Flood Risk Assessment and Drainage Strategy Addendum

Bridge Point, Weybridge

Date:	October 2022	**Issue:**	V2
Reference:	10334617	**Status:**	Planning

Prepared by:	PWE
Authorised by:	NRB
Issuing office:	BKM

DOCUMENT CONTROL

Issue	Date	Status	Author	Approval	Notes
V1	23/09/2022	DRAFT	PWE	NRB	
V2	17/10/2022	Planning	PWE	NRB	Updated drainage layout drawings, updated calculations, and minor typographical amendments.

CONTENTS

APPENDICES

1.0 REPORT PURPOSE

1.1. This report should be read in conjunction with and is an addendum to the following previous report:

- Flood Risk Assessment and Drainage Strategy, ref. 10334617 V2 dated April 2022.

1.2 The April 2022 report relates to a development known as Bridge Point, Weybridge, which in summary comprises redevelopment of the existing Weybridge Business Park for three new employment units. The scheme layout has been since been amended, details of which are indicated on the appended architectural layout drawing.

1.3 This FRA addendum provides detailed information relating to flood risk and drainage arrangements for the amended scheme and responds to Environment Agency comments relating to the original assessment.

2.0 ENVIRONMENT AGENCY CONSULTATION

2.1 HDR Consulting is in receipt of correspondence from the Environment Agency (EA) to the development control department at Runnymede Borough Council dated 15th September 2022 (ref. WA/2022/129831/01-L01).

2.2 The EA letter provides comments in relation to fluvial flood risk and states that proposed Unit 100: “would present an obstruction which could impede flood flow thereby increasing the risk of flooding to the surrounding area.”

2.3 This matter has been discussed with the EA and is fully addressed in this addendum report. HDR considers there to be no flood flow impedance created by the proposed development, as set out in Section 5 below.

3.0 FLUVIAL FLOOD RISK - HYDRAULIC MODELLING

3.1 As described in the previous report, most of the study site is mapped to fall within EA-designated Flood Zone 2 and a small area in Flood Zone 3a. This fluvial flooding is associated with the nearby Lower Wey and the Addlestone Bourn watercourses. Flood level modelling undertaken by Ramboll Consulting indicates the following peak flood levels for various return periods:

Source	100 year	100 year +9% (m AOD)	100 year + 20% (m AOD)	100 year + 24% (m AOD)	100 year + 35% (m AOD)
Addlestone Bourne	No Flooding	Not Modelled	12.30	Not Modelled	12.34
Lower Wey	12.26	12.36	Not Modelled	12.46	Not Modelled

3.2 The modelled flood level for the Lower Wey is supported by EA Product 4 data which identifies a modelled floodplain level of 12.46 mAOD for the 1 in 100 year plus 25% scenario. That data is provided in full in the April 2022 FRA.

4.0 FLOOD MODEL AND FLUVIAL FLOOD COMPENSATION

Pre redevelopment Fluvial Flooding

4.1 As described in the previous FRA, it is recognised that there should be no loss of floodplain storage within the site following its redevelopment. The volume of flooding based on the site's present-day (pre redevelopment) layout has been determined with reference to the existing topographical survey – as illustrated on HDR drawing 603 (see Appendix B). The HDR assessment is based on fluvial flood levels applicable to both the 1 in 100 +9% (12.36 mAOD) and the 1 in 100 +24% (12.46 mAOD) climate change scenarios.

4.2 Importantly, existing ground levels along the western bank of the Lower Wey where it borders the site range between about 12.90 to 13.20 mAOD. Consequently, flood waters can only reach the site by overtopping the watercourse bank further downstream to the north and then flowing southwards along Addlestone Road. A ridge line in this road of 12.30 mAOD must itself also be overtopped. Flood waters are modelled to enter the main part of the site just south of its existing entrance off Addlestone Road and the extent of this and the associated volumes are as shown on the HDR drawing. Flood waters will not enter the area north of Addlestone Road because the Addlestone Bourn linking watercourse provides an overflow channel.

Post-development Fluvial Flooding

4.3 Enclosed HDR drawing 604/P2 in Appendix C illustrates the modelled extent of fluvial flooding for the proposed development layout. This has been revised since the previous FRA, to reflect the amended position of Unit 100. The flood volumes and locations within the site where future flood water would be stored are clearly indicated. These have been determined using proposed development levels and are based on a future building finished floor level of 13.00 mAOD. This FFL provides 540 mm freeboard above the 1:100 + 24% flood level.

The following table provides a summary of the predicted floodplain storage pre- and post-development for the two modelled flood events:

Event	Flood Level (mAOD)	Pre-development flood storage (m3)	Post-development flood storage (m3)	Level-for-level requirement (m3)	Level-for-level storage acheived (m3)
1:100 +9%	12.360	300	600	300	600
1:100 +24%	12.460	750	1050	450	450

4.4 The drawings demonstrate that the proposed development will not reduce floodplain storage within the site and will provide adequate capacity for all modelled flood events. Safe access and egress during the flood event are also demonstrably available.

5.0 FLUVIAL FLOOD FLOW ROUTES

5.1 As indicated above, fluvial flood waters from the Lower Wey are modelled to enter the site from its north-eastern boundary with Addlestone Road. The Lower Wey will not overtop along the site's south-eastern boundary due to the existing topography.

5.2 HDR drawing 607 (Appendix D) illustrates the present-day fluvial flood flow path, based on a modelled flood level of 12.46 mAOD. The extent of associated on-site ponding is shown on this drawing and also separately on HDR drawing 603. Due to the existing topography this ponding, having entered the site from the Addlestone Road boundary, is effectively contained within the site and does not flow beyond its boundaries.

5.3 There is no material change in flood flow path under the proposed development layout. This is illustrated on drawing 608 in Appendix E. Fluvial flooding would continue to enter the site from the Addlestone Road boundary, via the new proposed bellmouth access point. Existing levels along the Lower Wey boundary are to be maintained so there will be no overtopping from the south-east. Ponding will be contained within the site as per the predevelopment scenario, eventually dissipating via the surface water drainage network. There is no impedance of flood water flow and there is no change in either on-site or off-site fluvial flood risk.

6.0 OTHER NON-PLUVIAL FLOODING

6.1 The risk of flooding from other non-pluvial sources is set out in detail in the previous FRA and is unchanged under this amended development proposal.

7.0 DRAINAGE

7.1 EXISTING RUNOFF

7.1.1 As described in the previous FRA, runoff from southern part the site is currently directed into the 'linking watercourse' (Addlestone Bourn) north of Addlestone Road, via a pumping station and two parallel rising main outfall pipes which pass under the road. There is no known restriction on the rate of discharge, which is assumed to be a function of the pump capacity.

7.1.2 Runoff from the northern part of the site is also currently directed into the linking watercourse. This appears to discharge by gravity at an unrestricted rate at present.

7.2 GREENFIELD RUNOFF RATES

7.2.1 The theoretical greenfield run-off rate has been calculated for the site based on the FEH method, with a pro-rata value to account for the actual site area.

7.2.2 The runoff calculations (see April 2022 FRA) indicate:

- Q bar (mean maximum annual flow rate) = 3.4 l/s/ha

7.3 SOIL INFILTRATION

7.3.1 As previously described, infiltration testing has determined that soakaway drainage is not feasible at the site.

7.4 BASINS

7.4.1 The revised development layout allows for inclusion of a drainage attenuation basin to be located in the north-eastern sector of the Unit 100 demise. This has been incorporated into the surface water drainage arrangements as discussed in more detail below.

7.5 DRAINAGE STRATEGY

7.5.1 An updated surface water drainage strategy for the development is provided on the drawings in Appendix F, with supporting calculations in Appendix G. The principles are unchanged from those presented in the April 2022 FRA.

7.5.2 It is proposed that a combination of below-ground storage systems and an above-ground basin be used at source to attenuate runoff to the QBAR greenfield rate prior to discharge into the Addlestone Bourn watercourse. Development levels are such that a pumped system and rising main will be required to serve the southern sector (Unit 100), while a gravity system will be used for the northern development (Units 210 and 220).

7.5.3 Permeable paving is proposed to be installed to all external car parking areas of the southern part of the development. This will be a 'Type B' system (after CIRIA 735), where the proportion of rainfall that exceeds the (negligible) infiltration capacity of the subsoil will flow into the engineered drainage network.

7.5.4 The drainage network for all of the site has been designed to accommodate the critical storm event up to and including the 1 in 100 year return period plus a 20% allowance for climate change, whilst still preventing off-site flooding. This is considered appropriate given the design life of the buildings has been confirmed by the developer to be approximately 25 years.

7.5.5 An exceedance analysis has been carried out based on the critical 1 in 100 year return period storm plus a 40% climate change allowance – locations of exceedance ponding are identified on the appended drawings.

7.5.6 The drainage system will be designed in accordance with the requirements of BS EN 752:2017 which stipulates that no surcharging should occur during a critical storm event of 1 in 2 years return period. It also requires that no exceedance flooding should occur during a critical storm event of 1 in 30 years return period.

7.5.7 The proposed foul network will operate by gravity and for the southern site (Unit 100) will discharge into an existing Thames Water public foul sewer manhole located on Hamm Hall Road. Foul drainage from the northern site will be directed into Thames Water foul sewer manhole 2801 located close to the western boundary of that part of the site.

7.5.8 All sewer connections are subject to Section 106 public sewer connection agreements, and in this regard a pre-development enquiry has been submitted to Thames Water to determine availability to accept the proposed surface and foul water flows. A copy of the response to this enquiry, which confirms available capacity, is provided in the April 2022

FRA.

8.0 DRAINAGE MAINTENANCE AND OWNERSHIP

8.1 Proposals for drainage maintenance confirmation of drainage ownership are largely unchanged from the previously submitted FRA.

8.2 In respect of the attenuation basin, the following measures are recommended:

Security

8.2.1 Perimeter fencing should be maintained around the attenuation basin to prevent unauthorised access including from trespassers and animals. Additional security measures may include incorporation of the areas of the basins within the coverage of site wide CCTV security cameras or installation of directional PIR security lighting to act as a further deterrent.

Litter Removal

8.2.2 Removal of any unwanted litter should be carried out to maintain the performance and visual appearance of the basin.

Grass Cutting

8.2.3 Cutting of grass to the perimeter and sloped embankments should be periodically carried out. All cuttings should be managed on site in wildlife or compost piles.

Inlet & Outlet Controls

8.2.4 Cleaning and removal of any unwanted material to the inlet and outlet pipes of the basin should be carried out to ensure free flow of surface water is maintained. Control structures in front of inlet and outlet pipes should be inspected to ensure their condition is maintained.

Vegetation Management

8.2.5 Limited levels of low maintenance vegetation should be maintained to the perimeter and sloped embankments of the attenuation basin. These areas of the basin will require upkeep and removal if any excessive vegetation becomes established.

Silt Removal

8.2.6 If excessive volumes of silt accumulate on the bottom surface of the basin this should be periodically removed using suitable landscape maintenance machinery. Silt accumulation should however be limited given the source control measures proposed upstream of the attenuation basins.

APPENDIX A

ARCHITECT'S PROPOSED DEVELOPMENT PLAN

- Dimensions are in millimeters, unless stated otherwise.
- Scaling of this drawing is not recommended.
- It is the recipients responsibilty to print this document to the correct scale.
- All relevant drawings and specifications should be read in conjunction with this drawing.

UNIT 100 GIA		
Warehouse Area	128,043 ft²	11,895 m²
Ground Floor Core	2,476 ft²	230 m²
Escape Core	459 ft²	43 m²
First Floor Office	7,538 ft²	700 m²
Second Floor Office	7,538 ft²	700 m²
Transport Office First Floor	1,563 ft²	145 m²
Transport Office Second Floor	1,563 ft²	145 m²
Total GIA Area	**149,180 ft²**	**13,859 m²**
UNIT 100 GEA		
Warehouse Area	130,573 ft²	12,131 m²
Ground Floor Core	2,758 ft²	256 m²
Escape Core	546 ft²	51 m²
First Floor Office	8,099 ft²	752 m²
Second Floor Office	8,099 ft²	752 m²
Transport Office First Floor	1,697 ft²	158 m²
Transport Office Second Floor	1,697 ft²	158 m²
Total GEA Area	**153,470 ft²**	**14,258 m²**
UNIT 210 GIA		
Warehouse Area	12,901 ft²	1,199 m²
Ground Floor Core	689 ft²	64 m²
First Floor Office	1,601 ft²	149 m²
Total GIA Area	**15,192 ft²**	**1,411 m²**
UNIT 210 GEA		
Warehouse Area	13,547 ft²	1,259 m²
Ground Floor Core	778 ft²	72 m²
First Floor Office	1,747 ft²	162 m²
Total GEA Area	**16,072 ft²**	**1,493 m²**
UNIT 220 GIA		
Warehouse Area	15,055 ft²	1,399 m²
Ground Floor Core	689 ft²	64 m²
First Floor Office	2,066 ft²	192 m²
Total GIA Area	**17,810 ft²**	**1,655 m²**
UNIT 220 GEA		
Warehouse Area	15,739 ft²	1,462 m²
Ground Floor Core	778 ft²	72 m²
First Floor Office	2,242 ft²	208 m²
Total GEA Area	**18,759 ft²**	**1,743 m²**
Total Area GIA	**182,182 ft²**	**16,925 m²**
Total Area GEA	**188,300 ft²**	**17,493 m²**

rev	amendments	by	ckd	date
V	Boundary line re-profiled.	LAH	AJL	13.10.22
U	Mode Transport coordinated / Boundary line re-profiled.	LAH	AJL	12.10.22
T	Substation and parking relocated to suit easement.	LAH	AJL	07.10.22
S	Mode Transport & AAC coordinated.	LAH	AJL	30.09.22

Weybridge Business Park, Weybridge

Proposed Block Plan

PLANNING

THIS DRAWING IS TO BE USED FOR THE STATED PURPOSE ONLY AND SHOULD NOT BE USED FOR ANY OTHER

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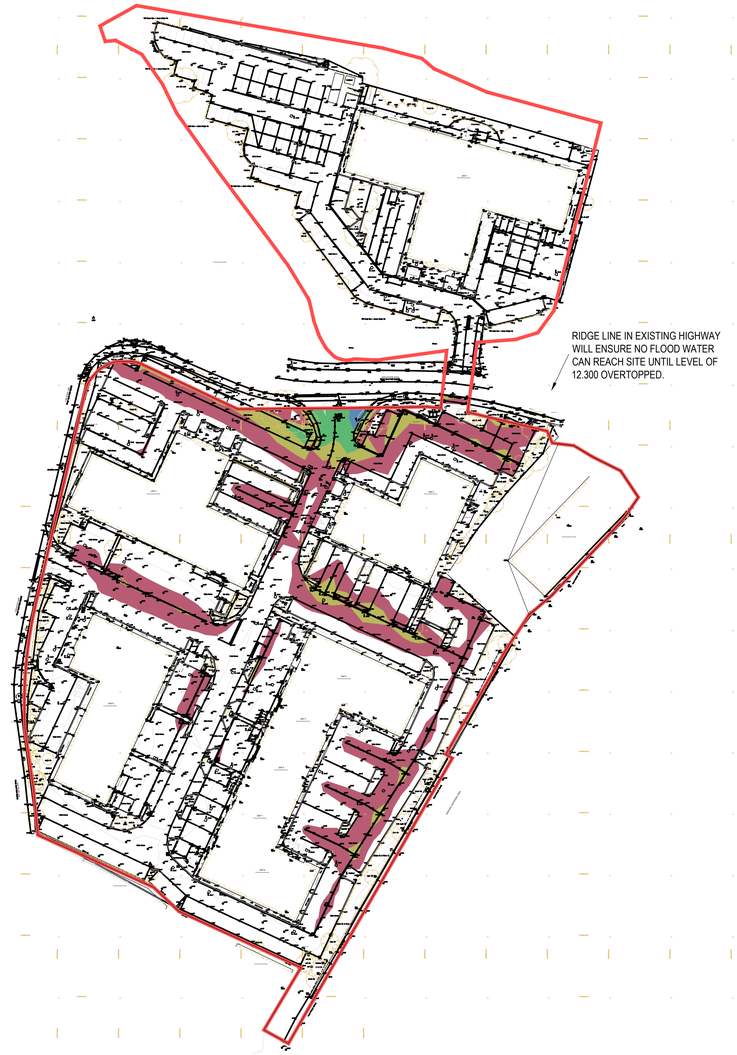
RIBA PoW Stage:	2 - Concept Design
Document Suitability:	S1
Drawn / Checked:	LAH / MT
Date:	30.09.22
Scale:	1:500 A1
UMC Project Number:	21490
Document Reference:	Drawing no: Revision:
21490 - UMC - ZZZZ - SI - DR - A	0602 V

Block Plan
Scale 1:500

10m SCALE 1:500

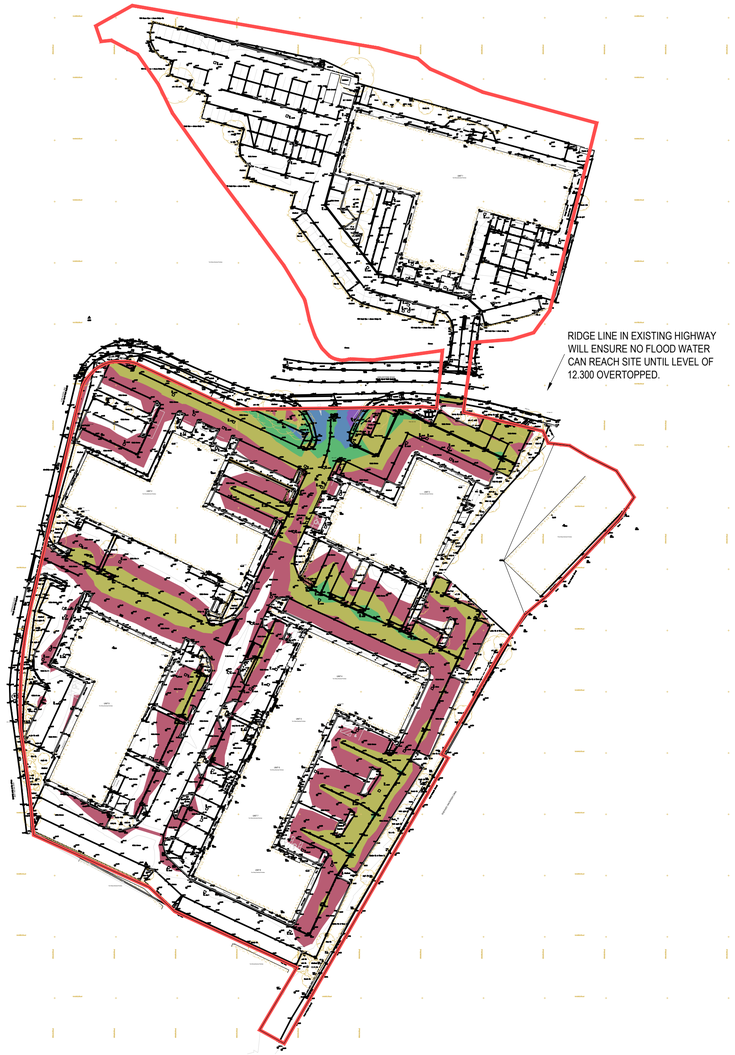
APPENDIX B

FLUVIAL FLOODING, EXISTING SITE LAYOUT



FLOOD VOLUME AT 12.380mAOD LEVEL = 300m³

SCALE 1:1000



FLOOD VOLUME AT 12.460mAOD LEVEL = 750m³

SCALE 1:1000

FLOOD VOLUMES	
FLOOD LEVEL (mAOD)	FLOOD VOLUME (m³)
12.380	300
12.460	750

NOTES:

1. FLOOD LEVEL TAKEN FROM RAMBOLL FLOOD RISK APPRAISAL REPORT REF. 1620014229 DATED 05/04/2022.

DRAWINGS:
TOPOGRAPHICAL SURVEY - SURVEY SOLUTIONS DRAWING NUMBER 12615 se-01 REV - TITLED 'TOPOGRAPHICAL SURVEY'.

SURFACE ELEVATION DATA			
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR
1	0.00	0.10	
2	0.10	0.20	
3	0.20	0.30	
4	0.30	0.40	
5	0.40	0.50	

ISOPACHYTE BANDS REFER TO DEPTH FROM FLOOD LEVEL TO TOPOGRAPHICAL GROUND PROFILE THEREFORE REPRESENT FLOODING DEPTHS.

1 IN 100 YEAR + 24%
FLOOD LEVEL = 12.460

Rev.	Tech	Date	Description
P1	NDH	07.04.22	FIRST ISSUE.

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Client: BRIDGE

Project Title: WEYBRIDGE BUSINESS PARK, WEYBRIDGE

Drawing Title: EXISTING FLOOD VOLUMES DURING 1 IN 100 YEAR + 24%

Purpose of Issue: Information ○ Preliminary ● Approval ○ Tender ○ Construction ○ Record Copy ○

First Issue Date	Drawn By	Scale	Checked
MARCH 22	NDH	1:1000 @ A1	NRB

Drawing Number: 10334617-HDR-XX-XX-DR-C-603

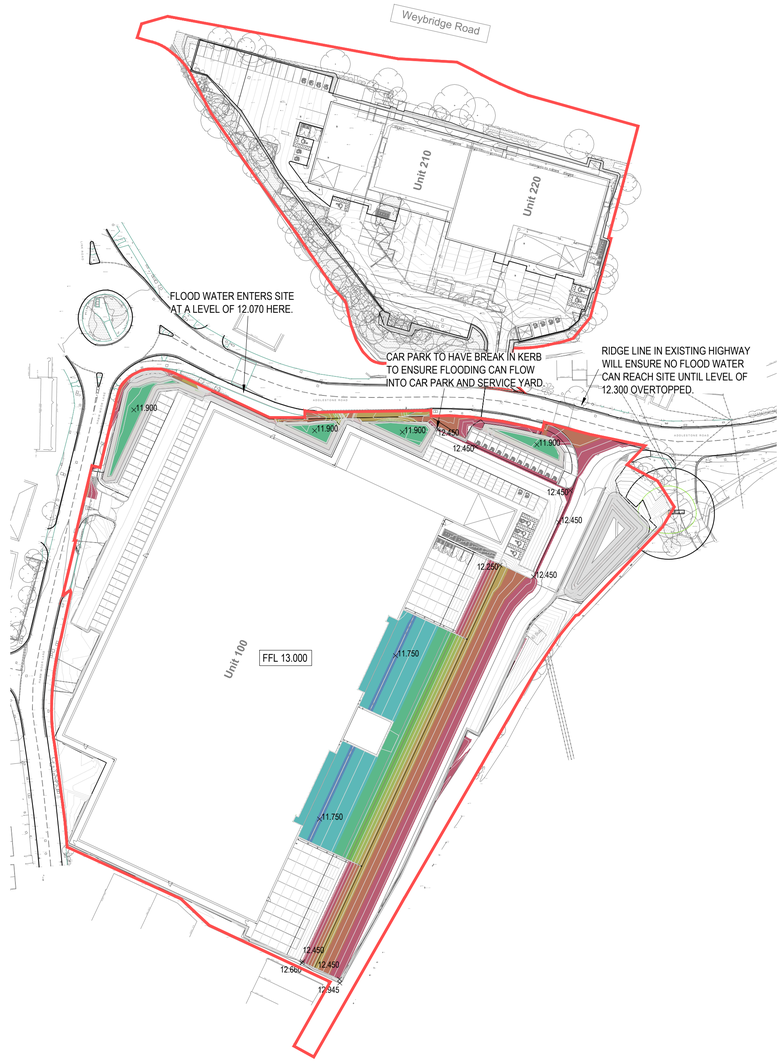
Rev.: P1

APPENDIX C

FLUVIAL FLOODING, PROPOSED SITE LAYOUT

FLOOD VOLUME AT 12.380mAOD LEVEL = 283m³

SCALE 1:1000



FLOOD VOLUME AT 12.460mAOD LEVEL = 1624m³

SCALE 1:1000

FLOOD VOLUMES FROM 12.300mAOD (HIGHEST LEVEL IN EXISTING HIGHWAY) TO 1 IN 100 YEAR +24% FLOOD LEVEL OF 12.460					
FLOOD LEVEL (mAOD)	EXISTING SITE FLOOD VOLUMES (m³)	PROPOSED SITE FLOOD VOLUMES (m³)	FLOOD STORAGE DIFFERENCE EXISTING TO PROPOSED (m³)	EXISTING FLOOD STORAGE FOR EACH 100mm SLICE	PROPOSED FLOOD STORAGE FOR EACH 100mm SLICE
12.380	240	285	45	-	-
12.460	600	1625	1025	360	1340

NOTES:

1. FLOOD LEVEL TAKEN FROM RAMBOLL FLOOD RISK APPRAISAL REPORT REF. 1620014229 DATED 05/04/2022.

DRAWINGS:

TOPOGRAPHICAL SURVEY - SURVEY SOLUTIONS DRAWING NUMBER 12615 se-01 REV - TITLED 'TOPOGRAPHICAL SURVEY'.
ARCHITECTS LAYOUT - UMC ARCHITECTS LAYOUT 21490-UMC-ZZZZ-SI-M2-A-0602 [Q] TITLED 'SITE LAYOUT'

SURFACE ELEVATION DATA			
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3	0.20	0.30	
4	0.30	0.40	
5	0.40	0.50	
6	0.50	0.60	
7	0.60	0.70	
8	0.70	0.80	
9	0.80	0.90	
10	0.90	1.00	

ISOPACHYTE BANDS REFER TO DEPTH FROM FLOOD LEVEL TO PROPOSED GROUND PROFILE THEREFORE REPRESENT FLOODING DEPTHS.

1 IN 100 YEAR + 24%
FLOOD LEVEL = 12.460

Rev.	Tech	Date	Description
P2	NDH	17.10.22	UPDATED IN LINE WITH LATEST ARCHITECTS LAYOUT.
P1	NDH	07.04.22	FIRST ISSUE.

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Client: BRIDGE

Project Title: **WEYBRIDGE BUSINESS PARK, WEYBRIDGE**

Drawing Title: **PROPOSED FLOOD VOLUMES DURING 1 IN 100 YEAR + 24%**

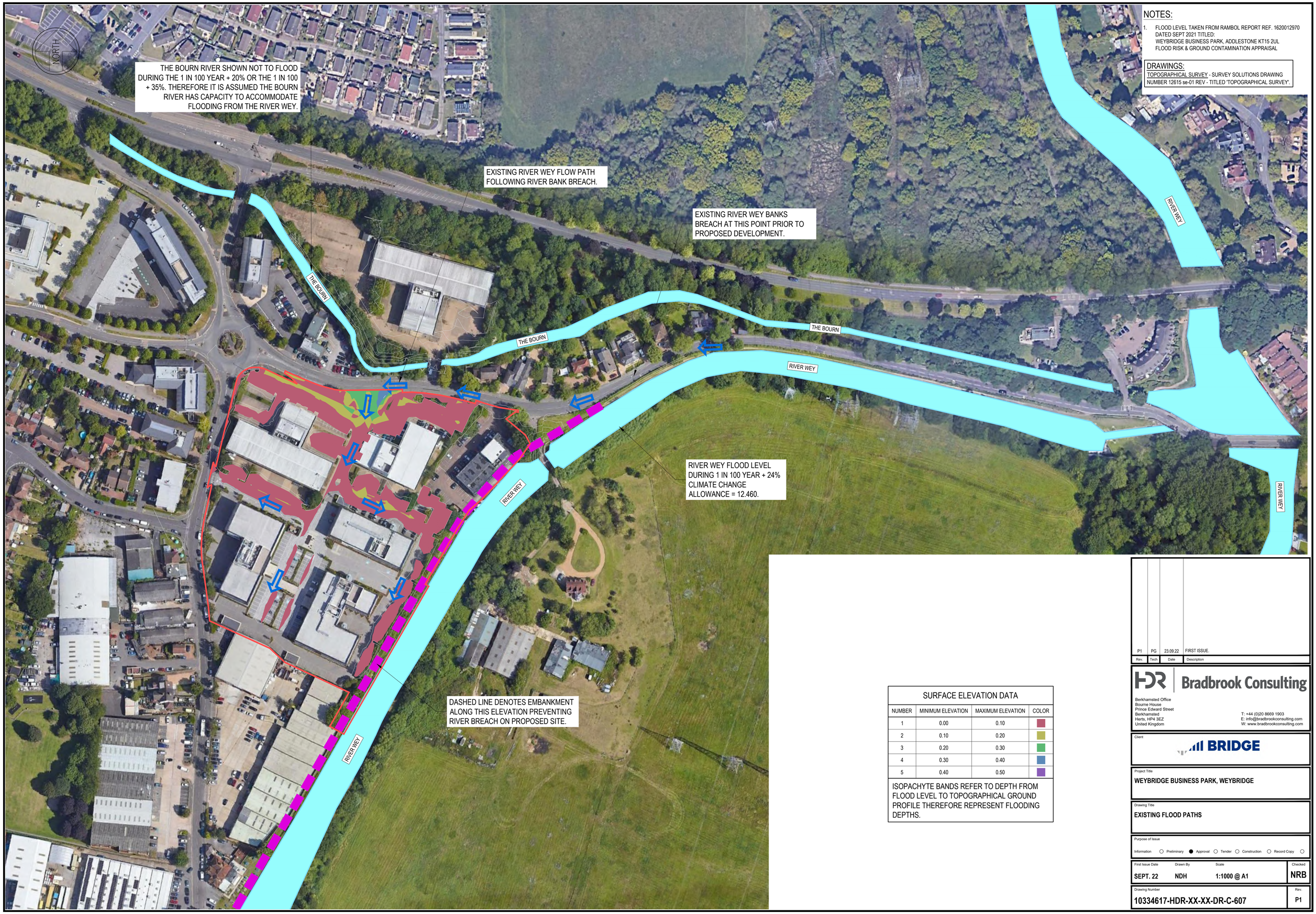
Purpose of Issue: Information ○ Preliminary ● Approval ○ Tender ○ Construction ○ Record Copy ○

First Issue Date	Drawn By	Scale	Checked
MARCH 22	NDH	1:1000 @ A1	NRB

Drawing Number	Rev.
10334617-HDR-XX-XX-DR-C-604	P2

APPENDIX D

FLUVIAL FLOOD FLOW PATH, EXISTING SITE LAYOUT



NOTES:

1. FLOOD LEVEL TAKEN FROM RAMBOL REPORT REF. 1620012970 DATED SEPT 2021 TITLED: WEYBRIDGE BUSINESS PARK, ADDLESTONE KT15 2UL FLOOD RISK & GROUND CONTAMINATION APPRAISAL

DRAWINGS:

TOPOGRAPHICAL SURVEY - SURVEY SOLUTIONS DRAWING NUMBER 12615 se-01 REV - TITLED 'TOPOGRAPHICAL SURVEY'.

SURFACE ELEVATION DATA

NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR
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2	0.10	0.20	
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4	0.30	0.40	
5	0.40	0.50	

ISOPACHYTE BANDS REFER TO DEPTH FROM FLOOD LEVEL TO TOPOGRAPHICAL GROUND PROFILE THEREFORE REPRESENT FLOODING DEPTHS.

Rev.	Tech	Date	Description
P1	PG	23.09.22	FIRST ISSUE.

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Client: BRIDGE

Project Title: **WEYBRIDGE BUSINESS PARK, WEYBRIDGE**

Drawing Title: **EXISTING FLOOD PATHS**

Purpose of Issue: Information ○ Preliminary ● Approval ○ Tender ○ Construction ○ Record Copy ○

First Issue Date	Drawn By	Scale	Checked
SEPT. 22	NDH	1:1000 @ A1	NRB

Drawing Number	Rev.
10334617-HDR-XX-XX-DR-C-607	P1

APPENDIX E

FLUVIAL FLOOD FLOW PATH, PROPOSED SITE LAYOUT

NORTH

THE BOURN RIVER SHOWN NOT TO FLOOD DURING THE 1 IN 100 YEAR + 20% OR THE 1 IN 100 + 35%. THEREFORE IT IS ASSUMED THE BOURN RIVER HAS CAPACITY TO ACCOMMODATE FLOODING FROM THE RIVER WEY.

EXISTING RIVER WEY FLOW PATH FOLLOWING RIVER BANK BREACH.

EXISTING RIVER WEY BANKS BREACH AT THIS POINT PRIOR TO PROPOSED DEVELOPMENT.

RIVER WEY FLOOD LEVEL DURING 1 IN 100 YEAR + 24% CLIMATE CHANGE ALLOWANCE = 12.460.

DASHED LINE DENOTES EMBANKMENT ALONG THIS ELEVATION PREVENTING RIVER BREACH ON PROPOSED SITE.

Weybridge Road

THE BOURN

RIVER WEY

Unit 210

Unit 220

Unit 100

FFL 13.000

11.900

12.450

11.750

12.660

12.345

NOTES:

1. FLOOD LEVEL TAKEN FROM RAMBOL REPORT REF. 1620012970 DATED SEPT 2021 TITLED: WEYBRIDGE BUSINESS PARK, ADDLESTONE KT15 2UL FLOOD RISK & GROUND CONTAMINATION APPRAISAL

DRAWINGS:

TOPOGRAPHICAL SURVEY - SURVEY SOLUTIONS DRAWING NUMBER 12615 se-01 REV - TITLED 'TOPOGRAPHICAL SURVEY'.

SURFACE ELEVATION DATA

NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR
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2	0.10	0.20	
3	0.20	0.30	
4	0.30	0.40	
5	0.40	0.50	
6	0.50	0.60	
7	0.60	0.70	
8	0.70	0.80	
9	0.80	0.90	
10	0.90	1.00	

ISOPACHYTE BANDS REFER TO DEPTH FROM FLOOD LEVEL TO PROPOSED GROUND PROFILE THEREFORE REPRESENT FLOODING DEPTHS.

Rev.	Tech	Date	Description
P1	PG	23.09.22	FIRST ISSUE.

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Client: BRIDGE

Project Title: **WEYBRIDGE BUSINESS PARK, WEYBRIDGE**

Drawing Title: **PROPOSED FLOOD PATHS**

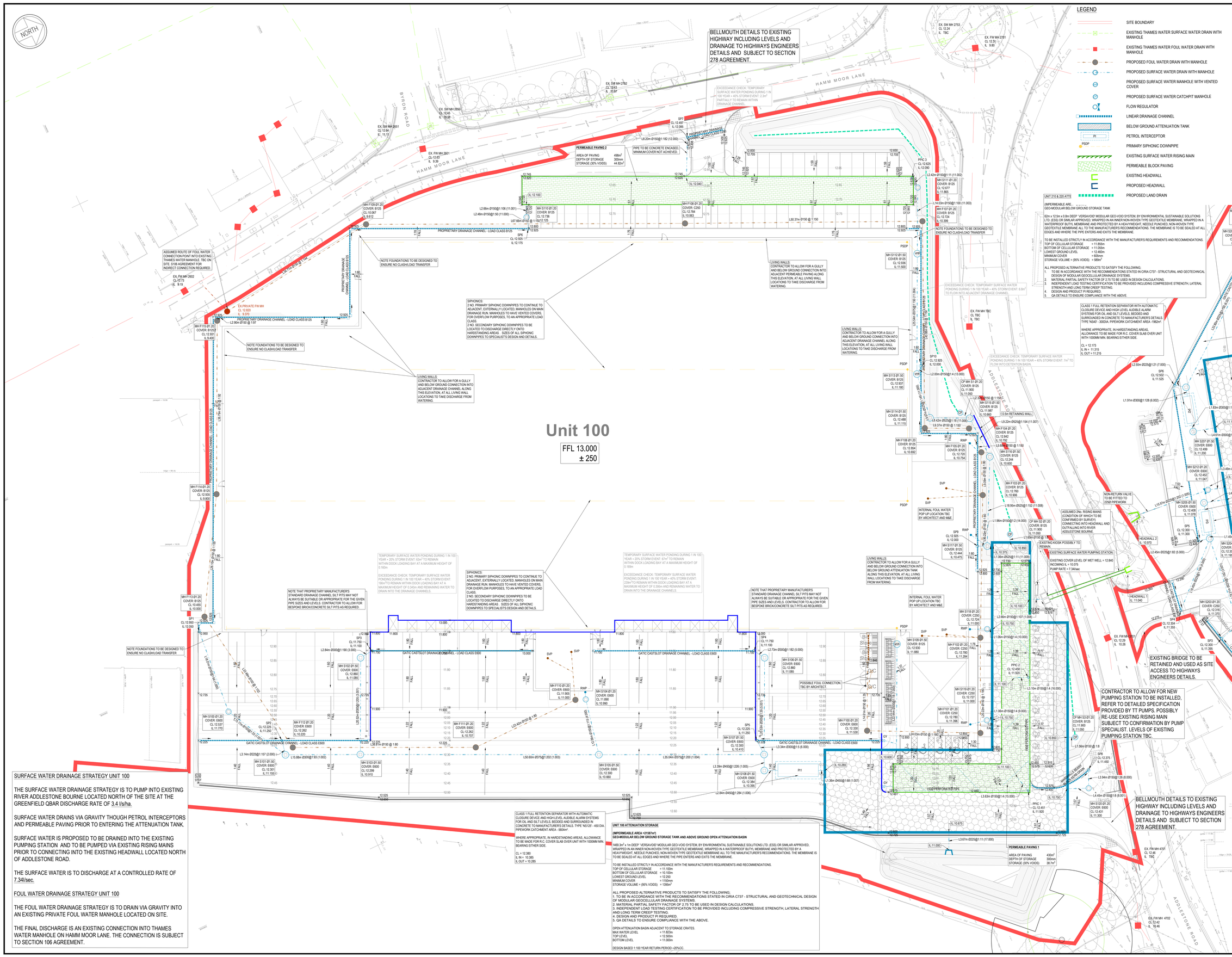
Purpose of Issue: Information ○ Preliminary ● Approval ○ Tender ○ Construction ○ Record Copy ○

First Issue Date	Drawn By	Scale	Checked
SEPT. 22	NDH	1:1000 @ A1	NRB

Drawing Number: **10334617-HDR-XX-XX-DR-C-608** Rev. **P1**

APPENDIX F

DRAINAGE STRATEGY DRAWINGS



DRAINAGE NOTES

1. ALL PRIVATE DRAINAGE WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH BS EN 752:2008 AND BUILDING REGULATIONS PART H.
2. ALL DRAINAGE WORKS WITHIN ADOPTABLE AREAS ARE TO COMPLY WITH THE REQUIREMENTS OF THE WATER UK/WATER RESEARCH CENTRE PUBLICATION 'SEWERS FOR ADOPTION' (CURRENT EDITION).
3. ALL CONNECTIONS TO EXISTING PUBLIC SEWERS TO BE IN ACCORDANCE WITH AND TO THE SATISFACTION OF THE LOCAL AUTHORITY.
4. CONCRETE PROTECTION (BEDDING CLASS 'Z') TO PIPEWORK TO BE PROVIDED AS FOLLOWS;
   (I) ALL PIPEWORK WITHIN SOFT AREAS WITH A COVER OF LESS THAN 600mm.
   (II) ALL PIPEWORK BENEATH ROADS, CAR PARKS AND ALL OTHER TRAFFICKED HARDSTANDING AREAS WITH A COVER LESS THAN 1200mm.
   (III) ALL PIPEWORK ADJACENT TO EXISTING AND PROPOSED TREES/DENSE VEGETATION IN LANDSCAPED AREAS.
   AN EXPANSION JOINT SHALL BE PROVIDED AT ALL JOINT LOCATIONS.
5. ALL BELOW GROUND FOUL DRAINAGE FROM WITHIN BUILDING FOOTPRINT TO BE 100mm DIA. UNLESS STATED OTHERWISE. REFER TO SEPARATE NOTE FOR RECOMMENDED MINIMUM GRADIENTS. ALL BELOW GROUND SURFACE WATER DRAINAGE FROM RWP LOCATIONS TO MAIN CARRIER DRAINS TO MATCH THE DIAMETER OF THE DOWNPIPE (TO ARCHITECT'S AND SPECIALIST CONTRACTOR'S DETAILS) UNLESS STATED OTHERWISE.
   ALL BELOW GROUND DRAINAGE FROM ROAD GULLIES TO BE 150mm DIA. UNLESS STATED OTHERWISE.
6. ALL PIPEWORK IN MANHOLES ARE TO BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE. ALL CHAMBER INVERT LEVELS, SHOWN ON THE DRAWING, ARE FOR THE OUTGOING PIPE.
7. ALL INTERNAL DRAINAGE TO BE TO THE ARCHITECT'S AND M & E ENGINEER'S DRAWINGS AND DETAILS.
8. THE POSITION AND INVERT LEVELS OF ALL EXISTING DRAINS, SEWERS AND MANHOLES TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE PROPOSED WORKS AND ANY DISCREPANCIES REPORTED IMMEDIATELY TO BRADBROOK CONSULTANTS.
9. ALL PIPES ARE TO HAVE A CLASS 'S' BED AND SURROUND UNLESS NOTED OTHERWISE (SEE NOTE 4 ABOVE).
10. ALL CONCRETE PIPES ARE TO BE HIGH STRENGTH AND TO BE IN ACCORDANCE WITH BS EN 1916 AND BS 5911.
11. ALL VITRIFIED CLAY PIPES ARE TO BE IN ACCORDANCE WITH BS EN 295.
12. FOR SETTING OUT OF FOUL AND RAINWATER OUTLETS REFER TO THE ARCHITECT'S DRAWINGS.
13. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS, SPECIFICATIONS AND DOCUMENTATION.
14. THE CONTRACTOR IS TO ALLOW FOR GREASE TRAPS IN THE KITCHEN AND OTHER APPROPRIATE AREAS.
15. DRAINAGE CHANNELS AND SILT PITS TO BE DESIGNED BY A SPECIALIST MANUFACTURER FOR CRITICAL STORMS OF 1.5 YEAR RETURN PERIOD, TO SUIT SITE CONDITIONS AND IN ACCORDANCE WITH LOAD CLASS REQUIREMENTS AS SHOWN ON THE PLAN.
    DESIGN TO BE SUBMITTED FOR COMMENT TO PRIOR TO ORDERING.
16. ALL EXTERNAL FINISHED LEVELS AND MANHOLE COVER LEVELS SHOWN ON THIS DRAWING ARE INDICATIVE AND SUBJECT TO ADJUSTMENT ON SITE TO SUIT THE FINISHED GROUND LEVELS. FOR FINAL LEVELS REFER TO THE ARCHITECT'S DRAWINGS.
17. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
18. ANY COORDINATES PROVIDED FOR MANHOLES OR INSPECTION CHAMBERS ARE RELEVANT TO THE MAIN DRAINAGE RUN INTERSECTION AND NOT THE CENTRE OF THE MANHOLE.
19. CHALK AND LIMESTONE ARE NOT TO BE USED AS BEDDING OR BACKFILLING MATERIAL IN SOILS WITH A PH VALUE LESS THAN 7.
20. A CCTV DRAINAGE SURVEY IS TO BE CARRIED OUT BOTH AT THE PRE-COMMENCEMENT OF CONSTRUCTION AND AT THE COMPLETION OF THE CONTRACT TO PROVE THE INTEGRITY OF THE AS-BUILT DRAINAGE SYSTEMS. AT THE COMPLETION OF THE CONTRACT THIS IS TO BE CARRIED OUT PRIOR TO THE ISSUE OF THE PRACTICAL COMPLETION CERTIFICATE.
21. SEWERS, MANHOLES, GULLIES, DRAINAGE CHANNELS AND SILT PITS SHOULD BE INSPECTED AT 6 MONTHLY INTERVALS AND CLEANED OUT AT 12 MONTHLY INTERVALS. A FULL CCTV SURVEY SHOULD ALSO BE CARRIED OUT AT 10 YEARLY INTERVALS. REFER ALSO TO SPECIALIST DRAINAGE CHANNEL AND PETROL INTERCEPTOR MANUFACTURER'S INFORMATION AND MAINTENANCE REQUIREMENTS.
    IN ALL INSTANCES, INSPECTION AND CLEANING SHOULD BE CARRIED OUT ONLY BY A SPECIALIST CONTRACTOR AND IN ACCORDANCE WITH THE GUIDELINES GIVEN IN 'SAFE WORKING IN SEWERS AND AT SEWAGE WORKS' PUBLISHED BY NATIONAL JOINT HEALTH AND SAFETY COMMITTEE FOR THE WATER SERVICES.

IMPORTANT NOTE:
THE CONTRACTOR IS TO EXERCISE EXTREME CARE WHEN EXCAVATING FOR DRAINAGE PIPES AND MANHOLES AND NOT TO UNDERMINE EXISTING OR NEW COLUMN BASES AND/OR STRIP FOOTINGS ALREADY CAST.
REFER ALSO TO NOTE 4 ON THIS DRAWING AND `CONCRETING OF DRAINS LAID NEAR FOUNDATIONS' DETAIL ON DRAWING 10334617-HDR-XX-XX-DR-C-303.

FOR NEW CONSTRUCTION, COLUMN FOUNDATIONS/STRIP FOOTINGS MUST BE TAKEN DOWN TO BELOW INVERT LEVEL OF ANY NEARBY, ADJACENT SERVICES (DRAINAGE, GAS, WATER, ETC.)

USE OF THERMOPLASTIC PIPES
IF THERMOPLASTIC PIPES ARE TO BE USED THEY ARE TO BE OF THE STRUCTURED WALL TYPE AND SHALL COMPLY WITH WIS 4-35-01 AND BS EN 13476 AND MUST BE BSI KITEMARKED (E.G. POLYSEWER/RIDGISEWER BY POLYPIPE CIVILS, ULTRARIB BY WAVIN OR SIMILAR). PIPES ARE TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS. NOTE: ALL INSTALLATION MUST BE IN ACCORDANCE WITH BUILDING REGULATIONS PART H, BS EN 752:2008, SPECIFICATION FOR HIGHWAY WORKS AND ALL RELEVANT BRITISH AND EUROPEAN CODES OF PRACTICE.

REFER TO THE ARCHITECT'S DETAILS FOR THE INTERNAL, ABOVE GROUND, DRAINAGE LAYOUT.
RECOMMENDED MINIMUM GRADIENTS FOR BELOW GROUND FOUL DRAINAGE CONNECTIONS:
100 DIA. AT 1:40,
100 DIA. AT 1:80 WITH MIN 1 NO. WC CONNECTION,
150 DIA. AT 1:150 WITH MIN 5 NO. WC CONNECTIONS.
FINAL FOUL DRAINAGE CONNECTIONS TO BE COORDINATED WITH THE ARCHITECT'S INTERNAL DRAINAGE LAYOUT PLANS.

Rev	Initials	Date	Description
T3	JJ	14.10.22	UPDATED IN LINE WITH LATEST ARCHITECT LAYOUT.
T2	JJ	29.09.22	UPDATED IN LINE WITH LATEST ARCHITECT LAYOUT.
T1	JJ	23.06.22	TENDER ISSUE. DRAINAGE UPDATED IN LINE WITH LATEST ARCHITECT LAYOUT.
P1	JJ	27.04.22	PRE1/MINARY ISSUE

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Client: BRIDGE

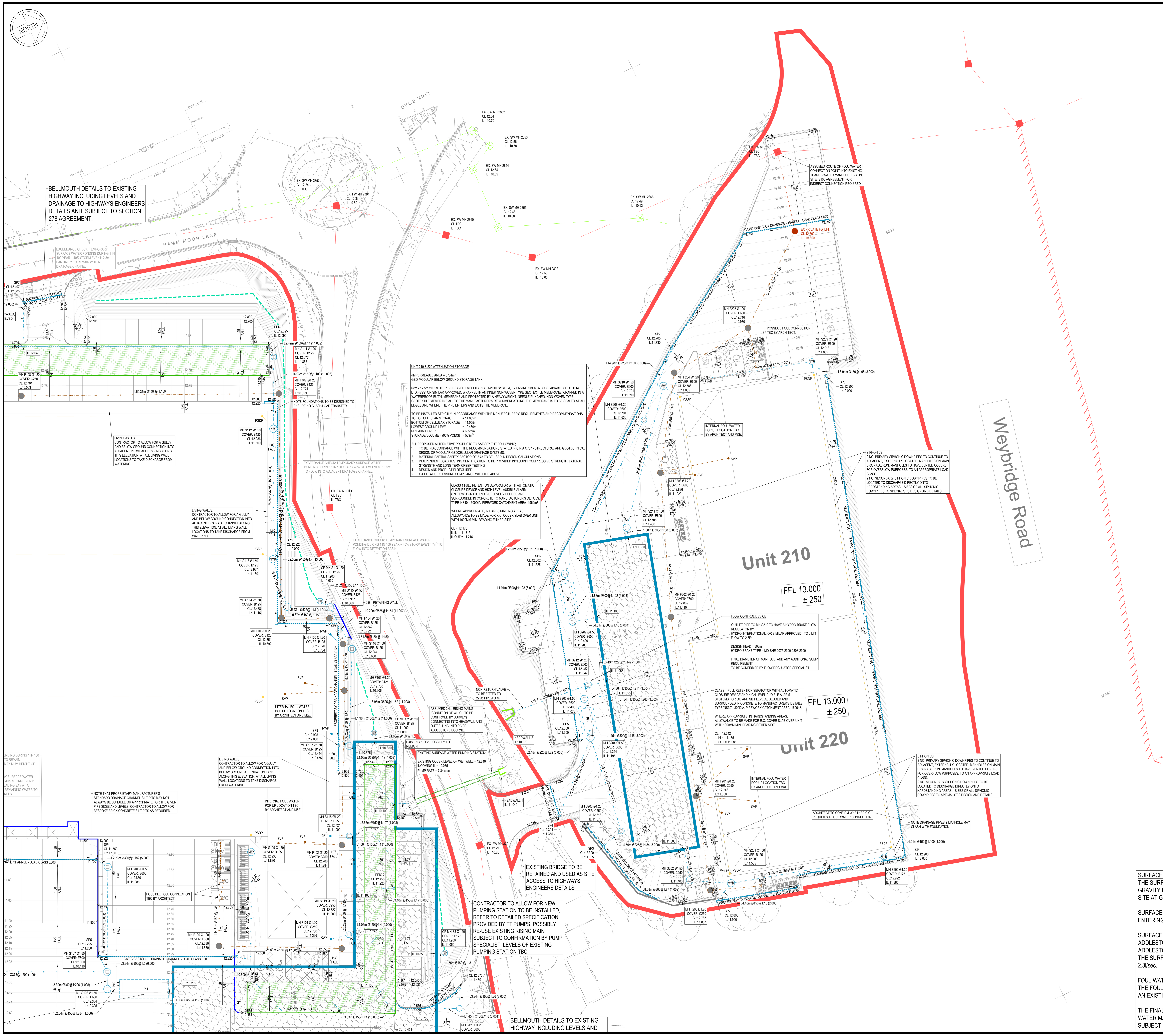
Project Title: **WEYBRIDGE BUSINESS PARK, WEYBRIDGE**

Drawing Title: **DRAINAGE LAYOUT AND EXTERNAL LEVELS SHEET 1 OF 2**

Purpose of Issue: Information ○ Preliminary ○ Approval ○ Tender ● Construction ○ Record Copy ○

First Issue Date	Drawn By	Scale	Checked
APRIL 22	JJ	1 : 250 @ A0	NDH

Drawing Number	Rev.
10334617-HDR-XX-XX-DR-C-300	T3



LEGEND

- SITE BOUNDARY
- EXISTING THAMES WATER SURFACE WATER DRAIN WITH MANHOLE
- EXISTING THAMES WATER FOUL WATER DRAIN WITH MANHOLE
- PROPOSED FOUL WATER DRAIN WITH MANHOLE
- PROPOSED SURFACE WATER DRAIN WITH MANHOLE
- PROPOSED SURFACE WATER MANHOLE WITH VENTED COVER
- PROPOSED SURFACE WATER CATCHPIT MANHOLE
- FLOW REGULATOR
- LINEAR DRAINAGE CHANNEL
- BELOW GROUND ATTENUATION TANK
- PETROL INTERCEPTOR
- PRIMARY SIPHONIC DOWNPIPE
- EXISTING SURFACE WATER RISING MAIN
- PERMEABLE BLOCK PAVING
- EXISTING HEADWALL
- PROPOSED HEADWALL
- PROPOSED LAND DRAIN

SURFACE WATER DRAINAGE STRATEGY UNIT 210 & 220

THE SURFACE WATER DRAINAGE STRATEGY IS TO DISCHARGE VIA GRAVITY INTO RIVER ADDLESTONE BOURNE LOCATED NORTH OF THE SITE AT GREENFIELD QBAR DISCHARGE RATE OF 3.4 l/s/ha.

SURFACE WATER DRAINS THOUGH PETROL INTERCEPTORS PRIOR TO ENTERING THE ATTENUATION TANK.

SURFACE WATER IS PROPOSED TO BE DISCHARGED INTO RIVER ADDLESTONE BOURNE VIA AN EXISTING HEADWALL LOCATED NORTH OF ADDLESTONE ROAD.
THE SURFACE WATER IS TO DISCHARGE AT A CONTROLLED RATE OF 2.3l/sec.

FOUL WATER DRAINAGE STRATEGY UNIT 210 & 220

THE FOUL WATER DRAINAGE STRATEGY IS TO DRAIN VIA GRAVITY INTO AN EXISTING PRIVATE FOUL WATER MANHOLE LOCATED ON SITE.

THE FINAL DISCHARGE IS AN EXISTING CONNECTION INTO THAMES WATER MANHOLE MH 2801 LOCATED IN THE SITE. THE CONNECTION IS SUBJECT TO SECTION 106 AGREEMENT.

DRAINAGE NOTES

1. ALL PRIVATE DRAINAGE WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH BS EN 752:2008 AND BUILDING REGULATIONS PART H.
2. ALL DRAINAGE WORKS WITHIN ADOPTABLE AREAS ARE TO COMPLY WITH THE REQUIREMENTS OF THE WATER UK/WATER RESEARCH CENTRE PUBLICATION `SEWERS FOR ADOPTION' (CURRENT EDITION).
3. ALL CONNECTIONS TO EXISTING PUBLIC SEWERS TO BE IN ACCORDANCE WITH AND TO THE SATISFACTION OF THE LOCAL AUTHORITY.
4. CONCRETE PROTECTION (BEDDING CLASS `Z') TO PIPEWORK TO BE PROVIDED AS FOLLOWS;
(I) ALL PIPEWORK WITHIN SOFT AREAS WITH A COVER OF LESS THAN 600mm.
(II) ALL PIPEWORK BENEATH ROADS, CAR PARKS AND ALL OTHER TRAFFICKED HARDSTANDING AREAS WITH A COVER LESS THAN 1200mm.
(III) ALL PIPEWORK ADJACENT TO EXISTING AND PROPOSED TREES/DENSE VEGETATION IN LANDSCAPED AREAS.
AN EXPANSION JOINT SHALL BE PROVIDED AT ALL JOINT LOCATIONS.
5. ALL BELOW GROUND FOUL DRAINAGE FROM WITHIN BUILDING FOOTPRINT TO BE 100mm DIA. UNLESS STATED OTHERWISE. REFER TO SEPARATE NOTE FOR RECOMMENDED MINIMUM GRADIENTS.
ALL BELOW GROUND SURFACE WATER DRAINAGE FROM RWP LOCATIONS TO MAIN CARRIER DRAINS TO MATCH THE DIAMETER OF THE DOWNPIPE (TO ARCHITECT'S AND SPECIALIST CONTRACTOR'S DETAILS) UNLESS STATED OTHERWISE.
ALL BELOW GROUND DRAINAGE FROM ROAD GULLIES TO BE 150mm DIA. UNLESS STATED OTHERWISE.
6. ALL PIPEWORK IN MANHOLES ARE TO BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE. ALL CHAMBER INVERT LEVELS, SHOWN ON THE DRAWING, ARE FOR THE OUTGOING PIPE.
7. ALL INTERNAL DRAINAGE TO BE TO THE ARCHITECT'S AND M & E ENGINEER'S DRAWINGS AND DETAILS.
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19. CHALK AND LIMESTONE ARE NOT TO BE USED AS BEDDING OR BACKFILLING MATERIAL IN SOILS WITH A PH VALUE LESS THAN 7.
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21. SEWERS, MANHOLES, GULLIES, DRAINAGE CHANNELS AND SILT PITS SHOULD BE INSPECTED AT 6 MONTHLY INTERVALS AND CLEANED OUT AT 12 MONTHLY INTERVALS. A FULL CCTV SURVEY SHOULD ALSO BE CARRIED OUT AT 10 YEARLY INTERVALS. REFER ALSO TO SPECIALIST DRAINAGE CHANNEL AND PETROL INTERCEPTOR MANUFACTURER'S INFORMATION AND MAINTENANCE REQUIREMENTS.
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REFER TO THE ARCHITECT'S DETAILS FOR THE INTERNAL, ABOVE GROUND, DRAINAGE LAYOUT.
RECOMMENDED MINIMUM GRADIENTS FOR BELOW GROUND FOUL DRAINAGE CONNECTIONS:
100 DIA. AT 1:40,
100 DIA. AT 1:80 WITH MIN 1 NO. WC CONNECTION,
150 DIA. AT 1:150 WITH MIN 5 NO. WC CONNECTIONS.
FINAL FOUL DRAINAGE CONNECTIONS TO BE COORDINATED WITH THE ARCHITECT'S INTERNAL DRAINAGE LAYOUT PLANS.

Rev.	Tech	Date	Description
T3	JJ	14.10.22	UPDATED IN LINE WITH LATEST ARCHITECT LAYOUT.
T2	JJ	23.09.22	UPDATED IN LINE WITH LATEST ARCHITECT LAYOUT.
T1	JJ	23.06.22	TENDER ISSUE. DRAINAGE UPDATED IN LINE WITH LATEST ARCHITECT LAYOUT.
P1	JJ	27.04.22	PRELIMINARY ISSUE.

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Client: BRIDGE

Project Title: **WEYBRIDGE BUSINESS PARK, WEYBRIDGE**

Drawing Title: **DRAINAGE LAYOUT AND EXTERNAL LEVELS SHEET 2 OF 2**

Purpose of Issue: Information ○ Preliminary ○ Approval ○ Tender ● Construction ○ Record Copy ○

First Issue Date	Drawn By	Scale	Checked
APRIL 22	JJ	1 : 250 @ A0	NDH

Drawing Number	Rev.
10334617-HDR-XX-XX-DR-C-301	T3

APPENDIX G

DRAINAGE CALCULATIONS

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	1.409	4-8	0.502

Total Area Contributing (ha) = 1.911

Total Pipe Volume (m^3) = 29.419

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	18.010	0.280	64.3	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit
1.001	15.170	0.465	32.6	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
2.000	3.140	0.020	157.0	0.123	5.00	0.0	0.600	o	225	Pipe/Conduit
1.002	15.880	0.170	93.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.000	2.840	0.015	189.3	0.136	5.00	0.0	0.600	o	300	Pipe/Conduit
3.001	20.520	0.100	205.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.003	50.600	0.250	202.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit
4.000	12.060	0.105	114.9	0.016	5.00	0.0	0.600	o	150	Pipe/Conduit
1.004	35.040	0.175	200.2	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	12.050	0.020	0.0	1.26	22.2
1.001	11.770	0.020	0.0	1.77	31.3
2.000	11.250	0.123	0.0	1.04	41.4
1.002	11.155	0.143	0.0	1.63	115.0
3.000	11.100	0.136	0.0	1.14	80.5
3.001	11.085	0.136	0.0	1.09	77.3
1.003	10.910	0.279	0.0	1.27	140.3
4.000	10.990	0.016	0.0	0.94	16.6
1.004	10.660	0.295	0.0	1.28	141.0

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
5.000	2.730	0.015	182.0	0.146	5.00	0.0	0.600	o	300	Pipe/Conduit
5.001	20.520	0.525	39.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.000	3.340	0.690	4.8	0.121	5.00	0.0	0.600	o	300	Pipe/Conduit
1.005	3.390	0.015	226.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit
1.006	2.840	0.010	284.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit
1.007	1.360	0.020	68.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit
7.000	22.440	1.280	17.5	0.205	5.00	0.0	0.600	o	300	Pipe/Conduit
8.000	3.940	0.150	26.3	0.016	5.00	0.0	0.600	o	150	Pipe/Conduit
8.001	4.450	0.550	8.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
5.000	11.100	0.146	0.0	1.16	82.2
5.001	11.085	0.146	0.0	2.52	178.3
6.000	11.250	0.121	0.0	7.19	508.4
1.005	10.410	0.562	0.0	1.35	214.4
1.006	10.395	0.562	0.0	1.20	191.1
1.007	10.285	0.562	0.0	2.47	392.6
7.000	11.880	0.205	0.0	3.77	266.7
8.000	11.450	0.016	0.0	1.97	34.9
8.001	11.300	0.016	0.0	3.56	63.0

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
9.000	1.060	0.250	4.2	0.019	5.00	0.0	0.600	o	150	Pipe/Conduit
10.000	1.060	0.250	4.2	0.019	5.00	0.0	0.600	o	150	Pipe/Conduit
11.000	2.480	0.050	49.6	0.012	5.00	0.0	0.600	o	150	Pipe/Conduit
11.001	2.660	0.025	106.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
12.000	8.200	0.045	182.2	0.011	5.00	0.0	0.600	o	150	Pipe/Conduit
11.002	2.420	0.225	10.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
11.003	14.030	0.140	100.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
11.004	25.540	0.170	150.2	0.163	0.00	0.0	0.600	o	375	Pipe/Conduit
13.000	2.000	0.445	4.5	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
9.000	11.000	0.019	0.0	4.93	87.1
10.000	11.000	0.019	0.0	4.93	87.1
11.000	12.175	0.012	0.0	1.43	25.3
11.001	12.125	0.012	0.0	0.97	17.2
12.000	12.085	0.011	0.0	0.74	13.1
11.002	12.090	0.023	0.0	3.09	54.6
11.003	11.865	0.023	0.0	1.00	17.7
11.004	11.500	0.186	0.0	1.48	163.0
13.000	12.000	0.010	0.0	4.79	84.6

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
11.005	9.670	0.065	148.8	0.803	0.00	0.0	0.600	o	525	Pipe/Conduit
11.006	8.420	0.455	18.5	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit
11.007	9.220	0.060	153.7	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit
11.008	5.680	0.125	45.4	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit
14.000	1.960	1.150	1.7	0.027	5.00	0.0	0.600	o	150	Pipe/Conduit
11.009	1.060	0.100	10.6	0.019	0.00	0.0	0.600	o	525	Pipe/Conduit
15.000	3.630	0.820	4.4	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
16.000	3.100	0.820	3.8	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
17.000	3.670	0.325	11.3	0.045	5.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
11.005	11.180	0.999	0.0	1.83	397.1
11.006	11.115	0.999	0.0	5.22	1131.0
11.007	10.660	0.999	0.0	1.80	390.6
11.008	10.600	0.999	0.0	3.33	720.7
14.000	12.000	0.027	0.0	7.78	137.5
11.009	10.475	1.045	0.0	6.91	1495.2
15.000	11.920	0.000	0.0	4.82	85.2
16.000	11.920	0.000	0.0	5.22	92.3
17.000	11.000	0.045	0.0	3.92	155.7

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.008	2.660	0.025	106.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
1.009	17.200	-0.965	-17.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.008	10.100	1.911	0.0	0.97	17.2
1.009	10.075	1.911	0.0	0.00	0.0

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SP1	12.950	0.900	Open Manhole	1200	1.000	12.050	150				
MH S100	12.537	0.767	Open Manhole	1200	1.001	11.770	150	1.000	11.770	150	
SP2	12.225	0.975	Open Manhole	1200	2.000	11.250	225				
MH S101	12.301	1.146	Open Manhole	1500	1.002	11.155	300	1.001	11.305	150	
								2.000	11.230	225	
SP3	11.750	0.650	Open Manhole	1200	3.000	11.100	300				
MH S102	12.860	1.775	Open Manhole	1500	3.001	11.085	300	3.000	11.085	300	
MH S103	12.299	1.389	Open Manhole	1500	1.003	10.910	375	1.002	10.985	300	
								3.001	10.985	300	
MH S104	11.890	0.900	Open Manhole	1200	4.000	10.990	150				
MH S105	12.300	1.640	Open Manhole	1500	1.004	10.660	375	1.003	10.660	375	
								4.000	10.885	150	
SP4	11.750	0.650	Open Manhole	1200	5.000	11.100	300				
MH S106	12.860	1.775	Open Manhole	1500	5.001	11.085	300	5.000	11.085	300	
SP5	12.225	0.975	Open Manhole	1200	6.000	11.250	300				
MH S107	12.300	1.890	Open Manhole	1500	1.005	10.410	450	1.004	10.485	375	
								5.001	10.560	300	
								6.000	10.560	300	
MH S108	12.384	1.989	Open Manhole	1500	1.006	10.395	450	1.005	10.395	450	
PI1	12.380	2.095	Open Manhole	1200	1.007	10.285	450	1.006	10.385	450	100
MH S109	12.930	1.050	Open Manhole	1500	7.000	11.880	300				
SP8	12.375	0.925	Open Manhole	1200	8.000	11.450	150				
MH S120	12.431	1.131	Open Manhole	1200	8.001	11.300	150	8.000	11.300	150	
MH S119	12.727	1.727	Open Manhole	1200	9.000	11.000	150				
MH S118	12.724	1.724	Open Manhole	1200	10.000	11.000	150				
SP6	12.925	0.750	Open Manhole	1200	11.000	12.175	150				
MH S110	12.736	0.611	Open Manhole	1200	11.001	12.125	150	11.000	12.125	150	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SP7	12.497	0.412	Open Manhole	1200	12.000	12.085	150				
PPIC 3	12.625	0.585	Open Manhole	1200	11.002	12.090	150	11.001	12.100	150	10
								12.000	12.040	150	
MH S111	12.677	0.812	Open Manhole	1200	11.003	11.865	150	11.002	11.865	150	
MH S112	12.936	1.436	Open Manhole	1500	11.004	11.500	375	11.003	11.725	150	
SP10	12.925	0.925	Open Manhole	1200	13.000	12.000	150				
MH S113	12.937	1.757	Open Manhole	1500	11.005	11.180	525	11.004	11.330	375	
								13.000	11.555	150	
MH S114	12.488	1.373	Open Manhole	1500	11.006	11.115	525	11.005	11.115	525	
MH S115	12.046	1.386	Open Manhole	1500	11.007	10.660	525	11.006	10.660	525	
MH S116	12.052	1.452	Open Manhole	1500	11.008	10.600	525	11.007	10.600	525	
SP9	12.925	0.925	Open Manhole	1200	14.000	12.000	150				
MH S117	12.444	1.969	Open Manhole	1500	11.009	10.475	525	11.008	10.475	525	
								14.000	10.850	150	
PPIC 1	12.450	0.530	Open Manhole	1200	15.000	11.920	150				
PPIC 2	12.450	0.530	Open Manhole	1200	16.000	11.920	150				
BASIN	12.500	1.500	Open Manhole	1200	17.000	11.000	225				
TANK	12.250	2.150	Open Manhole	1200	1.008	10.100	150	1.007	10.265	450	465
								7.000	10.600	300	650
								8.001	10.750	150	650
								9.000	10.750	150	650
								10.000	10.750	150	650
								11.009	10.375	525	650
								15.000	11.100	150	1000
								16.000	11.100	150	1000
								17.000	10.675	225	650
Pump	12.840	2.765	Open Manhole	1200	1.009	10.075	150	1.008	10.075	150	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
HW 1	12.400	1.360	Open Manhole	0		OUTFALL		1.009	11.040	150	

No coordinates have been specified, layout information cannot be produced.

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	SP1	12.950	12.050	0.750	Open Manhole	1200
1.001	o	150	MH S100	12.537	11.770	0.617	Open Manhole	1200
2.000	o	225	SP2	12.225	11.250	0.750	Open Manhole	1200
1.002	o	300	MH S101	12.301	11.155	0.846	Open Manhole	1500
3.000	o	300	SP3	11.750	11.100	0.350	Open Manhole	1200
3.001	o	300	MH S102	12.860	11.085	1.475	Open Manhole	1500
1.003	o	375	MH S103	12.299	10.910	1.014	Open Manhole	1500
4.000	o	150	MH S104	11.890	10.990	0.750	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	18.010	64.3	MH S100	12.537	11.770	0.617	Open Manhole	1200
1.001	15.170	32.6	MH S101	12.301	11.305	0.846	Open Manhole	1500
2.000	3.140	157.0	MH S101	12.301	11.230	0.846	Open Manhole	1500
1.002	15.880	93.4	MH S103	12.299	10.985	1.014	Open Manhole	1500
3.000	2.840	189.3	MH S102	12.860	11.085	1.475	Open Manhole	1500
3.001	20.520	205.2	MH S103	12.299	10.985	1.014	Open Manhole	1500
1.003	50.600	202.4	MH S105	12.300	10.660	1.265	Open Manhole	1500
4.000	12.060	114.9	MH S105	12.300	10.885	1.265	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.004	o	375	MH S105	12.300	10.660	1.265	Open Manhole	1500
5.000	o	300	SP4	11.750	11.100	0.350	Open Manhole	1200
5.001	o	300	MH S106	12.860	11.085	1.475	Open Manhole	1500
6.000	o	300	SP5	12.225	11.250	0.675	Open Manhole	1200
1.005	o	450	MH S107	12.300	10.410	1.440	Open Manhole	1500
1.006	o	450	MH S108	12.384	10.395	1.539	Open Manhole	1500
1.007	o	450	PI1	12.380	10.285	1.645	Open Manhole	1200
7.000	o	300	MH S109	12.930	11.880	0.750	Open Manhole	1500
8.000	o	150	SP8	12.375	11.450	0.775	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.004	35.040	200.2	MH S107	12.300	10.485	1.440	Open Manhole	1500
5.000	2.730	182.0	MH S106	12.860	11.085	1.475	Open Manhole	1500
5.001	20.520	39.1	MH S107	12.300	10.560	1.440	Open Manhole	1500
6.000	3.340	4.8	MH S107	12.300	10.560	1.440	Open Manhole	1500
1.005	3.390	226.0	MH S108	12.384	10.395	1.539	Open Manhole	1500
1.006	2.840	284.0	PI1	12.380	10.385	1.545	Open Manhole	1200
1.007	1.360	68.0	TANK	12.250	10.265	1.535	Open Manhole	1200
7.000	22.440	17.5	TANK	12.250	10.600	1.350	Open Manhole	1200
8.000	3.940	26.3	MH S120	12.431	11.300	0.981	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.001	o	150	MH S120	12.431	11.300	0.981	Open Manhole	1200
9.000	o	150	MH S119	12.727	11.000	1.577	Open Manhole	1200
10.000	o	150	MH S118	12.724	11.000	1.574	Open Manhole	1200
11.000	o	150	SP6	12.925	12.175	0.600	Open Manhole	1200
11.001	o	150	MH S110	12.736	12.125	0.461	Open Manhole	1200
12.000	o	150	SP7	12.497	12.085	0.262	Open Manhole	1200
11.002	o	150	PPIC 3	12.625	12.090	0.385	Open Manhole	1200
11.003	o	150	MH S111	12.677	11.865	0.662	Open Manhole	1200
11.004	o	375	MH S112	12.936	11.500	1.061	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.001	4.450	8.1	TANK	12.250	10.750	1.350	Open Manhole	1200
9.000	1.060	4.2	TANK	12.250	10.750	1.350	Open Manhole	1200
10.000	1.060	4.2	TANK	12.250	10.750	1.350	Open Manhole	1200
11.000	2.480	49.6	MH S110	12.736	12.125	0.461	Open Manhole	1200
11.001	2.660	106.4	PPIC 3	12.625	12.100	0.375	Open Manhole	1200
12.000	8.200	182.2	PPIC 3	12.625	12.040	0.435	Open Manhole	1200
11.002	2.420	10.8	MH S111	12.677	11.865	0.662	Open Manhole	1200
11.003	14.030	100.2	MH S112	12.936	11.725	1.061	Open Manhole	1500
11.004	25.540	150.2	MH S113	12.937	11.330	1.232	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
13.000	o	150	SP10	12.925	12.000	0.775	Open Manhole	1200
11.005	o	525	MH S113	12.937	11.180	1.232	Open Manhole	1500
11.006	o	525	MH S114	12.488	11.115	0.848	Open Manhole	1500
11.007	o	525	MH S115	12.046	10.660	0.861	Open Manhole	1500
11.008	o	525	MH S116	12.052	10.600	0.927	Open Manhole	1500
14.000	o	150	SP9	12.925	12.000	0.775	Open Manhole	1200
11.009	o	525	MH S117	12.444	10.475	1.444	Open Manhole	1500
15.000	o	150	PPIC 1	12.450	11.920	0.380	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
13.000	2.000	4.5	MH S113	12.937	11.555	1.232	Open Manhole	1500
11.005	9.670	148.8	MH S114	12.488	11.115	0.848	Open Manhole	1500
11.006	8.420	18.5	MH S115	12.046	10.660	0.861	Open Manhole	1500
11.007	9.220	153.7	MH S116	12.052	10.600	0.927	Open Manhole	1500
11.008	5.680	45.4	MH S117	12.444	10.475	1.444	Open Manhole	1500
14.000	1.960	1.7	MH S117	12.444	10.850	1.444	Open Manhole	1500
11.009	1.060	10.6	TANK	12.250	10.375	1.350	Open Manhole	1200
15.000	3.630	4.4	TANK	12.250	11.100	1.000	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
16.000	o	150	PPIC 2	12.450	11.920	0.380	Open Manhole	1200
17.000	o	225	BASIN	12.500	11.000	1.275	Open Manhole	1200
1.008	o	150	TANK	12.250	10.100	2.000	Open Manhole	1200
1.009	o	150	Pump	12.840	10.075	2.615	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
16.000	3.100	3.8	TANK	12.250	11.100	1.000	Open Manhole	1200
17.000	3.670	11.3	TANK	12.250	10.675	1.350	Open Manhole	1200
1.008	2.660	106.4	Pump	12.840	10.075	2.615	Open Manhole	1200
1.009	17.200	-17.8	HW 1	12.400	11.040	1.210	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.020	0.020	0.020
1.001	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.123	0.123	0.123
1.002	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.136	0.136	0.136
3.001	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.016	0.016	0.016
1.004	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.146	0.146	0.146
5.001	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.121	0.121	0.121
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.205	0.205	0.205
8.000	-	-	100	0.016	0.016	0.016
8.001	-	-	100	0.000	0.000	0.000
9.000	-	-	100	0.019	0.019	0.019
10.000	-	-	100	0.019	0.019	0.019
11.000	-	-	100	0.012	0.012	0.012
11.001	-	-	100	0.000	0.000	0.000
12.000	-	-	100	0.011	0.011	0.011
11.002	-	-	100	0.000	0.000	0.000
11.003	-	-	100	0.000	0.000	0.000
11.004	-	-	100	0.163	0.163	0.163
13.000	-	-	100	0.010	0.010	0.010
11.005	-	-	100	0.803	0.803	0.803
11.006	-	-	100	0.000	0.000	0.000
11.007	-	-	100	0.000	0.000	0.000
11.008	-	-	100	0.000	0.000	0.000
14.000	-	-	100	0.027	0.027	0.027
11.009	-	-	100	0.019	0.019	0.019
15.000	-	-	100	0.000	0.000	0.000
16.000	-	-	100	0.000	0.000	0.000
17.000	-	-	100	0.045	0.045	0.045
1.008	-	-	100	0.000	0.000	0.000

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.009	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.911	1.911	1.911

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009	HW 1	12.400	11.040	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 3
Number of Online Controls 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Storm Duration (mins)	30
FEH Rainfall Version	2013	Winter Storms	No		
Site Location	GB 506317 164697 TQ 06317 64697	Cv (Summer)	0.750		

Online Controls for Storm

Pump Manhole: Pump, DS/PN: 1.009, Volume (m³): 3.2

Invert Level (m) 10.075

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	7.3400	1.200	7.3400	2.200	7.3400	3.200	7.3400	4.200	7.3400	5.200	7.3400
0.400	7.3400	1.400	7.3400	2.400	7.3400	3.400	7.3400	4.400	7.3400	5.400	7.3400
0.600	7.3400	1.600	7.3400	2.600	7.3400	3.600	7.3400	4.600	7.3400	5.600	7.3400
0.800	7.3400	1.800	7.3400	2.800	7.3400	3.800	7.3400	4.800	7.3400	5.800	7.3400
1.000	7.3400	2.000	7.3400	3.000	7.3400	4.000	7.3400	5.000	7.3400	6.000	7.3400

Storage Structures for Storm

Porous Car Park Manhole: PPIC 3, DS/PN: 11.002

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	60.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	12.240	Depression Storage (mm)	5
Max Percolation (l/s)	143.1	Width (m)	83.1	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	6.2	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: PPIC 1, DS/PN: 15.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	20.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	12.070	Depression Storage (mm)	5
Max Percolation (l/s)	50.1	Width (m)	6.2	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	29.1	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: PPIC 2, DS/PN: 16.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	39.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	12.070	Depression Storage (mm)	5
Max Percolation (l/s)	72.2	Width (m)	42.6	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	6.1	Cap Volume Depth (m)	0.300

Complex Manhole: TANK, DS/PN: 1.008

Cellular Storage

Invert Level (m)	10.100	Infiltration Coefficient Side (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Base (m/hr)	0.00000			Safety Factor	2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1469.3	0.0	1.000	1469.3	0.0	1.001	0.0	0.0

Tank or Pond

Invert Level (m) 11.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	40.0	1.500	340.0	1.501	0.0

Time Area Diagram at Pipe Number 11.002 for Storm

Total Area (ha) 0.123

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.041	4	8	0.041	8	12	0.041

Time Area Diagram at Pipe Number 15.000 for Storm

Total Area (ha) 0.065

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.033	4	8	0.032

Time Area Diagram at Pipe Number 16.000 for Storm

Total Area (ha) 0.065

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.033	4	8	0.032

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 3
Number of Online Controls 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 506317 164697 TQ 06317 64697 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SP1	15 Winter	2	+0%					12.089	-0.111	0.000	0.15			3.2	OK
1.001	MH S100	15 Winter	2	+0%					11.803	-0.117	0.000	0.11			3.2	OK
2.000	SP2	15 Winter	2	+0%	30/15 Summer				11.396	-0.079	0.000	0.73			19.4	OK
1.002	MH S101	15 Winter	2	+0%	100/15 Summer				11.254	-0.201	0.000	0.23			22.8	OK
3.000	SP3	15 Winter	2	+0%	100/15 Summer	100/15 Summer			11.237	-0.163	0.000	0.42			21.5	OK
3.001	MH S102	15 Winter	2	+0%	100/15 Summer				11.202	-0.183	0.000	0.32			21.7	OK
1.003	MH S103	15 Winter	2	+0%	100/15 Summer				11.060	-0.225	0.000	0.33			43.3	OK
4.000	MH S104	15 Winter	2	+0%	100/15 Summer				11.032	-0.108	0.000	0.17			2.5	OK
1.004	MH S105	15 Winter	2	+0%	30/15 Summer				10.815	-0.220	0.000	0.35			44.7	OK

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	SP1	
1.001	MH S100	
2.000	SP2	
1.002	MH S101	
3.000	SP3	8
3.001	MH S102	
1.003	MH S103	
4.000	MH S104	
1.004	MH S105	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
5.000	SP4	15 Winter	2	+0%	30/15 Winter	100/360 Winter			11.242	-0.158	0.000	0.44			23.1	OK
5.001	MH S106	15 Winter	2	+0%	100/15 Summer				11.163	-0.222	0.000	0.15			23.3	OK
6.000	SP5	15 Winter	2	+0%	100/360 Winter				11.312	-0.238	0.000	0.09			19.4	OK
1.005	MH S107	15 Winter	2	+0%	30/15 Summer				10.683	-0.177	0.000	0.68			82.9	OK
1.006	MH S108	15 Winter	2	+0%	30/15 Summer				10.664	-0.181	0.000	0.67			82.5	OK
1.007	PI1	15 Winter	2	+0%	30/15 Summer				10.546	-0.189	0.000	0.62			81.9	OK
7.000	MH S109	15 Winter	2	+0%					11.955	-0.225	0.000	0.14			32.8	OK
8.000	SP8	15 Winter	2	+0%	100/360 Winter				11.483	-0.117	0.000	0.11			2.6	OK
8.001	MH S120	15 Winter	2	+0%	100/360 Winter				11.323	-0.127	0.000	0.05			2.5	OK
9.000	MH S119	15 Winter	2	+0%	100/240 Winter				11.031	-0.119	0.000	0.10			3.0	OK
10.000	MH S118	15 Winter	2	+0%	100/240 Winter				11.031	-0.119	0.000	0.10			3.0	OK
11.000	SP6	15 Winter	2	+0%	100/15 Summer				12.212	-0.113	0.000	0.14			1.9	OK
11.001	MH S110	15 Winter	2	+0%	30/15 Summer				12.169	-0.106	0.000	0.18			1.9	OK
12.000	SP7	15 Winter	2	+0%	30/15 Summer				12.169	-0.066	0.000	0.14			1.6	OK
11.002	PPIC 3	15 Winter	2	+0%	30/15 Summer				12.165	-0.075	0.000	0.50		15	14.7	OK
11.003	MH S111	15 Winter	2	+0%	30/15 Summer				11.977	-0.038	0.000	0.91			14.7	OK
11.004	MH S112	15 Winter	2	+0%	30/15 Summer				11.624	-0.251	0.000	0.23			32.6	OK
13.000	SP10	15 Winter	2	+0%	100/15 Summer				12.019	-0.131	0.000	0.04			1.6	OK
11.005	MH S113	15 Winter	2	+0%	30/15 Summer				11.455	-0.250	0.000	0.54			133.0	OK
11.006	MH S114	15 Winter	2	+0%	30/15 Winter				11.295	-0.345	0.000	0.26			133.1	OK
11.007	MH S115	15 Winter	2	+0%	30/15 Summer				10.932	-0.253	0.000	0.53			132.9	OK
11.008	MH S116	15 Winter	2	+0%	30/15 Summer				10.860	-0.265	0.000	0.49			131.9	OK
14.000	SP9	15 Winter	2	+0%					12.025	-0.125	0.000	0.06			4.3	OK
11.009	MH S117	15 Winter	2	+0%	30/15 Summer				10.755	-0.245	0.000	0.55			136.7	OK
15.000	PPIC 1	15 Winter	2	+0%					11.958	-0.112	0.000	0.15		7	8.2	OK
16.000	PPIC 2	15 Winter	2	+0%					11.958	-0.112	0.000	0.15		7	8.2	OK
17.000	BASIN	15 Winter	2	+0%	100/360 Winter				11.046	-0.179	0.000	0.09			7.2	OK
1.008	TANK	480 Winter	2	+0%	2/60 Winter				10.413	0.163	0.000	0.76			8.2	SURCHARGED
1.009	Pump	480 Winter	2	+0%	2/30 Winter				10.424	0.199	0.000	1.67			7.3	SURCHARGED

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
5.000	SP4	6
5.001	MH S106	
6.000	SP5	
1.005	MH S107	
1.006	MH S108	
1.007	PI1	
7.000	MH S109	
8.000	SP8	
8.001	MH S120	
9.000	MH S119	
10.000	MH S118	
11.000	SP6	
11.001	MH S110	
12.000	SP7	
11.002	PPIC 3	
11.003	MH S111	
11.004	MH S112	
13.000	SP10	
11.005	MH S113	
11.006	MH S114	
11.007	MH S115	
11.008	MH S116	
14.000	SP9	
11.009	MH S117	
15.000	PPIC 1	
16.000	PPIC 2	
17.000	BASIN	
1.008	TANK	
1.009	Pump	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 3
Number of Online Controls 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 506317 164697 TQ 06317 64697 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SP1	15 Winter	30	+0%					12.115	-0.085	0.000	0.39			8.0	OK
1.001	MH S100	15 Winter	30	+0%					11.824	-0.096	0.000	0.27			7.9	OK
2.000	SP2	15 Winter	30	+0%	30/15 Summer				11.570	0.095	0.000	1.82			48.6	SURCHARGED
1.002	MH S101	15 Winter	30	+0%	100/15 Summer				11.322	-0.133	0.000	0.59			57.0	OK
3.000	SP3	15 Winter	30	+0%	100/15 Summer	100/15 Summer			11.382	-0.018	0.000	1.00			51.6	OK
3.001	MH S102	15 Winter	30	+0%	100/15 Summer				11.301	-0.084	0.000	0.76			51.5	OK
1.003	MH S103	15 Winter	30	+0%	100/15 Summer				11.251	-0.034	0.000	0.78			101.9	OK
4.000	MH S104	15 Winter	30	+0%	100/15 Summer				11.135	-0.005	0.000	0.43			6.4	OK
1.004	MH S105	15 Winter	30	+0%	30/15 Summer				11.118	0.083	0.000	0.85			107.3	SURCHARGED

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	SP1	
1.001	MH S100	
2.000	SP2	
1.002	MH S101	
3.000	SP3	8
3.001	MH S102	
1.003	MH S103	
4.000	MH S104	
1.004	MH S105	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
5.000	SP4	15 Winter	30	+0%	30/15 Winter	100/360 Winter			11.400	0.000	0.000	1.09			56.5	SURCHARGED
5.001	MH S106	15 Winter	30	+0%	100/15 Summer				11.216	-0.169	0.000	0.37			57.2	OK
6.000	SP5	15 Winter	30	+0%	100/360 Winter				11.348	-0.202	0.000	0.23			48.6	OK
1.005	MH S107	15 Winter	30	+0%	30/15 Summer				11.017	0.157	0.000	1.46			177.6	SURCHARGED
1.006	MH S108	15 Winter	30	+0%	30/15 Summer				10.914	0.069	0.000	1.44			178.4	SURCHARGED
1.007	PI1 600	Winter	30	+0%	30/15 Summer				10.798	0.063	0.000	0.16			21.5	SURCHARGED
7.000	MH S109	15 Winter	30	+0%					12.003	-0.177	0.000	0.35			82.2	OK
8.000	SP8	15 Winter	30	+0%	100/360 Winter				11.503	-0.097	0.000	0.26			6.4	OK
8.001	MH S120	15 Winter	30	+0%	100/360 Winter				11.337	-0.113	0.000	0.14			6.3	OK
9.000	MH S119	15 Winter	30	+0%	100/240 Winter				11.050	-0.100	0.000	0.24			7.6	OK
10.000	MH S118	15 Winter	30	+0%	100/240 Winter				11.050	-0.100	0.000	0.24			7.6	OK
11.000	SP6	30 Winter	30	+0%	100/15 Summer				12.318	-0.007	0.000	0.24			3.4	OK
11.001	MH S110	15 Winter	30	+0%	30/15 Summer				12.317	0.042	0.000	0.36			3.9	SURCHARGED
12.000	SP7	30 Winter	30	+0%	30/15 Summer				12.319	0.084	0.000	0.26			3.0	FLOOD RISK
11.002	PPIC 3	15 Winter	30	+0%	30/15 Summer				12.317	0.077	0.000	0.81		5	24.0	SURCHARGED
11.003	MH S111	15 Winter	30	+0%	30/15 Summer				12.172	0.157	0.000	1.47			23.9	SURCHARGED
11.004	MH S112	15 Winter	30	+0%	30/15 Summer				11.949	0.074	0.000	0.59			83.5	SURCHARGED
13.000	SP10	15 Winter	30	+0%	100/15 Summer				12.031	-0.119	0.000	0.10			4.0	OK
11.005	MH S113	15 Winter	30	+0%	30/15 Summer				11.896	0.191	0.000	1.40			348.9	SURCHARGED
11.006	MH S114	15 Winter	30	+0%	30/15 Winter				11.692	0.052	0.000	0.66			342.7	SURCHARGED
11.007	MH S115	15 Winter	30	+0%	30/15 Summer				11.491	0.306	0.000	1.37			341.4	SURCHARGED
11.008	MH S116	15 Winter	30	+0%	30/15 Summer				11.291	0.166	0.000	1.26			342.2	SURCHARGED
14.000	SP9	15 Winter	30	+0%					12.040	-0.110	0.000	0.16			10.8	OK
11.009	MH S117	15 Winter	30	+0%	30/15 Summer				11.093	0.093	0.000	1.44			357.0	SURCHARGED
15.000	PPIC 1	15 Winter	30	+0%					11.982	-0.088	0.000	0.36		8	20.6	OK
16.000	PPIC 2	15 Winter	30	+0%					11.982	-0.088	0.000	0.36		8	20.6	OK
17.000	BASIN	15 Winter	30	+0%	100/360 Winter				11.072	-0.153	0.000	0.22			18.1	OK
1.008	TANK 600	Winter	30	+0%	2/60 Winter				10.797	0.547	0.000	0.76			8.2	SURCHARGED
1.009	Pump 720	Winter	30	+0%	2/30 Winter				10.808	0.583	0.000	1.67			7.3	SURCHARGED

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
5.000	SP4	6
5.001	MH S106	
6.000	SP5	
1.005	MH S107	
1.006	MH S108	
1.007	PI1	
7.000	MH S109	
8.000	SP8	
8.001	MH S120	
9.000	MH S119	
10.000	MH S118	
11.000	SP6	
11.001	MH S110	
12.000	SP7	
11.002	PPIC 3	
11.003	MH S111	
11.004	MH S112	
13.000	SP10	
11.005	MH S113	
11.006	MH S114	
11.007	MH S115	
11.008	MH S116	
14.000	SP9	
11.009	MH S117	
15.000	PPIC 1	
16.000	PPIC 2	
17.000	BASIN	
1.008	TANK	
1.009	Pump	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 3
Number of Online Controls 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 506317 164697 TQ 06317 64697 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 20

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SP1	15 Winter	100	+20%					12.135	-0.065	0.000	0.60			12.5	OK
1.001	MH S100	15 Winter	100	+20%					11.872	-0.048	0.000	0.43			12.4	OK
2.000	SP2	15 Winter	100	+20%	30/15 Summer				12.042	0.567	0.000	2.49			66.4	FLOOD RISK
1.002	MH S101	960 Winter	100	+20%	100/15 Summer				11.816	0.361	0.000	0.06			5.9	SURCHARGED
3.000	SP3	960 Winter	100	+20%	100/15 Summer	100/15 Summer			11.813	0.413	62.611	0.11			5.7	FLOOD
3.001	MH S102	960 Winter	100	+20%	100/15 Summer				11.814	0.429	0.000	0.08			5.7	SURCHARGED
1.003	MH S103	960 Winter	100	+20%	100/15 Summer				11.816	0.531	0.000	0.09			11.5	SURCHARGED
4.000	MH S104	960 Winter	100	+20%	100/15 Summer				11.818	0.678	0.000	0.04			0.7	FLOOD RISK
1.004	MH S105	960 Winter	100	+20%	30/15 Summer				11.818	0.783	0.000	0.10			12.1	SURCHARGED

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	SP1	
1.001	MH S100	
2.000	SP2	
1.002	MH S101	
3.000	SP3	8
3.001	MH S102	
1.003	MH S103	
4.000	MH S104	
1.004	MH S105	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
5.000	SP4	960 Winter	100	+20%	30/15 Winter	100/360 Winter			11.817	0.417	66.762	0.12			6.0	FLOOD
5.001	MH S106	960 Winter	100	+20%	100/15 Summer				11.817	0.432	0.000	0.04			6.0	SURCHARGED
6.000	SP5	720 Winter	100	+20%	100/360 Winter				11.821	0.271	0.000	0.03			6.3	SURCHARGED
1.005	MH S107	720 Winter	100	+20%	30/15 Summer				11.821	0.961	0.000	0.23			28.4	SURCHARGED
1.006	MH S108	720 Winter	100	+20%	30/15 Summer				11.823	0.978	0.000	0.23			28.2	SURCHARGED
1.007	PI1	720 Winter	100	+20%	30/15 Summer				11.825	1.090	0.000	0.21			28.1	SURCHARGED
7.000	MH S109	15 Winter	100	+20%					12.040	-0.140	0.000	0.55			128.7	OK
8.000	SP8	720 Winter	100	+20%	100/360 Winter				11.828	0.228	0.000	0.03			0.8	SURCHARGED
8.001	MH S120	720 Winter	100	+20%	100/360 Winter				11.828	0.378	0.000	0.02			0.8	SURCHARGED
9.000	MH S119	720 Winter	100	+20%	100/240 Winter				11.827	0.677	0.000	0.03			1.0	SURCHARGED
10.000	MH S118	720 Winter	100	+20%	100/240 Winter				11.827	0.677	0.000	0.03			1.0	SURCHARGED
11.000	SP6	15 Winter	100	+20%	100/15 Summer				12.465	0.140	0.000	0.47			6.6	SURCHARGED
11.001	MH S110	15 Winter	100	+20%	30/15 Summer				12.465	0.190	0.000	0.55			6.0	FLOOD RISK
12.000	SP7	15 Winter	100	+20%	30/15 Summer				12.465	0.230	0.000	0.51			5.8	FLOOD RISK
11.002	PPIC 3	15 Winter	100	+20%	30/15 Summer				12.465	0.225	0.000	0.93		13	27.6	FLOOD RISK
11.003	MH S111	15 Winter	100	+20%	30/15 Summer				12.497	0.482	0.000	1.70			27.6	FLOOD RISK
11.004	MH S112	15 Winter	100	+20%	30/15 Summer				12.792	0.917	0.000	0.65			92.3	FLOOD RISK
13.000	SP10	15 Winter	100	+20%	100/15 Summer				12.754	0.604	0.000	0.20			8.4	FLOOD RISK
11.005	MH S113	15 Winter	100	+20%	30/15 Summer				12.750	1.045	0.000	1.87			464.1	FLOOD RISK
11.006	MH S114	15 Winter	100	+20%	30/15 Winter				12.375	0.735	0.000	0.89			461.9	FLOOD RISK
11.007	MH S115	15 Winter	100	+20%	30/15 Summer				12.004	0.819	0.000	1.86			463.1	FLOOD RISK
11.008	MH S116	720 Winter	100	+20%	30/15 Summer				11.829	0.704	0.000	0.22			58.7	FLOOD RISK
14.000	SP9	15 Winter	100	+20%					12.051	-0.099	0.000	0.25			17.0	OK
11.009	MH S117	720 Winter	100	+20%	30/15 Summer				11.828	0.828	0.000	0.24			60.8	SURCHARGED
15.000	PPIC 1	15 Winter	100	+20%					12.001	-0.069	0.000	0.57		8	32.2	OK
16.000	PPIC 2	15 Winter	100	+20%					12.001	-0.069	0.000	0.57		8	32.2	OK
17.000	BASIN	720 Winter	100	+20%	100/360 Winter				11.828	0.603	0.000	0.03			2.4	SURCHARGED
1.008	TANK	720 Winter	100	+20%	2/60 Winter				11.827	1.577	0.000	0.92			10.0	SURCHARGED
1.009	Pump	600 Winter	100	+20%	2/30 Winter				11.848	1.623	0.000	1.67			7.3	SURCHARGED

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
5.000	SP4	6
5.001	MH S106	
6.000	SP5	
1.005	MH S107	
1.006	MH S108	
1.007	PI1	
7.000	MH S109	
8.000	SP8	
8.001	MH S120	
9.000	MH S119	
10.000	MH S118	
11.000	SP6	
11.001	MH S110	
12.000	SP7	
11.002	PPIC 3	
11.003	MH S111	
11.004	MH S112	
13.000	SP10	
11.005	MH S113	
11.006	MH S114	
11.007	MH S115	
11.008	MH S116	
14.000	SP9	
11.009	MH S117	
15.000	PPIC 1	
16.000	PPIC 2	
17.000	BASIN	
1.008	TANK	
1.009	Pump	

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	1.409	4-8	0.502

Total Area Contributing (ha) = 1.911

Total Pipe Volume (m^3) = 29.419

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	18.010	0.280	64.3	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit
1.001	15.170	0.465	32.6	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
2.000	3.140	0.020	157.0	0.123	5.00	0.0	0.600	o	225	Pipe/Conduit
1.002	15.880	0.170	93.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.000	2.840	0.015	189.3	0.136	5.00	0.0	0.600	o	300	Pipe/Conduit
3.001	20.520	0.100	205.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.003	50.600	0.250	202.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit
4.000	12.060	0.105	114.9	0.016	5.00	0.0	0.600	o	150	Pipe/Conduit
1.004	35.040	0.175	200.2	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	12.050	0.020	0.0	1.26	22.2
1.001	11.770	0.020	0.0	1.77	31.3
2.000	11.250	0.123	0.0	1.04	41.4
1.002	11.155	0.143	0.0	1.63	115.0
3.000	11.100	0.136	0.0	1.14	80.5
3.001	11.085	0.136	0.0	1.09	77.3
1.003	10.910	0.279	0.0	1.27	140.3
4.000	10.990	0.016	0.0	0.94	16.6
1.004	10.660	0.295	0.0	1.28	141.0

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
5.000	2.730	0.015	182.0	0.146	5.00	0.0	0.600	o	300	Pipe/Conduit
5.001	20.520	0.525	39.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.000	3.340	0.690	4.8	0.121	5.00	0.0	0.600	o	300	Pipe/Conduit
1.005	3.390	0.015	226.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit
1.006	2.840	0.010	284.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit
1.007	1.360	0.020	68.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit
7.000	22.440	1.280	17.5	0.205	5.00	0.0	0.600	o	300	Pipe/Conduit
8.000	3.940	0.150	26.3	0.016	5.00	0.0	0.600	o	150	Pipe/Conduit
8.001	4.450	0.550	8.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
5.000	11.100	0.146	0.0	1.16	82.2
5.001	11.085	0.146	0.0	2.52	178.3
6.000	11.250	0.121	0.0	7.19	508.4
1.005	10.410	0.562	0.0	1.35	214.4
1.006	10.395	0.562	0.0	1.20	191.1
1.007	10.285	0.562	0.0	2.47	392.6
7.000	11.880	0.205	0.0	3.77	266.7
8.000	11.450	0.016	0.0	1.97	34.9
8.001	11.300	0.016	0.0	3.56	63.0

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
9.000	1.060	0.250	4.2	0.019	5.00	0.0	0.600	o	150	Pipe/Conduit
10.000	1.060	0.250	4.2	0.019	5.00	0.0	0.600	o	150	Pipe/Conduit
11.000	2.480	0.050	49.6	0.012	5.00	0.0	0.600	o	150	Pipe/Conduit
11.001	2.660	0.025	106.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
12.000	8.200	0.045	182.2	0.011	5.00	0.0	0.600	o	150	Pipe/Conduit
11.002	2.420	0.225	10.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
11.003	14.030	0.140	100.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
11.004	25.540	0.170	150.2	0.163	0.00	0.0	0.600	o	375	Pipe/Conduit
13.000	2.000	0.445	4.5	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
9.000	11.000	0.019	0.0	4.93	87.1
10.000	11.000	0.019	0.0	4.93	87.1
11.000	12.175	0.012	0.0	1.43	25.3
11.001	12.125	0.012	0.0	0.97	17.2
12.000	12.085	0.011	0.0	0.74	13.1
11.002	12.090	0.023	0.0	3.09	54.6
11.003	11.865	0.023	0.0	1.00	17.7
11.004	11.500	0.186	0.0	1.48	163.0
13.000	12.000	0.010	0.0	4.79	84.6

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
11.005	9.670	0.065	148.8	0.803	0.00	0.0	0.600	o	525	Pipe/Conduit
11.006	8.420	0.455	18.5	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit
11.007	9.220	0.060	153.7	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit
11.008	5.680	0.125	45.4	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit
14.000	1.960	1.150	1.7	0.027	5.00	0.0	0.600	o	150	Pipe/Conduit
11.009	1.060	0.100	10.6	0.019	0.00	0.0	0.600	o	525	Pipe/Conduit
15.000	3.630	0.820	4.4	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
16.000	3.100	0.820	3.8	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
17.000	3.670	0.325	11.3	0.045	5.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
11.005	11.180	0.999	0.0	1.83	397.1
11.006	11.115	0.999	0.0	5.22	1131.0
11.007	10.660	0.999	0.0	1.80	390.6
11.008	10.600	0.999	0.0	3.33	720.7
14.000	12.000	0.027	0.0	7.78	137.5
11.009	10.475	1.045	0.0	6.91	1495.2
15.000	11.920	0.000	0.0	4.82	85.2
16.000	11.920	0.000	0.0	5.22	92.3
17.000	11.000	0.045	0.0	3.92	155.7

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.008	2.660	0.025	106.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
1.009	17.200	-0.965	-17.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.008	10.100	1.911	0.0	0.97	17.2
1.009	10.075	1.911	0.0	0.00	0.0

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SP1	12.950	0.900	Open Manhole	1200	1.000	12.050	150				
MH S100	12.537	0.767	Open Manhole	1200	1.001	11.770	150	1.000	11.770	150	
SP2	12.225	0.975	Open Manhole	1200	2.000	11.250	225				
MH S101	12.301	1.146	Open Manhole	1500	1.002	11.155	300	1.001	11.305	150	
								2.000	11.230	225	
SP3	11.750	0.650	Open Manhole	1200	3.000	11.100	300				
MH S102	12.860	1.775	Open Manhole	1500	3.001	11.085	300	3.000	11.085	300	
MH S103	12.299	1.389	Open Manhole	1500	1.003	10.910	375	1.002	10.985	300	
								3.001	10.985	300	
MH S104	11.890	0.900	Open Manhole	1200	4.000	10.990	150				
MH S105	12.300	1.640	Open Manhole	1500	1.004	10.660	375	1.003	10.660	375	
								4.000	10.885	150	
SP4	11.750	0.650	Open Manhole	1200	5.000	11.100	300				
MH S106	12.860	1.775	Open Manhole	1500	5.001	11.085	300	5.000	11.085	300	
SP5	12.225	0.975	Open Manhole	1200	6.000	11.250	300				
MH S107	12.300	1.890	Open Manhole	1500	1.005	10.410	450	1.004	10.485	375	
								5.001	10.560	300	
								6.000	10.560	300	
MH S108	12.384	1.989	Open Manhole	1500	1.006	10.395	450	1.005	10.395	450	
PI1	12.380	2.095	Open Manhole	1200	1.007	10.285	450	1.006	10.385	450	100
MH S109	12.930	1.050	Open Manhole	1500	7.000	11.880	300				
SP8	12.375	0.925	Open Manhole	1200	8.000	11.450	150				
MH S120	12.431	1.131	Open Manhole	1200	8.001	11.300	150	8.000	11.300	150	
MH S119	12.727	1.727	Open Manhole	1200	9.000	11.000	150				
MH S118	12.724	1.724	Open Manhole	1200	10.000	11.000	150				
SP6	12.925	0.750	Open Manhole	1200	11.000	12.175	150				
MH S110	12.736	0.611	Open Manhole	1200	11.001	12.125	150	11.000	12.125	150	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SP7	12.497	0.412	Open Manhole	1200	12.000	12.085	150				
PPIC 3	12.625	0.585	Open Manhole	1200	11.002	12.090	150	11.001	12.100	150	10
								12.000	12.040	150	
MH S111	12.677	0.812	Open Manhole	1200	11.003	11.865	150	11.002	11.865	150	
MH S112	12.936	1.436	Open Manhole	1500	11.004	11.500	375	11.003	11.725	150	
SP10	12.925	0.925	Open Manhole	1200	13.000	12.000	150				
MH S113	12.937	1.757	Open Manhole	1500	11.005	11.180	525	11.004	11.330	375	
								13.000	11.555	150	
MH S114	12.488	1.373	Open Manhole	1500	11.006	11.115	525	11.005	11.115	525	
MH S115	12.046	1.386	Open Manhole	1500	11.007	10.660	525	11.006	10.660	525	
MH S116	12.052	1.452	Open Manhole	1500	11.008	10.600	525	11.007	10.600	525	
SP9	12.925	0.925	Open Manhole	1200	14.000	12.000	150				
MH S117	12.444	1.969	Open Manhole	1500	11.009	10.475	525	11.008	10.475	525	
								14.000	10.850	150	
PPIC 1	12.450	0.530	Open Manhole	1200	15.000	11.920	150				
PPIC 2	12.450	0.530	Open Manhole	1200	16.000	11.920	150				
BASIN	12.500	1.500	Open Manhole	1200	17.000	11.000	225				
TANK	12.250	2.150	Open Manhole	1200	1.008	10.100	150	1.007	10.265	450	465
								7.000	10.600	300	650
								8.001	10.750	150	650
								9.000	10.750	150	650
								10.000	10.750	150	650
								11.009	10.375	525	650
								15.000	11.100	150	1000
								16.000	11.100	150	1000
								17.000	10.675	225	650
Pump	12.840	2.765	Open Manhole	1200	1.009	10.075	150	1.008	10.075	150	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
HW 1	12.400	1.360	Open Manhole	0		OUTFALL		1.009	11.040	150	

No coordinates have been specified, layout information cannot be produced.

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	SP1	12.950	12.050	0.750	Open Manhole	1200
1.001	o	150	MH S100	12.537	11.770	0.617	Open Manhole	1200
2.000	o	225	SP2	12.225	11.250	0.750	Open Manhole	1200
1.002	o	300	MH S101	12.301	11.155	0.846	Open Manhole	1500
3.000	o	300	SP3	11.750	11.100	0.350	Open Manhole	1200
3.001	o	300	MH S102	12.860	11.085	1.475	Open Manhole	1500
1.003	o	375	MH S103	12.299	10.910	1.014	Open Manhole	1500
4.000	o	150	MH S104	11.890	10.990	0.750	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	18.010	64.3	MH S100	12.537	11.770	0.617	Open Manhole	1200
1.001	15.170	32.6	MH S101	12.301	11.305	0.846	Open Manhole	1500
2.000	3.140	157.0	MH S101	12.301	11.230	0.846	Open Manhole	1500
1.002	15.880	93.4	MH S103	12.299	10.985	1.014	Open Manhole	1500
3.000	2.840	189.3	MH S102	12.860	11.085	1.475	Open Manhole	1500
3.001	20.520	205.2	MH S103	12.299	10.985	1.014	Open Manhole	1500
1.003	50.600	202.4	MH S105	12.300	10.660	1.265	Open Manhole	1500
4.000	12.060	114.9	MH S105	12.300	10.885	1.265	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.004	o	375	MH S105	12.300	10.660	1.265	Open Manhole	1500
5.000	o	300	SP4	11.750	11.100	0.350	Open Manhole	1200
5.001	o	300	MH S106	12.860	11.085	1.475	Open Manhole	1500
6.000	o	300	SP5	12.225	11.250	0.675	Open Manhole	1200
1.005	o	450	MH S107	12.300	10.410	1.440	Open Manhole	1500
1.006	o	450	MH S108	12.384	10.395	1.539	Open Manhole	1500
1.007	o	450	PI1	12.380	10.285	1.645	Open Manhole	1200
7.000	o	300	MH S109	12.930	11.880	0.750	Open Manhole	1500
8.000	o	150	SP8	12.375	11.450	0.775	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.004	35.040	200.2	MH S107	12.300	10.485	1.440	Open Manhole	1500
5.000	2.730	182.0	MH S106	12.860	11.085	1.475	Open Manhole	1500
5.001	20.520	39.1	MH S107	12.300	10.560	1.440	Open Manhole	1500
6.000	3.340	4.8	MH S107	12.300	10.560	1.440	Open Manhole	1500
1.005	3.390	226.0	MH S108	12.384	10.395	1.539	Open Manhole	1500
1.006	2.840	284.0	PI1	12.380	10.385	1.545	Open Manhole	1200
1.007	1.360	68.0	TANK	12.250	10.265	1.535	Open Manhole	1200
7.000	22.440	17.5	TANK	12.250	10.600	1.350	Open Manhole	1200
8.000	3.940	26.3	MH S120	12.431	11.300	0.981	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.001	o	150	MH S120	12.431	11.300	0.981	Open Manhole	1200
9.000	o	150	MH S119	12.727	11.000	1.577	Open Manhole	1200
10.000	o	150	MH S118	12.724	11.000	1.574	Open Manhole	1200
11.000	o	150	SP6	12.925	12.175	0.600	Open Manhole	1200
11.001	o	150	MH S110	12.736	12.125	0.461	Open Manhole	1200
12.000	o	150	SP7	12.497	12.085	0.262	Open Manhole	1200
11.002	o	150	PPIC 3	12.625	12.090	0.385	Open Manhole	1200
11.003	o	150	MH S111	12.677	11.865	0.662	Open Manhole	1200
11.004	o	375	MH S112	12.936	11.500	1.061	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.001	4.450	8.1	TANK	12.250	10.750	1.350	Open Manhole	1200
9.000	1.060	4.2	TANK	12.250	10.750	1.350	Open Manhole	1200
10.000	1.060	4.2	TANK	12.250	10.750	1.350	Open Manhole	1200
11.000	2.480	49.6	MH S110	12.736	12.125	0.461	Open Manhole	1200
11.001	2.660	106.4	PPIC 3	12.625	12.100	0.375	Open Manhole	1200
12.000	8.200	182.2	PPIC 3	12.625	12.040	0.435	Open Manhole	1200
11.002	2.420	10.8	MH S111	12.677	11.865	0.662	Open Manhole	1200
11.003	14.030	100.2	MH S112	12.936	11.725	1.061	Open Manhole	1500
11.004	25.540	150.2	MH S113	12.937	11.330	1.232	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
13.000	o	150	SP10	12.925	12.000	0.775	Open Manhole	1200
11.005	o	525	MH S113	12.937	11.180	1.232	Open Manhole	1500
11.006	o	525	MH S114	12.488	11.115	0.848	Open Manhole	1500
11.007	o	525	MH S115	12.046	10.660	0.861	Open Manhole	1500
11.008	o	525	MH S116	12.052	10.600	0.927	Open Manhole	1500
14.000	o	150	SP9	12.925	12.000	0.775	Open Manhole	1200
11.009	o	525	MH S117	12.444	10.475	1.444	Open Manhole	1500
15.000	o	150	PPIC 1	12.450	11.920	0.380	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
13.000	2.000	4.5	MH S113	12.937	11.555	1.232	Open Manhole	1500
11.005	9.670	148.8	MH S114	12.488	11.115	0.848	Open Manhole	1500
11.006	8.420	18.5	MH S115	12.046	10.660	0.861	Open Manhole	1500
11.007	9.220	153.7	MH S116	12.052	10.600	0.927	Open Manhole	1500
11.008	5.680	45.4	MH S117	12.444	10.475	1.444	Open Manhole	1500
14.000	1.960	1.7	MH S117	12.444	10.850	1.444	Open Manhole	1500
11.009	1.060	10.6	TANK	12.250	10.375	1.350	Open Manhole	1200
15.000	3.630	4.4	TANK	12.250	11.100	1.000	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
16.000	o	150	PPIC 2	12.450	11.920	0.380	Open Manhole	1200
17.000	o	225	BASIN	12.500	11.000	1.275	Open Manhole	1200
1.008	o	150	TANK	12.250	10.100	2.000	Open Manhole	1200
1.009	o	150	Pump	12.840	10.075	2.615	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
16.000	3.100	3.8	TANK	12.250	11.100	1.000	Open Manhole	1200
17.000	3.670	11.3	TANK	12.250	10.675	1.350	Open Manhole	1200
1.008	2.660	106.4	Pump	12.840	10.075	2.615	Open Manhole	1200
1.009	17.200	-17.8	HW 1	12.400	11.040	1.210	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.020	0.020	0.020
1.001	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.123	0.123	0.123
1.002	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.136	0.136	0.136
3.001	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.016	0.016	0.016
1.004	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.146	0.146	0.146
5.001	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.121	0.121	0.121
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.205	0.205	0.205
8.000	-	-	100	0.016	0.016	0.016
8.001	-	-	100	0.000	0.000	0.000
9.000	-	-	100	0.019	0.019	0.019
10.000	-	-	100	0.019	0.019	0.019
11.000	-	-	100	0.012	0.012	0.012
11.001	-	-	100	0.000	0.000	0.000
12.000	-	-	100	0.011	0.011	0.011
11.002	-	-	100	0.000	0.000	0.000
11.003	-	-	100	0.000	0.000	0.000
11.004	-	-	100	0.163	0.163	0.163
13.000	-	-	100	0.010	0.010	0.010
11.005	-	-	100	0.803	0.803	0.803
11.006	-	-	100	0.000	0.000	0.000
11.007	-	-	100	0.000	0.000	0.000
11.008	-	-	100	0.000	0.000	0.000
14.000	-	-	100	0.027	0.027	0.027
11.009	-	-	100	0.019	0.019	0.019
15.000	-	-	100	0.000	0.000	0.000
16.000	-	-	100	0.000	0.000	0.000
17.000	-	-	100	0.045	0.045	0.045
1.008	-	-	100	0.000	0.000	0.000

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.009	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.911	1.911	1.911

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009	HW 1	12.400	11.040	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 3
Number of Online Controls 1	Number of Storage Structures 4	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Storm Duration (mins)	30
FEH Rainfall Version	2013	Winter Storms	No		
Site Location	GB 506317 164697 TQ 06317 64697	Cv (Summer)	0.750		

Online Controls for Storm

Pump Manhole: Pump, DS/PN: 1.009, Volume (m³): 3.2

Invert Level (m) 10.075

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	7.3400	1.200	7.3400	2.200	7.3400	3.200	7.3400	4.200	7.3400	5.200	7.3400
0.400	7.3400	1.400	7.3400	2.400	7.3400	3.400	7.3400	4.400	7.3400	5.400	7.3400
0.600	7.3400	1.600	7.3400	2.600	7.3400	3.600	7.3400	4.600	7.3400	5.600	7.3400
0.800	7.3400	1.800	7.3400	2.800	7.3400	3.800	7.3400	4.800	7.3400	5.800	7.3400
1.000	7.3400	2.000	7.3400	3.000	7.3400	4.000	7.3400	5.000	7.3400	6.000	7.3400

Storage Structures for Storm

Porous Car Park Manhole: PPIC 3, DS/PN: 11.002

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	60.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	12.240	Depression Storage (mm)	5
Max Percolation (l/s)	143.1	Width (m)	83.1	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	6.2	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: PPIC 1, DS/PN: 15.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	20.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	12.070	Depression Storage (mm)	5
Max Percolation (l/s)	50.1	Width (m)	6.2	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	29.1	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: PPIC 2, DS/PN: 16.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	39.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	12.070	Depression Storage (mm)	5
Max Percolation (l/s)	72.2	Width (m)	42.6	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	6.1	Cap Volume Depth (m)	0.300

Complex Manhole: TANK, DS/PN: 1.008

Cellular Storage

Invert Level (m)	10.100	Infiltration Coefficient Side (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Base (m/hr)	0.00000			Safety Factor	2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1469.3	0.0	1.000	1469.3	0.0	1.001	0.0	0.0

Tank or Pond

Invert Level (m) 11.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	40.0	1.500	340.0	1.501	0.0

Time Area Diagram at Pipe Number 11.002 for Storm

Total Area (ha) 0.123

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.041	4	8	0.041	8	12	0.041

Time Area Diagram at Pipe Number 15.000 for Storm

Total Area (ha) 0.065

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.033	4	8	0.032

Time Area Diagram at Pipe Number 16.000 for Storm

Total Area (ha) 0.065

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.033	4	8	0.032

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 3
Number of Online Controls 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 506317 164697 TQ 06317 64697 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 100
Climate Change (%) 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SP1	15 Winter	100	+40%					12.144	-0.056	0.000	0.70			14.6	OK
1.001	MH S100	15 Winter	100	+40%	100/15 Summer				11.997	0.077	0.000	0.45			13.0	SURCHARGED
2.000	SP2	15 Winter	100	+40%	100/15 Summer				12.220	0.745	0.000	2.96			78.8	FLOOD RISK
1.002	MH S101	960 Winter	100	+40%	100/15 Summer				11.944	0.489	0.000	0.07			6.9	SURCHARGED
3.000	SP3	960 Winter	100	+40%	100/15 Summer	100/15 Summer			11.940	0.540	190.234	0.13			6.5	FLOOD
3.001	MH S102	960 Winter	100	+40%	100/15 Summer				11.941	0.556	0.000	0.10			6.5	SURCHARGED
1.003	MH S103	960 Winter	100	+40%	100/15 Summer				11.943	0.658	0.000	0.10			13.4	SURCHARGED
4.000	MH S104	960 Winter	100	+40%	100/15 Summer	100/360 Winter			11.931	0.791	40.613	0.15			2.3	FLOOD
1.004	MH S105	960 Winter	100	+40%	100/15 Summer				11.944	0.909	0.000	0.11			13.5	SURCHARGED

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	SP1	
1.001	MH S100	
2.000	SP2	
1.002	MH S101	
3.000	SP3	21
3.001	MH S102	
1.003	MH S103	
4.000	MH S104	6
1.004	MH S105	

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10334617
WEYBRIDGE BUSINESS PARK
EXCEEDANCE - UNIT 100 - REV B

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Designed by JJOHN
Checked by NDH

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
5.000	SP4	960 Winter	100	+40%	100/15 Summer	100/15 Winter			11.948	0.548	198.293	0.14			7.0	FLOOD
5.001	MH S106	960 Winter	100	+40%	100/15 Summer				11.948	0.563	0.000	0.04			7.0	SURCHARGED
6.000	SP5	960 Winter	100	+40%	100/15 Winter				11.950	0.400	0.000	0.03			5.8	FLOOD RISK
1.005	MH S107	960 Winter	100	+40%	100/15 Summer				11.950	1.090	0.000	0.21			25.9	SURCHARGED
1.006	MH S108	720 Winter	100	+40%	100/15 Summer				11.953	1.108	0.000	0.26			32.1	SURCHARGED
1.007	PI1	720 Winter	100	+40%	100/15 Summer				11.956	1.221	0.000	0.24			32.0	SURCHARGED
7.000	MH S109	15 Winter	100	+40%					12.056	-0.124	0.000	0.64			150.1	OK
8.000	SP8	720 Winter	100	+40%	100/180 Winter				11.960	0.360	0.000	0.04			1.0	SURCHARGED
8.001	MH S120	720 Winter	100	+40%	100/180 Winter				11.960	0.510	0.000	0.02			1.0	SURCHARGED
9.000	MH S119	720 Winter	100	+40%	100/180 Winter				11.959	0.809	0.000	0.04			1.2	SURCHARGED
10.000	MH S118	720 Winter	100	+40%	100/180 Winter				11.959	0.809	0.000	0.04			1.2	SURCHARGED
11.000	SP6	30 Winter	100	+40%	100/15 Summer				12.537	0.212	0.000	0.44			6.1	SURCHARGED
11.001	MH S110	30 Winter	100	+40%	100/15 Summer				12.535	0.260	0.000	0.51			5.6	FLOOD RISK
12.000	SP7	30 Winter	100	+40%	100/15 Summer	100/15 Winter			12.499	0.264	2.340	0.98			11.2	FLOOD
11.002	PPIC 3	15 Winter	100	+40%	100/15 Summer				12.534	0.294	0.000	0.98		17	29.2	FLOOD RISK
11.003	MH S111	15 Winter	100	+40%	100/15 Summer				12.609	0.594	0.000	1.79			29.2	FLOOD RISK
11.004	MH S112	15 Winter	100	+40%	100/15 Summer	100/15 Summer			12.943	1.068	6.779	0.63			88.7	FLOOD
13.000	SP10	15 Winter	100	+40%	100/15 Summer				12.922	0.772	0.000	0.31			13.2	FLOOD RISK
11.005	MH S113	15 Winter	100	+40%	100/15 Summer	100/15 Winter			12.938	1.233	0.639	2.06			512.2	FLOOD
11.006	MH S114	15 Winter	100	+40%	100/15 Summer	100/15 Winter			12.488	0.848	0.292	0.98			508.3	FLOOD
11.007	MH S115	15 Winter	100	+40%	100/15 Summer	100/15 Summer			12.053	0.868	6.662	1.92			477.5	FLOOD
11.008	MH S116	720 Winter	100	+40%	100/15 Summer				11.961	0.836	0.000	0.25			68.0	FLOOD RISK
14.000	SP9	15 Winter	100	+40%					12.056	-0.094	0.000	0.30			19.8	OK
11.009	MH S117	720 Winter	100	+40%	100/15 Summer				11.960	0.960	0.000	0.28			70.4	SURCHARGED
15.000	PPIC 1	15 Winter	100	+40%					12.010	-0.060	0.000	0.66		8	37.6	OK
16.000	PPIC 2	15 Winter	100	+40%					12.010	-0.060	0.000	0.66		8	37.6	OK
17.000	BASIN	720 Winter	100	+40%	100/180 Winter				11.960	0.735	0.000	0.03			2.7	SURCHARGED
1.008	TANK	720 Winter	100	+40%	100/15 Summer				11.959	1.709	0.000	0.79			8.6	FLOOD RISK
1.009	Pump	720 Winter	100	+40%	100/15 Summer				11.960	1.735	0.000	1.67			7.3	SURCHARGED

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
5.000	SP4	18
5.001	MH S106	
6.000	SP5	
1.005	MH S107	
1.006	MH S108	
1.007	PI1	
7.000	MH S109	
8.000	SP8	
8.001	MH S120	
9.000	MH S119	
10.000	MH S118	
11.000	SP6	
11.001	MH S110	
12.000	SP7	2
11.002	PPIC 3	
11.003	MH S111	
11.004	MH S112	2
13.000	SP10	
11.005	MH S113	1
11.006	MH S114	1
11.007	MH S115	3
11.008	MH S116	
14.000	SP9	
11.009	MH S117	
15.000	PPIC 1	
16.000	PPIC 2	
17.000	BASIN	
1.008	TANK	
1.009	Pump	

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.483	4-8	0.191

Total Area Contributing (ha) = 0.674

Total Pipe Volume (m^3) = 12.005

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	4.010	0.040	100.3	0.014	5.00	0.0	0.600	o	150	Pipe/Conduit
1.001	30.330	0.305	99.4	0.077	0.00	0.0	0.600	o	225	Pipe/Conduit
2.000	41.280	0.245	168.5	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit
1.002	8.080	0.105	77.0	0.077	0.00	0.0	0.600	o	300	Pipe/Conduit
1.003	6.170	0.100	61.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.000	4.590	0.025	183.6	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit
3.001	19.200	0.100	192.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
4.000	16.450	0.085	193.5	0.029	5.00	0.0	0.600	o	225	Pipe/Conduit
5.000	2.450	0.030	81.7	0.090	5.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	12.000	0.014	0.0	1.00	17.7
1.001	11.885	0.091	0.0	1.31	52.1
2.000	11.900	0.007	0.0	0.77	13.6
1.002	11.505	0.175	0.0	1.79	126.8
1.003	11.400	0.175	0.0	2.01	141.7
3.000	11.395	0.042	0.0	0.96	38.2
3.001	11.370	0.042	0.0	0.94	37.4
4.000	11.355	0.029	0.0	0.94	37.2
5.000	11.300	0.090	0.0	1.45	57.6

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
3.002	1.450	0.010	145.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.003	1.840	0.007	262.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.004	4.860	0.023	211.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.000	14.980	0.100	149.8	0.107	5.00	0.0	0.600	o	225	Pipe/Conduit
6.001	33.800	0.225	150.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
7.000	2.500	0.120	20.8	0.089	5.00	0.0	0.600	o	225	Pipe/Conduit
6.002	1.910	0.015	127.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.003	1.830	0.015	122.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.004	4.610	0.100	46.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
8.000	3.940	0.040	98.5	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit
8.001	29.420	0.220	133.7	0.066	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
3.002	11.195	0.161	0.0	1.30	92.1
3.003	11.085	0.161	0.0	0.97	68.2
3.004	11.078	0.161	0.0	1.08	76.2
6.000	11.730	0.107	0.0	1.07	42.4
6.001	11.630	0.107	0.0	1.06	42.3
7.000	11.525	0.089	0.0	2.88	114.5
6.002	11.330	0.196	0.0	1.39	98.4
6.003	11.215	0.196	0.0	1.42	100.5
6.004	11.200	0.196	0.0	2.32	164.1
8.000	12.000	0.010	0.0	1.01	17.9
8.001	11.885	0.076	0.0	1.13	44.9

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.483	4-8	0.191

Total Area Contributing (ha) = 0.674

Total Pipe Volume (m^3) = 12.005

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	4.010	0.040	100.3	0.014	5.00	0.0	0.600	o	150	Pipe/Conduit
1.001	30.330	0.305	99.4	0.077	0.00	0.0	0.600	o	225	Pipe/Conduit
2.000	41.280	0.245	168.5	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit
1.002	8.080	0.105	77.0	0.077	0.00	0.0	0.600	o	300	Pipe/Conduit
1.003	6.170	0.100	61.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.000	4.590	0.025	183.6	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit
3.001	19.200	0.100	192.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
4.000	16.450	0.085	193.5	0.029	5.00	0.0	0.600	o	225	Pipe/Conduit
5.000	2.450	0.030	81.7	0.090	5.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	12.000	0.014	0.0	1.00	17.7
1.001	11.885	0.091	0.0	1.31	52.1
2.000	11.900	0.007	0.0	0.77	13.6
1.002	11.505	0.175	0.0	1.79	126.8
1.003	11.400	0.175	0.0	2.01	141.7
3.000	11.395	0.042	0.0	0.96	38.2
3.001	11.370	0.042	0.0	0.94	37.4
4.000	11.355	0.029	0.0	0.94	37.2
5.000	11.300	0.090	0.0	1.45	57.6

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
3.002	1.450	0.010	145.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.003	1.840	0.007	262.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
3.004	4.860	0.023	211.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.000	14.980	0.100	149.8	0.107	5.00	0.0	0.600	o	225	Pipe/Conduit
6.001	33.800	0.225	150.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
7.000	2.500	0.120	20.8	0.089	5.00	0.0	0.600	o	225	Pipe/Conduit
6.002	1.910	0.015	127.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.003	1.830	0.015	122.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.004	4.610	0.100	46.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
8.000	3.940	0.040	98.5	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit
8.001	29.420	0.220	133.7	0.066	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
3.002	11.195	0.161	0.0	1.30	92.1
3.003	11.085	0.161	0.0	0.97	68.2
3.004	11.078	0.161	0.0	1.08	76.2
6.000	11.730	0.107	0.0	1.07	42.4
6.001	11.630	0.107	0.0	1.06	42.3
7.000	11.525	0.089	0.0	2.88	114.5
6.002	11.330	0.196	0.0	1.39	98.4
6.003	11.215	0.196	0.0	1.42	100.5
6.004	11.200	0.196	0.0	2.32	164.1
8.000	12.000	0.010	0.0	1.01	17.9
8.001	11.885	0.076	0.0	1.13	44.9

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
8.002	28.670	0.190	150.9	0.066	0.00	0.0	0.600	o	300	Pipe/Conduit
8.003	1.880	0.050	37.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.004	1.780	0.008	222.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
1.005	15.570	0.077	202.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
8.002	11.590	0.142	0.0	1.28	90.3
8.003	11.400	0.142	0.0	2.57	181.8
1.004	11.055	0.674	0.0	0.87	34.7
1.005	11.047	0.674	0.0	0.92	36.4

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SP1	12.900	0.900	Open Manhole	1200	1.000	12.000	150				
MH S200	12.922	1.037	Open Manhole	1200	1.001	11.885	225	1.000	11.960	150	
SP2	12.800	0.900	Open Manhole	1200	2.000	11.900	150				
MH S201	12.903	1.398	Open Manhole	1500	1.002	11.505	300	1.001	11.580	225	
								2.000	11.655	150	
MH S202	12.721	1.321	Open Manhole	1500	1.003	11.400	300	1.002	11.400	300	
12.300	12.300	0.905	Open Manhole	1200	3.000	11.395	225				
MH S203	12.316	0.946	Open Manhole	1200	3.001	11.370	225	3.000	11.370	225	
SP4	12.304	0.949	Open Manhole	1200	4.000	11.355	225				
SP5	12.300	1.000	Open Manhole	1200	5.000	11.300	225				
MH S204	12.354	1.159	Open Manhole	1500	3.002	11.195	300	3.001	11.270	225	
								4.000	11.270	225	
								5.000	11.270	225	
PI3	12.342	1.257	Open Manhole	1500	3.003	11.085	300	3.002	11.185	300	100
MH S205	12.408	1.330	Open Manhole	1500	3.004	11.078	300	3.003	11.078	300	
SP7	12.705	0.975	Open Manhole	1200	6.000	11.730	225				
MH S208	12.794	1.164	Open Manhole	1200	6.001	11.630	225	6.000	11.630	225	
SP6	12.502	0.977	Open Manhole	1200	7.000	11.525	225				
MH S206	12.521	1.191	Open Manhole	1500	6.002	11.330	300	6.001	11.405	225	
								7.000	11.405	225	
PI2	12.173	0.958	Open Manhole	1500	6.003	11.215	300	6.002	11.315	300	100
MH S207	12.499	1.299	Open Manhole	1500	6.004	11.200	300	6.003	11.200	300	
SP8	12.905	0.905	Open Manhole	1200	8.000	12.000	150				
MH S209	12.918	1.033	Open Manhole	1200	8.001	11.885	225	8.000	11.960	150	
MH S210	12.791	1.201	Open Manhole	1500	8.002	11.590	300	8.001	11.665	225	
MH S211	12.684	1.284	Open Manhole	1500	8.003	11.400	300	8.002	11.400	300	
TANK	12.460	1.405	Open Manhole	1500	1.004	11.055	225	1.003	11.300	300	320

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
								3.004	11.055	300	
								6.004	11.100	300	120
								8.003	11.350	300	370
MH S212 (FC)	12.452	1.405	Open Manhole	1200	1.005	11.047	225	1.004	11.047	225	
HW 2	11.250	0.280	Open Manhole	0		OUTFALL		1.005	10.970	225	

No coordinates have been specified, layout information cannot be produced.

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	SP1	12.900	12.000	0.750	Open Manhole	1200
1.001	o	225	MH S200	12.922	11.885	0.812	Open Manhole	1200
2.000	o	150	SP2	12.800	11.900	0.750	Open Manhole	1200
1.002	o	300	MH S201	12.903	11.505	1.098	Open Manhole	1500
1.003	o	300	MH S202	12.721	11.400	1.021	Open Manhole	1500
3.000	o	225	12.300	12.300	11.395	0.680	Open Manhole	1200
3.001	o	225	MH S203	12.316	11.370	0.721	Open Manhole	1200
4.000	o	225	SP4	12.304	11.355	0.724	Open Manhole	1200
5.000	o	225	SP5	12.300	11.300	0.775	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	4.010	100.3	MH S200	12.922	11.960	0.812	Open Manhole	1200
1.001	30.330	99.4	MH S201	12.903	11.580	1.098	Open Manhole	1500
2.000	41.280	168.5	MH S201	12.903	11.655	1.098	Open Manhole	1500
1.002	8.080	77.0	MH S202	12.721	11.400	1.021	Open Manhole	1500
1.003	6.170	61.7	TANK	12.460	11.300	0.860	Open Manhole	1500
3.000	4.590	183.6	MH S203	12.316	11.370	0.721	Open Manhole	1200
3.001	19.200	192.0	MH S204	12.354	11.270	0.859	Open Manhole	1500
4.000	16.450	193.5	MH S204	12.354	11.270	0.859	Open Manhole	1500
5.000	2.450	81.7	MH S204	12.354	11.270	0.859	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.002	o	300	MH S204	12.354	11.195	0.859	Open Manhole	1500
3.003	o	300	PI3	12.342	11.085	0.957	Open Manhole	1500
3.004	o	300	MH S205	12.408	11.078	1.030	Open Manhole	1500
6.000	o	225	SP7	12.705	11.730	0.750	Open Manhole	1200
6.001	o	225	MH S208	12.794	11.630	0.939	Open Manhole	1200
7.000	o	225	SP6	12.502	11.525	0.752	Open Manhole	1200
6.002	o	300	MH S206	12.521	11.330	0.891	Open Manhole	1500
6.003	o	300	PI2	12.173	11.215	0.658	Open Manhole	1500
6.004	o	300	MH S207	12.499	11.200	0.999	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.002	1.450	145.0	PI3	12.342	11.185	0.857	Open Manhole	1500
3.003	1.840	262.9	MH S205	12.408	11.078	1.030	Open Manhole	1500
3.004	4.860	211.3	TANK	12.460	11.055	1.105	Open Manhole	1500
6.000	14.980	149.8	MH S208	12.794	11.630	0.939	Open Manhole	1200
6.001	33.800	150.2	MH S206	12.521	11.405	0.891	Open Manhole	1500
7.000	2.500	20.8	MH S206	12.521	11.405	0.891	Open Manhole	1500
6.002	1.910	127.3	PI2	12.173	11.315	0.558	Open Manhole	1500
6.003	1.830	122.0	MH S207	12.499	11.200	0.999	Open Manhole	1500
6.004	4.610	46.1	TANK	12.460	11.100	1.060	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.000	o	150	SP8	12.905	12.000	0.755	Open Manhole	1200
8.001	o	225	MH S209	12.918	11.885	0.808	Open Manhole	1200
8.002	o	300	MH S210	12.791	11.590	0.901	Open Manhole	1500
8.003	o	300	MH S211	12.684	11.400	0.984	Open Manhole	1500
1.004	o	225	TANK	12.460	11.055	1.180	Open Manhole	1500
1.005	o	225	MH S212 (FC)	12.452	11.047	1.180	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.000	3.940	98.5	MH S209	12.918	11.960	0.808	Open Manhole	1200
8.001	29.420	133.7	MH S210	12.791	11.665	0.901	Open Manhole	1500
8.002	28.670	150.9	MH S211	12.684	11.400	0.984	Open Manhole	1500
8.003	1.880	37.6	TANK	12.460	11.350	0.810	Open Manhole	1500
1.004	1.780	222.5	MH S212 (FC)	12.452	11.047	1.180	Open Manhole	1200
1.005	15.570	202.2	HW 2	11.250	10.970	0.055	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	HW 2	11.250	10.970	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Storm Duration (mins)	30
FEH Rainfall Version	2013	Winter Storms	Yes		
Site Location	GB 506317 164697 TQ 06317 64697	Cv (Summer)	0.750		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: MH S212 (FC), DS/PN: 1.005, Volume (m³): 1.6

Unit Reference	MD-SHE-0075-2300-0808-2300	Sump Available	Yes
Design Head (m)	0.808	Diameter (mm)	75
Design Flow (l/s)	2.3	Invert Level (m)	11.047
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	100
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.808	2.3	Kick-Flo®	0.512	1.9
Flush-Flo™	0.241	2.3	Mean Flow over Head Range	-	2.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.0	0.600	2.0	1.600	3.1	2.600	3.9	5.000	5.3	7.500	6.5
0.200	2.3	0.800	2.3	1.800	3.3	3.000	4.2	5.500	5.6	8.000	6.7
0.300	2.3	1.000	2.5	2.000	3.5	3.500	4.5	6.000	5.8	8.500	6.9
0.400	2.2	1.200	2.8	2.200	3.6	4.000	4.8	6.500	6.1	9.000	7.1
0.500	1.9	1.400	3.0	2.400	3.8	4.500	5.1	7.000	6.3	9.500	7.3

Storage Structures for Storm

Cellular Storage Manhole: TANK, DS/PN: 1.004

Invert Level (m) 11.055 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	775.0	0.0	0.800	775.0	0.0	0.801	0.0	0.0

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Manhole Headloss Coeff (Global)	0.500	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Foul Sewage per hectare (l/s)	0.000	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Additional Flow - % of Total Flow	0.000	Flow per Person per Day (l/per/day)	0.000

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Site Location GB 506317 164697 TQ 06317 64697	Cv (Summer) 0.750
FEH Rainfall Version	2013	Data Type	Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	2.5 Second Increment (Extended)	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SP1	15 Winter	100	+40%	100/15 Summer				12.539	0.389	0.000	0.98			12.2	SURCHARGED
1.001	MH S200	15 Winter	100	+40%	100/15 Summer				12.526	0.416	0.000	1.26			61.4	SURCHARGED
2.000	SP2	960 Winter	100	+40%	100/15 Winter				12.111	0.061	0.000	0.03			0.3	SURCHARGED
1.002	MH S201	960 Winter	100	+40%	100/15 Summer				12.111	0.306	0.000	0.10			8.4	SURCHARGED
1.003	MH S202	960 Winter	100	+40%	100/15 Summer				12.111	0.411	0.000	0.11			8.3	SURCHARGED
3.000	12.300	960 Winter	100	+40%	100/15 Summer				12.111	0.491	0.000	0.07			1.9	FLOOD RISK
3.001	MH S203	960 Winter	100	+40%	100/15 Summer				12.111	0.516	0.000	0.06			1.9	FLOOD RISK
4.000	SP4	960 Winter	100	+40%	100/15 Summer				12.111	0.531	0.000	0.04			1.3	FLOOD RISK
5.000	SP5	960 Winter	100	+40%	100/15 Summer				12.111	0.586	0.000	0.14			4.2	FLOOD RISK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	SP1	
1.001	MH S200	
2.000	SP2	
1.002	MH S201	
1.003	MH S202	
3.000	12.300	
3.001	MH S203	
4.000	SP4	
5.000	SP5	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
3.002	MH S204	960 Winter	100	+40%	100/15 Summer				12.111	0.616	0.000	0.13			7.2	FLOOD RISK
3.003	PI3	960 Winter	100	+40%	100/15 Summer				12.111	0.726	0.000	0.13			7.1	FLOOD RISK
3.004	MH S205	960 Winter	100	+40%	100/15 Summer				12.111	0.733	0.000	0.14			7.0	FLOOD RISK
6.000	SP7	15 Winter	100	+40%	100/15 Summer				12.703	0.748	0.000	1.63			60.8	FLOOD RISK
6.001	MH S208	15 Winter	100	+40%	100/15 Summer				12.472	0.617	0.000	1.52			60.4	SURCHARGED
7.000	SP6	15 Winter	100	+40%	100/15 Summer				12.196	0.446	0.000	1.20			58.5	SURCHARGED
6.002	MH S206	960 Winter	100	+40%	100/15 Summer				12.111	0.481	0.000	0.17			9.3	SURCHARGED
6.003	PI2	960 Winter	100	+40%	100/15 Summer				12.111	0.596	0.000	0.17			9.2	FLOOD RISK
6.004	MH S207	960 Winter	100	+40%	100/15 Summer				12.111	0.611	0.000	0.12			9.1	SURCHARGED
8.000	SP8	15 Winter	100	+40%	100/15 Summer				12.412	0.262	0.000	0.73			9.2	SURCHARGED
8.001	MH S209	15 Winter	100	+40%	100/15 Summer				12.404	0.294	0.000	1.24			52.0	SURCHARGED
8.002	MH S210	960 Winter	100	+40%	100/15 Summer				12.111	0.221	0.000	0.08			6.8	SURCHARGED
8.003	MH S211	960 Winter	100	+40%	100/15 Summer				12.111	0.411	0.000	0.11			6.7	SURCHARGED
1.004	TANK	960 Winter	100	+40%	100/15 Summer				12.111	0.831	0.000	0.18			5.3	SURCHARGED
1.005	MH S212 (FC)	960 Winter	100	+40%	100/15 Summer				12.111	0.839	0.000	0.08			2.6	SURCHARGED

PN	US/MH Name	Level Exceeded
3.002	MH S204	
3.003	PI3	
3.004	MH S205	
6.000	SP7	
6.001	MH S208	
7.000	SP6	
6.002	MH S206	
6.003	PI2	
6.004	MH S207	
8.000	SP8	
8.001	MH S209	
8.002	MH S210	
8.003	MH S211	
1.004	TANK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.005	MH S212 (FC)	

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
8.002	28.670	0.190	150.9	0.066	0.00	0.0	0.600	o	300	Pipe/Conduit
8.003	1.880	0.050	37.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.004	1.780	0.008	222.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
1.005	15.570	0.077	202.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
8.002	11.590	0.142	0.0	1.28	90.3
8.003	11.400	0.142	0.0	2.57	181.8
1.004	11.055	0.674	0.0	0.87	34.7
1.005	11.047	0.674	0.0	0.92	36.4

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SP1	12.900	0.900	Open Manhole	1200	1.000	12.000	150				
MH S200	12.922	1.037	Open Manhole	1200	1.001	11.885	225	1.000	11.960	150	
SP2	12.800	0.900	Open Manhole	1200	2.000	11.900	150				
MH S201	12.903	1.398	Open Manhole	1500	1.002	11.505	300	1.001	11.580	225	
								2.000	11.655	150	
MH S202	12.721	1.321	Open Manhole	1500	1.003	11.400	300	1.002	11.400	300	
12.300	12.300	0.905	Open Manhole	1200	3.000	11.395	225				
MH S203	12.316	0.946	Open Manhole	1200	3.001	11.370	225	3.000	11.370	225	
SP4	12.304	0.949	Open Manhole	1200	4.000	11.355	225				
SP5	12.300	1.000	Open Manhole	1200	5.000	11.300	225				
MH S204	12.354	1.159	Open Manhole	1500	3.002	11.195	300	3.001	11.270	225	
								4.000	11.270	225	
								5.000	11.270	225	
PI3	12.342	1.257	Open Manhole	1500	3.003	11.085	300	3.002	11.185	300	100
MH S205	12.408	1.330	Open Manhole	1500	3.004	11.078	300	3.003	11.078	300	
SP7	12.705	0.975	Open Manhole	1200	6.000	11.730	225				
MH S208	12.794	1.164	Open Manhole	1200	6.001	11.630	225	6.000	11.630	225	
SP6	12.502	0.977	Open Manhole	1200	7.000	11.525	225				
MH S206	12.521	1.191	Open Manhole	1500	6.002	11.330	300	6.001	11.405	225	
								7.000	11.405	225	
PI2	12.173	0.958	Open Manhole	1500	6.003	11.215	300	6.002	11.315	300	100
MH S207	12.499	1.299	Open Manhole	1500	6.004	11.200	300	6.003	11.200	300	
SP8	12.905	0.905	Open Manhole	1200	8.000	12.000	150				
MH S209	12.918	1.033	Open Manhole	1200	8.001	11.885	225	8.000	11.960	150	
MH S210	12.791	1.201	Open Manhole	1500	8.002	11.590	300	8.001	11.665	225	
MH S211	12.684	1.284	Open Manhole	1500	8.003	11.400	300	8.002	11.400	300	
TANK	12.460	1.405	Open Manhole	1500	1.004	11.055	225	1.003	11.300	300	320

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
								3.004	11.055	300	
								6.004	11.100	300	120
								8.003	11.350	300	370
MH S212 (FC)	12.452	1.405	Open Manhole	1200	1.005	11.047	225	1.004	11.047	225	
HW 2	11.250	0.280	Open Manhole	0		OUTFALL		1.005	10.970	225	

No coordinates have been specified, layout information cannot be produced.

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	SP1	12.900	12.000	0.750	Open Manhole	1200
1.001	o	225	MH S200	12.922	11.885	0.812	Open Manhole	1200
2.000	o	150	SP2	12.800	11.900	0.750	Open Manhole	1200
1.002	o	300	MH S201	12.903	11.505	1.098	Open Manhole	1500
1.003	o	300	MH S202	12.721	11.400	1.021	Open Manhole	1500
3.000	o	225	12.300	12.300	11.395	0.680	Open Manhole	1200
3.001	o	225	MH S203	12.316	11.370	0.721	Open Manhole	1200
4.000	o	225	SP4	12.304	11.355	0.724	Open Manhole	1200
5.000	o	225	SP5	12.300	11.300	0.775	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	4.010	100.3	MH S200	12.922	11.960	0.812	Open Manhole	1200
1.001	30.330	99.4	MH S201	12.903	11.580	1.098	Open Manhole	1500
2.000	41.280	168.5	MH S201	12.903	11.655	1.098	Open Manhole	1500
1.002	8.080	77.0	MH S202	12.721	11.400	1.021	Open Manhole	1500
1.003	6.170	61.7	TANK	12.460	11.300	0.860	Open Manhole	1500
3.000	4.590	183.6	MH S203	12.316	11.370	0.721	Open Manhole	1200
3.001	19.200	192.0	MH S204	12.354	11.270	0.859	Open Manhole	1500
4.000	16.450	193.5	MH S204	12.354	11.270	0.859	Open Manhole	1500
5.000	2.450	81.7	MH S204	12.354	11.270	0.859	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.002	o	300	MH S204	12.354	11.195	0.859	Open Manhole	1500
3.003	o	300	PI3	12.342	11.085	0.957	Open Manhole	1500
3.004	o	300	MH S205	12.408	11.078	1.030	Open Manhole	1500
6.000	o	225	SP7	12.705	11.730	0.750	Open Manhole	1200
6.001	o	225	MH S208	12.794	11.630	0.939	Open Manhole	1200
7.000	o	225	SP6	12.502	11.525	0.752	Open Manhole	1200
6.002	o	300	MH S206	12.521	11.330	0.891	Open Manhole	1500
6.003	o	300	PI2	12.173	11.215	0.658	Open Manhole	1500
6.004	o	300	MH S207	12.499	11.200	0.999	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.002	1.450	145.0	PI3	12.342	11.185	0.857	Open Manhole	1500
3.003	1.840	262.9	MH S205	12.408	11.078	1.030	Open Manhole	1500
3.004	4.860	211.3	TANK	12.460	11.055	1.105	Open Manhole	1500
6.000	14.980	149.8	MH S208	12.794	11.630	0.939	Open Manhole	1200
6.001	33.800	150.2	MH S206	12.521	11.405	0.891	Open Manhole	1500
7.000	2.500	20.8	MH S206	12.521	11.405	0.891	Open Manhole	1500
6.002	1.910	127.3	PI2	12.173	11.315	0.558	Open Manhole	1500
6.003	1.830	122.0	MH S207	12.499	11.200	0.999	Open Manhole	1500
6.004	4.610	46.1	TANK	12.460	11.100	1.060	Open Manhole	1500

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.000	o	150	SP8	12.905	12.000	0.755	Open Manhole	1200
8.001	o	225	MH S209	12.918	11.885	0.808	Open Manhole	1200
8.002	o	300	MH S210	12.791	11.590	0.901	Open Manhole	1500
8.003	o	300	MH S211	12.684	11.400	0.984	Open Manhole	1500
1.004	o	225	TANK	12.460	11.055	1.180	Open Manhole	1500
1.005	o	225	MH S212 (FC)	12.452	11.047	1.180	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.000	3.940	98.5	MH S209	12.918	11.960	0.808	Open Manhole	1200
8.001	29.420	133.7	MH S210	12.791	11.665	0.901	Open Manhole	1500
8.002	28.670	150.9	MH S211	12.684	11.400	0.984	Open Manhole	1500
8.003	1.880	37.6	TANK	12.460	11.350	0.810	Open Manhole	1500
1.004	1.780	222.5	MH S212 (FC)	12.452	11.047	1.180	Open Manhole	1200
1.005	15.570	202.2	HW 2	11.250	10.970	0.055	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.014	0.014	0.014
1.001	-	-	100	0.077	0.077	0.077
2.000	-	-	100	0.007	0.007	0.007
1.002	-	-	100	0.077	0.077	0.077
1.003	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.042	0.042	0.042
3.001	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.029	0.029	0.029
5.000	-	-	100	0.090	0.090	0.090
3.002	-	-	100	0.000	0.000	0.000
3.003	-	-	100	0.000	0.000	0.000
3.004	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.107	0.107	0.107
6.001	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.089	0.089	0.089
6.002	-	-	100	0.000	0.000	0.000
6.003	-	-	100	0.000	0.000	0.000
6.004	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.010	0.010	0.010
8.001	-	-	100	0.066	0.066	0.066
8.002	-	-	100	0.066	0.066	0.066
8.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.674	0.674	0.674

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	HW 2	11.250	10.970	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Storm Duration (mins)	30
FEH Rainfall Version	2013	Winter Storms	Yes		
Site Location	GB 506317 164697 TQ 06317 64697	Cv (Summer)	0.750		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: MH S212 (FC), DS/PN: 1.005, Volume (m³): 1.6

Unit Reference	MD-SHE-0075-2300-0808-2300	Sump Available	Yes
Design Head (m)	0.808	Diameter (mm)	75
Design Flow (l/s)	2.3	Invert Level (m)	11.047
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	100
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.808	2.3	Kick-Flo®	0.512	1.9
Flush-Flo™	0.241	2.3	Mean Flow over Head Range	-	2.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.0	0.600	2.0	1.600	3.1	2.600	3.9	5.000	5.3	7.500	6.5
0.200	2.3	0.800	2.3	1.800	3.3	3.000	4.2	5.500	5.6	8.000	6.7
0.300	2.3	1.000	2.5	2.000	3.5	3.500	4.5	6.000	5.8	8.500	6.9
0.400	2.2	1.200	2.8	2.200	3.6	4.000	4.8	6.500	6.1	9.000	7.1
0.500	1.9	1.400	3.0	2.400	3.8	4.500	5.1	7.000	6.3	9.500	7.3

Storage Structures for Storm

Cellular Storage Manhole: TANK, DS/PN: 1.004

Invert Level (m) 11.055 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	775.0	0.0	0.800	775.0	0.0	0.801	0.0	0.0

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 506317 164697 TQ 06317 64697 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SP1	15 Winter	2	+0%	100/15 Summer				12.043	-0.107	0.000	0.18			2.2	OK	
1.001	MH S200	15 Winter	2	+0%	100/15 Summer				11.963	-0.147	0.000	0.26			12.6	OK	
2.000	SP2	15 Winter	2	+0%					11.929	-0.121	0.000	0.08			1.1	OK	
1.002	MH S201	15 Winter	2	+0%	100/15 Summer				11.617	-0.188	0.000	0.30			24.2	OK	
1.003	MH S202	15 Winter	2	+0%	100/15 Summer				11.513	-0.187	0.000	0.31			24.2	OK	
3.000	12.300	15 Winter	2	+0%	100/15 Summer				11.471	-0.149	0.000	0.24			6.7	OK	
3.001	MH S203	15 Winter	2	+0%	100/15 Summer				11.438	-0.157	0.000	0.20			6.7	OK	
4.000	SP4	15 Winter	2	+0%	100/15 Summer				11.411	-0.169	0.000	0.14			4.6	OK	
5.000	SP5	15 Winter	2	+0%	30/15 Summer				11.411	-0.114	0.000	0.48			14.3	OK	

7th Floor
240 Blackfriars Road
London, UK, SE1 8NW

10334617
WEYBRIDGE BUSINESS PARK
UNIT 210 & 220 - REV A

Date 13/10/2022 12:47
File 10334617-FULL NETWORK-UNIT 210 & 220 - REV A.MDX

Designed by JJOHN
Checked by NDH

Innovyze | Network 2020.1

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
3.002	MH S204	15 Winter	2	+0%	100/15 Summer				11.338	-0.157	0.000	0.46			25.7	OK
3.003	PI3	480 Winter	2	+0%	30/15 Summer				11.242	-0.143	0.000	0.07			3.7	OK
3.004	MH S205	480 Winter	2	+0%	30/180 Winter				11.242	-0.136	0.000	0.07			3.7	OK
6.000	SP7	15 Winter	2	+0%	30/15 Summer				11.838	-0.117	0.000	0.46			17.0	OK
6.001	MH S208	15 Winter	2	+0%	30/15 Summer				11.734	-0.121	0.000	0.42			16.9	OK
7.000	SP6	15 Winter	2	+0%	100/15 Summer				11.608	-0.142	0.000	0.29			14.2	OK
6.002	MH S206	15 Winter	2	+0%	30/15 Summer				11.493	-0.137	0.000	0.57			31.0	OK
6.003	PI2	15 Winter	2	+0%	30/15 Summer				11.376	-0.139	0.000	0.56			30.8	OK
6.004	MH S207	15 Winter	2	+0%	100/15 Summer				11.330	-0.170	0.000	0.39			30.7	OK
8.000	SP8	15 Winter	2	+0%	100/15 Summer				12.036	-0.114	0.000	0.13			1.6	OK
8.001	MH S209	15 Winter	2	+0%	100/15 Summer				11.962	-0.148	0.000	0.25			10.5	OK
8.002	MH S210	15 Winter	2	+0%	100/15 Summer				11.689	-0.201	0.000	0.24			19.4	OK
8.003	MH S211	15 Winter	2	+0%	100/15 Summer				11.515	-0.185	0.000	0.31			19.2	OK
1.004	TANK	480 Winter	2	+0%	30/60 Summer				11.241	-0.039	0.000	0.13			3.8	OK
1.005	MH S212 (FC)	480 Winter	2	+0%	30/30 Winter				11.257	-0.015	0.000	0.07			2.3	OK

PN	US/MH Name	Level Exceeded
3.002	MH S204	
3.003	PI3	
3.004	MH S205	
6.000	SP7	
6.001	MH S208	
7.000	SP6	
6.002	MH S206	
6.003	PI2	
6.004	MH S207	
8.000	SP8	
8.001	MH S209	
8.002	MH S210	
8.003	MH S211	
1.004	TANK	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.005	MH S212 (FC)	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 506317 164697 TQ 06317 64697 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SP1	15 Winter	30	+0%	100/15 Summer				12.071	-0.079	0.000	0.45			5.6	OK
1.001	MH S200	15 Winter	30	+0%	100/15 Summer				12.037	-0.073	0.000	0.79			38.3	OK
2.000	SP2	15 Winter	30	+0%					11.947	-0.103	0.000	0.20			2.7	OK
1.002	MH S201	15 Winter	30	+0%	100/15 Summer				11.730	-0.075	0.000	0.90			73.0	OK
1.003	MH S202	15 Winter	30	+0%	100/15 Summer				11.628	-0.072	0.000	0.92			72.6	OK
3.000	12.300	15 Winter	30	+0%	100/15 Summer				11.539	-0.081	0.000	0.61			16.8	OK
3.001	MH S203	15 Winter	30	+0%	100/15 Summer				11.527	-0.068	0.000	0.47			15.8	OK
4.000	SP4	15 Winter	30	+0%	100/15 Summer				11.516	-0.064	0.000	0.32			10.7	OK
5.000	SP5	15 Winter	30	+0%	30/15 Summer				11.555	0.030	0.000	1.19			35.6	SURCHARGED

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	SP1	
1.001	MH S200	
2.000	SP2	
1.002	MH S201	
1.003	MH S202	
3.000	12.300	
3.001	MH S203	
4.000	SP4	
5.000	SP5	

7th Floor 240 Blackfriars Road London, UK, SE1 8NW	10334617 WEYBRIDGE BUSINESS PARK UNIT 210 & 220 - REV A
Date 13/10/2022 12:47 File 10334617-FULL NETWORK-UNIT 210 & 220 - REV A.MDX	Designed by JJOHN Checked by NDH
Innovyze	Network 2020.1

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
3.002	MH S204	15 Winter	30	+0%	100/15 Summer				11.495	0.000	0.000	1.03			57.8	OK
3.003	PI3	720 Winter	30	+0%	30/15 Summer				11.467	0.082	0.000	0.10			5.2	SURCHARGED
3.004	MH S205	720 Winter	30	+0%	30/180 Winter				11.467	0.089	0.000	0.10			5.2	SURCHARGED
6.000	SP7	15 Winter	30	+0%	30/15 Summer				12.021	0.066	0.000	1.09			40.4	SURCHARGED
6.001	MH S208	15 Winter	30	+0%	30/15 Summer				11.905	0.050	0.000	0.98			39.0	SURCHARGED
7.000	SP6	15 Winter	30	+0%	100/15 Summer				11.742	-0.008	0.000	0.70			34.1	OK
6.002	MH S206	15 Winter	30	+0%	30/15 Summer				11.684	0.054	0.000	1.31			71.5	SURCHARGED
6.003	PI2	15 Winter	30	+0%	30/15 Summer				11.568	0.053	0.000	1.31			71.9	SURCHARGED
6.004	MH S207	720 Winter	30	+0%	100/15 Summer				11.467	-0.033	0.000	0.08			6.4	OK
8.000	SP8	15 Winter	30	+0%	100/15 Summer				12.059	-0.091	0.000	0.32			4.0	OK
8.001	MH S209	15 Winter	30	+0%	100/15 Summer				12.034	-0.076	0.000	0.76			31.9	OK
8.002	MH S210	15 Winter	30	+0%	100/15 Summer				11.783	-0.107	0.000	0.72			58.7	OK
8.003	MH S211	15 Winter	30	+0%	100/15 Summer				11.633	-0.067	0.000	0.96			58.9	OK
1.004	TANK	720 Winter	30	+0%	30/60 Summer				11.466	0.186	0.000	0.18			5.3	SURCHARGED
1.005	MH S212 (FC)	720 Winter	30	+0%	30/30 Winter				11.510	0.238	0.000	0.07			2.3	SURCHARGED

PN	US/MH Name	Level Exceeded
3.002	MH S204	
3.003	PI3	
3.004	MH S205	
6.000	SP7	
6.001	MH S208	
7.000	SP6	
6.002	MH S206	
6.003	PI2	
6.004	MH S207	
8.000	SP8	
8.001	MH S209	
8.002	MH S210	
8.003	MH S211	
1.004	TANK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.005	MH S212 (FC)	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Manhole Headloss Coeff (Global)	0.500	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Foul Sewage per hectare (l/s)	0.000	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Additional Flow - % of Total Flow	0.000	Flow per Person per Day (l/per/day)	0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 506317 164697 TQ 06317 64697 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 20

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SP1	15 Winter	100	+20%	100/15 Summer				12.330	0.180	0.000	0.83			10.4	SURCHARGED
1.001	MH S200	15 Winter	100	+20%	100/15 Summer				12.318	0.208	0.000	1.11			54.2	SURCHARGED
2.000	SP2	15 Winter	100	+20%					11.962	-0.088	0.000	0.32			4.2	OK
1.002	MH S201	15 Winter	100	+20%	100/15 Summer				11.930	0.125	0.000	1.28			103.6	SURCHARGED
1.003	MH S202	15 Winter	100	+20%	100/15 Summer				11.755	0.055	0.000	1.30			103.3	SURCHARGED
3.000	12.300	15 Winter	100	+20%	100/15 Summer				11.797	0.177	0.000	0.86			23.6	SURCHARGED
3.001	MH S203	15 Winter	100	+20%	100/15 Summer				11.778	0.183	0.000	0.68			23.0	SURCHARGED
4.000	SP4	15 Winter	100	+20%	100/15 Summer				11.761	0.181	0.000	0.48			16.0	SURCHARGED
5.000	SP5	15 Winter	100	+20%	30/15 Summer				11.867	0.342	0.000	1.74			52.1	SURCHARGED

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	SP1	
1.001	MH S200	
2.000	SP2	
1.002	MH S201	
1.003	MH S202	
3.000	12.300	
3.001	MH S203	
4.000	SP4	
5.000	SP5	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
3.002	MH S204	960 Winter	100	+20%	100/15 Summer				11.749	0.254	0.000	0.11			6.2	SURCHARGED
3.003	PI3	960 Winter	100	+20%	30/15 Summer				11.749	0.364	0.000	0.11			6.1	SURCHARGED
3.004	MH S205	960 Winter	100	+20%	30/180 Winter				11.749	0.371	0.000	0.12			6.0	SURCHARGED
6.000	SP7	15 Winter	100	+20%	30/15 Summer				12.589	0.634	0.000	1.53			57.2	FLOOD RISK
6.001	MH S208	15 Winter	100	+20%	30/15 Summer				12.344	0.489	0.000	1.40			55.9	SURCHARGED
7.000	SP6	15 Winter	100	+20%	100/15 Summer				12.021	0.271	0.000	1.04			50.8	SURCHARGED
6.002	MH S206	15 Winter	100	+20%	30/15 Summer				11.892	0.262	0.000	1.90			103.2	SURCHARGED
6.003	PI2	960 Winter	100	+20%	30/15 Summer				11.749	0.234	0.000	0.15			7.9	SURCHARGED
6.004	MH S207	960 Winter	100	+20%	100/15 Summer				11.749	0.249	0.000	0.10			7.9	SURCHARGED
8.000	SP8	15 Winter	100	+20%	100/15 Summer				12.237	0.087	0.000	0.62			7.8	SURCHARGED
8.001	MH S209	15 Winter	100	+20%	100/15 Summer				12.229	0.119	0.000	1.10			45.9	SURCHARGED
8.002	MH S210	15 Winter	100	+20%	100/15 Summer				11.955	0.065	0.000	1.03			84.5	SURCHARGED
8.003	MH S211	960 Winter	100	+20%	100/15 Summer				11.749	0.049	0.000	0.10			5.8	SURCHARGED
1.004	TANK	960 Winter	100	+20%	30/60 Summer				11.749	0.469	0.000	0.18			5.3	SURCHARGED
1.005	MH S212 (FC)	960 Winter	100	+20%	30/30 Winter				11.786	0.514	0.000	0.07			2.3	SURCHARGED

PN	US/MH Name	Level Exceeded
3.002	MH S204	
3.003	PI3	
3.004	MH S205	
6.000	SP7	
6.001	MH S208	
7.000	SP6	
6.002	MH S206	
6.003	PI2	
6.004	MH S207	
8.000	SP8	
8.001	MH S209	
8.002	MH S210	
8.003	MH S211	
1.004	TANK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.005	MH S212 (FC)	