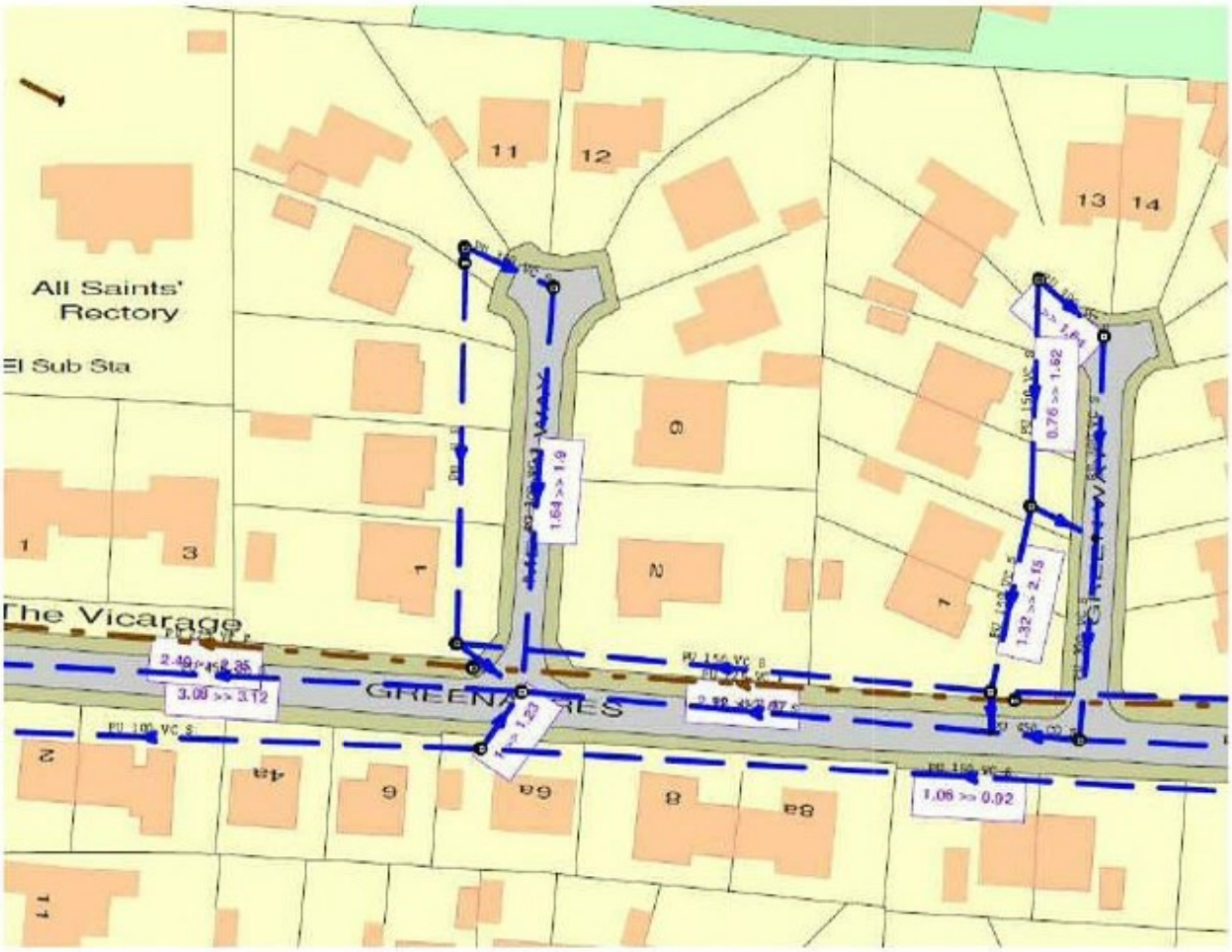
3. EXISTING DRAINAGE

The Yorkshire Water sewer records have been obtained and this shows that a 150mm surface water sewer and a 225mm foul sewer run along the southern boundary of the development site.

Connections to these sewers would be available for the development.

An easement of 3m from these sewers should be provided within the development, which is allowed for with the proposed house location.

The Yorkshire water records are shown below.



YORKSHIRE WATER RECORDS

4. FOUL WATER PROPOSALS

Foul water for the new house should have its own separate system. This should connect and discharge to the foul sewer on the southern boundary of the development. A direct connection is probably the most likely from the new house, but an indirect connection through a foul only drain on site within 2 Meadow Way, would also be acceptable.

Yorkshire water approval for the connection should be obtained.

5. SURFACE WATER PROPOSALS

Surface water from any new development site should be by infiltration, to watercourse or to sewer in that specific order.

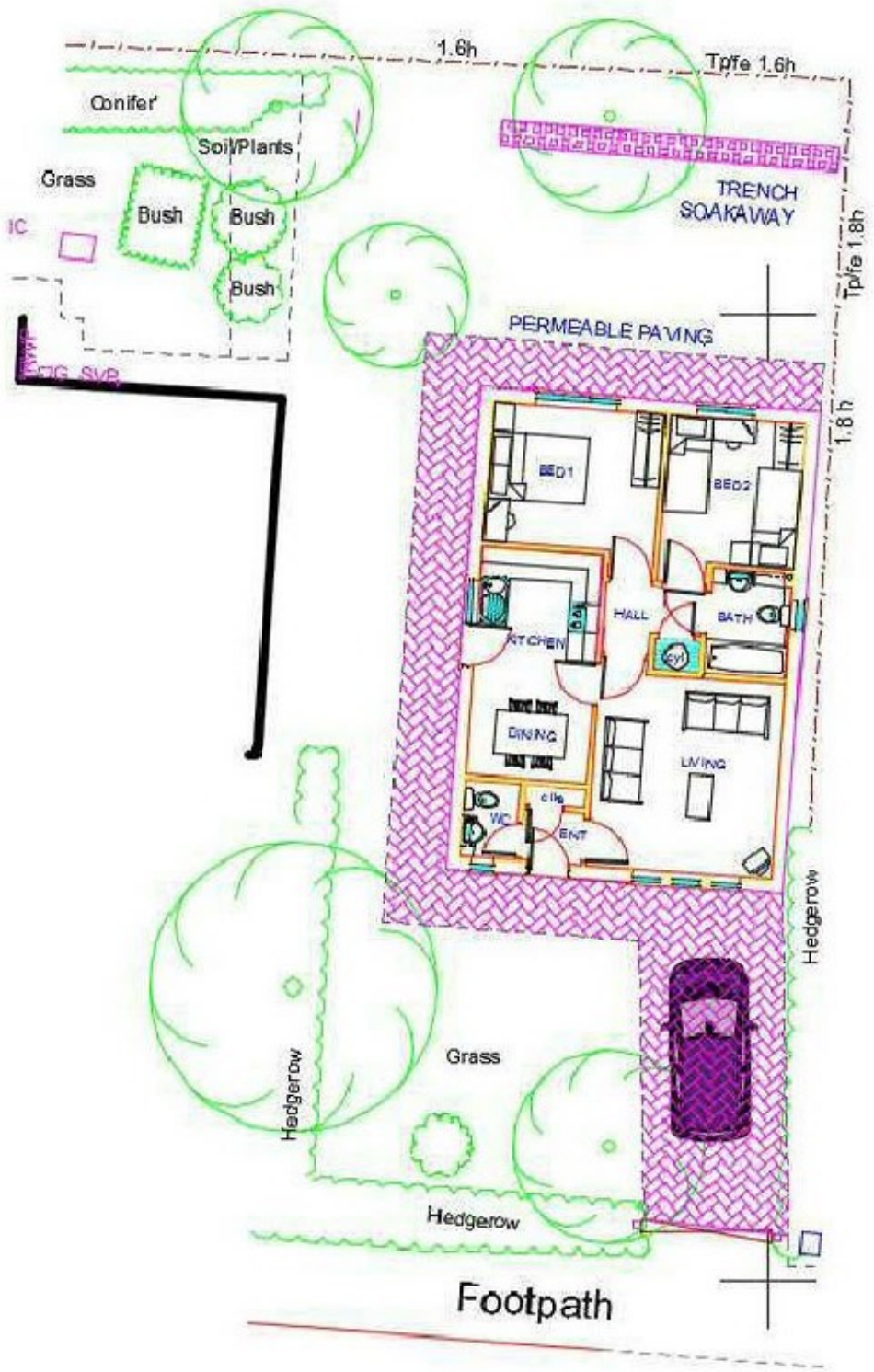
There is no watercourse near to this development and so the proposed disposal of surface water would be by either of the two options, outlined below.

OPTION 1

Disposal by infiltration. The site ground conditions should be investigated through tests to BRE Digest 365 to determine the soil conditions for infiltration. If the soil is suitable for infiltration, then I would recommend permeable paving for the driveway and footpaths and a trench soakaway to take the surface water from the roof.

The size of the soakaway would have to be determined after the soil conditions have been tested and should be sized to ensure that the site does not flood in the 1 in 30 year plus climate change storm event and no flooding off site within the 1 in 100 year plus climate change storm condition.

A suggested location for the soakaway is shown below. The soakaways should conform to the building regulations and should be located a minimum of 5m from any building. If this cannot be achieved, then a direct connection to sewer may be required.



POSSIBLE SOAKAWAY LOCATION

OPTION 2

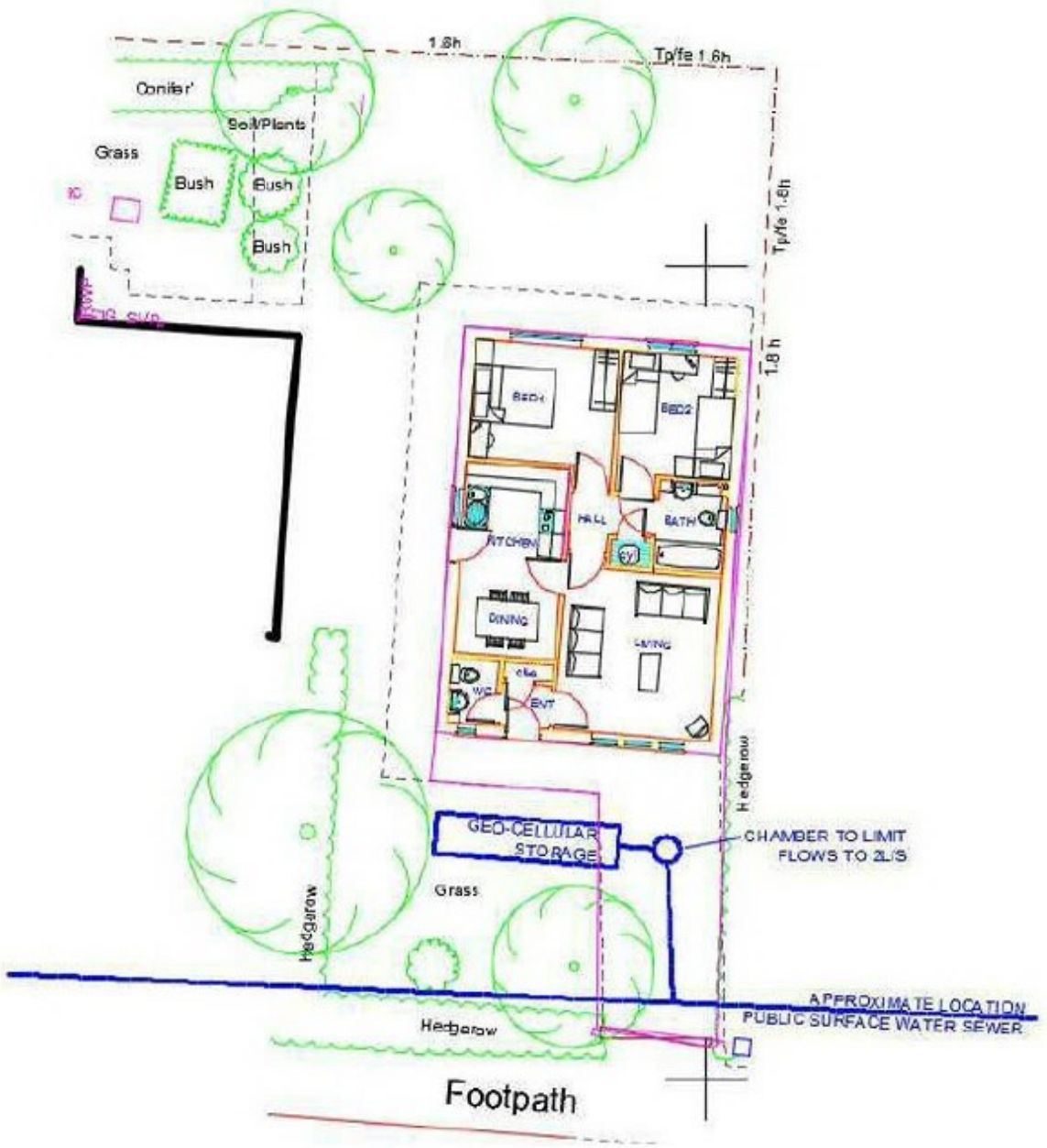
If the soil conditions are unsuitable for infiltration then a direct connection to the public surface water sewer to discharge the surface water should be made. The discharge should be limited to an acceptable flow and I suggest 2l/s as a maximum discharge rate. Restricting the outflow to 2l/s will require some storage of surface water on site.

The storage requirement for this site has been determined by using the Microdrainage program and the following parameters:-

M5-60 19mm
R = 0.4
Impermeable area, drive and roof = 100 sq m
Allowable discharge =2l/s
Storm event 1 in 100 year plus 30% climate change.

The Microdrainage program shows that for all durations, the 1 in 100 year plus climate change storm requires a maximum of 1.6 cu m of attenuation. The calculations are shown below.

The attenuation can be provided within the curtilage of the proposed dwelling. The most economical option would probably be to use a geo-cellular block type storage device. A possible location for this and the connection to sewer is shown below. Yorkshire water approval for the connection should be obtained.



POSSIBLE LOCATION OF GEO-CELLULAR STORAGE

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 9 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	100.330	0.330	0.0	1.8	1.8	1.4	O K
30 min Summer	100.351	0.351	0.0	1.8	1.8	1.5	O K
60 min Summer	100.319	0.319	0.0	1.7	1.7	1.4	O K
120 min Summer	100.249	0.249	0.0	1.5	1.5	1.0	O K
180 min Summer	100.189	0.189	0.0	1.3	1.3	0.8	O K
240 min Summer	100.151	0.151	0.0	1.2	1.2	0.6	O K
360 min Summer	100.105	0.105	0.0	0.9	0.9	0.4	O K
480 min Summer	100.080	0.080	0.0	0.8	0.8	0.3	O K
600 min Summer	100.065	0.065	0.0	0.7	0.7	0.3	O K
720 min Summer	100.056	0.056	0.0	0.6	0.6	0.2	O K
960 min Summer	100.048	0.048	0.0	0.5	0.5	0.2	O K
1440 min Summer	100.039	0.039	0.0	0.4	0.4	0.2	O K
2160 min Summer	100.032	0.032	0.0	0.3	0.3	0.1	O K
2880 min Summer	100.027	0.027	0.0	0.2	0.2	0.1	O K
4320 min Summer	100.022	0.022	0.0	0.1	0.1	0.1	O K
5760 min Summer	100.020	0.020	0.0	0.1	0.1	0.1	O K
7200 min Summer	100.019	0.019	0.0	0.1	0.1	0.1	O K
8640 min Summer	100.017	0.017	0.0	0.1	0.1	0.1	O K
10080 min Summer	100.016	0.016	0.0	0.1	0.1	0.1	O K
15 min Winter	100.370	0.370	0.0	1.9	1.9	1.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	121.269	0.0	2.3	18
30 min Summer	79.698	0.0	3.0	21
60 min Summer	49.937	0.0	3.7	36
120 min Summer	30.267	0.0	4.5	70
180 min Summer	22.297	0.0	5.0	100
240 min Summer	17.881	0.0	5.4	130
360 min Summer	12.957	0.0	5.8	190
480 min Summer	10.330	0.0	6.2	248
600 min Summer	8.659	0.0	6.5	308
720 min Summer	7.492	0.0	6.7	368
960 min Summer	5.959	0.0	7.1	488
1440 min Summer	4.309	0.0	7.8	720
2160 min Summer	3.110	0.0	8.4	1080
2880 min Summer	2.466	0.0	8.9	1468
4320 min Summer	1.775	0.0	9.6	2168
5760 min Summer	1.405	0.0	10.1	2912
7200 min Summer	1.171	0.0	10.5	3624
8640 min Summer	1.008	0.0	10.9	4320
10080 min Summer	0.889	0.0	11.2	5000
15 min Winter	121.269	0.0	2.5	14

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	100.382	0.382	0.0	1.9	1.9	1.6	O K
60 min Winter	100.324	0.324	0.0	1.6	1.6	1.4	O K
120 min Winter	100.217	0.217	0.0	1.4	1.4	0.9	O K
180 min Winter	100.153	0.153	0.0	1.2	1.2	0.7	O K
240 min Winter	100.115	0.115	0.0	1.0	1.0	0.5	O K
360 min Winter	100.074	0.074	0.0	0.7	0.7	0.3	O K
480 min Winter	100.056	0.056	0.0	0.6	0.6	0.2	O K
600 min Winter	100.049	0.049	0.0	0.5	0.5	0.2	O K
720 min Winter	100.045	0.045	0.0	0.4	0.4	0.2	O K
960 min Winter	100.039	0.039	0.0	0.4	0.4	0.2	O K
1440 min Winter	100.032	0.032	0.0	0.3	0.3	0.1	O K
2160 min Winter	100.026	0.026	0.0	0.2	0.2	0.1	O K
2880 min Winter	100.022	0.022	0.0	0.1	0.1	0.1	O K
4320 min Winter	100.019	0.019	0.0	0.1	0.1	0.1	O K
5760 min Winter	100.017	0.017	0.0	0.1	0.1	0.1	O K
7200 min Winter	100.016	0.016	0.0	0.1	0.1	0.1	O K
8640 min Winter	100.014	0.014	0.0	0.1	0.1	0.1	O K
10080 min Winter	100.014	0.014	0.0	0.1	0.1	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	79.685	0.0	3.8	28
60 min Winter	49.987	0.0	4.2	40
120 min Winter	30.267	0.0	5.1	72
180 min Winter	22.297	0.0	5.6	102
240 min Winter	17.851	0.0	6.0	132
360 min Winter	12.957	0.0	6.5	190
480 min Winter	10.330	0.0	6.9	248
600 min Winter	8.659	0.0	7.3	308
720 min Winter	7.492	0.0	7.6	368
960 min Winter	5.959	0.0	8.0	494
1440 min Winter	4.309	0.0	8.7	732
2160 min Winter	3.110	0.0	9.4	1104
2880 min Winter	2.466	0.0	9.9	1420
4320 min Winter	1.775	0.0	10.7	2104
5760 min Winter	1.405	0.0	11.3	2904
7200 min Winter	1.171	0.0	11.8	3576
8640 min Winter	1.008	0.0	12.2	4248
10080 min Winter	0.889	0.0	12.5	5000

MICRODRAINAGE CALCULATIONS

5 CONCLUSION

This development site can be drained successfully for both foul and surface water. Further investigation is required after planning has been achieved to determine the best drainage scheme, but foul and surface water can be disposed of successfully.

Report by

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04/11/2015