DRAINAGE STRATEGY

for

MR BARR

PROPOSED APARTMENTS AND HOLIDAY LETS

at

DOG AND PARTRIDGE

HESKETH LANE, CHIPPING, PR3 2TH

NOVEMBER 2018

REFORD

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CONTENTS

1. INTRODUCTION

1.1 This drainage strategy has been produced on behalf of Mr Barr in support of a planning application for the conversion of an existing restaurant (A3) to create twelve apartments (C3) and the siting of four holiday lets at the Dog and Partridge, Hesketh Lane, Chipping, PR3 2TH. A location plan is included within Appendix A.

1.2 This drainage strategy 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 proposal relates to roughly rectangular piece of land (approx. 0.29 hectare) to the north of Hesketh Lane, approximately 1.6 miles south of Chipping village.

2.2 The current use of the site consists of the former Dog and Partridge Restaurant and Bar which includes the main stone restaurant building, a modern rear extension, large car park and rear garden area.

2.3 The site is within a ribbon residential development that lies along the northern channel line of Hesketh Lane. Around this area lies green fields.

2.4 Access to the site is from Hesketh Lane.

2.5 The site is generally level with a fall to the eastern boundary.

Site geology

2.6 The online Soilscapes viewer has identified the geology of this parcel of land as slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage.

2.7 Infiltration tests have not been carried out as the ground would not be conducive to infiltration.

Understanding of existing drainage local to the site

2.8 The site lies within Flood Zone 1, the lowest risk, on the Environment Agency's flood map for planning and is unaffected by surface water flooding.

2.9 A watercourse lies approx. 180m to the north of the site.

2.10 United Utilities has confirmed there are no public sewers within the locality.

2.11 Private foul and surface water drainage lies within the site.

2.12 Except for the pub frontage onto Hesketh Lane where surface water runoff from the roof is discharged to ground, surface water from the remainder of the building and hardstanding areas is collected by a piped system and is discharged into the watercourse to the north via an outfall in the northeast corner of the site.

2.13 Foul water from the existing development is collected by a piped system, treated by a septic tank and also discharges into the watercourse to the north via a separate outfall in the northeast corner of the site.

Proposed development

2.14 The proposal is to convert the Dog and Partridge Restaurant and Bar and associated grounds to provide 12 Nr. 1 and 2 bed apartments and 4Nr. new build holiday lets. The illustrative site layout plan is shown on drawing GA3147-BP-01 accompanying the planning application.

3. PROPOSED DRAINAGE STRATEGY

3.1 The proposed drainage layout is included within Appendix B.

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 strive to provide betterment and be restricted to the pre-development values as far as practicable.

3.4 The nature of the geology of the site means that infiltration back into the ground is not feasible.

3.5 A watercourse lies approx. 180m to the north of the site.

3.6 Except for the pub frontage onto Hesketh Lane where surface water runoff from the roof is discharged to ground, surface water is collected by a piped system and is discharged into the watercourse to the north via an outfall in the site's north eastern corner.

3.7 In line with common practice, and In order to ensure that the surface water discharge from the proposed development mimics that from the existing site, it is intended that surface water runoff from the developed site, except for the pub frontage onto Hesketh Lane, will also be discharged into the watercourse via the existing outfall.

3.8 The existing site consists of the former Dog and Partridge Restaurant and Bar which includes the main stone restaurant building, a modern rear extension, large car park and rear garden area. The area of the existing site comprising existing roofs and hardstanding areas has been measured as 1,640m^2.

3.9 The existing brownfield surface water runoff rate from the site has been calculated using the Modified Rational Method and a storm intensity of 50mm/hour for a 1 year storm. This has been applied over the existing roofs and hardstanding areas on the site, an area of 1,640m^2, and gives the surface water currently discharged from the site via the existing outfall as 2.78Ai = 2.78 x 0.164 x 50 = 22.8 l/s. Providing betterment of 30% reduces the runoff from the site to 16.0 l/s.

3.10 New surface water drainage will therefore be constructed, appropriately sized to take surface water runoff from the new development, and will be attenuated to 16.0 l/s prior to discharge into the watercourse via the existing outfall.

3.11 Attenuation will be provided for rainfall events up to the 100 year critical rain storm plus 30% on stored volumes. The additional 30% is to allow for climate change and has been included in the surface water volume. As such there will be no change to the flood risk upstream or downstream of this location.

3.12 A preliminary surface water drainage design has been carried out for the 100 year critical rain storm plus 30% on stored volumes. Attenuation is provided within the new drainage network below ground within the communal garden. The design is included within Appendix C.

3.13 It should be noted that the preliminary surface water drainage design identifies the volume of attenuation required for the 100 year event plus climate change and demonstrates, at this stage, that it can be accommodated within the indicative masterplan.

Foul Water Drainage

3.14 It is intended that foul water from the developed site will be collected by a new piped system. A packaged sewage treatment plant will be installed for the new development and will replace the existing septic tank.

3.15 A typical sewage treatment plant is possibly a Marsh Industries Ensign for a population of 50, although this will need to be confirmed. The plant is 5200mm long by 1912mm wide and should be located a minimum 7m away from a habitable building.

3.16 The effluent discharge from the sewage treatment plant will be made via the separate existing outfall to the watercourse.

4. SUMMARY AND CONCLUSIONS

4.1 This drainage strategy has been produced on behalf of Mr Barr in support of a planning application for the conversion of an existing restaurant (A3) to create twelve apartments (C3) and the siting of four holiday lets at the Dog and Partridge, Hesketh Lane, Chipping, PR3 2TH.

4.2 The nature of the local geology means that infiltration of surface water runoff back into the ground is not feasible.

4.3 Surface water runoff from the developed site will be collected by a new drainage system, attenuated and discharged into the watercourse to the north of the site, mimicking the existing situation.

4.4 The preliminary surface water drainage design has catered for surface water runoff generated by all rainfall events up to the 100 year critical rain storm plus 30% on stored volumes and demonstrates, at this stage, that it can be accommodated within the indicative masterplan. The additional 30% is to allow for climate change and has been included in the surface water volume.

4.5 Foul water from the developed site will be collected by a new piped system. A packaged sewage treatment plant will be installed for the new development and will replace the existing septic tank. The effluent discharge from the sewage treatment plant will be made via the separate existing outfall to the watercourse.

APPENDIX A

LOCATION PLAN

DOG & PARTRIDGE, HESKETH LANE, CHIPPING, PR3 2TH

m 0 12.5 25 50 75 100 125
SCALE
1:1,250

6238
Chipping House
Chipping
Maycraft House
Maycraft Cottage
Beech House (Home for the Elderly)
Norwood
Chapel House
8333
Avondale
Roall Garth
(PH)
Dog and Partridge
0035
Edencroft Kennels
The Bungalow
Corner House
Edenholme
8524
7925
Judd Holmes
Issues
0018
100.0m
Bonds Farmhouse
HESKETH LANE
BM 98.02m
96.9m
Hesketh Lane
94.8m
GP
TCB
Path (um)
Path (um)
Path (um)
5617
6511
JUDD HOLMES LANE
River View
N

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CLIENT: MR BARR
DWG STATUS: PLANNING PURPOSES ONLY

DRAWING TITLE / PROJECT:
LOCATION PLAN:
DOG & PARTRIDGE, HESKETH LANE, CHIPPING, PR3 2TH

DRAWING No.	SCALE(S)	DATE
GA3147-LP-01	1:1250 (A3)	AUG 18

APPENDIX B

PROPOSED BLOCK PLAN

PROPOSED DRAINAGE LAYOUT

DOG & PARTRIDGE, HESKETH LANE, CHIPPING, PR3 2TH

(x) NODE
SURFACE
FOUL
STP SEWAGE TREATMENT PLANT
[x] AREAS

EXISTING ACCESS CLOSED OFF AND SYMPATHETICALLY LANDSCAPED

EXISTING OUTFALLS

Stone Wall
ATTENUATION
COMMUNAL GARDEN
STP
LOW STONE WALL
BIN STORE
CAR PARK
COMMUNAL GARDEN
HESKETH LANE
Gross
Foul Line

N

SCALE 1:200
m 0 2 4 6 8 10 12 14 16 18 20

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MR BARR

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PROPOSED BLOCK PLAN:

GA3147-BP-01 | 1:200 (A2) | JUNE '16

APPENDIX C

Drainage Design Report

Flow

v7.0

Network	Storm Network
Filename	C:\Users\Bob\Documents\reford\18.526 dog and partridge pub\drainage design\dog.pfd
Username	Bob Ford (r.e.ford@virginmedia.com)
Last analysed	02/12/2018 18:45:31
Report produced on	02/12/2018 18:55:32

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Rainfall Methodology	FSR
Return Period (years)	2
Additional Flow (%)	0
FSR Region	England and Wales
M5-60 (mm)	19.000
Ratio-R	0.250
CV	0.750
Time of Entry (mins)	5.00
Maximum Time of Concentration (mins)	30.00
Maximum Rainfall (mm/hr)	75.0
Minimum Velocity (m/s)	1.00
Connection Type	Level Soffits
Minimum Backdrop Height (m)	2.000
Preferred Cover Depth (m)	0.400
Enforce best practice design rules	

Name	Area (ha)	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Node Type	Diameter (mm)	Depth (m)
1	0.008	5.00		100.400	Manhole	100	0.500
2	0.008	5.00		100.400	Manhole	450	0.820
3	0.012	5.00		100.400	Manhole	450	1.005
4	0.012	5.00		100.400	Manhole	450	1.190
5	0.023	5.00		100.400	Manhole	1200	1.350
6	0.005	5.00		100.200	Manhole	1200	1.398
7	0.006	5.00		100.300	Manhole	100	0.500
8	0.005	5.00		100.250	Manhole	450	0.669
9				100.200	Manhole	450	0.838
10	0.007	5.00		100.300	Manhole	100	0.500
11	0.006	5.00		100.250	Manhole	450	0.669
12				100.200	Manhole	450	1.057
13	0.013	5.00		100.200	Manhole	1200	1.438
14	0.015	5.00		100.200	Manhole	100	0.500
15	0.017	5.00		100.000	Manhole	1200	1.425
16	0.012	5.00		100.000	Manhole	1200	1.537
17	0.011	5.00		100.000	Manhole	1200	1.596
18				99.900	Manhole	1500	1.549
19				99.800	Manhole	1200	1.491

Name	US Node	DS Node	Length (m)	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)	Min DS IL (m)	Lateral Area (ha)	Lateral Ins Point (%)	Lateral T of E (mins)
1.000	1	2	19.000	99.900	99.580	0.320	59.4	100	Circular	5.32	51.3				
1.001	2	3	11.000	99.580	99.395	0.185	59.5	100	Circular	5.50	50.6				
1.002	3	4	11.000	99.395	99.210	0.185	59.5	100	Circular	5.68	50.0				
1.003	4	6	7.000	99.210	98.852	0.358	19.6	100	Circular	5.75	49.8				
2.000	5	6	25.000	99.050	98.802	0.248	100.8	150	Circular	5.42	50.9				
1.004	6	13	4.000	98.802	98.762	0.040	100.0	150	Circular	5.82	49.6				
3.000	7	8	13.000	99.800	99.581	0.219	59.4	100	Circular	5.22	51.6				
3.001	8	9	13.000	99.581	99.362	0.219	59.4	100	Circular	5.43	50.8				
3.002	9	12	13.000	99.362	99.143	0.219	59.4	100	Circular	5.65	50.1				
4.000	10	11	13.000	99.800	99.581	0.219	59.4	100	Circular	5.22	51.6				
4.001	11	12	13.000	99.581	99.143	0.438	29.7	100	Circular	5.37	51.1				
3.003	12	13	5.000	99.143	98.812	0.331	15.1	100	Circular	5.69	50.0				
1.005	13	16	15.000	98.762	98.538	0.224	67.0	150	Circular	6.02	48.9				
5.000	14	15	10.000	99.700	98.700	1.000	10.0	100	Circular	5.07	52.1				
5.001	15	16	19.000	98.575	98.463	0.112	169.6	225	Circular	5.38	51.0				
1.006	16	17	10.000	98.463	98.404	0.059	169.5	225	Circular	6.19	48.4				
1.007	17	18	9.000	98.404	98.351	0.053	169.8	225	Circular	6.34	48.0				
1.008	18	19	7.000	98.351	98.309	0.042	166.7	225	Circular	6.45	47.6				

Rainfall Methodology	FSR		Return Period (years)	Climate Change (%)
FSR Region	England and Wales		1	0
M5-60 (mm)	19.000		30	0
Ratio-R	0.250		100	0
Summer CV	0.750		100	30
Winter CV	0.840			
Analysis Speed	Normal			
Drain Down Time (mins)	240			
Additional Storage (m³/ha)	20.0			
Storm Durations (mins)	15			
	30			
	60			
	120			
	180			
	240			
	360			
	480			
	600			
	720			
	960			
	1440			
Check Discharge Rate(s)	x			
1 year (l/s)				
30 year (l/s)				
100 year (l/s)				
Check Discharge Volume	x			
100 year 360 minute (m³)				

Hydro-Brake®												
Node	Flap Valve	Online / Offline	Replaces Downstream Link	Loop to Node	Invert Level (m)	Design Depth (m)	Design Flow (l/s)	Objective	Sump Available	Product Number	Min Outlet Diameter (m)	Min Node Diameter (mm)
18	x	Online	x		98.351	1.550	16.0	(HE) Minimise upstream storage		CTL-SHE-0172-1600-1550-1600	0.225	1500

Depth/Area/Inf Area

Node	Base Inf Coefficient (m/hr)	Side Inf Coefficient (m/hr)	Safety Factor	Porosity	Invert Level (m)	Time to half empty (mins)	Depth (m)	Area (m²)	Inf. Area (m²)
18	0.00000	0.00000	2.0	0.95	98.351	50	0.000	24.0	0.0
							0.600	24.0	0.0
							0.601	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.19%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	11	99.923	0.023	0.9	0.0075	0.0000	OK	1.000	2	0.9	0.511	0.114	0.0338	
15 minute winter	2	11	99.613	0.033	1.8	0.0115	0.0000	OK	1.001	3	1.8	0.632	0.229	0.0314	
15 minute winter	3	11	99.441	0.046	3.2	0.0182	0.0000	OK	1.002	4	3.1	0.952	0.397	0.0361	
15 minute winter	4	11	99.251	0.041	4.5	0.0149	0.0000	OK	1.003	6	4.5	1.508	0.323	0.0207	
15 minute winter	5	10	99.088	0.038	2.6	0.0566	0.0000	OK	2.000	6	2.5	0.417	0.144	0.1638	
15 minute winter	6	11	98.882	0.080	7.6	0.0964	0.0000	OK	1.004	13	7.5	0.776	0.425	0.0389	
15 minute winter	7	10	99.820	0.020	0.7	0.0049	0.0000	OK	3.000	8	0.7	0.479	0.084	0.0181	
15 minute winter	8	10	99.608	0.027	1.3	0.0083	0.0000	OK	3.001	9	1.2	0.726	0.152	0.0218	
15 minute winter	9	11	99.389	0.027	1.2	0.0042	0.0000	OK	3.002	12	1.2	0.688	0.154	0.0228	
15 minute winter	10	11	99.822	0.022	0.8	0.0062	0.0000	OK	4.000	11	0.8	0.593	0.102	0.0177	
15 minute winter	11	10	99.606	0.025	1.5	0.0083	0.0000	OK	4.001	12	1.5	0.890	0.130	0.0214	
15 minute winter	12	11	99.172	0.029	2.6	0.0045	0.0000	OK	3.003	13	2.7	1.353	0.169	0.0101	
15 minute winter	13	11	98.844	0.082	11.6	0.1081	0.0000	OK	1.005	16	11.6	1.213	0.533	0.1434	
15 minute winter	14	10	99.720	0.020	1.7	0.0124	0.0000	OK	5.000	15	1.7	1.489	0.087	0.0113	
15 minute winter	15	10	98.620	0.045	3.6	0.0614	0.0000	OK	5.001	16	3.5	0.311	0.088	0.2377	
15 minute winter	16	11	98.574	0.111	16.4	0.1426	0.0000	OK	1.006	17	16.2	0.830	0.407	0.2003	
30 minute winter	17	23	98.556	0.152	14.9	0.1924	0.0000	OK	1.007	18	14.2	0.927	0.357	0.2976	
30 minute winter	18	23	98.554	0.203	14.2	4.9757	0.0000	OK	1.008	19	8.8	0.777	0.219	0.0792	11.6
30 minute winter	19	23	98.380	0.071	8.8	0.0000	0.0000	OK							

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.19%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	10	99.936	0.036	2.2	0.0118	0.0000	OK	1.000	2	2.2	0.647	0.276	0.0638	
15 minute winter	2	10	99.633	0.053	4.4	0.0187	0.0000	OK	1.001	3	4.3	0.741	0.547	0.0627	
15 minute winter	3	11	99.482	0.087	7.7	0.0346	0.0000	OK	1.002	4	7.6	1.119	0.968	0.0827	
15 minute winter	4	12	99.339	0.129	10.9	0.0467	0.0000	SURCHARGED	1.003	6	10.4	1.601	0.753	0.0548	
15 minute winter	5	13	99.129	0.079	6.4	0.1167	0.0000	OK	2.000	6	6.3	0.474	0.357	0.3381	
15 minute winter	6	12	99.116	0.314	18.1	0.3778	0.0000	SURCHARGED	1.004	13	15.3	0.869	0.862	0.0704	
15 minute winter	7	10	99.831	0.031	1.7	0.0078	0.0000	OK	3.000	8	1.7	0.617	0.213	0.0354	
15 minute winter	8	10	99.625	0.044	3.1	0.0137	0.0000	OK	3.001	9	3.0	0.912	0.382	0.0429	
15 minute winter	9	11	99.405	0.043	3.0	0.0069	0.0000	OK	3.002	12	3.1	0.872	0.388	0.0485	
15 minute winter	10	10	99.834	0.034	2.0	0.0098	0.0000	OK	4.000	11	1.9	0.750	0.248	0.0338	
15 minute winter	11	10	99.620	0.039	3.6	0.0133	0.0000	OK	4.001	12	3.6	1.142	0.322	0.0455	
15 minute winter	12	11	99.196	0.053	6.6	0.0084	0.0000	OK	3.003	13	6.3	1.357	0.403	0.0301	
30 minute summer	13	20	99.073	0.311	23.4	0.4084	0.0000	SURCHARGED	1.005	16	22.2	1.319	1.021	0.2641	
15 minute winter	14	10	99.733	0.033	4.2	0.0199	0.0000	OK	5.000	15	4.2	1.915	0.215	0.0441	
30 minute winter	15	23	98.856	0.281	7.4	0.3853	0.0000	SURCHARGED	5.001	16	6.1	0.356	0.153	0.7557	
30 minute winter	16	23	98.856	0.393	28.9	0.5052	0.0000	SURCHARGED	1.006	17	28.0	0.810	0.704	0.3977	
30 minute winter	17	24	98.837	0.433	30.2	0.5489	0.0000	SURCHARGED	1.007	18	29.6	1.141	0.744	0.3579	
30 minute winter	18	25	98.823	0.472	29.6	11.6017	0.0000	SURCHARGED	1.008	19	15.8	0.904	0.393	0.1222	29.0
30 minute winter	19	25	98.406	0.097	15.8	0.0000	0.0000	OK							

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.19%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	10	99.942	0.042	2.9	0.0137	0.0000	OK	1.000	2	2.8	0.680	0.362	0.1028	
15 minute winter	2	13	99.756	0.176	5.7	0.0623	0.0000	SURCHARGED	1.001	3	5.0	0.737	0.632	0.0861	
15 minute winter	3	13	99.699	0.304	9.1	0.1209	0.0000	SURCHARGED	1.002	4	7.8	1.113	0.993	0.0861	
15 minute winter	4	13	99.531	0.321	11.9	0.1160	0.0000	SURCHARGED	1.003	6	11.0	1.638	0.797	0.0548	
30 minute winter	5	21	99.341	0.291	7.0	0.4284	0.0000	SURCHARGED	2.000	6	6.4	0.454	0.362	0.4401	
30 minute winter	6	21	99.320	0.518	18.0	0.6232	0.0000	SURCHARGED	1.004	13	15.0	0.850	0.843	0.0704	
15 minute winter	7	10	99.836	0.036	2.2	0.0089	0.0000	OK	3.000	8	2.2	0.655	0.274	0.0428	
15 minute winter	8	10	99.633	0.052	4.0	0.0159	0.0000	OK	3.001	9	3.9	0.980	0.490	0.0513	
15 minute winter	9	11	99.412	0.050	3.9	0.0079	0.0000	OK	3.002	12	3.9	0.867	0.494	0.0760	
15 minute winter	10	10	99.839	0.039	2.5	0.0112	0.0000	OK	4.000	11	2.5	0.798	0.315	0.0404	
15 minute winter	11	10	99.626	0.045	4.7	0.0152	0.0000	OK	4.001	12	4.6	1.172	0.413	0.0725	
30 minute winter	12	21	99.331	0.188	7.2	0.0299	0.0000	SURCHARGED	3.003	13	6.5	1.360	0.413	0.0391	
30 minute winter	13	22	99.276	0.514	23.8	0.6750	0.0000	SURCHARGED	1.005	16	22.9	1.319	1.051	0.2641	
15 minute winter	14	10	99.738	0.038	5.4	0.0228	0.0000	OK	5.000	15	5.4	2.040	0.278	0.0514	
60 minute winter	15	44	99.195	0.620	7.0	0.8493	0.0000	SURCHARGED	5.001	16	6.1	0.322	0.155	0.7557	
60 minute winter	16	44	99.194	0.731	28.2	0.9412	0.0000	SURCHARGED	1.006	17	27.5	0.691	0.691	0.3977	
60 minute winter	17	44	99.183	0.779	29.9	0.9887	0.0000	SURCHARGED	1.007	18	29.2	1.068	0.734	0.3579	
60 minute winter	18	44	99.171	0.820	29.2	15.1407	0.0000	SURCHARGED	1.008	19	15.9	0.906	0.396	0.1230	51.5
60 minute summer	19	49	98.407	0.098	15.9	0.0000	0.0000	OK							

Results for 100 year +30% Critical Storm Duration. Lowest mass balance: 99.19%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	1	22	100.081	0.181	3.1	0.0593	0.0000	SURCHARGED	1.000	2	3.1	0.680	0.394	0.1487	
30 minute winter	2	22	100.061	0.481	6.2	0.1702	0.0000	SURCHARGED	1.001	3	5.1	0.754	0.643	0.0861	
30 minute winter	3	22	100.013	0.618	9.1	0.2461	0.0000	SURCHARGED	1.002	4	7.2	1.131	0.921	0.0861	
60 minute winter	4	45	99.979	0.769	10.0	0.2775	0.0000	SURCHARGED	1.003	6	9.3	1.601	0.678	0.0548	
60 minute winter	5	45	99.940	0.890	6.6	1.3099	0.0000	SURCHARGED	2.000	6	5.4	0.439	0.304	0.4401	
60 minute winter	6	45	99.935	1.133	15.5	1.3634	0.0000	FLOOD RISK	1.004	13	14.1	0.841	0.793	0.0704	
60 minute winter	7	46	99.942	0.142	1.7	0.0353	0.0000	SURCHARGED	3.000	8	1.7	0.623	0.216	0.1017	
60 minute winter	8	46	99.941	0.360	3.1	0.1113	0.0000	SURCHARGED	3.001	9	3.2	0.926	0.403	0.1017	
60 minute winter	9	46	99.937	0.575	3.2	0.0915	0.0000	FLOOD RISK	3.002	12	3.1	0.833	0.394	0.1017	
60 minute winter	10	46	99.941	0.141	2.0	0.0405	0.0000	SURCHARGED	4.000	11	2.0	0.758	0.254	0.1017	
60 minute winter	11	46	99.939	0.358	3.7	0.1210	0.0000	SURCHARGED	4.001	12	3.7	1.095	0.331	0.1017	
60 minute winter	12	46	99.934	0.791	6.8	0.1257	0.0000	FLOOD RISK	3.003	13	5.8	1.371	0.368	0.0391	
60 minute winter	13	46	99.925	1.163	22.9	1.5262	0.0000	FLOOD RISK	1.005	16	21.9	1.254	1.005	0.2641	
60 minute winter	14	45	99.874	0.174	4.3	0.1058	0.0000	SURCHARGED	5.000	15	4.3	1.761	0.223	0.0782	
60 minute winter	15	45	99.867	1.292	9.2	1.7698	0.0000	FLOOD RISK	5.001	16	8.0	0.302	0.200	0.7557	
60 minute winter	16	45	99.866	1.403	33.1	1.8058	0.0000	FLOOD RISK	1.006	17	32.0	0.804	0.803	0.3977	
60 minute winter	17	46	99.855	1.451	35.1	1.8416	0.0000	FLOOD RISK	1.007	18	34.1	1.140	0.858	0.3579	
60 minute winter	18	46	99.844	1.493	34.1	16.3288	0.0000	FLOOD RISK	1.008	19	15.9	0.906	0.396	0.1230	67.2
15 minute summer	19	15	98.407	0.098	15.9	0.0000	0.0000	OK							