DRAINAGE STRATEGY

INCORPORATING AN ASSESSMENT OF FLOOD RISK

for

Mr BEN LEE

PROPOSED RESIDENTIAL DEVELOPMENT

on

LAND TO THE REAR OF THE DOG INN

MARKET PLACE, LONGRIDGE, PR3 3RR

MARCH 2021

REFORD

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APPENDICES

1. INTRODUCTION

1.1 This surface water and foul water drainage strategy, incorporating an assessment of flood risk, has been produced on behalf of Mr Ben Lee in support of a planning application for a proposed development comprising nine residential dwellings on land to the rear of the Dog Inn, Market Place, Longridge, PR3 3RR. A location plan is included within Appendix A.

1.2 This report describes the existing site conditions and proposed development. It assesses the potential impact of proposals on existing sewers 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 is located in the centre of the town of Longridge off Market Place. The site lies to the rear of The Dog Inn public house and is accessed via a lane to the north east side of the pub which also serves the customer carpark.

2.2 The site size has been measured as 0.37ha.

2.3 The site is currently vacant, being made up of an area of shrub and brownfield land.

2.4 The site falls in a south easterly direction, with the access point off Market Place being at a higher level than the south eastern elements of the site, and the area of the site where the proposed dwellings are to be located is a level area approx. 8m below the level of Market Street.

Proposed development

2.5 The proposed development will comprise nine residential dwellings. The masterplan is shown on the drawing accompanying the planning application.

Site geology

2.6 The online Soilscapes Viewer has identified the site lying in a region characterised by the following two types of soils:

- Freely draining slightly acid loamy soils
- Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage.

2.7 Initial infiltration testing has been carried out at two locations within the area of the site where the development is proposed. One test was carried out in each of the locations and permeability rates of 2.438×10^{-5} m/s and 3.881×10^{-5} m/s have been calculated.

Understanding of existing drainage within and local to the site

2.8 United Utilities sewer records identify a 225mm diameter public sewer crossing the site in a northeast to southwest direction. The line of the sewer where it crosses the site is clearly identified as existing manholes lie within the development site boundary.

2.9 The sewer records also identify a possible watercourse in culvert that lies approx. 70m to the northwest of the development site and flows in a south westerly direction along the rear of the properties that lie along King Street, the southern end of Dixon Road to cross Berry Lane and along Brewery Street.

2.10 The sewer records are included within Appendix B.

2.11 The existing Dog Inn public house has an existing private drainage system which connects to the public sewer network.

Flood risk

2.12 The flood map for planning identifies the site lying within Flood Zone 1, the lowest risk.

2.13 The Long Term Flood Risk map on the GOV.uk website shows the site is at a very low risk of surface water flooding. A very low risk means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%).

2.14 There are no canals or other artificial sources local to the development site.

2.15 A 225mm diameter public foul sewer crosses the site in a northeast to southwest direction.

2.16 The Environment Agency risk of flooding from reservoirs map identifies the site is not at risk.

2.17 The Environment Agency does not consider groundwater flooding to be a significant flood risk factor in the Ribble Valley area.

2.18 Surface water runoff from the development will be controlled and as such, there will be no change to the flood risk upstream or downstream of this location.

3. PROPOSED DRAINAGE STRATEGY

3.1 The proposed drainage layout is included within Appendix C.

Surface Water Drainage

3.2 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).

3.3 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

3.4 The online Soilscapes Viewer has identified the site lying in a region characterised by the following two types of soils:

- Freely draining slightly acid loamy soils
- Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage.

3.5 Initial infiltration testing has been carried out at two locations within the area of the site where a soakaway is proposed. One test was carried out in each of the locations and permeability rates of 2.438×10^{-5} m/s and 3.881×10^{-5} m/s have been calculated.

3.6 It is therefore intended that surface water runoff from the proposed residential roofs and accessway will discharge to a soakaway located within the site. As three tests were not carried out, based upon previous experience the infiltration rate to be used within the design of the soakaway should be halved. Using the most conservative rate of

2.438 x 10^{-5} m/s, a permeability rate of 1.219 x 10^{-5} m/s (0.0439 m/hr) has been used within the calculation.

3.7 Surface water will be managed within the non-drained areas of the site, i.e. the gardens, footpaths, etc. by allowing water to infiltrate into the upper strata and be stored where it will be either taken up by plants or evaporated. There may, potentially, be periods where the upper strata may become saturated and surface ponding may occur but this will be shallow in depth and will disappear over a short period of time.

3.8 The soakaway has been designed to take surface water runoff generated by all rainfall events up to the 100 year critical rain storm plus 30%. The additional 30% is to allow for climate change.

3.9 A surface water drainage design has been carried out for the proposed development using a total area of roofs and hardstandings of 1,820m^2.

3.10 The design demonstrates that a soakaway of size 6m x 19m x 1.2m deep will be adequate to drain the surface water runoff from the building roof for storm events up to a 1 in 100 year return period with an additional 30% added to rainfall intensities to allow for climate change. The surface water drainage design is included within Appendix D.

3.11 The size of the soakaway has been increased by an additional 5% to 6m x 20m x 1.2m deep to take account of the possible loss of volume over its lifetime. A catchpit is to be placed on each pipe discharging into the soakaway to allow silt and other debris to settle out.

3.12 The soakaway is to comprise storage crates and is to be located a distance of at least 5m from the building and 2.5m from boundaries. Crates are to be installed in accordance with manufacturer's instructions.

3.13 Further infiltration testing is to be carried out prior to the detailed design of the surface water drainage to confirm that a soakaway solution is viable. If infiltration rates are proved not to be suitable then alternative methods of discharge of surface water from the developed site are to be investigated.

3.14 The sewer records identify a possible watercourse in culvert that lies approx. 70m to the northwest of the development site and flows in a south westerly direction along the rear of the properties that lie along King Street, the southern end of Dixon Road to cross Berry Lane and along Brewery Street. The development site lies approx. 8m below Berry Lane where the culverted watercourse crosses and therefore it is not possible for a connection to be made.

3.15 The existing Dog Inn public house has an existing drainage system which connects to the public sewer network. As such it would be intended that an attenuated surface water discharge would be made into the public sewer crossing the site if a soakaway is not possible.

Foul Water Drainage

3.16 United Utilities sewer records identify a 225mm diameter public sewer crossing the site in a northeast to southwest direction. The line of the sewer where it crosses the site is clearly identified as existing manholes lie within the development site boundary.

3.17 It is therefore intended that foul water from the proposed development will be collected by a piped system and discharged into the public sewer that crosses the development site.

4. SUMMARY AND CONCLUSIONS

4.1 This surface water and foul water drainage strategy, incorporating an assessment of flood risk, has been produced on behalf of Mr Ben Lee in support of a planning application for a proposed development comprising nine residential dwellings on land to the rear of the Dog Inn, Market Place, Longridge, PR3 3RR.

4.2 The nature of the local geology means that infiltration of surface water runoff back into the ground is likely to be feasible on this site.

4.3 It is intended that surface water runoff from the developed site will be discharged back into the ground via a soakaway. If this is proved not to be possible by further testing at the detailed design stage then an attenuated discharge is to be made into the public sewer crossing the site.

4.4 Foul water from the proposed development will be collected by a piped system and discharged into the public sewer that crosses the development site.

APPENDIX A

PGB Architectural Services LTD Lily Cottage, 12 Glen Avenue, Knowle Green, Preston PR3 2ZQ
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Land to the Rear of
The Dog Inn Market Place Longridge
NGJ Holdings Ltd

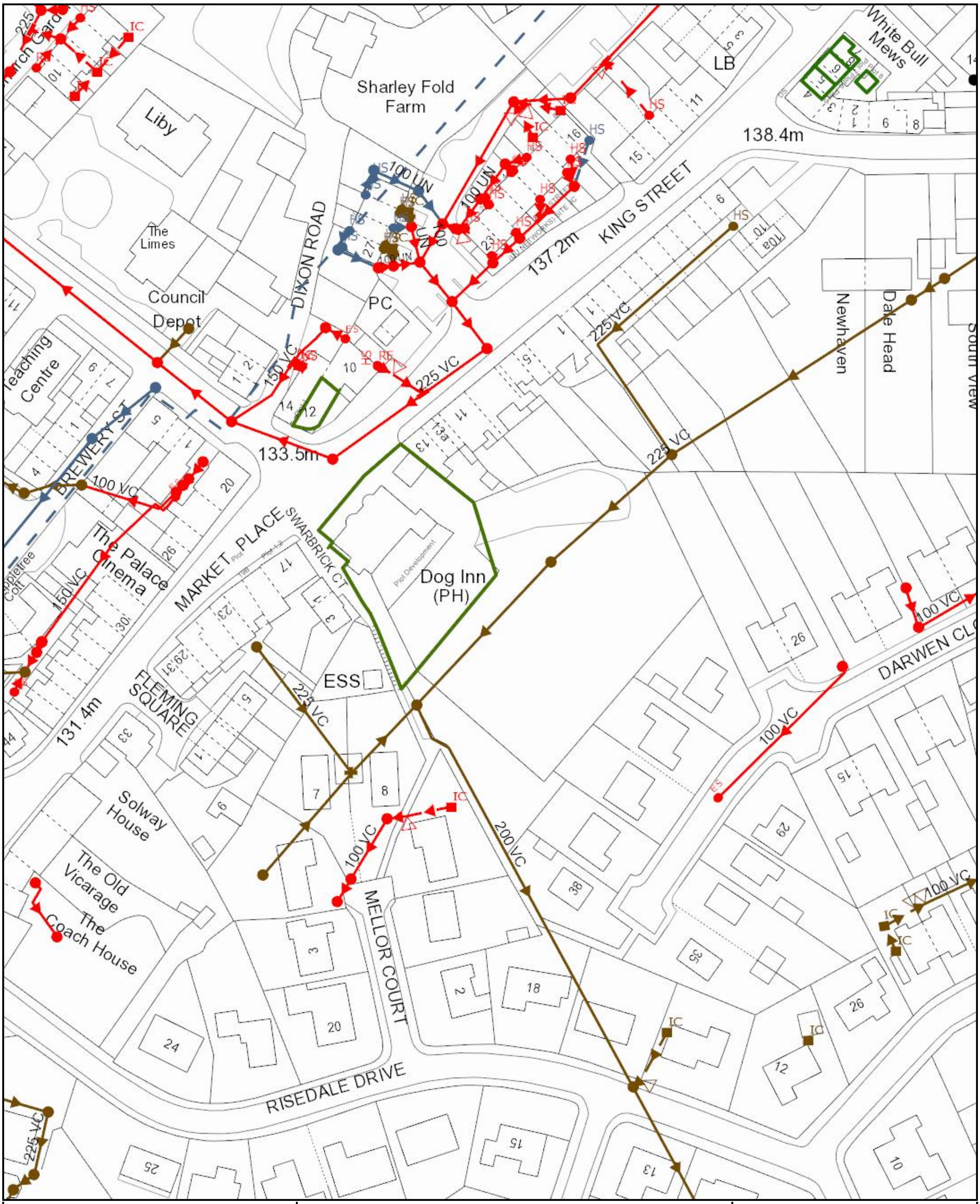
Location Plan

DATE 06.04.2020

JOB NO. 3156
DRAWING NO. 001
REVISION
SCALE 1:1250 @ A4

PGB ARCHITECTURAL SERVICES LTD

APPENDIX B



Scale:	1:1250
Date:	11/12/2020

SEWER RECORDS

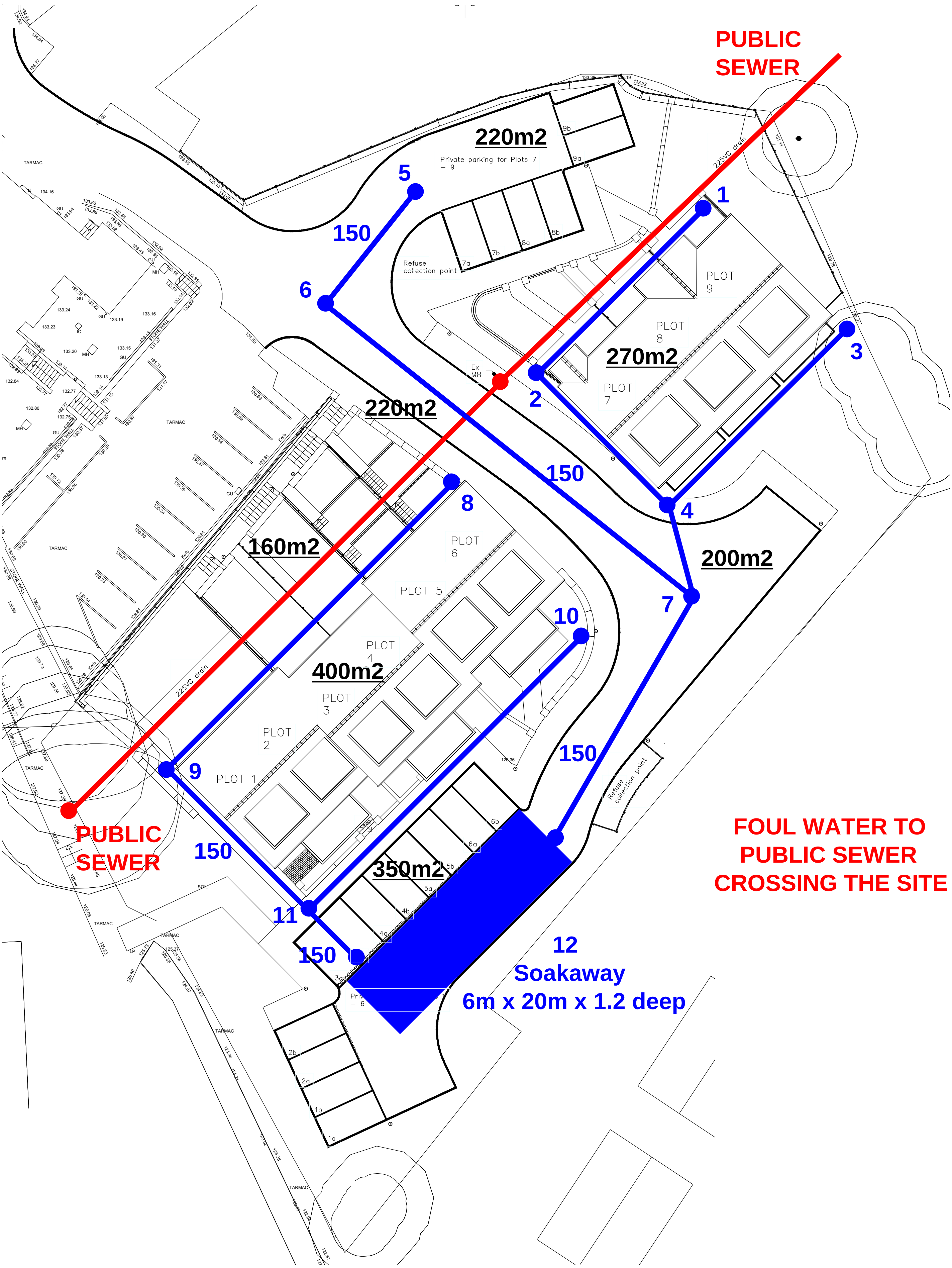
United Utilities
Water for the North West

Address or Site Reference: dog inn

Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

APPENDIX C



PROPOSED DRAINAGE LAYOUT

APPENDIX D

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	75.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.800	Minimum Backdrop Height (m)	2.000
Ratio-R	0.290	Preferred Cover Depth (m)	0.500
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
1	0.009	5.00	131.200	450	0.600
2	0.006	5.00	131.200	450	0.937
3	0.006	5.00	128.500	450	0.600
4	0.006	5.00	128.500	450	0.937
5	0.022	5.00	131.500	1200	1.100
6	0.022	5.00	131.300	1200	1.100
7	0.020	5.00	127.600	1200	1.100
8	0.021	5.00	126.720	450	0.600
9	0.015	5.00	125.370	450	0.650
10	0.010	5.00	126.720	450	0.600
11	0.010	5.00	125.370	450	0.919
12	0.035	5.00	125.100	1200	1.100
13			125.100	1200	1.150

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	1	2	20.000	0.600	130.600	130.263	0.337	59.3	100	5.33	54.6
2.001	2	4	14.000	0.600	130.263	127.563	2.700	5.2	100	5.40	54.3
3.000	3	4	20.000	0.600	127.900	127.563	0.337	59.3	100	5.33	54.6
2.002	4	7	8.000	0.600	127.563	126.550	1.013	7.9	100	5.45	54.1
1.000	5	6	12.000	0.600	130.400	130.200	0.200	60.0	150	5.15	55.3
1.001	6	7	38.000	0.600	130.200	126.500	3.700	10.3	150	5.35	54.5
1.002	7	12	24.000	0.600	126.500	124.000	2.500	9.6	150	5.57	53.7
4.000	8	9	32.000	0.600	126.120	124.770	1.350	23.7	100	5.34	54.6
4.001	9	11	16.000	0.600	124.720	124.451	0.269	59.5	150	5.54	53.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
2.000	1.001	7.9	1.3	0.500	0.837	0.009	0.0
2.001	3.419	26.8	2.2	0.837	0.837	0.015	0.0
3.000	1.001	7.9	0.9	0.500	0.837	0.006	0.0
2.002	2.768	21.7	4.0	0.837	0.950	0.027	0.0
1.000	1.301	23.0	3.3	0.950	0.950	0.022	0.0
1.001	3.162	55.9	6.5	0.950	0.950	0.044	0.0
1.002	3.271	57.8	13.2	0.950	0.950	0.091	0.0
4.000	1.592	12.5	3.1	0.500	0.500	0.021	0.0
4.001	1.306	23.1	5.2	0.500	0.769	0.036	0.0

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
5.000	10	11	32.000	0.600	126.120	124.501	1.619	19.8	100	5.31	54.7
4.002	11	12	6.000	0.600	124.451	124.000	0.451	13.3	150	5.58	53.7
1.003	12	13	5.000	0.600	124.000	123.950	0.050	100.0	150	5.66	53.4

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
5.000	1.745	13.7	1.5	0.500	0.769	0.010	0.0
4.002	2.776	49.1	8.1	0.769	0.950	0.056	0.0
1.003	1.005	17.8	26.3	0.950	1.000	0.182	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
2.000	20.000	59.3	100	Circular	131.200	130.600	0.500	131.200	130.263	0.837
2.001	14.000	5.2	100	Circular	131.200	130.263	0.837	128.500	127.563	0.837
3.000	20.000	59.3	100	Circular	128.500	127.900	0.500	128.500	127.563	0.837
2.002	8.000	7.9	100	Circular	128.500	127.563	0.837	127.600	126.550	0.950
1.000	12.000	60.0	150	Circular	131.500	130.400	0.950	131.300	130.200	0.950
1.001	38.000	10.3	150	Circular	131.300	130.200	0.950	127.600	126.500	0.950
1.002	24.000	9.6	150	Circular	127.600	126.500	0.950	125.100	124.000	0.950
4.000	32.000	23.7	100	Circular	126.720	126.120	0.500	125.370	124.770	0.500
4.001	16.000	59.5	150	Circular	125.370	124.720	0.500	125.370	124.451	0.769
5.000	32.000	19.8	100	Circular	126.720	126.120	0.500	125.370	124.501	0.769
4.002	6.000	13.3	150	Circular	125.370	124.451	0.769	125.100	124.000	0.950
1.003	5.000	100.0	150	Circular	125.100	124.000	0.950	125.100	123.950	1.000

Link
2.000
2.001
3.000
2.002
1.000
1.001
1.002
4.000
4.001
5.000
4.002
1.003

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	18.800	Drain Down Time (mins)	240
Ratio-R	0.290	Additional Storage (m^3/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	0	0	0
100	30	0	0

Node 12 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.04388	Invert Level (m)	122.800	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.04388	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	6.000	Number Required	1
Porosity	0.95	Pit Length (m)	19.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	130.627	0.027	1.1	0.0123	0.0000	OK
15 minute winter	2	11	130.280	0.017	1.8	0.0050	0.0000	OK
15 minute winter	3	11	127.920	0.020	0.7	0.0072	0.0000	OK
15 minute winter	4	11	127.590	0.027	3.1	0.0077	0.0000	OK
15 minute winter	5	10	130.435	0.035	2.6	0.0542	0.0000	OK
15 minute winter	6	10	130.231	0.031	5.2	0.0471	0.0000	OK
15 minute winter	7	11	126.544	0.044	10.6	0.0662	0.0000	OK
15 minute winter	8	10	126.150	0.030	2.5	0.0259	0.0000	OK
15 minute winter	9	10	124.765	0.045	4.2	0.0279	0.0000	OK
15 minute winter	10	10	126.140	0.020	1.2	0.0097	0.0000	OK
15 minute winter	11	10	124.490	0.039	6.5	0.0147	0.0000	OK
600 minute winter	12	450	123.037	-0.963	3.3	25.6691	0.0000	OK
15 minute summer	13	1	123.950	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	2.000	2	1.1	0.829	0.134	0.0258	
15 minute winter	2	2.001	4	1.8	1.376	0.065	0.0181	
15 minute winter	3	3.000	4	0.7	0.504	0.089	0.0280	
15 minute winter	4	2.002	7	3.2	1.930	0.145	0.0131	
15 minute winter	5	1.000	6	2.6	0.896	0.112	0.0345	
15 minute winter	6	1.001	7	5.1	1.494	0.092	0.1313	
15 minute winter	7	1.002	12	10.5	2.459	0.182	0.1027	
15 minute winter	8	4.000	9	2.4	1.221	0.192	0.0631	
15 minute winter	9	4.001	11	4.1	1.029	0.179	0.0646	
15 minute winter	10	5.000	11	1.1	1.053	0.083	0.0347	
15 minute winter	11	4.002	12	6.4	1.843	0.131	0.0209	
600 minute winter	12	1.003	13	0.0	0.000	0.000	0.0000	0.0
600 minute winter	12	Infiltration		0.8				

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	130.643	0.043	2.6	0.0196	0.0000	OK
15 minute winter	2	10	130.290	0.027	4.3	0.0077	0.0000	OK
15 minute winter	3	10	127.931	0.031	1.7	0.0112	0.0000	OK
15 minute winter	4	10	127.606	0.043	7.6	0.0123	0.0000	OK
15 minute winter	5	10	130.457	0.057	6.4	0.0874	0.0000	OK
15 minute winter	6	10	130.249	0.048	12.7	0.0742	0.0000	OK
15 minute winter	7	10	126.573	0.073	25.9	0.1084	0.0000	OK
15 minute winter	8	10	126.170	0.050	6.1	0.0427	0.0000	OK
15 minute winter	9	10	124.794	0.074	10.4	0.0461	0.0000	OK
15 minute winter	10	10	126.151	0.031	2.9	0.0154	0.0000	OK
15 minute winter	11	10	124.516	0.065	16.0	0.0246	0.0000	OK
720 minute winter	12	675	123.431	-0.569	5.8	68.3689	0.0000	OK
15 minute summer	13	1	123.950	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	2.000	2	2.6	1.060	0.326	0.0489	
15 minute winter	2	2.001	4	4.2	1.742	0.158	0.0344	
15 minute winter	3	3.000	4	1.7	0.630	0.212	0.0531	
15 minute winter	4	2.002	7	7.5	2.424	0.346	0.0248	
15 minute winter	5	1.000	6	6.3	1.143	0.275	0.0664	
15 minute winter	6	1.001	7	12.6	1.893	0.225	0.2537	
15 minute winter	7	1.002	12	25.5	3.104	0.441	0.1975	
15 minute winter	8	4.000	9	6.0	1.554	0.476	0.1226	
15 minute winter	9	4.001	11	10.2	1.278	0.444	0.1282	
15 minute winter	10	5.000	11	2.8	1.362	0.206	0.0662	
15 minute winter	11	4.002	12	15.8	2.307	0.322	0.0411	
720 minute winter	12	1.003	13	0.0	0.000	0.000	0.0000	0.0
720 minute winter	12	Infiltration		0.9				

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	130.650	0.050	3.4	0.0228	0.0000	OK
15 minute winter	2	10	130.294	0.031	5.5	0.0088	0.0000	OK
15 minute winter	3	10	127.936	0.036	2.2	0.0129	0.0000	OK
15 minute winter	4	10	127.613	0.050	9.9	0.0144	0.0000	OK
15 minute winter	5	10	130.466	0.066	8.2	0.1008	0.0000	OK
15 minute winter	6	10	130.255	0.055	16.3	0.0848	0.0000	OK
15 minute winter	7	10	126.585	0.085	33.5	0.1273	0.0000	OK
15 minute winter	8	10	126.178	0.058	7.9	0.0501	0.0000	OK
15 minute winter	9	10	124.807	0.087	13.3	0.0539	0.0000	OK
15 minute winter	10	10	126.156	0.036	3.7	0.0175	0.0000	OK
15 minute winter	11	10	124.527	0.076	20.5	0.0288	0.0000	OK
600 minute winter	12	585	123.657	-0.343	8.4	92.8312	0.0000	OK
15 minute summer	13	1	123.950	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	2.000	2	3.3	1.134	0.425	0.0593	
15 minute winter	2	2.001	4	5.5	1.850	0.205	0.0419	
15 minute winter	3	3.000	4	2.2	0.672	0.276	0.0647	
15 minute winter	4	2.002	7	9.8	2.582	0.449	0.0303	
15 minute winter	5	1.000	6	8.1	1.220	0.354	0.0800	
15 minute winter	6	1.001	7	16.2	2.001	0.290	0.3082	
15 minute winter	7	1.002	12	33.0	3.297	0.572	0.2408	
15 minute winter	8	4.000	9	7.7	1.652	0.618	0.1496	
15 minute winter	9	4.001	11	13.2	1.348	0.572	0.1565	
15 minute winter	10	5.000	11	3.6	1.460	0.264	0.0794	
15 minute winter	11	4.002	12	20.4	2.442	0.415	0.0500	
600 minute winter	12	1.003	13	0.0	0.000	0.000	0.0000	0.0
600 minute winter	12	Infiltration		1.0				

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	130.658	0.058	4.4	0.0267	0.0000	OK
15 minute winter	2	10	130.298	0.035	7.2	0.0101	0.0000	OK
15 minute winter	3	10	127.942	0.042	2.9	0.0150	0.0000	OK
15 minute winter	4	10	127.623	0.060	12.9	0.0172	0.0000	OK
15 minute winter	5	10	130.477	0.077	10.7	0.1180	0.0000	OK
15 minute winter	6	10	130.264	0.064	21.3	0.0979	0.0000	OK
15 minute winter	7	10	126.602	0.102	43.6	0.1531	0.0000	OK
15 minute winter	8	10	126.190	0.070	10.2	0.0599	0.0000	OK
15 minute winter	9	10	124.824	0.104	17.3	0.0645	0.0000	OK
15 minute winter	10	10	126.162	0.042	4.9	0.0205	0.0000	OK
15 minute winter	11	10	124.542	0.091	26.8	0.0345	0.0000	OK
960 minute winter	12	900	123.994	-0.006	7.7	129.2636	0.0000	OK
15 minute summer	13	1	123.950	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	2.000	2	4.3	1.203	0.548	0.0719	
15 minute winter	2	2.001	4	7.2	1.948	0.267	0.0516	
15 minute winter	3	3.000	4	2.9	0.717	0.365	0.0800	
15 minute winter	4	2.002	7	12.8	2.741	0.590	0.0374	
15 minute winter	5	1.000	6	10.6	1.302	0.461	0.0977	
15 minute winter	6	1.001	7	21.1	2.107	0.378	0.3794	
15 minute winter	7	1.002	12	43.1	3.479	0.745	0.2974	
15 minute winter	8	4.000	9	10.0	1.739	0.798	0.1836	
15 minute winter	9	4.001	11	17.1	1.410	0.741	0.1939	
15 minute winter	10	5.000	11	4.8	1.571	0.352	0.0984	
15 minute winter	11	4.002	12	26.5	2.579	0.541	0.0617	
960 minute winter	12	1.003	13	0.0	0.000	0.000	0.0000	0.0
960 minute winter	12	Infiltration		1.1				