

145-148 FRIAR STREET & 1-15 QUEEN VICTORIA STREET READING

Drainage Strategy & SUDs

September 2024

Client Name: Thackeray Estates Ltd
Document Reference: 21044-ASL-DSN-03-P2
Project Number: 21044

Approval Status

Issue	Date	Prepared by	Checked by	Approved by
P2	12.09.24	H Chetty	A Bowling	A Bowling

Comments

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We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

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1. Introduction

- 1.1. Axiom Structures have been commissioned to undertake a Surface Water Drainage Strategy for the proposed development at 145-148 Friar Street and 1-15 Queen Victoria Street, which is sited in Reading and to discharge Planning Condition 21.
- 1.2. This report is being issued as an addendum to the Flood Risk Assessment and Drainage Strategy (FRA & DS) report submitted by J M Enviro Ltd for the Section 73 planning application. The proposed below ground surface water drainage and SUDs aligns with the strategy agreed with Reading Borough Council as part of the Section 73 application.
- 1.3. The EA's Flood Map for planning shows that the site is in **Flood Zone 1** and the site area is less than 1 ha.
- 1.4. The existing site is considered "Less Vulnerable" on the basis of retail use and 'More Vulnerable' as being turned into hotel development.
- 1.5. In addition, the Strategic Flood Risk Assessment (SFRA) and Surface Water Management Plan (SWMP) show no record of surface water flooding at the site.
- 1.6. The total site area is approximately 1500 m², the built footprint of the existing building will remain the same as a result of the proposal, with brown roof providing an improvement of the permeable areas.
- 1.7. In compliance with Policy EN18, the proposals have aimed to reduce runoff of existing as much as possible and hence lined permeable paving with attenuation storage is proposed (with an orifice / hydrobreak flow control) to limit runoff from the new roof and courtyard areas via the existing drainage.
- 1.8. Upon analysis and following the implementation of appropriate mitigation measures set out in this report, the development has been shown to aim to comply with Policy EN18.
- 1.9. The proposed development is considered to be suitable and given that:
 - With reference to the EA planning guidance on development and flood risk the courtyard and adjacent retail areas at ground floor is viewed as a minor development as it provide no habitable space;
 - The site lies within an existing developed area within EA defined Flood Zone 1;
 - Runoff calculations undertaken have shown the proposed development aim to comply with Reading Borough Council EN18

2. Planning Policy Guidance

National Planning Policy Framework and Planning Practice Guidance

- 2.1. The National Planning Policy Framework¹ (NPPF) last revised in February 2019 and its supporting Planning Practice Guidance² (PPG) states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. Where development is necessary, it must be made safe without increasing flood risk elsewhere.
- 2.2. In relation to drainage it states that when determining planning applications, Local Planning Authorities (LPA) should only consider development in areas where priority is given to the use of Sustainable Drainage Systems (SuDS).
- 2.3. The PPG states that developers and LPAs should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of SuDS.

Non-statutory Technical Standards for Sustainable Drainage Systems

- 2.4. The Non-statutory Technical Standards for SuDS³ was published in March 2015 and is the current guidance for the design, maintenance and operation of SuDS.
- 2.5. The standards set out that the peak runoff rates should be as close as is reasonably practicable to the greenfield rate, but should never exceed the pre-development runoff rate.
- 2.6. The standards also set out that the drainage system should be designed so that flooding does not occur on any part of the site for a 1 in 30 year rainfall event, and that no flood of a building (including basement) would occur during a 1 in 100 year rainfall event.
- 2.7. It is also noted within the standards that pumping should only be used when it is not reasonably practicable to discharge by gravity.

Reading Borough Council Local Plan

- 2.8. Reading Borough Council EN18 of the Local Plan require a Sustainable Urban Drainage System (SuDS) to be included and retained as part of the proposed development.
- 2.9. Proposed drainage strategy layout is presented on the drawings in Appendix B.
- 2.10. The report addresses the Reading Borough Council requirements summarised in the table below. The responses are summarised in the table below and references given to the relevant sections of the report.

¹ Ministry of Housing, Communities and Local Government, February 2019. National Planning Policy Framework.

² Ministry of Housing, Communities and Local Government, March 2014. Planning Practice Guidance.

³ Department for Environment, Food, and Rural Affairs, March 2015. Non-statutory technical standards for sustainable drainage systems.

Planning requirement (Condition 21)	Response / Report Section
<i>Sustainable Drainage Strategy and associated detailed design</i>	The proposal aims to reduce surface water run-off as much as possible. Existing roof downpipe for the new roof buildings adjacent to the courtyard will be routed into the lined permeable paving. Brown roof are being provided that will reduce the impermeable areas of the site. Existing roof is being retained, with new roof and courtyard flow rate being restricted. Refer to Appendix B - 21044-ASL-ZZ-ZZ-DR-D-600 drawing for drainage layouts and lined permeable paving detail and section. Refer to Appendix A – for Architect drawing that show the area of brown roofs that are being provided.
<i>Management and maintenance plan of surface water drainage for the site using SuDS methods</i>	Section 8 of this report

3. Surface Water Drainage Outline Strategy

- 3.1. In similar manner to the existing condition, the surface water from the development roof will be gravity routed to the sewer via the existing surface water drainage connection.
- 3.2. The surface water run-off from the roof that is being retained and sloped towards the Queen Victoria and Friar Street will discharge to the sewer without any restriction.
- 3.3. An element of brown roof has been provided throughout the development which will reduce the rate and volume of water discharging to the sewer. The new roof and courtyard will discharge into the permeable paving and attenuation tank located below the courtyard.
- 3.4. A lined permeable paving is proposed to assist in reduction of surface water flows to the public sewer as well as to assist in the qualitative treatment of the water.
- 3.5. The surface water sewer system for the re-development shall be designed to convey surface water only with foul water being discharged separately to the surface and foul water sewer in Friar and Queen Victoria Street. (Appendix B) The design will be in accordance with BS EN 752 – Drain and Sewer Systems Outside Buildings, BS EN 12056 – Gravity Drainage Systems Inside Buildings and Approved Document H to the Building Regulations.
- 3.6. Surface water will be accommodated in geocellular units within a 300mm depth manufactured by Polypipe Ltd at the ground floor level below the courtyard surface which would be permeable. The flow rate will be restricted from the attenuation tank using orifice at the ground floor level and connecting to existing drainage.
- 3.7. The total surface water discharge from the proposed 0.15 hectare development is 29.4 l/s in accordance to the Flood Risk Assessment (FRA) for the 1 in 100 year storm 60 minutes duration storm, submitted as part of the Pre-development Enquiry application. The surface water run-off from the proposed development will therefore be restricted to the public sewer at 60% of the existing flow rate based on restricting the flow rate from the new roof and courtyard.
- 3.8. Calculations have been undertaken using the Causeway Flow for 1 in 2, 30, 100 and 100 year plus 40% CC year storms based on the 60 minute rainfall duration for the existing and proposed development areas, the output are summarised in Section 6 and Appendix C of this report.

4. SUDs Comment and Strategy

- 4.1. One the most effective means of reducing surface water flows and run-off is to control the rainfall at source with the use of brown roofs and permeable paving.
- 4.2. The development does not increase the area of impermeable surfacing and there are significant limitation on implementing any SuDS due to small scale of the development.
- 4.3. The development provides an opportunity to reduce rainwater run-off with the use of a lined permeable paving and brown roof to assist in flow control system with storage of extreme rainfall events and to provide qualitative treatment of water falling on the courtyard surface.
- 4.4. There will be no increase in impermeable area as a result of the development and hence no increase in rainwater run-off. In order to meet the Policy EN18, surface water from the courtyard and adjacent new roofs areas will be routed to the lined permeable paving.

5. Surface Water Design and SUDs Hierarchy

- 5.1. The proposed drainage system would be designed to convey surface and foul water separately. The design would be in accordance with BS EN 752 – Drain and Sewer Systems Outside Building, BS EN 12056 – Gravity Drainage Systems Inside Buildings and Approved Document H of Building Regulations. ⁴
- 5.2. In line with Building Regulations and the PPG, the following hierarchy of surface water disposal should be adhered to, in decreasing order of preference.
 - I. Discharge to ground;
 - II. Discharge to surface water body;
 - III. Discharge to a surface water sewer; and
 - IV. Discharge to a combined sewer.

Discharge to Ground

- 5.3. The most effective way to reduce surface water runoff is through infiltration into the subsoil which reduces the total volume of runoff, rather than simply reducing peak flows. This can include features such as infiltration trenches, soakaways, infiltration basins, and permeable paving.
- 5.4. Soakaway have not been considered for this development due to the presence of existing basement for this development.

Discharge to a Surface Water Body

- 5.5. There is no watercourse in close proximity of the proposed development and therefore this is not a viable option.

Discharge to a Surface Water Sewer

- 5.6. There is surface water sewer in close proximity of the proposed development located in the adjacent public roads.

Sustainable Drainage Systems

- 5.7. The most sustainable way to manage surface water drainage is through the use of Sustainable Drainage Systems (SuDS), which need to be considered in relation to site-specific conditions.
- 5.8. SuDS mimic the natural drainage system and provide a method of surface water drainage which can decrease the quantity of water discharged, thereby reducing the risk of flooding. In addition to reducing flood risk, SuDS devices can improve water quality, and provide biodiversity and amenity benefits.
- 5.9. A variety of SuDS are available to reduce or temporarily attenuate the discharge of surface water runoff. The potential for SuDS was considered throughout the development of the scheme proposals as indicated in the FRA and DS submitted for planning.

⁴ British Standards Institution, April 2008. *BS EN 752:2008 – Drain and Sewer Systems Outside Buildings*.

Lined Permeable Paving

- 5.10. Due to the space restrictions and keeping any soakaways 5m away from building foundation, infiltration is not possible for the development. Lined permeable paving with attenuation tank would provide water quality benefits, in addition to attenuating the flows. The attenuation volume within the geocellular attenuation tank have been sized to ensure flooding does not occur for the 1 in 100 year event with an allowance of 40% climate change for the surface water run-off from the adjacent building and courtyard areas.

Living Roof

- 5.11. Brown living roofs comprise a vegetative cover over a drainage layer which mimics the natural drainage regime of a Greenfield site, through absorption by the plants and retention of precipitation within the growing medium. This reduces the volume of runoff and peak flows. Living roofs can also provide benefits through providing replacement and additional habitat within developments. Furthermore, they can facilitate in reducing a building's carbon footprint by removing CO₂ and reducing energy demand owing to the thermal benefits.

Attenuation Tank

- 5.12. Cellular attenuation units are plastic tanks that are installed below ground and can be used to provide storage before discharge into the ground. Cellular units can be placed in all external areas where a minimal cover can be accommodated, subject to loading capacity, by the manufacturer.
- 5.13. To satisfy rate for discharge and volume of attenuation, an attenuation tank maximum depth 300mm have been provided in conjunction with permeable paving. The attenuation tanks have been sized to ensure flooding does not occur for the 1 in 100 year event with an allowance of 40% climate change.

6. Calculated Flow Rates

Existing Areas and flow rates.

- 6.1. Refer to calculations in the Appendix C and areas shown on drawings

Total existing roof and courtyard = 1500 m² (uncontrolled discharge to sewer)

Existing Permeable Area = 0 m²

Percentage impermeable = 100%.

1 in 2 year event = 13.8 l/s

1 in 30 year event = 37.9 l/s

1 in 100 year event = 49.0 l/s

1 in 100 year + 40%CC = 68.4 l/s

Based on a 60 minutes storm duration.

Proposed Areas and flow rates.

Total site area = as above

Total existing roof being retained = 600 m² (uncontrolled discharge to sewer)

New roof and courtyard discharging to Permeable Paving plus Tank including brown roof = 900 m²

Brown Roof Areas = 280 m²

Percentage impermeable = 81% but 60% of impermeable to be routed via SuDS and Flow Control.

1 in 1 year event. = 2.0 l/s (flow control) + 5.5 l/s (uncontrolled) = 7.5 l/s

1 in 30 year event = 2.0 l/s (flow control) + 15.1 l/s (uncontrolled) = 17.1 l/s

1 in 100 year event = 2.0 l/s (flow control) + 18.8 l/s (uncontrolled) = 20.8 l/s

1 in 100 plus 40% year event = 2.0 l/s (flow control) + 27.4 l/s (uncontrolled) = 29.4 l/s

- 6.2. Overall there is a 60% reduction in discharge flow rate as the part of the roof continue to discharge without restriction and attenuation. However the surface water run-off from the building adjacent to the courtyard itself will be treated through the flow of water through the brown roof and attenuated before discharge to the existing drainage. The flow of water through the SUDS feature will increase the time of concentration and therefore the flow to the sewer will usually occur after the main existing roof has discharged to the sewer.

7. Treatment Train Design

- 7.1. The runoff draining from the hotel residential roofs will have a very low pollution hazard level and the development proposals should mitigate for these runoff indices. Runoff from these roofs will discharge into the below ground system being attenuated before discharge into the receiving environment.
- 7.2. Runoff from the courtyard areas are stated as a low pollution hazard level. Runoff from this area will be directed into that areas where the permeable paving is proposed to then connect into the drainage system. The treatment train from this runoff routes, will move through permeable paving sand and then into attenuation tanks below. This treatment train will mitigate the medium pollution hazard level as detailed below.

Table 1: Pollution hazard / mitigation indices for medium and very low hazard

Pollutant	Pollution Hazard Indices (Very low – Roof /Podium)	Pollution Hazard Indices (Medium – Courtyard)	Mitigation Indices Component Permeable Paving and Brown Roof
Total Suspended Solids	0.2	0.7	$0.7+0.4 = 1.1$
Metals	0.2	0.6	$0.6 + 0.4 = 1.0$
Hydrocarbons	0.05	0.7	$0.7 + 0.4 = 1.1$

[Total SuDS Mitigation Indices $\geq$ Pollution Hazard Indices] (for each contaminant type)

- 7.3. Any exceedance flow would run towards the lower level at the entrance to the courtyard and overflow towards the road.

8. Sustainable Drainage System Maintenance Plan

- 8.1. The Planning Practice SuDS Guidance sets requirement for out the developers to consider the operation, management and maintenance of all SuDS.
- 8.2. It is expected that construction of the drainage element will start in January 2025 with completion 15 months later.
- 8.3. Following completion of the Development, a management company would be responsible for the SuDS and overall operation of the building. The tables below outline the associated maintenance that is required for the SuDS and drainage ancillaries incorporated into the development. This requirement will be included in the O&M manual for the building.

Maintenance Plan for Lined Permeable Paving

Permeable Paving	
Task	Frequency
Inspection of paving and structure, pipework and filtration devices	Monthly or as required
Inspect filter drain surface, inlet/outlet pipework and control system for blockages, standing water and damage	Monthly or as required
Inspect perforated pipe and catchpit sumps for silt accumulation and silt removal frequencies	Every six months

Maintenance Plan for Living Roofs

Brown Roof	
Task	Frequency
Inspect system to replace dead plants as required	As required
Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
Inspect system to ensure substrate is not eroded and inlet/outlet drains are not blocked	Annually or as required (after severe storms)

Maintenance Plan for Tanks and Control Structure

Tank and Control Structure	
Task	Frequency
Inspection of Sumps and Orifice	As required
Jetting of Tank	Annually

9. Conclusions

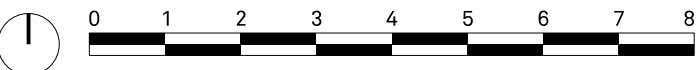
- 9.1. Surface water runoff from the existing Site discharges to the Thames Water public sewers. The proposed strategy would mirror this situation. Attenuation tanks below the courtyard at ground floor level would restrict surface water runoff to 2 l/s.
- 9.2. Surface water run-off from existing roof that is being retained will discharge at a rate of 27.4 l/s for the 1 in 100 year plus 40% CC. This is 60% of the existing runoff rate for the 1 in 100 year 60 minutes duration storm. Living roofs would also be incorporated, which would improve water quality, provide biodiversity benefits and increases the time that water discharges to the public sewer.
- 9.3. The SUDs construction will be completed in middle of 2026 and once completed this will be maintained by a management contractor that would also be responsible for the maintenance of the building operation.

APPENDICES

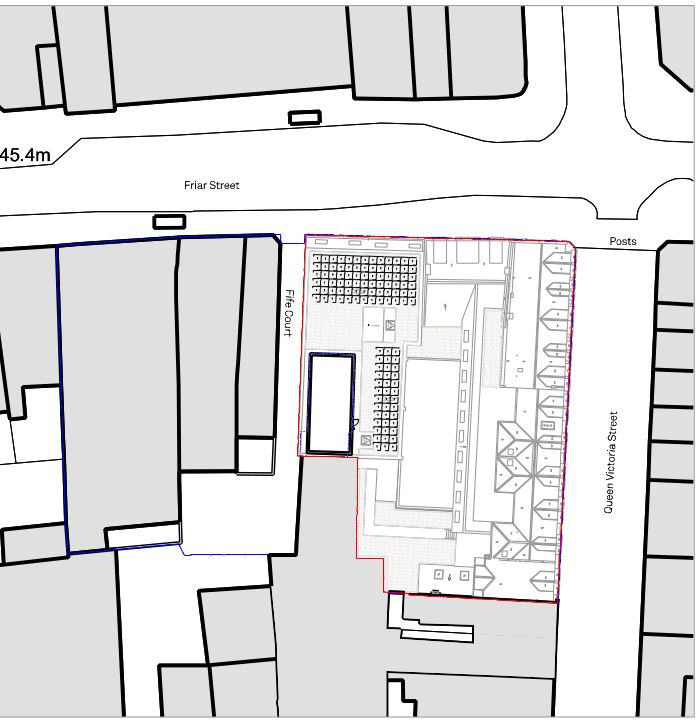
A. Architect Plans with Brown Roof

Notes

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KEY PLAN



P04	31.07.24	PR	CC	unit 5 and 6 flue added
P03	14.06.24	PR	CC	drainage added, kitchens amended to Ashton comments
P02	17.05.24	PR	CC	structural columns added
P01	03.05.24	AM	CC	First Issue

Rev: | Date: | By: | Chk By: | Rev Note:

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Project Title
145-148 Friar Street, 1-15 Queen Victoria Street

Client
Thackeray Group

Drawing Title
Shell & Core - Proposed First Floor Plan

Drawing No.
P22018-FCH-BA-01-DR-A-1371

Status
S3

Issue suitable for:
Information

Date
16.04.24

Job No.
P22-018

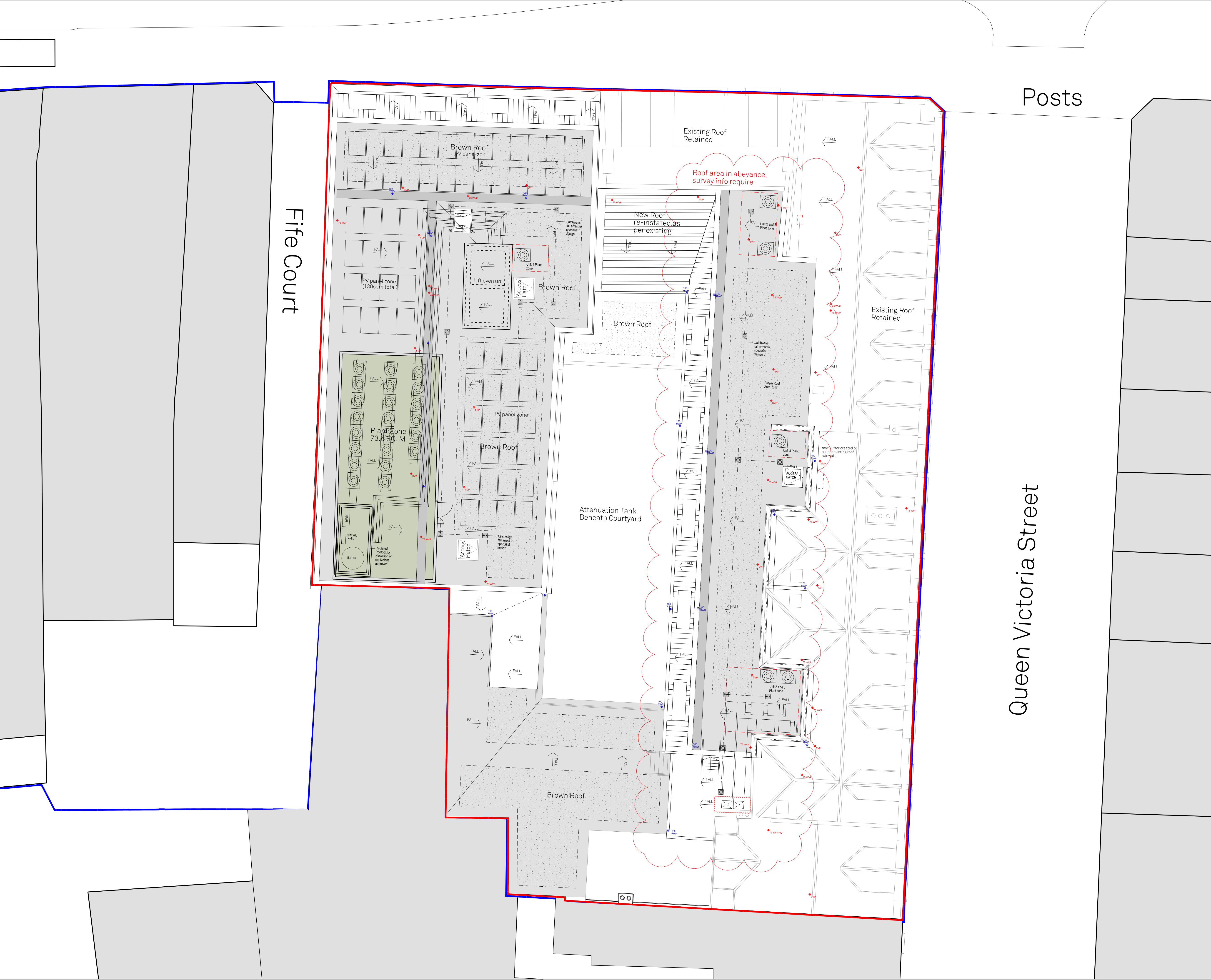
Drawing Stage
Planning

Scale
1:100 @ A1

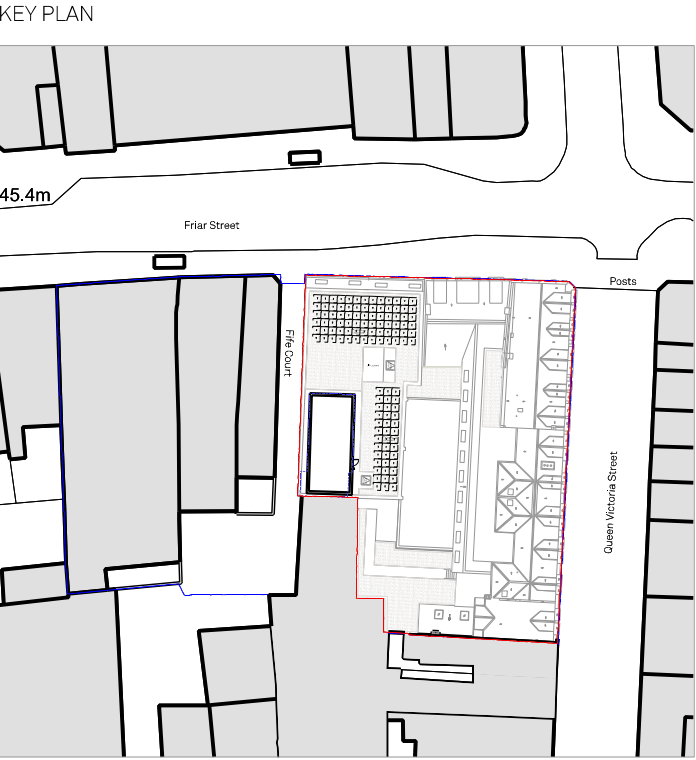
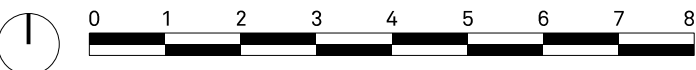
Rev
P04

Drawn By
AM

Checked By
CC



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P02	30.07.24	PR	CC	tenant plant zones added
P01	26.06.24	PR	CC	First Issue

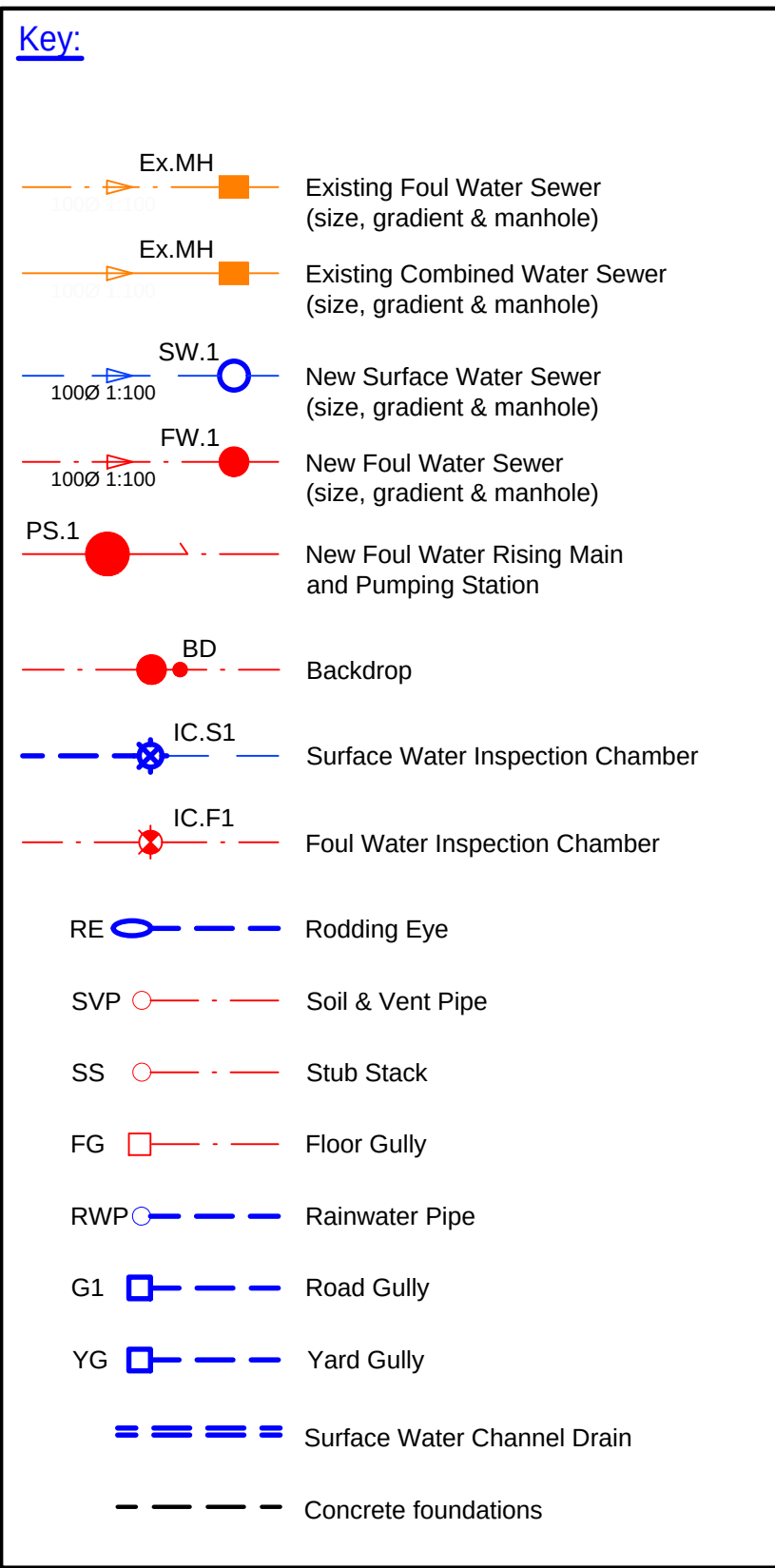
Rev: | Date: | By: | Chk By: | Rev Note:

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Project Title 145-148 Friar Street, 1-15 Queen Victoria Street				Rev
Client Thackeray Group				P02
Drawing Title Shell & Core - Proposed Roof Plan				Drawn By
Drawing No. P22018-FCH-BA-RF-DR-A-1376				PR
Status S3	Issue suitable for: Information	Date 25.06.24	Scale 1:100 @ A1	Checked By CC
Job No. P22-018	Drawing Stage Planning			

**B. Proposed Drainage Layout, Drainage Details & Thames Water Sewer
Plan**



- NOTES
1. Do not scale this drawing. Any discrepancy is to be reported immediately.
 2. This drawing is to be read in conjunction with all Engineers, Architects and other relevant drawings and specifications.
 3. All dimensions are in millimetres unless otherwise shown
 4. All dimensions and levels are to be checked on site by the contractors prior to preparing any working drawings or commencing on site.
 5. All material and workmanship are to comply with the relevant current British Standards, and where required by the Employer, to NHBC standards.
- SPECIFICATION NOTES (READ WITH DRAINAGE SPECIFICATION)
6. Foul drains are to be 100mm diameter laid at a gradient not flatter than 1: 80 (1.40 IF NO WC). Where 150mm nominal diameter, than pipe should not be laid flatter than 1:150 UNO.
 7. Drains are to be constructed using UPVC or HDPE with flexible joints bedded and backfilled with the manufacturers recommendation.
 8. 100mm rigid pipes with less than 300mm cover or pipes of 150mm or greater with less than 600mm cover are to be surrounded by 150mm of concrete with movement joints provided at the pipe joints.
 9. The Contractor is to satisfy himself as to the exact location of the existing sewers before excavating for construction of the new connections and sewers.
 10. All work by the Contractor must be carried out in such a way that all requirements under the health and safety at work act are satisfied.
 11. Drainage to be installed to the invert levels shown on layout/manhole schedule and not to any gradients shown. Gradients are for design information only.
 12. All precast concrete components shall be in accordance with BS5911 (pt100 for pipes/pt 200 for manholes/pt230 for road gullies).
 13. Clayware drains and fittings to be in accordance with BS EN 295:1991 and BS 65:1991 (Hepworth or similar approved).
 14. Cast iron drains and fittings to be in accordance with the timesaver system. (Saint Gobian pipelines or similar approved).
 15. Location of all waste points based on architects drawings.
 16. Exact locations of SVP/PP/SS/RWP to be confirmed by MEP Engineer.
 17. Gullies connected to LGF drainage without AFV would need to be an Anti Flood Gully. SVP and RWP should have roddable access at least 1m above FFL.

STAGE 3 DRAWING
This drawing is for stage 3 purposes only and must not be read as construction issue. It indicates design intent and is subject to amendment during final coordination

T2	12.08.24	Coordinated with latest M&E drawings issued 08.08.2024	HC	AB
T1	05.08.24	STAGE 3 ISSUE	HC	AB
Rev	Date	Amendments	By	Chkd

STAGE 3

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Client: **THACKERAY ESTATES**

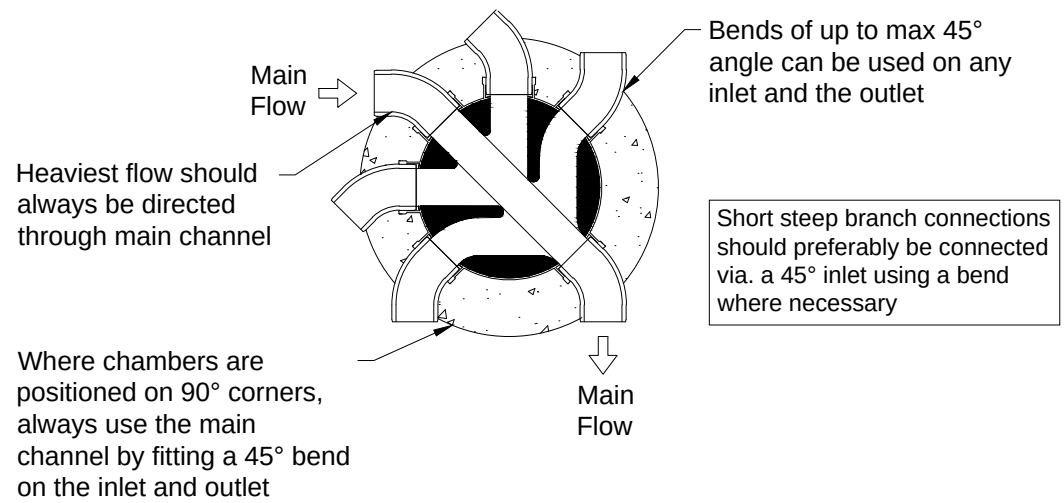
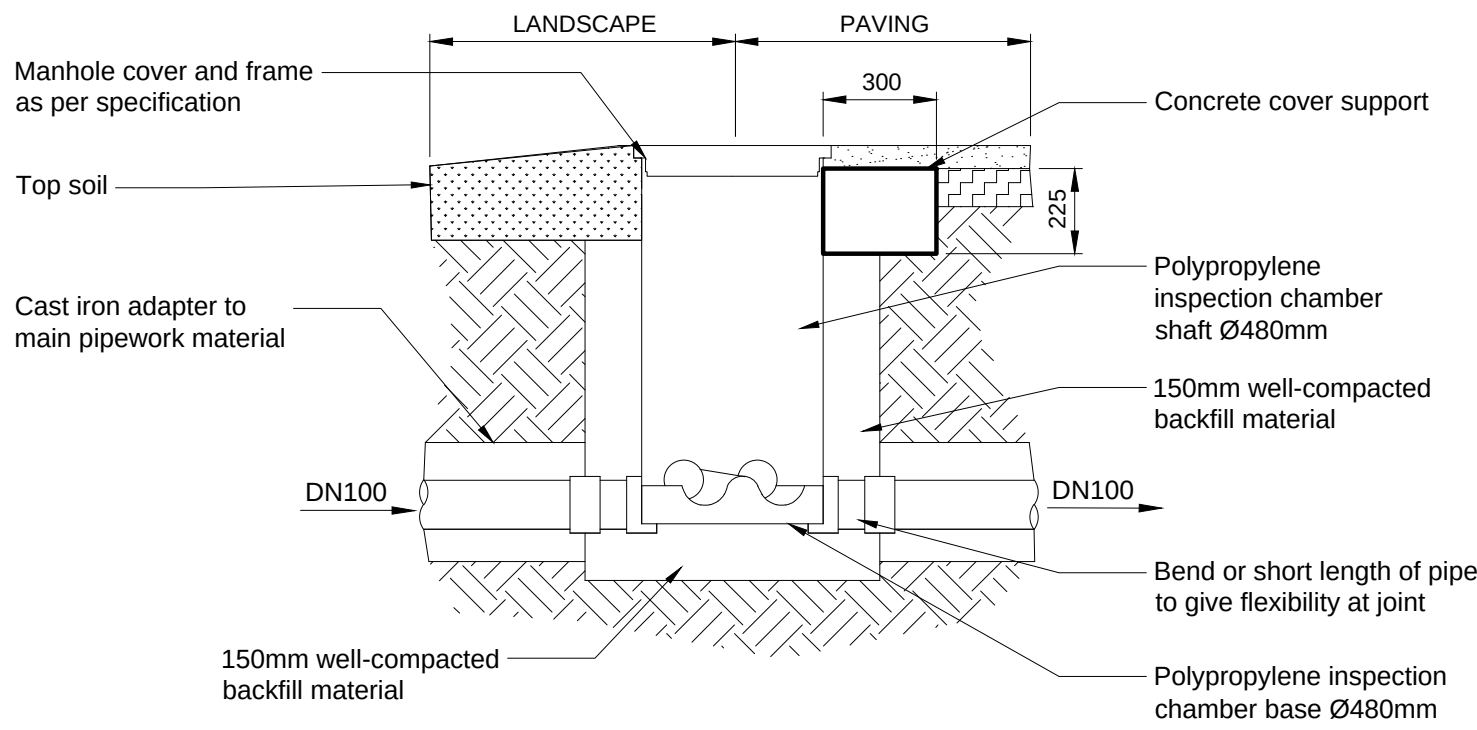
Project:
**QUEEN VICTORIA STREET,
READING**

Drawing title:

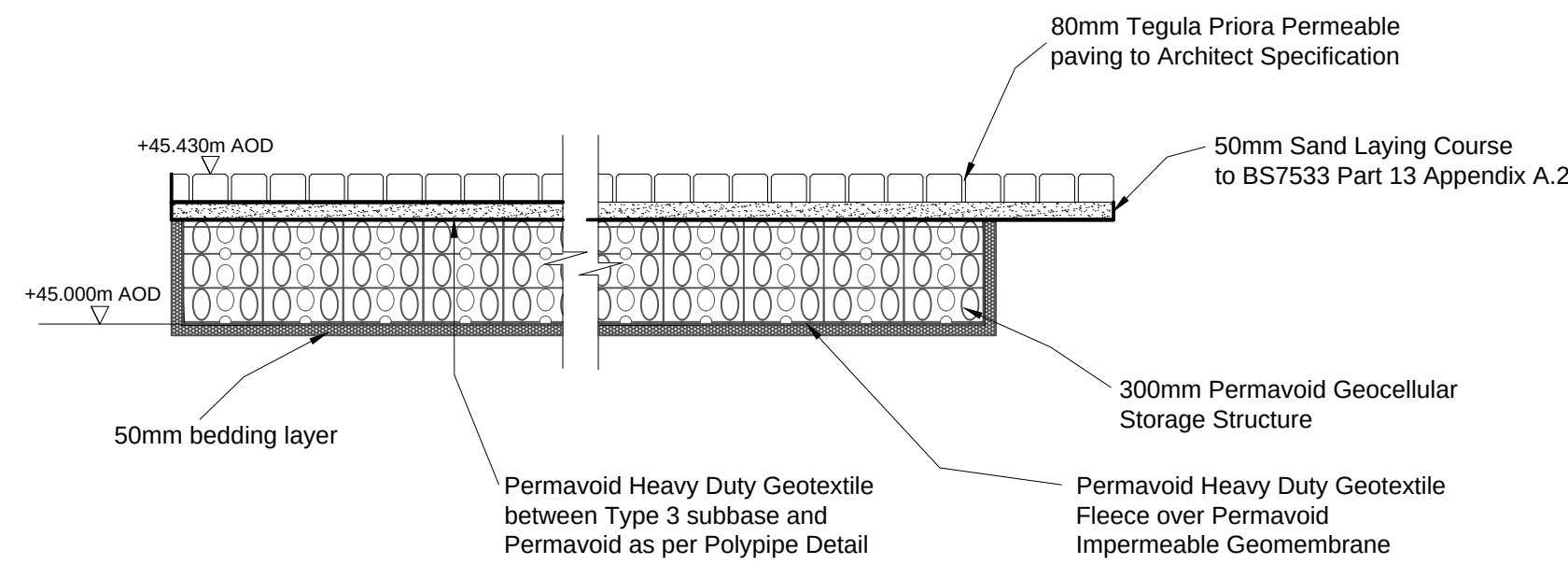
**PROPOSED DRAINAGE
LAYOUT - GROUND FLOOR**

Date: 06/2024	Scale at A1: 1:100	Scale at A3: 1:200
Drawn by: DJ	Designed by: HC	Chk'd by: AB

21044 - ASL - QVS1 - 00 - DR- D - 0606 - T2

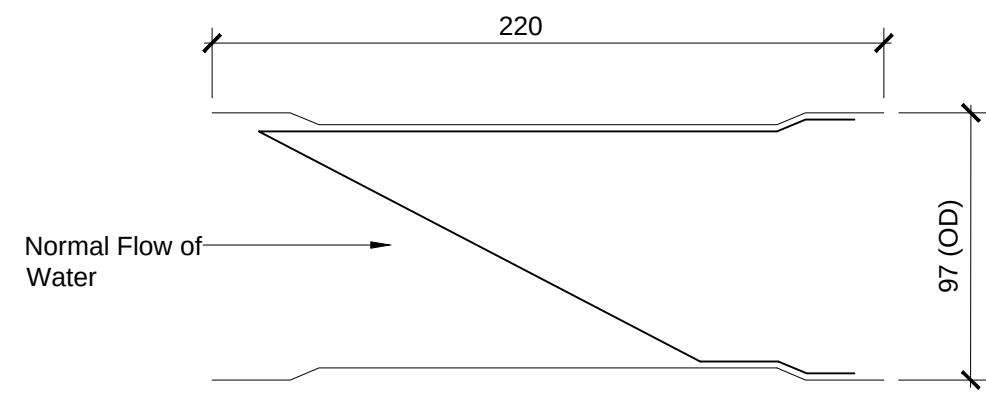


DETAIL 1
TYPICAL POLYPROPYLENE INSPECTION
CHAMBER (PPIC) DETAIL
SCALE 1:20



DETAIL 5
SECTION THROUGH ATTENUATION
TANK FOR 30 T
SCALE 1:20

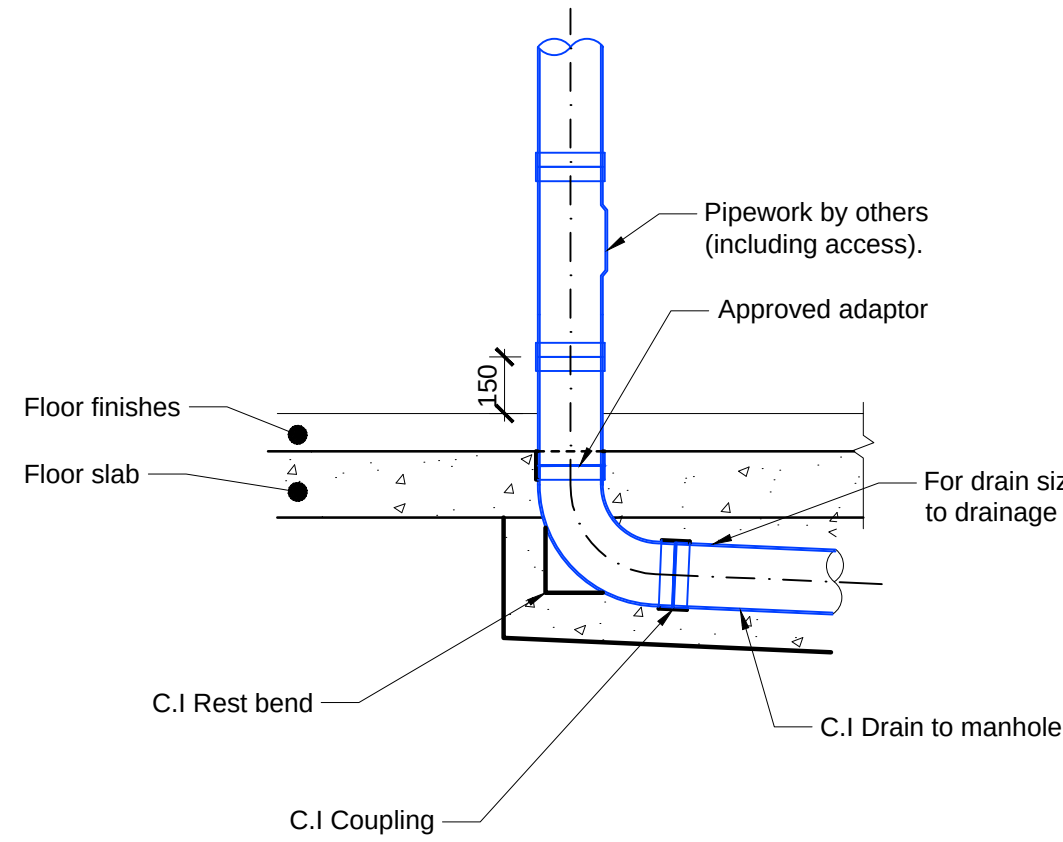
BASED ON CBR of 5%. CBR TO BE
CONFIRMED PRIOR TO CONSTRUCTION.



In-line Flood Valve
Althon WaStop® DN100
Art.nr: ws97-55-304
Materials: Stainless Steel
Fits in Existing pipe (min-max): 98-101

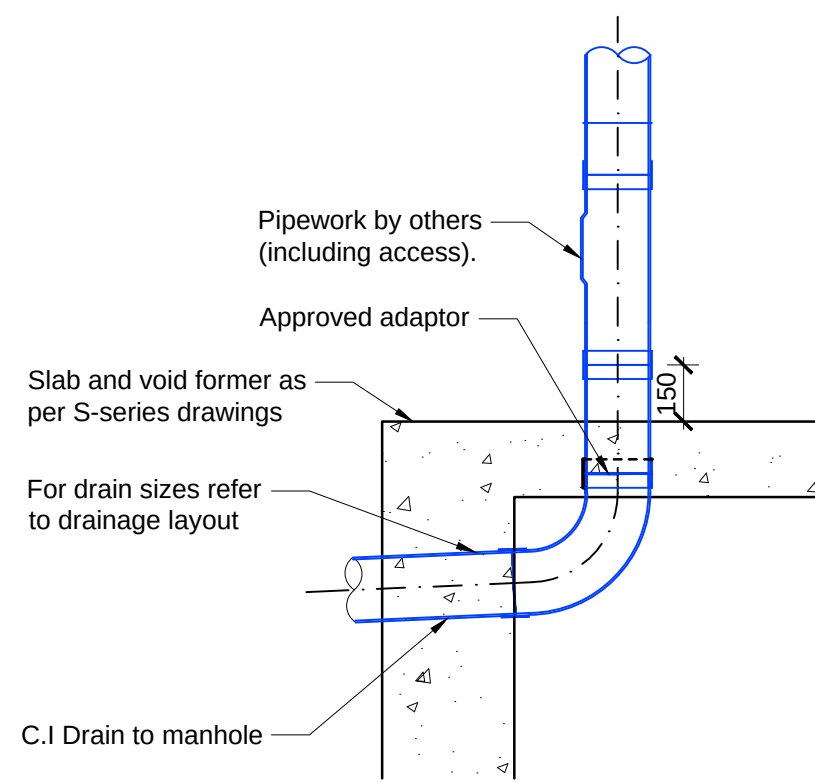
Special versions of WaStop® can be ordered, according to your requirements.
Pipe: EN14301/AISI 304 as standard, extra charge if EN14404/AISI 316 is required.
Tests conducted by Vatterfall Ulveckling AB prove that WaStop® check valves have the lowest head loss in the market.
PLEASE NOTE THIS DRAWING IS NOT TO SCALE AND SHOULD ONLY BE USED AS A VISUAL REPRESENTATION
All dimensions shown in mm.

DETAIL 2
INLINE FLAP VALVE
Scale NTS

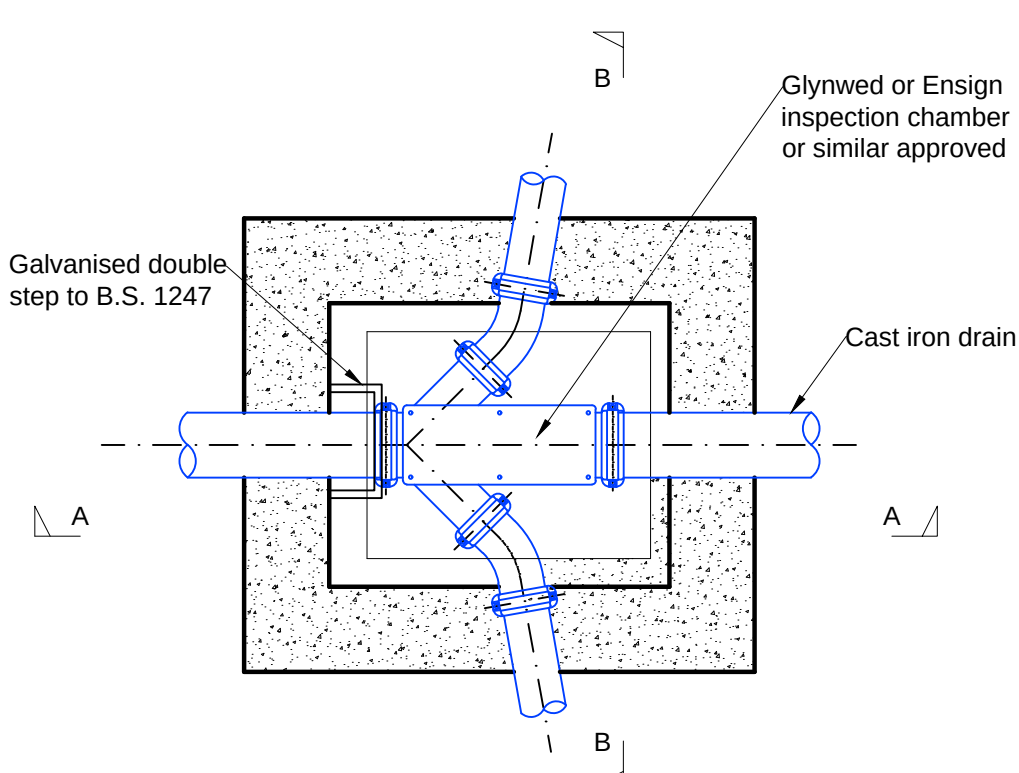


INVERT LEVEL INDICATED ON DRAINAGE
LAYOUT 21044-DR-0606 TO AVOID PIPE CLASHES

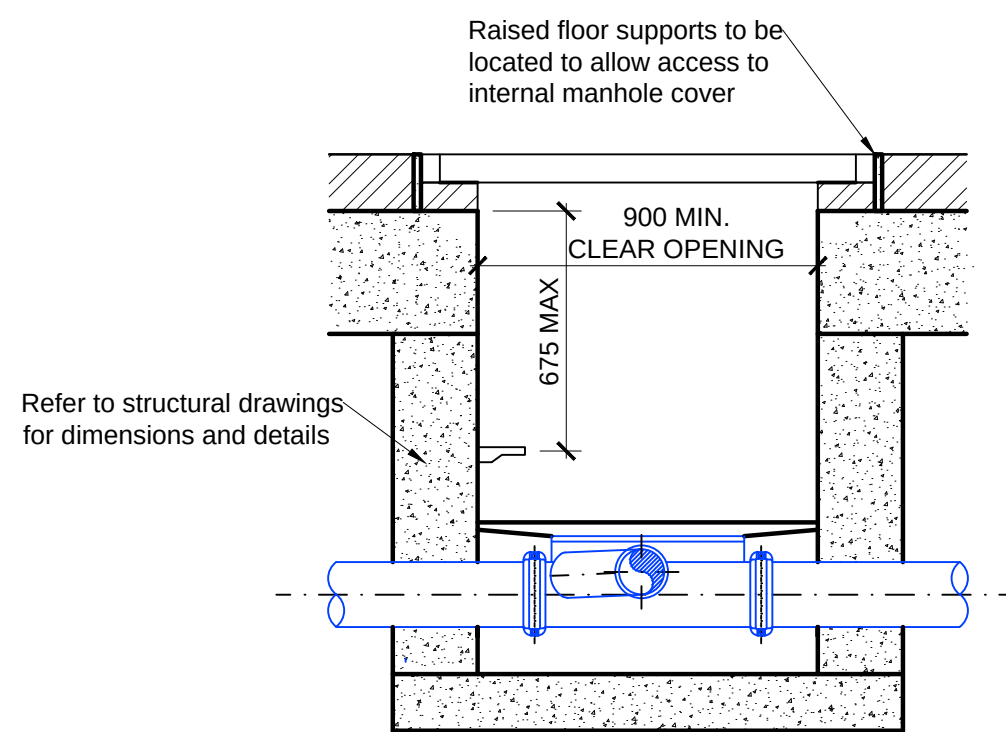
DETAIL 3
TYPICAL RAINWATER PIPE (RWP) DETAIL
SCALE 1:20



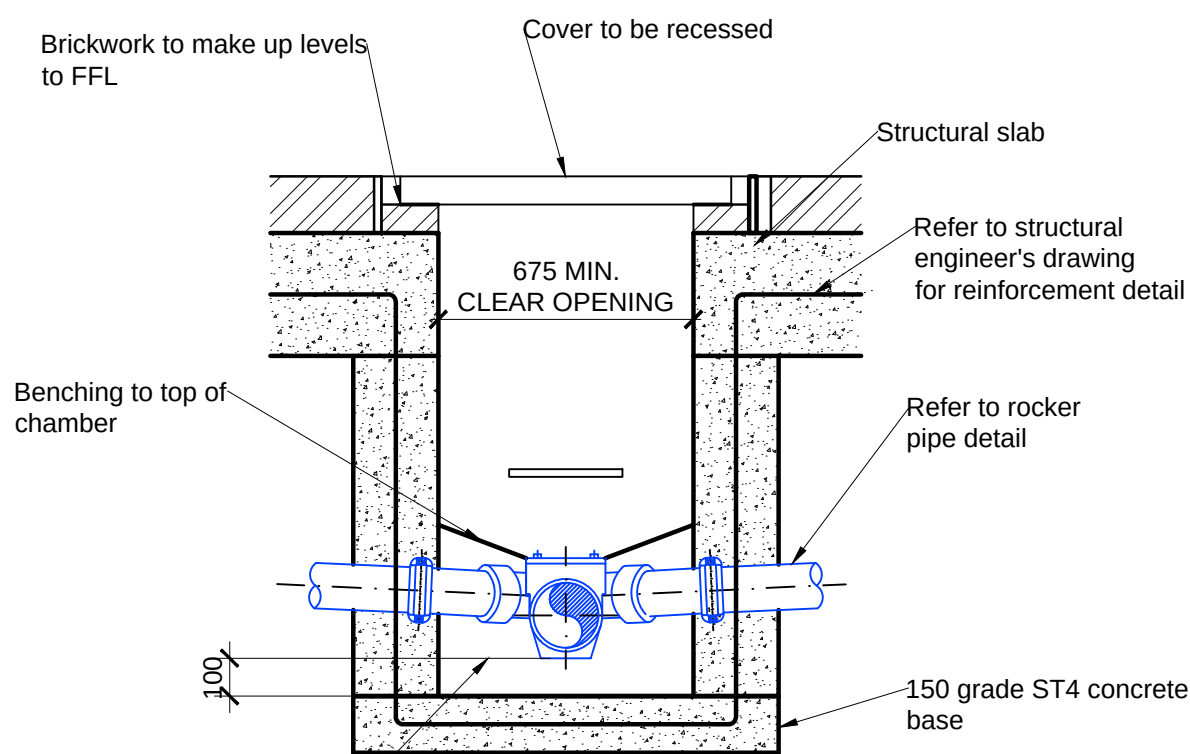
DETAIL 4
TYPICAL RAINWATER PIPE THROUGH SLAB
(RWP DETAIL)
SCALE 1:20



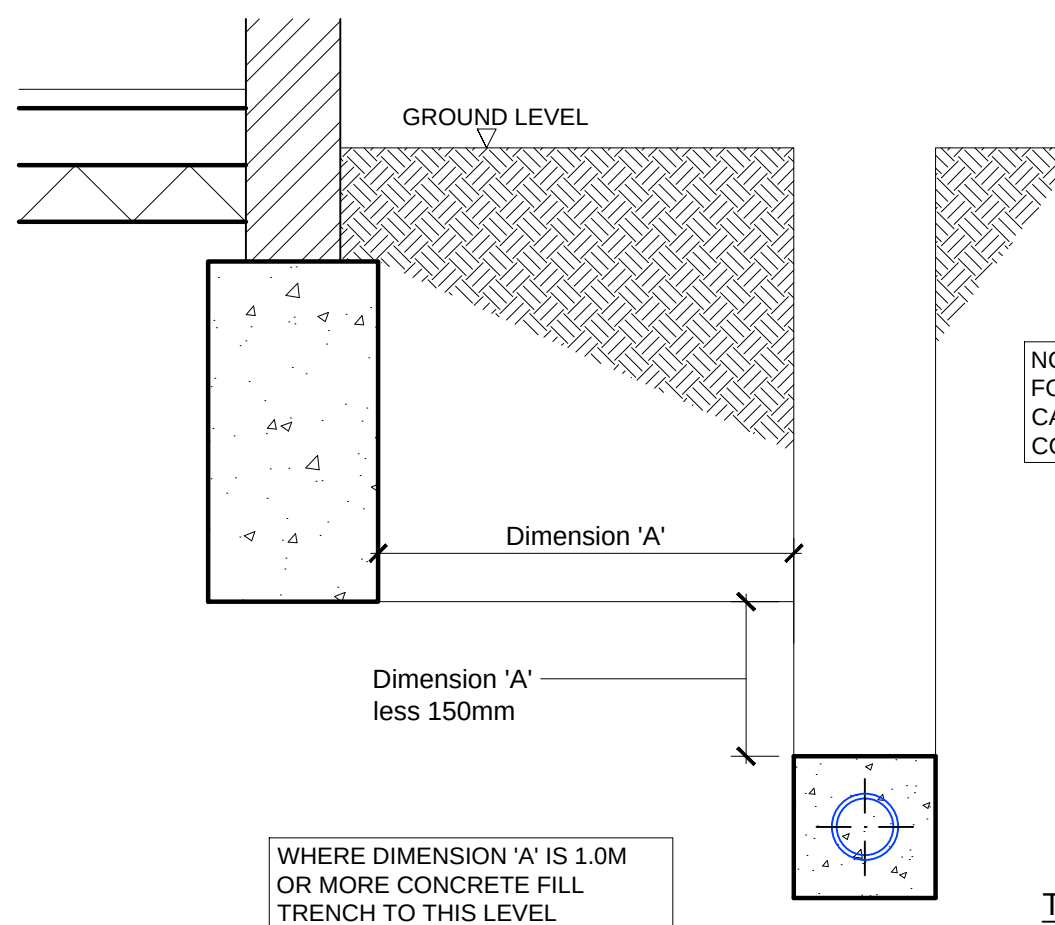
DETAIL 6 - PLAN
TYPICAL INTERNAL MANHOLE
DETAIL - D05
Scale 1:20



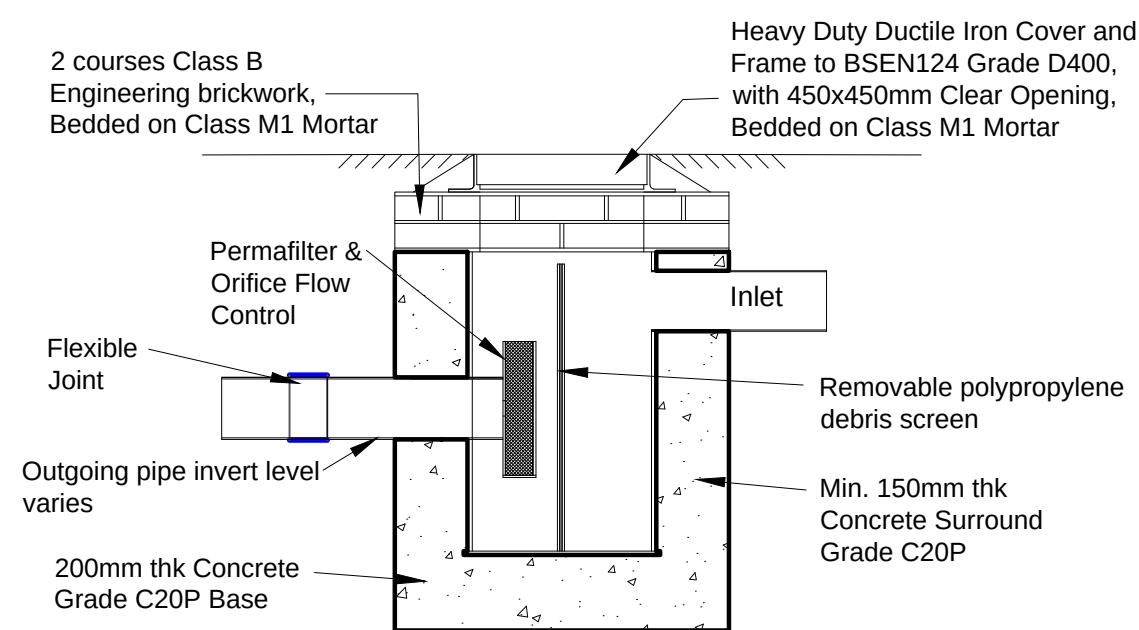
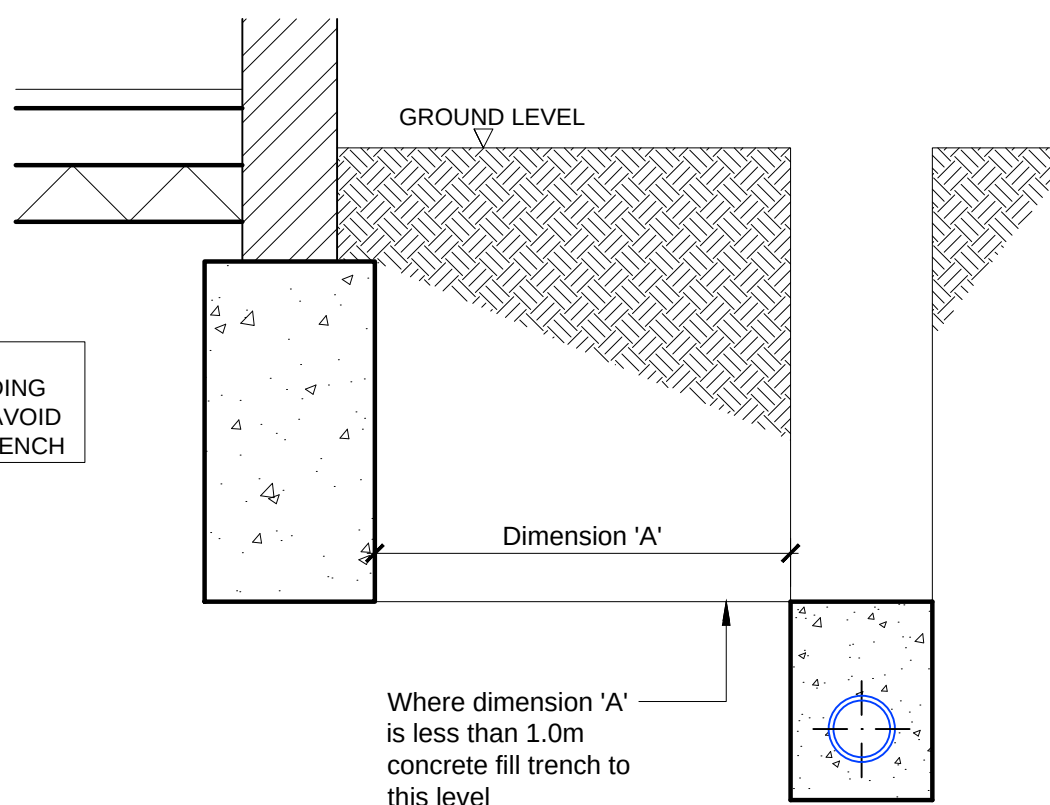
DETAIL 6 - SECTION A-A
TYPICAL INTERNAL MANHOLE
DETAIL - D05
Scale 1:20



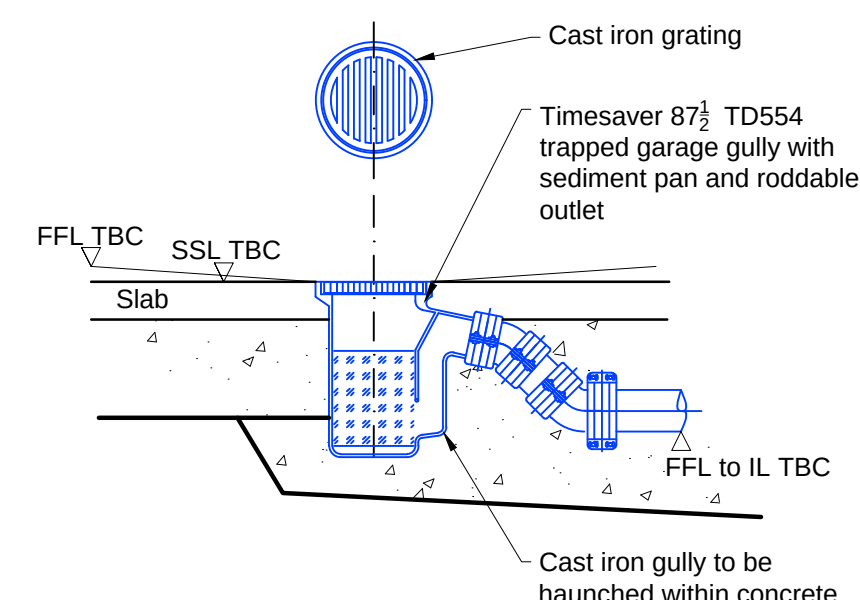
DETAIL 6 - SECTION B-B
TYPICAL INTERNAL MANHOLE
DETAIL
Scale 1:20



DETAIL 7
TYPICAL DETAIL OF PIPE RUNS
ADJACENT TO BUILDINGS
SCALE 1:20



DETAIL 8
5000 PERMAVOID CATCHPIT INSPECTION CHAMBER
INCORPORATING FLOW CONTROL AND DEBRIS DEVICE
(MAXIMUM DEPTH 1200MM)
SCALE 1:20



DETAIL 9
REFUSE/BIKE STORE GULLY TO 1000
DRAIN POINT
SCALE 1:20

NOTES

- Do not scale this drawing. Any discrepancy is to be reported immediately.
- This drawing is to be read in conjunction with all Engineers, Architects and other relevant drawings and specifications.
- All dimensions are in millimetres unless otherwise shown
- All dimensions and levels are to be checked on site by the contractors prior to preparing any working drawings or commencing on site.
- All material and workmanship are to comply with the relevant current British Standards, and where required by the Employer, to NHBC standards.

SPECIFICATION NOTES (READ WITH DRAINAGE SPECIFICATION)

- Foul drains are to be 100mm diameter laid at a gradient not flatter than 1:80 (1:40 IF NO WC). Where 150mm nominal diameter, than pipe should not be laid flatter than 1:150 UNO.
- Drains are to be constructed using UPVC or HDPE with flexible joints bedded and backfilled with the manufacturers recommendation.
- 100mm rigid pipes with less than 300mm cover or pipes of 150mm or greater with less than 600mm cover cover are to be surrounded by 150mm of concrete with movement joints provided at the pipe joints.
- The Contractor is to satisfy himself as to the exact location of the existing sewers before excavating for construction of the new connections and sewers.
- All work by the Contractor must be carried out in such a way that all requirements under the Health and safety at work act are satisfied.
- Drainage to be installed to the invert levels shown on layout/manhole schedule and not to any gradients shown. Gradients are for design information only.
- All precast concrete components shall be in accordance with BS5911 (pt100 for pipes/pt 200 for manholes/pt230 for road gullies).
- Clayware drains and fittings to be in accordance with BS EN 295:1991 and BS 65:1991 (Hepworth or similar approved).
- Cast iron drains and fittings to be in accordance with the timesaver system. (Saint Gobian pipelines or similar approved).
- Location of all waste points based on architects layout drawings.
- Exact locations of SVP/NP/SS/RWP to be confirmed by MEP Engineer.
- Gullies connected to LGF drainage without AFV would need to be an Anti Flood Gully. SVP and RWP should have roddable access at least 1m above FFL.

STAGE 3 DRAWING
This drawing is for stage 3 purposes only and must not be read as construction issue. It indicates design intent and is subject to amendment during final coordination

T2	12.08.24	Issued for tender	HC	AB
T1	05.08.24	STAGE 3 ISSUE	HC	AB
Rev	Date	Amendments	By	Chkd

STAGE 3

AXIOM STRUCTURES

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Client:
THACKERAY ESTATES

Project:
**QUEEN VICTORIA STREET,
READING**

Drawing title:
**PROPOSED DRAINAGE
DETAILS SHEET 1 OF 2**

Date: 06/2024	Scale at A1: AS INDICATED	Scale at A3: AS INDICATED
Drawn by: DJ	Designed by: HC	Chkd by: AB

PROJECT	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	NUMBER	REVISION
21044 - ASL -	ZZ	- XX -	DR -	D -	0610	-	T2

C. Drainage/SUDs Calculation and Catchment Areas



Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.850	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	500.0		

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
15 minute summer	2	11	44.071	0.215	7.1	0.3986	0.0000	SURCHARGED
15 minute summer	5553	11	44.045	0.337	6.7	0.3809	0.0000	OK
15 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
15 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
15 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
15 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
15 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
15 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
15 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
15 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14	12	43.112	0.067	6.5	0.0756	0.0000	OK
15 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17	10	44.012	0.042	3.5	0.0625	0.0000	OK
15 minute summer	18	10	43.999	0.046	4.2	0.0729	0.0000	OK
15 minute summer	19	10	43.942	0.055	6.9	0.1024	0.0000	OK
15 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14_OUT	12	43.088	0.061	6.3	0.0000	0.0000	OK
15 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17_OUT	10	43.914	0.039	3.5	0.0000	0.0000	OK
15 minute summer	18_OUT	10	43.907	0.043	4.2	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	5553	0.0	0.000	0.000	0.1067	
15 minute summer	2	2.000	5553	6.7	0.551	0.377	0.2587	
15 minute summer	5553	1.001	14	6.5	0.887	0.124	0.1712	
15 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
15 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
15 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
15 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
15 minute summer	10	3.002	14	0.0	0.000	0.000	0.2731	
15 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
15 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
15 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
15 minute summer	14	1.002	14_OUT	6.3	0.684	0.161	0.0289	2.2
15 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	17	9.000	17_OUT	3.5	0.909	0.148	0.0211	1.5
15 minute summer	18	10.000	18_OUT	4.2	0.952	0.178	0.0227	1.8
15 minute summer	19	11.000	19_OUT	6.8	1.210	0.263	0.0739	3.0
15 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	19_OUT	10	43.660	0.052	6.8	0.0000	0.0000	OK
15 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
15 minute summer	2	11	44.273	0.417	18.7	0.7752	0.0000	SURCHARGED
15 minute summer	5553	11	44.084	0.376	18.0	0.4258	0.0000	OK
15 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
15 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
15 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
15 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
15 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
15 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
15 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
15 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14	12	43.164	0.119	17.9	0.1350	0.0000	OK
15 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17	10	44.042	0.072	9.2	0.1087	0.0000	OK
15 minute summer	18	10	44.035	0.082	11.1	0.1292	0.0000	OK
15 minute summer	19	10	43.987	0.100	18.3	0.1873	0.0000	OK
15 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14_OUT	12	43.132	0.105	17.7	0.0000	0.0000	OK
15 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17_OUT	10	43.940	0.065	9.1	0.0000	0.0000	OK
15 minute summer	18_OUT	10	43.936	0.072	11.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	5553	0.0	0.000	0.000	0.2887	
15 minute summer	2	2.000	5553	18.0	1.024	1.012	0.2587	
15 minute summer	5553	1.001	14	17.9	1.168	0.343	0.3591	
15 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
15 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
15 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
15 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
15 minute summer	10	3.002	14	0.0	0.000	0.000	0.5919	
15 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
15 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
15 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
15 minute summer	14	1.002	14_OUT	17.7	0.896	0.451	0.0619	7.2
15 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	17	9.000	17_OUT	9.1	1.160	0.391	0.0435	4.0
15 minute summer	18	10.000	18_OUT	11.0	1.207	0.472	0.0473	4.8
15 minute summer	19	11.000	19_OUT	18.1	1.522	0.697	0.1560	7.9
15 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	19_OUT	10	43.700	0.092	18.1	0.0000	0.0000	OK
15 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
15 minute summer	2	11	44.405	0.549	23.9	1.0188	0.0000	SURCHARGED
15 minute summer	5553	11	44.099	0.391	22.9	0.4417	0.0000	OK
15 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
15 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
15 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
15 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
15 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
15 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
15 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
15 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14	12	43.184	0.139	22.6	0.1575	0.0000	OK
15 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17	10	44.054	0.084	11.7	0.1266	0.0000	OK
15 minute summer	18	10	44.050	0.097	14.2	0.1523	0.0000	OK
15 minute summer	19	10	44.010	0.123	23.4	0.2304	0.0000	OK
15 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14_OUT	12	43.148	0.121	22.5	0.0000	0.0000	OK
15 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17_OUT	10	43.950	0.075	11.6	0.0000	0.0000	OK
15 minute summer	18_OUT	10	43.948	0.084	14.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	5553	0.0	0.000	0.000	0.3605	
15 minute summer	2	2.000	5553	22.9	1.302	1.287	0.2587	
15 minute summer	5553	1.001	14	22.6	1.238	0.434	0.4287	
15 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
15 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
15 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
15 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
15 minute summer	10	3.002	14	0.0	0.000	0.000	0.7139	
15 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
15 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
15 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
15 minute summer	14	1.002	14_OUT	22.5	0.948	0.574	0.0745	9.5
15 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	17	9.000	17_OUT	11.6	1.226	0.498	0.0525	5.1
15 minute summer	18	10.000	18_OUT	14.1	1.273	0.604	0.0573	6.1
15 minute summer	19	11.000	19_OUT	23.1	1.577	0.889	0.1919	10.1
15 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	19_OUT	10	43.718	0.110	23.1	0.0000	0.0000	OK
15 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	13	44.124	0.024	0.9	0.0267	0.0000	OK
15 minute summer	2	11	44.702	0.846	33.5	1.5702	0.0000	SURCHARGED
15 minute summer	5553	11	44.120	0.412	31.6	0.4660	0.0000	OK
15 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
15 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
15 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
15 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
15 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
15 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
15 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
15 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14	12	43.216	0.171	30.3	0.1938	0.0000	OK
15 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17	10	44.077	0.107	16.4	0.1601	0.0000	OK
15 minute summer	18	10	44.079	0.126	19.8	0.1980	0.0000	OK
15 minute summer	19	11	44.252	0.365	32.8	0.6825	0.0000	SURCHARGED
15 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14_OUT	12	43.173	0.146	30.3	0.0000	0.0000	OK
15 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17_OUT	10	43.967	0.092	16.3	0.0000	0.0000	OK
15 minute summer	18_OUT	10	43.969	0.105	19.6	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	5553	-0.9	0.102	-0.038	0.5168	
15 minute summer	2	2.000	5553	31.6	1.794	1.772	0.2587	
15 minute summer	5553	1.001	14	30.3	1.328	0.580	0.5354	
15 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
15 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
15 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
15 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
15 minute summer	10	3.002	14	0.0	0.000	0.000	0.8984	
15 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
15 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
15 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
15 minute summer	14	1.002	14_OUT	30.3	1.014	0.772	0.0935	13.6
15 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	17	9.000	17_OUT	16.3	1.314	0.698	0.0684	7.1
15 minute summer	18	10.000	18_OUT	19.6	1.351	0.841	0.0749	8.6
15 minute summer	19	11.000	19_OUT	31.4	1.786	1.208	0.2281	14.3
15 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	19_OUT	10	43.750	0.142	31.4	0.0000	0.0000	OK
15 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 2 year 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
15 minute summer	2	11	44.071	0.215	7.1	0.3986	0.0000	SURCHARGED
15 minute summer	5553	11	44.045	0.337	6.7	0.3809	0.0000	OK
15 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
15 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
15 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
15 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
15 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
15 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
15 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
15 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14	12	43.112	0.067	6.5	0.0756	0.0000	OK
15 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17	10	44.012	0.042	3.5	0.0625	0.0000	OK
15 minute summer	18	10	43.999	0.046	4.2	0.0729	0.0000	OK
15 minute summer	19	10	43.942	0.055	6.9	0.1024	0.0000	OK
15 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
15 minute summer	14_OUT	12	43.088	0.061	6.3	0.0000	0.0000	OK
15 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
15 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
15 minute summer	17_OUT	10	43.914	0.039	3.5	0.0000	0.0000	OK
15 minute summer	18_OUT	10	43.907	0.043	4.2	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	5553	0.0	0.000	0.000	0.1067	
15 minute summer	2	2.000	5553	6.7	0.551	0.377	0.2587	
15 minute summer	5553	1.001	14	6.5	0.887	0.124	0.1712	
15 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
15 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
15 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
15 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
15 minute summer	10	3.002	14	0.0	0.000	0.000	0.2731	
15 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
15 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
15 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
15 minute summer	14	1.002	14_OUT	6.3	0.684	0.161	0.0289	2.2
15 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	17	9.000	17_OUT	3.5	0.909	0.148	0.0211	1.5
15 minute summer	18	10.000	18_OUT	4.2	0.952	0.178	0.0227	1.8
15 minute summer	19	11.000	19_OUT	6.8	1.210	0.263	0.0739	3.0
15 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 2 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.047	0.191	4.5	0.3541	0.0000	SURCHARGED
60 minute summer	5553	33	44.035	0.327	4.5	0.3698	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.100	0.055	4.4	0.0625	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	33	44.003	0.033	2.2	0.0490	0.0000	OK
60 minute summer	18	33	43.990	0.037	2.7	0.0576	0.0000	OK
60 minute summer	19	33	43.931	0.044	4.5	0.0815	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.078	0.051	4.4	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	33	43.906	0.031	2.2	0.0000	0.0000	OK
60 minute summer	18_OUT	33	43.898	0.034	2.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.0697	
60 minute summer	2	2.000	5553	4.5	0.440	0.251	0.2587	
60 minute summer	5553	1.001	14	4.4	0.799	0.085	0.1298	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.2089	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	4.4	0.621	0.112	0.0223	4.0
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	2.2	0.806	0.094	0.0151	2.3
60 minute summer	18	10.000	18_OUT	2.7	0.850	0.116	0.0165	2.9
60 minute summer	19	11.000	19_OUT	4.5	1.084	0.173	0.0544	4.7
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 2 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	19_OUT	33	43.650	0.042	4.5	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 2 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute winter	2	34	44.034	0.178	3.2	0.3309	0.0000	SURCHARGED
60 minute winter	5553	34	44.028	0.320	3.2	0.3622	0.0000	OK
60 minute winter	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute winter	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute winter	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute winter	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute winter	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute winter	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute winter	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute winter	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute winter	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14	35	43.092	0.047	3.2	0.0527	0.0000	OK
60 minute winter	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17	33	43.998	0.028	1.6	0.0416	0.0000	OK
60 minute winter	18	33	43.983	0.030	1.9	0.0479	0.0000	OK
60 minute winter	19	33	43.924	0.037	3.2	0.0682	0.0000	OK
60 minute winter	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14_OUT	35	43.070	0.043	3.2	0.0000	0.0000	OK
60 minute winter	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17_OUT	33	43.902	0.027	1.6	0.0000	0.0000	OK
60 minute winter	18_OUT	33	43.893	0.029	1.9	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	5553	0.0	0.000	0.000	0.0473	
60 minute winter	2	2.000	5553	3.2	0.430	0.180	0.2587	
60 minute winter	5553	1.001	14	3.2	0.726	0.061	0.1031	
60 minute winter	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute winter	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute winter	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute winter	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute winter	10	3.002	14	0.0	0.000	0.000	0.1642	
60 minute winter	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute winter	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute winter	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute winter	14	1.002	14_OUT	3.2	0.569	0.081	0.0176	3.9
60 minute winter	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	17	9.000	17_OUT	1.6	0.737	0.069	0.0120	2.3
60 minute winter	18	10.000	18_OUT	1.9	0.773	0.081	0.0127	2.8
60 minute winter	19	11.000	19_OUT	3.2	0.986	0.123	0.0425	4.7
60 minute winter	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 2 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	19_OUT	33	43.644	0.036	3.2	0.0000	0.0000	OK
60 minute winter	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 30 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.155	0.299	12.4	0.5553	0.0000	SURCHARGED
60 minute summer	5553	34	44.066	0.358	12.3	0.4052	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.141	0.096	12.2	0.1085	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	33	44.027	0.057	6.1	0.0855	0.0000	OK
60 minute summer	18	33	44.017	0.064	7.4	0.1010	0.0000	OK
60 minute summer	19	33	43.964	0.077	12.2	0.1434	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.112	0.085	12.2	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	33	43.927	0.052	6.1	0.0000	0.0000	OK
60 minute summer	18_OUT	33	43.922	0.058	7.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.2000	
60 minute summer	2	2.000	5553	12.3	0.701	0.692	0.2587	
60 minute summer	5553	1.001	14	12.2	1.059	0.234	0.2707	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.4462	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	12.2	0.816	0.311	0.0469	12.3
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	6.1	1.053	0.261	0.0321	6.5
60 minute summer	18	10.000	18_OUT	7.4	1.101	0.317	0.0348	7.8
60 minute summer	19	11.000	19_OUT	12.2	1.400	0.469	0.1141	12.9
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 30 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute summer	19_OUT	33	43.680	0.072	12.2	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
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Results for 30 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute winter	2	33	44.100	0.244	8.9	0.4535	0.0000	SURCHARGED
60 minute winter	5553	33	44.054	0.346	8.9	0.3915	0.0000	OK
60 minute winter	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute winter	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute winter	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute winter	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute winter	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute winter	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute winter	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute winter	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute winter	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14	34	43.125	0.080	8.8	0.0907	0.0000	OK
60 minute winter	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17	32	44.017	0.047	4.3	0.0702	0.0000	OK
60 minute winter	18	33	44.006	0.053	5.3	0.0833	0.0000	OK
60 minute winter	19	33	43.950	0.063	8.7	0.1172	0.0000	OK
60 minute winter	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14_OUT	34	43.099	0.072	8.8	0.0000	0.0000	OK
60 minute winter	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17_OUT	32	43.919	0.044	4.3	0.0000	0.0000	OK
60 minute winter	18_OUT	33	43.913	0.049	5.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	5553	0.0	0.000	0.000	0.1457	
60 minute winter	2	2.000	5553	8.9	0.505	0.499	0.2587	
60 minute winter	5553	1.001	14	8.8	0.970	0.169	0.2137	
60 minute winter	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute winter	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute winter	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute winter	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute winter	10	3.002	14	0.0	0.000	0.000	0.3509	
60 minute winter	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute winter	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute winter	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute winter	14	1.002	14_OUT	8.8	0.749	0.225	0.0370	12.1
60 minute winter	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	17	9.000	17_OUT	4.3	0.963	0.184	0.0247	6.4
60 minute winter	18	10.000	18_OUT	5.3	1.013	0.227	0.0271	7.7
60 minute winter	19	11.000	19_OUT	8.7	1.289	0.334	0.0883	12.7
60 minute winter	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 30 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	19_OUT	33	43.668	0.060	8.7	0.0000	0.0000	OK
60 minute winter	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.227	0.371	16.1	0.6882	0.0000	SURCHARGED
60 minute summer	5553	34	44.078	0.370	16.0	0.4185	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.157	0.112	15.9	0.1262	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	33	44.036	0.066	7.9	0.0994	0.0000	OK
60 minute summer	18	33	44.028	0.075	9.5	0.1175	0.0000	OK
60 minute summer	19	33	43.978	0.091	15.8	0.1695	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.125	0.098	15.8	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	33	43.935	0.060	7.9	0.0000	0.0000	OK
60 minute summer	18_OUT	33	43.931	0.067	9.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.2566	
60 minute summer	2	2.000	5553	16.0	0.907	0.896	0.2587	
60 minute summer	5553	1.001	14	15.9	1.134	0.304	0.3278	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.5436	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	15.8	0.871	0.403	0.0569	16.2
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	7.9	1.122	0.339	0.0390	8.4
60 minute summer	18	10.000	18_OUT	9.5	1.168	0.407	0.0421	10.1
60 minute summer	19	11.000	19_OUT	15.8	1.482	0.607	0.1395	16.7
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	19_OUT	33	43.692	0.084	15.8	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute winter	2	33	44.140	0.284	11.5	0.5282	0.0000	SURCHARGED
60 minute winter	5553	34	44.064	0.356	11.5	0.4022	0.0000	OK
60 minute winter	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute winter	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute winter	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute winter	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute winter	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute winter	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute winter	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute winter	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute winter	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14	34	43.137	0.092	11.4	0.1046	0.0000	OK
60 minute winter	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17	33	44.024	0.054	5.6	0.0814	0.0000	OK
60 minute winter	18	33	44.014	0.061	6.8	0.0961	0.0000	OK
60 minute winter	19	33	43.960	0.073	11.3	0.1368	0.0000	OK
60 minute winter	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14_OUT	34	43.109	0.082	11.4	0.0000	0.0000	OK
60 minute winter	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17_OUT	33	43.925	0.050	5.6	0.0000	0.0000	OK
60 minute winter	18_OUT	33	43.919	0.055	6.8	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	5553	0.0	0.000	0.000	0.1878	
60 minute winter	2	2.000	5553	11.5	0.652	0.644	0.2587	
60 minute winter	5553	1.001	14	11.4	1.039	0.219	0.2579	
60 minute winter	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute winter	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute winter	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute winter	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute winter	10	3.002	14	0.0	0.000	0.000	0.4250	
60 minute winter	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute winter	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute winter	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute winter	14	1.002	14_OUT	11.4	0.802	0.291	0.0447	16.0
60 minute winter	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	17	9.000	17_OUT	5.6	1.030	0.240	0.0301	8.3
60 minute winter	18	10.000	18_OUT	6.8	1.078	0.291	0.0327	10.0
60 minute winter	19	11.000	19_OUT	11.3	1.374	0.434	0.1076	16.5
60 minute winter	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	19_OUT	33	43.677	0.069	11.3	0.0000	0.0000	OK
60 minute winter	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year +40% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.384	0.528	22.6	0.9812	0.0000	SURCHARGED
60 minute summer	5553	34	44.097	0.389	22.2	0.4398	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.182	0.137	22.2	0.1553	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	33	44.051	0.081	11.0	0.1220	0.0000	OK
60 minute summer	18	33	44.046	0.093	13.3	0.1461	0.0000	OK
60 minute summer	19	33	44.004	0.117	22.1	0.2196	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.146	0.119	22.0	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	33	43.947	0.072	11.0	0.0000	0.0000	OK
60 minute summer	18_OUT	33	43.945	0.081	13.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.3518	
60 minute summer	2	2.000	5553	22.2	1.262	1.247	0.2587	
60 minute summer	5553	1.001	14	22.2	1.233	0.425	0.4210	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.7021	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	22.0	0.942	0.561	0.0732	23.0
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	11.0	1.212	0.471	0.0502	11.7
60 minute summer	18	10.000	18_OUT	13.3	1.259	0.570	0.0547	14.1
60 minute summer	19	11.000	19_OUT	22.1	1.571	0.849	0.1839	23.4
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year +40% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	19_OUT	33	43.714	0.106	22.1	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year +40% CC 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute winter	2	33	44.229	0.373	16.1	0.6919	0.0000	SURCHARGED
60 minute winter	5553	34	44.079	0.371	16.0	0.4191	0.0000	OK
60 minute winter	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute winter	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute winter	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute winter	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute winter	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute winter	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute winter	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute winter	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute winter	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14	34	43.157	0.112	16.0	0.1270	0.0000	OK
60 minute winter	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17	33	44.036	0.066	7.9	0.0994	0.0000	OK
60 minute winter	18	33	44.028	0.075	9.5	0.1175	0.0000	OK
60 minute winter	19	33	43.978	0.091	15.8	0.1695	0.0000	OK
60 minute winter	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14_OUT	34	43.126	0.099	16.0	0.0000	0.0000	OK
60 minute winter	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17_OUT	33	43.935	0.060	7.9	0.0000	0.0000	OK
60 minute winter	18_OUT	33	43.931	0.067	9.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	5553	0.0	0.000	0.000	0.2591	
60 minute winter	2	2.000	5553	16.0	0.911	0.900	0.2587	
60 minute winter	5553	1.001	14	16.0	1.136	0.307	0.3301	
60 minute winter	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute winter	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute winter	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute winter	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute winter	10	3.002	14	0.0	0.000	0.000	0.5481	
60 minute winter	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute winter	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute winter	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute winter	14	1.002	14_OUT	16.0	0.874	0.407	0.0574	22.8
60 minute winter	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	17	9.000	17_OUT	7.9	1.122	0.339	0.0390	11.6
60 minute winter	18	10.000	18_OUT	9.5	1.168	0.407	0.0421	14.0
60 minute winter	19	11.000	19_OUT	15.8	1.482	0.607	0.1395	23.1
60 minute winter	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year +40% CC 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	19_OUT	33	43.692	0.084	15.8	0.0000	0.0000	OK
60 minute winter	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 2 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.030	0.174	2.8	0.2738	0.0000	SURCHARGED
60 minute summer	5553	33	44.025	0.317	2.8	0.3588	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.088	0.043	2.7	0.0482	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	1	43.970	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18	1	43.953	0.000	0.0	0.0000	0.0000	OK
60 minute summer	19	33	43.921	0.034	2.8	0.0543	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.067	0.040	2.7	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	1	43.875	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18_OUT	1	43.864	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.0381	
60 minute summer	2	2.000	5553	2.8	0.398	0.156	0.2587	
60 minute summer	5553	1.001	14	2.7	0.694	0.052	0.0917	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.1444	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	2.7	0.541	0.068	0.0155	2.1
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	18	10.000	18_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	19	11.000	19_OUT	2.8	0.950	0.108	0.0386	3.0
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 2 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	19_OUT	33	43.641	0.033	2.8	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 2 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.16%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute winter	2	33	44.022	0.166	2.0	0.2622	0.0000	SURCHARGED
60 minute winter	5553	33	44.020	0.312	2.0	0.3530	0.0000	OK
60 minute winter	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute winter	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute winter	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute winter	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute winter	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute winter	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute winter	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute winter	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute winter	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14	34	43.081	0.036	2.0	0.0410	0.0000	OK
60 minute winter	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17	1	43.970	0.000	0.0	0.0000	0.0000	OK
60 minute winter	18	1	43.953	0.000	0.0	0.0000	0.0000	OK
60 minute winter	19	33	43.916	0.029	2.0	0.0458	0.0000	OK
60 minute winter	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14_OUT	34	43.061	0.034	1.9	0.0000	0.0000	OK
60 minute winter	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17_OUT	1	43.875	0.000	0.0	0.0000	0.0000	OK
60 minute winter	18_OUT	1	43.864	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	5553	0.0	0.000	0.000	0.0240	
60 minute winter	2	2.000	5553	2.0	0.411	0.112	0.2587	
60 minute winter	5553	1.001	14	2.0	0.630	0.038	0.0730	
60 minute winter	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute winter	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute winter	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute winter	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute winter	10	3.002	14	0.0	0.000	0.000	0.1142	
60 minute winter	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute winter	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute winter	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute winter	14	1.002	14_OUT	1.9	0.496	0.050	0.0123	2.1
60 minute winter	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	17	9.000	17_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	18	10.000	18_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	19	11.000	19_OUT	2.0	0.863	0.077	0.0303	2.9
60 minute winter	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 2 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.16%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	19_OUT	33	43.636	0.028	2.0	0.0000	0.0000	OK
60 minute winter	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 30 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.082	0.226	7.6	0.3566	0.0000	SURCHARGED
60 minute summer	5553	33	44.049	0.341	7.6	0.3855	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.118	0.073	7.5	0.0828	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	1	43.970	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18	1	43.953	0.000	0.0	0.0000	0.0000	OK
60 minute summer	19	33	43.945	0.058	7.6	0.0925	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.093	0.066	7.5	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	1	43.875	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18_OUT	1	43.864	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.1234	
60 minute summer	2	2.000	5553	7.6	0.490	0.425	0.2587	
60 minute summer	5553	1.001	14	7.5	0.926	0.144	0.1897	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.3098	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	7.5	0.717	0.190	0.0327	7.2
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	18	10.000	18_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	19	11.000	19_OUT	7.6	1.245	0.292	0.0799	8.1
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 30 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	19_OUT	33	43.663	0.055	7.6	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 30 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute winter	2	33	44.057	0.201	5.4	0.3159	0.0000	SURCHARGED
60 minute winter	5553	33	44.040	0.332	5.4	0.3750	0.0000	OK
60 minute winter	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute winter	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute winter	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute winter	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute winter	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute winter	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute winter	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute winter	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute winter	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14	34	43.106	0.061	5.4	0.0693	0.0000	OK
60 minute winter	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17	1	43.970	0.000	0.0	0.0000	0.0000	OK
60 minute winter	18	1	43.953	0.000	0.0	0.0000	0.0000	OK
60 minute winter	19	33	43.935	0.048	5.4	0.0766	0.0000	OK
60 minute winter	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14_OUT	34	43.083	0.056	5.4	0.0000	0.0000	OK
60 minute winter	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17_OUT	1	43.875	0.000	0.0	0.0000	0.0000	OK
60 minute winter	18_OUT	1	43.864	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	5553	0.0	0.000	0.000	0.0866	
60 minute winter	2	2.000	5553	5.4	0.482	0.303	0.2587	
60 minute winter	5553	1.001	14	5.4	0.844	0.103	0.1491	
60 minute winter	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute winter	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute winter	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute winter	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute winter	10	3.002	14	0.0	0.000	0.000	0.2418	
60 minute winter	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute winter	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute winter	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute winter	14	1.002	14_OUT	5.4	0.655	0.137	0.0257	7.1
60 minute winter	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	17	9.000	17_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	18	10.000	18_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	19	11.000	19_OUT	5.4	1.138	0.208	0.0621	8.0
60 minute winter	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 30 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	19_OUT	33	43.654	0.046	5.4	0.0000	0.0000	OK
60 minute winter	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.77%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.115	0.259	9.9	0.4072	0.0000	SURCHARGED
60 minute summer	5553	33	44.058	0.350	9.9	0.3955	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.130	0.085	9.8	0.0957	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	1	43.970	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18	1	43.953	0.000	0.0	0.0000	0.0000	OK
60 minute summer	19	33	43.955	0.068	9.9	0.1077	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.103	0.076	9.8	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	1	43.875	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18_OUT	1	43.864	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.1610	
60 minute summer	2	2.000	5553	9.9	0.561	0.554	0.2587	
60 minute summer	5553	1.001	14	9.8	0.996	0.187	0.2298	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.3776	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	9.8	0.769	0.249	0.0398	9.6
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	18	10.000	18_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	19	11.000	19_OUT	9.9	1.331	0.380	0.0974	10.5
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.77%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	19_OUT	33	43.672	0.064	9.9	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute winter	2	33	44.075	0.219	7.0	0.3452	0.0000	SURCHARGED
60 minute winter	5553	33	44.047	0.339	7.0	0.3831	0.0000	OK
60 minute winter	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute winter	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute winter	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute winter	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute winter	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute winter	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute winter	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute winter	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute winter	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14	34	43.115	0.070	7.0	0.0797	0.0000	OK
60 minute winter	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17	1	43.970	0.000	0.0	0.0000	0.0000	OK
60 minute winter	18	1	43.953	0.000	0.0	0.0000	0.0000	OK
60 minute winter	19	33	43.942	0.055	7.0	0.0883	0.0000	OK
60 minute winter	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute winter	14_OUT	34	43.091	0.064	7.0	0.0000	0.0000	OK
60 minute winter	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute winter	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute winter	17_OUT	1	43.875	0.000	0.0	0.0000	0.0000	OK
60 minute winter	18_OUT	1	43.864	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	5553	0.0	0.000	0.000	0.1143	
60 minute winter	2	2.000	5553	7.0	0.474	0.392	0.2587	
60 minute winter	5553	1.001	14	7.0	0.907	0.134	0.1800	
60 minute winter	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute winter	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute winter	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute winter	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute winter	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute winter	10	3.002	14	0.0	0.000	0.000	0.2937	
60 minute winter	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute winter	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute winter	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute winter	14	1.002	14_OUT	7.0	0.703	0.177	0.0311	9.5
60 minute winter	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	17	9.000	17_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	18	10.000	18_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	19	11.000	19_OUT	7.0	1.219	0.269	0.0752	10.3
60 minute winter	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	19_OUT	33	43.661	0.053	7.0	0.0000	0.0000	OK
60 minute winter	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year +40% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	1	44.100	0.000	0.0	0.0000	0.0000	OK
60 minute summer	2	33	44.181	0.325	13.8	0.5120	0.0000	SURCHARGED
60 minute summer	5553	33	44.071	0.363	13.7	0.4104	0.0000	OK
60 minute summer	4	1	44.024	0.000	0.0	0.0000	0.0000	OK
60 minute summer	5	1	44.076	0.000	0.0	0.0000	0.0000	OK
60 minute summer	3	1	43.629	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	1	43.974	0.000	0.0	0.0000	0.0000	OK
60 minute summer	6	1	43.798	0.000	0.0	0.0000	0.0000	OK
60 minute summer	9	1	43.672	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10	1	43.371	0.000	0.0	0.0000	0.0000	OK
60 minute summer	11	1	43.989	0.000	0.0	0.0000	0.0000	OK
60 minute summer	12	1	43.847	0.000	0.0	0.0000	0.0000	OK
60 minute summer	13	1	43.813	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14	34	43.147	0.102	13.6	0.1155	0.0000	OK
60 minute summer	15	1	43.943	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16	1	43.921	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17	1	43.970	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18	1	43.953	0.000	0.0	0.0000	0.0000	OK
60 minute summer	19	33	43.970	0.083	13.8	0.1321	0.0000	OK
60 minute summer	20	1	43.956	0.000	0.0	0.0000	0.0000	OK
60 minute summer	14_OUT	34	43.118	0.091	13.6	0.0000	0.0000	OK
60 minute summer	15_OUT	1	43.898	0.000	0.0	0.0000	0.0000	OK
60 minute summer	16_OUT	1	43.793	0.000	0.0	0.0000	0.0000	OK
60 minute summer	17_OUT	1	43.875	0.000	0.0	0.0000	0.0000	OK
60 minute summer	18_OUT	1	43.864	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	5553	0.0	0.000	0.000	0.2219	
60 minute summer	2	2.000	5553	13.7	0.781	0.771	0.2587	
60 minute summer	5553	1.001	14	13.6	1.089	0.261	0.2926	
60 minute summer	4	3.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	5	4.000	3	0.0	0.000	0.000	0.0000	
60 minute summer	3	3.001	10	0.0	0.000	0.000	0.0000	
60 minute summer	7	5.000	6	0.0	0.000	0.000	0.0000	
60 minute summer	6	5.001	9	0.0	0.000	0.000	0.0000	
60 minute summer	9	5.002	10	0.0	0.000	0.000	0.0000	
60 minute summer	10	3.002	14	0.0	0.000	0.000	0.4844	
60 minute summer	11	6.000	12	0.0	0.000	0.000	0.0000	
60 minute summer	12	6.001	13	0.0	0.000	0.000	0.0000	
60 minute summer	13	6.002	14	0.0	0.000	0.000	0.0000	
60 minute summer	14	1.002	14_OUT	13.6	0.839	0.346	0.0508	13.8
60 minute summer	15	7.000	15_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	16	8.000	16_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	17	9.000	17_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	18	10.000	18_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	19	11.000	19_OUT	13.8	1.439	0.530	0.1255	14.6
60 minute summer	20	12.000	20_OUT	0.0	0.000	0.000	0.0000	0.0

Results for 100 year +40% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	19_OUT	33	43.686	0.078	13.8	0.0000	0.0000	OK
60 minute summer	20_OUT	1	43.638	0.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	10	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Node Storage Online Orifice Control

Flap Valve	x	Design Depth (m)	0.480	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.1		
Invert Level (m)	45.000	Diameter (m)	0.043		

Node Storage Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	130.0	0.0	0.300	130.0	0.0	0.301	0.0	0.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	Storage	184	45.286	0.286	13.7	36.5014	0.0000	OK
Link Event (Outflow)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
240 minute summer	Storage	Orifice	2.0	39.1				

Results for 100 year +40% CC 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Storage	19	45.172	0.172	53.1	22.0005	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
15 minute summer	Storage	Orifice	1.5	16.3				

Results for 100 year +40% CC 30 minute summer. 270 minute analysis at 1 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	Storage	33	45.222	0.222	47.9	28.2907	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
30 minute summer	Storage	Orifice	1.7	20.5				

Results for 100 year +40% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	Storage	62	45.264	0.264	35.7	33.7277	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute summer	Storage	Orifice	1.9	25.2				

Results for 100 year +40% CC 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	Storage	120	45.279	0.279	22.2	35.6635	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
120 minute summer	Storage	Orifice	2.0	30.5				

Results for 100 year +40% CC 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	Storage	152	45.285	0.284	16.4	36.3203	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
180 minute summer	Storage	Orifice	2.0	35.0				

Results for 100 year +40% CC 240 minute summer. 480 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	Storage	184	45.286	0.286	13.7	36.5014	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
240 minute summer	Storage	Orifice	2.0	39.1				

Results for 100 year +40% CC 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Storage	248	45.278	0.278	10.2	35.4629	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
360 minute summer	Storage	Orifice	2.0	45.4				

Results for 100 year +40% CC 480 minute summer. 720 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	Storage	320	45.267	0.267	7.8	34.1280	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
480 minute summer	Storage	Orifice	1.9	50.8				

Results for 100 year +40% CC 600 minute summer. 840 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	Storage	390	45.257	0.257	6.3	32.8395	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
600 minute summer	Storage	Orifice	1.9	55.3				

Results for 100 year +40% CC 720 minute summer. 960 minute analysis at 15 minute timestep. Mass balance: 100.00%

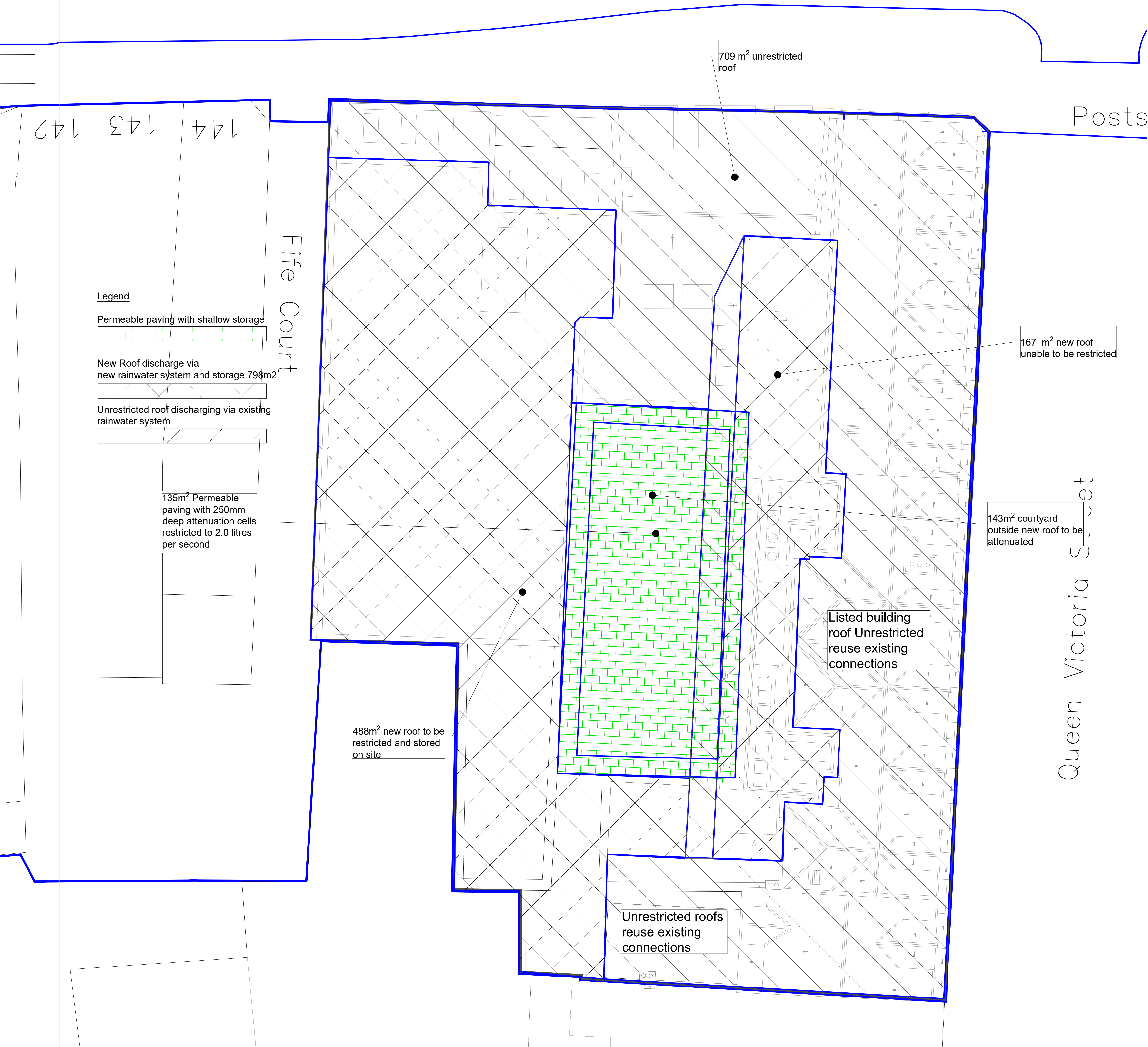
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	Storage	450	45.243	0.243	5.5	31.0249	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
720 minute summer	Storage	Orifice	1.8	58.4				

Results for 100 year +40% CC 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	Storage	585	45.222	0.222	4.4	28.3560	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
960 minute summer	Storage	Orifice	1.7	63.2				

Results for 100 year +40% CC 1440 minute summer. 1680 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	Storage	840	45.184	0.184	3.1	23.4741	0.0000	OK
Link Event	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
1440 minute summer	Storage	Orifice	1.6	68.6				



- NOTES:
1. If in doubt, please ask.
 2. Do not scale this drawing. Any discrepancies are to be reported to the engineer immediately.
 3. All dimensions in millimetres, unless noted otherwise.
 4. All dimensions and levels are to be checked on site by the contractor prior to preparing any working drawings or commencing on site.
 5. The contractor must ensure and will be held responsible for the overall stability of the building/structure/excavation at all stages of the work.
 6. All work by the contractor must be carried out in such a way that all requirements under the health and safety at work act are satisfied.
 7. All work is to be carried out in compliance with the requirements of the relevant statutory authorities and regulations.
 8. To be read in conjunction with **General Notes Drg.No.** - ASL-ZZ-XX-DR-S-0002.

DRAINAGE NOTES:
The location, size, depth and identification of existing services that may be shown or referred to on these drawings have been assessed from non-intrusive observations, record drawings and the like. Any Contractor shall safely carry out intrusive investigations, trial holes or soundings, prior to commencing any works, to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to the Client prior to the commencement of any works.

P2	12.04.24	Preliminary Issue	hc	jm
P1	24.10.22	Preliminary Issue	jdh	
Rev	Date	Amendments	By	Chkd

PRELIMINARY

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Client:
THACKERAY ESTATES

Project:
1-11 QUEEN VICTORIA ST

Drawing title:
**PROPOSED ROOF PLAN
OPTION 2**

Date: 10/2022	Scale at A1: 1:100	Scale at A3:
Drawn by: Jdh	Designed by: Jdh	Chk'd by:

PROJECT	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	NUMBER	REVISION
21044	- ASL -	ZZ	- ZZ -	DR -	D -	0602 -	P2