

20229221

Hilton Lane Housing Development Below Ground Drainage Strategy

July 2022

Document Control

Revision	Originator	Checked By	Reviewed By	Approved By	Issued to	Issue Date
A0	Steve Gill	Steve Gill	Steve Gill	Steve Gill	Client	June 2022
	MEng (Hons)	MEng (Hons)	MEng (Hons)	MEng (Hons)		

The above signatures confirm that:

- the **originator** has to the best of their ability produced a document of high quality work, and made any amendments as required during the checking and reviewing process
- the **checker** has completed a line by line check using source data and agreed changes to be made with the originator
- the **reviewer** has completed a high level review and agreed any changes/corrections with the originator and ensured they have been completed
- the **approver** has confirmed that the check and review has been completed by persons appropriately qualified and that the document is fit for issue

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1 Introduction

1.1 General

This strategy has been developed in relation to the above-mentioned project. This report provides technical feasibility of providing surface water drainage for the development proposals and detailed hydraulic analysis to demonstrate the proposed solution. This report may be modified and updated to suit requirements and obligations of the Local Planning Authority, Environment Agency, Sewerage Undertakers and any other statutory authorities.

This strategy report aims to include the following:

- Identify available data relating to drainage at the existing site.
- Discuss Sustainable Urban Drainage Systems (SUDS) as an option for reducing surface water flood risk
- Determine any potential increase or decrease in surface runoff as a result of the proposed development
- Devise an appropriate high level surface water drainage strategy to deal with any surface water runoff and include for climate change

The proposed drainage network must be capable of operating effectively following climate-change over the anticipated lifespan of the development. Residential developments are considered likely to remain for at least 100 years. According to Table 2 of DEFRA guidance on climate change, the peak rainfall intensity that is used to test the system performance must be increased by 40%. The drainage network, therefore, must be effective at managing surface water on the site for rainfall up to and including the 1 in 100 year + 40% storm event.

2 Policy and Guidance

2.1 National planning policy framework & technical guidance

The National Planning Policy Framework (NPPF) published in February 2019 superseded the previous Planning Policy Guidance (PPG) and Planning Policy Statements (PPS) including PPS25: Development and Flood Risk. One of the key aims of the NPPF is to ensure that flood risk is accounted for at all stages of the planning stages to help mitigate inappropriate development in areas at risk of flooding thus directing development away from such areas. It advises that development in areas of higher risk should be safe and that flood resilience should be incorporated into the design. New developments should not increase flood risk elsewhere and new development should help mitigate flood risk to the wider area.

2.2 Planning Practice Guidance. Climate change & flood risk

The NPPF is accompanied by a Technical Guidance document that is similar to the superseded PPS 25 document in regards to:

- Climate change allowance
- Flood zone categories
- Flood zone / usage compatibility
- Sequential test
- Exception test

3 Existing Site

3.1 Site Address

The site is brownfield and located off Hilton Lane / Butterstile Close, Prestwich, M25 9RS. Approx grid ref – OS: 380937E, 402418N

3.2 Description

The existing site is currently undeveloped, brownfield land (see below google earth image). The site previously contained a building (possible dwelling) and large landscaped garden. There is a previous landfill contained onsite.



Figure 1: Google Earth Image: Existing Development Site

3.2.1 Topography

A site topography survey has been undertaken and the site has a gentle fall towards Butterstile Close.

3.2.2 Geology and Groundwater

Cranfield University Soilscapes map suggests that the soils onsite will be free draining soils, see below figure.

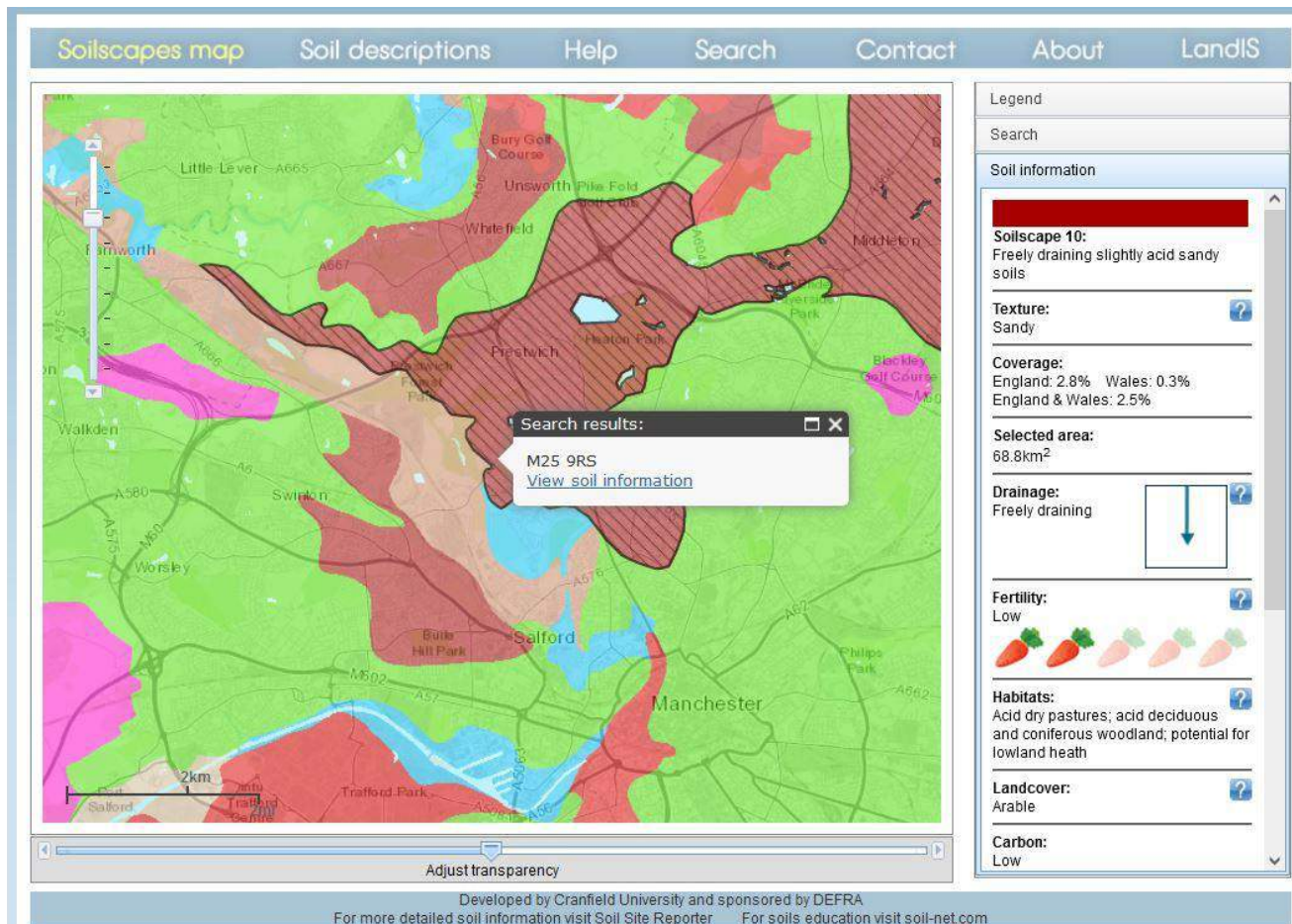


Figure 2: Cranfield University Soilscape Map

A full ground investigation has been undertaken and full details can be read in the Phase 2 ground investigation report by LK Group dated 24th May 2022.

The phase 2 investigation concludes sub soils consist of made ground up to 7m depth and has moderate contamination. The site does contain historic landfill and the assumed extent is over 50% of the site.

Very loose to medium dense gravely silty sands were noted also overlying cohesive firm to very high strength clays. Ground water was recorded at 4.3m at its highest level during monitoring between 16/02/2022 and 13/05/2022.

Percolation tests were not completed during the investigation.

3.2.3 Current Site Drainage

The existing site is brownfield and is assumed to have contained below ground drainage network serving the previous building which appears to have been demolished in 2018. It is not assumed that this existing drainage has been retained and it is not relied upon – a new network will be designed and new connections proposed to the public sewers in Butterstile close.

United Utilities sewer maps show 150mm diameter foul sewer and 225mm diameter surface water sewer below Butterstile close outside the site entrance (see UU map in appendix).

4 Development Proposal

It is proposed to develop the site, construction 8No new detached dwellings with associated gardens, car parking and new access road off Butterstile close utilising the existing entrance junction.

Given site contamination from previous land use it is not recommended to adopt infiltration systems which can lead to contamination pathway to sub soils, ground water and aquifer.

4.1 Existing peak runoff rate

According to requirements set out within the technical documents NSSDS (2011) and NSTSSD (2015), development must not increase the risk of flooding elsewhere. In practical terms this results in the proposed development runoff rate must provide a betterment against the predevelopment rate or be equal to the calculated greenfield rate.

Given the previous building has been demolished for over 4 years and the site is not assumed to have positive drainage connection to the surface water sewer

The greenfield run off rate has been calculated using UKSUDS greenfield runoff tool (see Appendix):

- Site impermeable area = 0.2Ha

	Greenfield runoff rate (l/s)
1:1year	0.04
1:30year	0.08
1:100year	0.1
Qbar	0.05 This value is unrealistic for restriction given the diameter of orifice required to restrict will be very prone to blocking. We propose a restriction of 5l/s is reasonable and mitigates blockage potential.

4.2 Sequential & Exceptions Test

The development is residential and is thus considered “more vulnerable” as defined in Table 2 of the NPPF Technical Guidance. Although the development falls into Flood zone 1 and thus according to Table 3 of NPPF Technical Guidance sequential and exceptions test are not required.

4.3 Development Flood Risk

The site is wholly within flood zone 1 and is less than 1Ha in size – no flood risk assessment is required.

5 Climate Change

Climate change allowance is included to account for increased rainfall intensity in the future, to reduce vulnerability and increase resilience to flooding. Upper end and central allowances should

be applied to rainfall intensity. The central allowance must be applied to the surface water network for assessment of its performance and ability to contain critical events. The upper end allowance must be applied to assess the potential flood risk implications to the site and ensure that flooding is wholly contained onsite.

The development is assumed to be operational beyond 2085 and thus the Upper end 40% allowance is to be added to the 100 year 6 hour storm event.

6 Surface Water Strategy

National standards for sustainable drainage systems (NSSDS) and National planning practice guidance outline the following hierarchy of surface water destinations:

1. Discharge to ground (infiltration)

The prevailing ground conditions onsite are unsuitable for infiltration as demonstrated in the Phase 2 investigation due to depths of made ground and widespread contamination across the site .

2. Discharge to surface water body

There is a no watercourse in local vicinity to the site

3. Discharge to surface water sewer

There is a 225mm diameter surface water sewer in the road outside the site

4. Discharge to combined sewer

Use of practical SuDs features that could be incorporated into the scheme are discussed below:

6.1 Source control

6.1.1 Green Roofs

Green roofs are not considered practical given pitched roofs proposed for the dwellings.

6.1.2 Rainwater Harvesting

Rainwater harvesting could be used to intercept run off and store for use in grey water flushing, irrigation of planted areas and washing of external areas. Harvesting for grey water flushing is **not usually considered** economically viable for a housing development of this nature, though could be adopted for irrigation and external washing via above ground water butts or similar for each plot.

6.2 Site Control

6.2.1 Infiltration – discharge to the ground onsite

Infiltration is not viable as previously stated.

6.2.2 Permeable paving

Whilst type A and B permeable paving systems (which promote full or partial infiltration) are not viable for this site, a type C system could be adopted to promote runoff passing through permeable

finishes and within permeable subbase prior to interception within the piped network. This slows the interception rate down and offers filtration of contaminants improving water quality prior to discharge to public sewer.

6.3 Hydraulic Design

The site wide drainage and below ground storage is designed conservatively with no reduction in flow by mechanisms discussed above. The drainage network is designed to accommodate only the new hard surfaces formed onsite.

The site is to contain and control surface water flows up to and including the 100 year storm event + allowance for 40% climate change. Storage onsite has been sized to contain the full 100 year rainfall event.

The site is to be positively drained to surface water sewer below Butterstile Close with flow rate restricted by means of a flow control set in a new private manhole onsite at 5l/s.

The new surface water network onsite is to be kept private and managed collectively by the land owner/s. All drainage is to be formed in accordance with current building regulations and also with Ciria C753 The SUDS Manual.

7 Foul Water Strategy

All foul water is to be positively drained to the public foul sewer below Butterstile Close subject to agreement with United Utilities.

Proposed drainage is to be designed in accordance with Building Regulations Document H1 and existing drainage onsite retained is to be surveyed to establish condition, levels and size to verify it can be retained.

Appendix A. UU Sewer Map and flood map

BDI Structural Solutions

Stafford Court
145 Washway Road,
Sale,
M33 7PE

FAO:

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: 20229221 Hilton Lane
Our Ref: UUPS-ORD-407150
Date: 28/06/2022

Dear Sirs

Location: 1 BUTTERSTILE CLOSE, PRESTWICH, MANCHESTER, M25 9RS

I acknowledge with thanks your request dated 26/06/2022 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



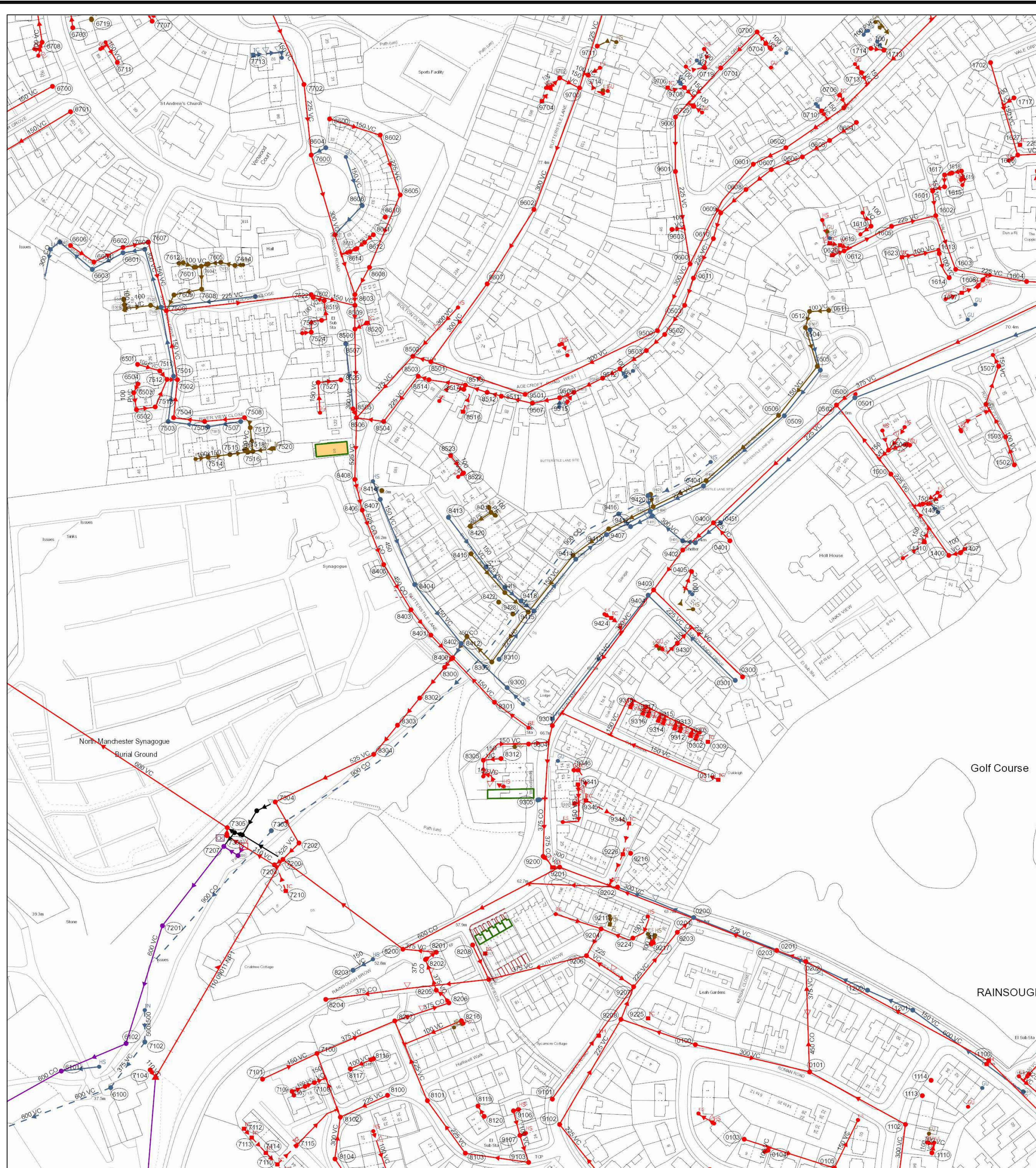
Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.



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

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LEGEND

Abandoned

Foul

Surface Water

Combined

Public Sewer

Section 104

Rising Main

Sludge Main

Overflow

Water Course

Highway Drain

All point assets follow the standard colour convention:
red - combined
brown - foul
blue - surface water
purple - overflow

Manhole

Head of System

Extent of Survey

Rodding Eye

Inlet

Discharge Point

Valve

Penstock

Washout Chamber

Valve

Air Valve

Non Return Valve

Soakaway

Hatch Box

Flow Meter

Oil Interceptor

Summit

Drop Staff

Orifice Plate

Side Entry Manhole

Cutfall

Screen Chamber

Inspection Chamber

Bifurcation Chamber

Lamp Hole

T Junction / Saddle

Catchpit

Valve Chamber

Vent Column

Vortex Chamber

Penstock Chamber

Network Storage Tank

Sewer Overflow

Ww Treatment Works

Ww Pumping Station

Septic Tank

Control Kiosk

Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular TR Trapezoidal
EG Egg AR Arch
OV Oval BA Barrel
FT Flat Top HO HorseShoe
RE Rectangular UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

1 BUTTERSTILE CLOSE,
PRESTWICH,
MANCHESTER,
M25 9RS

Scale: 1:1250

Date: 28/06/2022

Sheet: 1 of 1

Printed by: Property Searches

SEWER RECORDS



Water for the North West

Appendix B. Flood Risk Map

Flood map for planning

Your reference
Hilton Lane

Location (easting/northing)
380941/402414

Created
15 Jul 2022 12:20

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger than 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

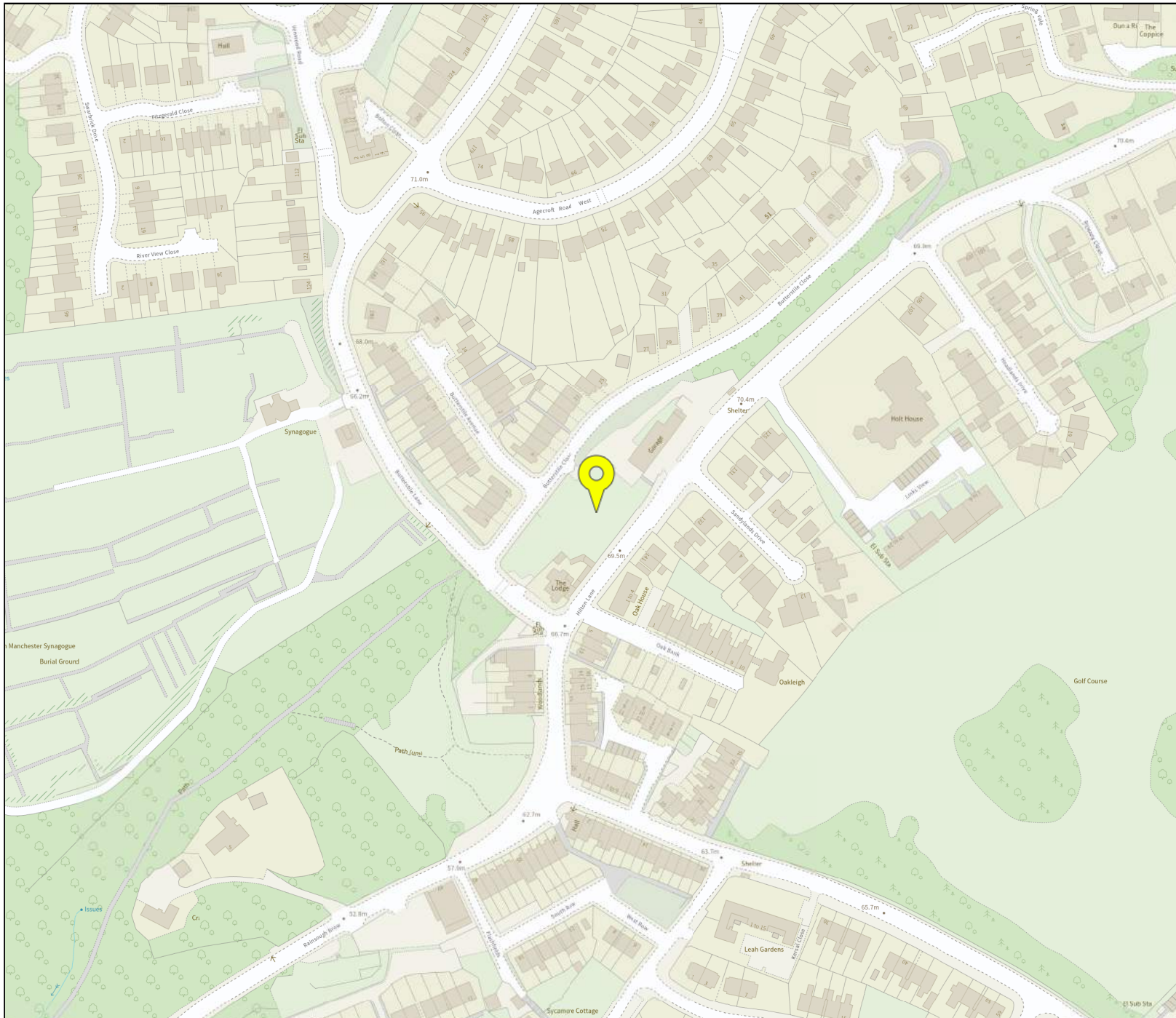
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

Hilton Lane

Location (easting/northing)

380941/402414

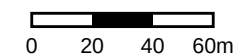
Scale

1:2500

Created

15 Jul 2022 12:20

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



Appendix C. Pre-development Greenfield Runoff and post-development hydraulic calculations

Calculated by:	steve gill
Site name:	Hilton Lane
Site location:	Prestwich

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.51808° N
Longitude:	2.28895° W
Reference:	3310134489
Date:	Jul 15 2022 12:14

Runoff estimation approach **IH124**

Site characteristics

Total site area (ha): 0.2

Methodology

Q_{BAR} estimation method: Calculate from SPR and SAAR

SPR estimation method: Calculate from SOIL type

Soil characteristics

Default Edited

SOIL type: 1 1

HOST class: N/A N/A

SPR/SPRHOST: 0.1 0.1

Hydrological characteristics

Default Edited

SAAR (mm): 939 939

Hydrological region: 10 10

Growth curve factor 1 year: 0.87 0.87

Growth curve factor 30 years: 1.7 1.7

Growth curve factor 100 years: 2.08 2.08

Growth curve factor 200 years: 2.37 2.37

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

Default Edited

Q_{BAR} (l/s): 0.05 0.05

1 in 1 year (l/s): 0.04 0.04

1 in 30 years (l/s): 0.08 0.08

1 in 100 year (l/s): 0.1 0.1

1 in 200 years (l/s): 0.11 0.11

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.360	Preferred Cover Depth (m)	0.600
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
01	0.009	5.00	65.860	450	0.960
02	0.018	5.00	65.800	450	1.025
03	0.021	5.00	66.500	450	0.750
04	0.045	5.00	66.300	450	0.812
05	0.019	5.00	65.850	1050	2.050
06	0.030	5.00	65.850	1050	2.260
07			65.750	1050	2.224
08			65.250	1200	1.809

Links

Name	US Node	DS Node	Length (m)	Slope (1:X)	Dia (mm)
1.001	01	02	10.000	80.0	150
1.002	02	05	16.300	80.0	150
1.003	03	04	10.500	40.0	150
1.004	04	06	13.500	20.0	150
1.005	05	06	16.800	80.0	150
1.006	06	07	5.100	80.0	150
1.007	07	08	6.800	80.0	150

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.001	01	02	1.125	19.9	1.1
1.002	02	05	1.125	19.9	3.3
1.003	03	04	1.596	28.2	2.6
1.004	04	06	2.262	40.0	8.2
1.005	05	06	1.125	19.9	5.5
1.006	06	07	1.125	19.9	17.0
1.007	07	08	1.125	19.9	16.9

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	60
M5-60 (mm)	18.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.360	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x
Analysis Speed	Normal		

Storm Durations

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



Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 06 Online Orifice Control

Flap Valve	x	Design Depth (m)	2.260	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	5.0		
Invert Level (m)	63.590	Diameter (m)	0.040		

Node 06 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.590	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	4.500	Number Required	1
Porosity	0.95	Pit Length (m)	15.000		

Results for 1 year 15 minute winter. 75 minute analysis at 1 minute timestep. Mass balance: 99.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	01	10	64.924	0.024	1.1	0.0082	0.0000	OK
15 minute winter	02	10	64.817	0.042	3.3	0.0212	0.0000	OK
15 minute winter	03	10	65.781	0.031	2.6	0.0220	0.0000	OK
15 minute winter	04	10	65.535	0.047	8.1	0.0598	0.0000	OK
15 minute winter	05	10	63.856	0.056	5.5	0.0587	0.0000	OK
15 minute winter	06	19	63.701	0.111	17.1	7.2444	0.0000	OK
15 minute winter	07	19	63.550	0.024	1.0	0.0205	0.0000	OK
15 minute winter	08	19	63.464	0.023	1.0	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)
15 minute winter	01	1.001	02	1.1	0.380	0.054	0.0288	
15 minute winter	02	1.002	05	3.2	0.818	0.161	0.0637	
15 minute winter	03	1.003	04	2.6	0.709	0.091	0.0385	
15 minute winter	04	1.004	06	8.0	1.725	0.199	0.0624	
15 minute winter	05	1.005	06	5.5	1.083	0.277	0.1330	
15 minute winter	06	Orifice	07	1.0				
15 minute winter	07	1.007	08	1.0	0.581	0.051	0.0118	3.5

Results for 1 year 30 minute winter. 90 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
30 minute winter	01	18	64.922	0.022	0.9	0.0075	0.0000	OK
30 minute winter	02	18	64.812	0.037	2.6	0.0190	0.0000	OK
30 minute winter	03	18	65.777	0.027	2.0	0.0195	0.0000	OK
30 minute winter	04	18	65.530	0.042	6.3	0.0527	0.0000	OK
30 minute winter	05	18	63.848	0.048	4.4	0.0502	0.0000	OK
30 minute winter	06	32	63.730	0.140	13.6	9.1116	0.0000	OK
30 minute winter	07	33	63.551	0.025	1.2	0.0219	0.0000	OK
30 minute winter	08	33	63.466	0.025	1.2	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)
30 minute winter	01	1.001	02	0.9	0.368	0.045	0.0249	
30 minute winter	02	1.002	05	2.6	0.770	0.130	0.0548	
30 minute winter	03	1.003	04	2.0	0.659	0.071	0.0322	
30 minute winter	04	1.004	06	6.3	1.619	0.158	0.0525	
30 minute winter	05	1.005	06	4.4	0.844	0.220	0.1550	
30 minute winter	06	Orifice	07	1.2				
30 minute winter	07	1.007	08	1.2	0.603	0.058	0.0130	4.6

Results for 1 year 60 minute winter. 120 minute analysis at 1 minute timestep. Mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	01	34	64.918	0.018	0.6	0.0062	0.0000	OK
60 minute winter	02	33	64.806	0.031	1.8	0.0158	0.0000	OK
60 minute winter	03	33	65.773	0.023	1.4	0.0164	0.0000	OK
60 minute winter	04	33	65.522	0.034	4.3	0.0432	0.0000	OK
60 minute winter	05	33	63.839	0.039	3.0	0.0413	0.0000	OK
60 minute winter	06	60	63.754	0.164	9.3	10.6930	0.0000	SURCHARGED
60 minute winter	07	60	63.553	0.027	1.3	0.0230	0.0000	OK
60 minute winter	08	60	63.467	0.026	1.3	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	01	1.001	02	0.6	0.331	0.030	0.0190	
60 minute winter	02	1.002	05	1.8	0.694	0.090	0.0421	
60 minute winter	03	1.003	04	1.4	0.604	0.050	0.0246	
60 minute winter	04	1.004	06	4.3	1.457	0.108	0.0399	
60 minute winter	05	1.005	06	3.0	0.742	0.150	0.1673	
60 minute winter	06	Orifice	07	1.3				
60 minute winter	07	1.007	08	1.3	0.619	0.064	0.0139	6.5

Results for 1 year 120 minute winter. 180 minute analysis at 2 minute timestep. Mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	01	64	64.915	0.015	0.4	0.0051	0.0000	OK
120 minute winter	02	64	64.800	0.025	1.2	0.0129	0.0000	OK
120 minute winter	03	64	65.768	0.018	0.9	0.0133	0.0000	OK
120 minute winter	04	64	65.515	0.027	2.8	0.0348	0.0000	OK
120 minute winter	05	64	63.832	0.032	2.0	0.0337	0.0000	OK
120 minute winter	06	98	63.771	0.181	6.1	11.7979	0.0000	SURCHARGED
120 minute winter	07	100	63.553	0.027	1.3	0.0236	0.0000	OK
120 minute winter	08	100	63.467	0.026	1.3	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)
120 minute winter	01	1.001	02	0.4	0.298	0.020	0.0143	
120 minute winter	02	1.002	05	1.2	0.618	0.060	0.0317	
120 minute winter	03	1.003	04	0.9	0.537	0.032	0.0181	
120 minute winter	04	1.004	06	2.8	1.288	0.070	0.0293	
120 minute winter	05	1.005	06	2.0	0.604	0.101	0.1669	
120 minute winter	06	Orifice	07	1.3				
120 minute winter	07	1.007	08	1.3	0.629	0.067	0.0145	9.7

Results for 1 year 180 minute winter. 240 minute analysis at 4 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
180 minute winter	01	92	64.913	0.013	0.3	0.0045	0.0000	OK
180 minute winter	02	96	64.797	0.022	0.9	0.0112	0.0000	OK
180 minute winter	03	96	65.766	0.016	0.7	0.0118	0.0000	OK
180 minute winter	04	96	65.512	0.024	2.1	0.0302	0.0000	OK
180 minute winter	05	96	63.828	0.028	1.5	0.0293	0.0000	OK
180 minute winter	06	136	63.774	0.184	4.6	12.0253	0.0000	SURCHARGED
180 minute winter	07	136	63.553	0.027	1.4	0.0237	0.0000	OK
180 minute winter	08	136	63.468	0.027	1.4	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)
180 minute winter	01	1.001	02	0.3	0.278	0.015	0.0116	
180 minute winter	02	1.002	05	0.9	0.568	0.045	0.0258	
180 minute winter	03	1.003	04	0.7	0.500	0.025	0.0148	
180 minute winter	04	1.004	06	2.1	1.186	0.053	0.0239	
180 minute winter	05	1.005	06	1.5	0.570	0.075	0.1644	
180 minute winter	06	Orifice	07	1.4				
180 minute winter	07	1.007	08	1.4	0.631	0.068	0.0146	12.6

Results for 1 year 240 minute winter. 300 minute analysis at 4 minute timestep. Mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	01	104	64.911	0.011	0.2	0.0037	0.0000	OK
240 minute winter	02	128	64.794	0.019	0.7	0.0099	0.0000	OK
240 minute winter	03	124	65.765	0.015	0.6	0.0109	0.0000	OK
240 minute winter	04	124	65.510	0.022	1.8	0.0278	0.0000	OK
240 minute winter	05	128	63.825	0.025	1.2	0.0263	0.0000	OK
240 minute winter	06	176	63.773	0.183	3.8	11.9209	0.0000	SURCHARGED
240 minute winter	07	176	63.553	0.027	1.3	0.0237	0.0000	OK
240 minute winter	08	176	63.467	0.026	1.3	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)
240 minute winter	01	1.001	02	0.2	0.253	0.010	0.0094	
240 minute winter	02	1.002	05	0.7	0.528	0.035	0.0216	
240 minute winter	03	1.003	04	0.6	0.475	0.021	0.0132	
240 minute winter	04	1.004	06	1.8	1.131	0.045	0.0213	
240 minute winter	05	1.005	06	1.2	0.532	0.060	0.1624	
240 minute winter	06	Orifice	07	1.3				
240 minute winter	07	1.007	08	1.3	0.630	0.068	0.0145	15.2

Results for 1 year 360 minute winter. 424 minute analysis at 8 minute timestep. Mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	01	168	64.911	0.011	0.2	0.0037	0.0000	OK
360 minute winter	02	184	64.793	0.018	0.6	0.0092	0.0000	OK
360 minute winter	03	168	65.763	0.013	0.4	0.0090	0.0000	OK
360 minute winter	04	184	65.507	0.019	1.3	0.0239	0.0000	OK
360 minute winter	05	184	63.823	0.023	1.0	0.0241	0.0000	OK
360 minute winter	06	248	63.769	0.179	2.9	11.6888	0.0000	SURCHARGED
360 minute winter	07	248	63.553	0.027	1.3	0.0236	0.0000	OK
360 minute winter	08	248	63.467	0.026	1.3	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)
360 minute winter	01	1.001	02	0.2	0.253	0.010	0.0088	
360 minute winter	02	1.002	05	0.6	0.503	0.030	0.0194	
360 minute winter	03	1.003	04	0.4	0.424	0.014	0.0104	
360 minute winter	04	1.004	06	1.3	1.030	0.033	0.0170	
360 minute winter	05	1.005	06	1.0	0.534	0.050	0.1610	
360 minute winter	06	Orifice	07	1.3				
360 minute winter	07	1.007	08	1.3	0.628	0.067	0.0144	20.7

Results for 1 year 480 minute winter. 544 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 winter	01	160	64.908	0.008	0.1	0.0027	0.0000	OK
480 minute winter	02	232	64.790	0.015	0.4	0.0076	0.0000	OK
480 minute winter	03	208	65.761	0.011	0.3	0.0079	0.0000	OK
480 minute winter	04	232	65.505	0.017	1.0	0.0211	0.0000	OK
480 minute winter	05	232	63.819	0.019	0.7	0.0203	0.0000	OK
480 minute winter	06	320	63.751	0.161	2.2	10.5165	0.0000	SURCHARGED
480 minute winter	07	320	63.552	0.026	1.3	0.0229	0.0000	OK
480 minute winter	08	320	63.467	0.026	1.3	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)
480 minute winter	01	1.001	02	0.1	0.225	0.005	0.0062	
480 minute winter	02	1.002	05	0.4	0.446	0.020	0.0146	
480 minute winter	03	1.003	04	0.3	0.390	0.011	0.0086	
480 minute winter	04	1.004	06	1.0	0.952	0.025	0.0142	
480 minute winter	05	1.005	06	0.7	0.380	0.035	0.1579	
480 minute winter	06	Orifice	07	1.3				
480 minute winter	07	1.007	08	1.3	0.618	0.063	0.0138	24.0

Results for 1 year 600 minute winter. 660 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 winter	01	210	64.908	0.008	0.1	0.0027	0.0000	OK
600 minute winter	02	315	64.790	0.015	0.4	0.0076	0.0000	OK
600 minute winter	03	285	65.761	0.011	0.3	0.0079	0.0000	OK
600 minute winter	04	300	65.504	0.016	0.9	0.0200	0.0000	OK
600 minute winter	05	315	63.819	0.019	0.7	0.0203	0.0000	OK
600 minute winter	06	390	63.741	0.151	2.0	9.8659	0.0000	SURCHARGED
600 minute winter	07	390	63.552	0.026	1.2	0.0224	0.0000	OK
600 minute winter	08	390	63.466	0.025	1.2	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)
600 minute winter	01	1.001	02	0.1	0.225	0.005	0.0062	
600 minute winter	02	1.002	05	0.4	0.446	0.020	0.0146	
600 minute winter	03	1.003	04	0.3	0.409	0.011	0.0082	
600 minute winter	04	1.004	06	0.9	0.922	0.023	0.0132	
600 minute winter	05	1.005	06	0.7	0.190	0.035	0.1565	
600 minute winter	06	Orifice	07	1.2				
600 minute winter	07	1.007	08	1.2	0.611	0.061	0.0135	25.9

Results for 1 year 720 minute winter. 780 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 winter	01	270	64.908	0.008	0.1	0.0027	0.0000	OK
720 minute winter	02	315	64.788	0.013	0.3	0.0066	0.0000	OK
720 minute winter	03	375	65.761	0.011	0.3	0.0079	0.0000	OK
720 minute winter	04	375	65.504	0.016	0.9	0.0200	0.0000	OK
720 minute winter	05	315	63.816	0.016	0.5	0.0173	0.0000	OK
720 minute winter	06	450	63.730	0.140	1.8	9.1159	0.0000	OK
720 minute winter	07	450	63.551	0.025	1.2	0.0219	0.0000	OK
720 minute winter	08	450	63.466	0.025	1.2	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)
720 minute winter	01	1.001	02	0.1	0.225	0.005	0.0054	
720 minute winter	02	1.002	05	0.3	0.410	0.015	0.0119	
720 minute winter	03	1.003	04	0.3	0.390	0.011	0.0082	
720 minute winter	04	1.004	06	0.9	0.922	0.023	0.0132	
720 minute winter	05	1.005	06	0.5	0.193	0.025	0.1511	
720 minute winter	06	Orifice	07	1.2				
720 minute winter	07	1.007	08	1.2	0.603	0.058	0.0130	27.3

Results for 1 year 960 minute winter. 1020 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 winter	01	375	64.908	0.008	0.1	0.0027	0.0000	OK
960 minute winter	02	435	64.788	0.013	0.3	0.0066	0.0000	OK
960 minute winter	03	405	65.759	0.009	0.2	0.0066	0.0000	OK
960 minute winter	04	495	65.502	0.014	0.7	0.0177	0.0000	OK
960 minute winter	05	435	63.816	0.016	0.5	0.0173	0.0000	OK
960 minute winter	06	570	63.718	0.128	1.5	8.3534	0.0000	OK
960 minute winter	07	570	63.551	0.025	1.1	0.0214	0.0000	OK
960 minute winter	08	570	63.465	0.024	1.1	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)
960 minute winter	01	1.001	02	0.1	0.225	0.005	0.0054	
960 minute winter	02	1.002	05	0.3	0.410	0.015	0.0119	
960 minute winter	03	1.003	04	0.2	0.371	0.007	0.0066	
960 minute winter	04	1.004	06	0.7	0.857	0.018	0.0110	
960 minute winter	05	1.005	06	0.5	0.168	0.025	0.1412	
960 minute winter	06	Orifice	07	1.1				
960 minute winter	07	1.007	08	1.1	0.595	0.055	0.0126	30.6

Results for 1 year 1440 minute winter. 1500 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 winter	01	630	64.908	0.008	0.1	0.0027	0.0000	OK
1440 minute winter	02	630	64.786	0.011	0.2	0.0055	0.0000	OK
1440 minute winter	03	720	65.759	0.009	0.2	0.0066	0.0000	OK
1440 minute winter	04	720	65.500	0.012	0.5	0.0151	0.0000	OK
1440 minute winter	05	630	63.813	0.013	0.3	0.0136	0.0000	OK
1440 minute winter	06	870	63.679	0.089	1.0	5.8357	0.0000	OK
1440 minute winter	07	870	63.548	0.022	0.9	0.0191	0.0000	OK
1440 minute winter	08	870	63.463	0.022	0.9	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)
1440 minute winter	01	1.001	02	0.1	0.225	0.005	0.0045	
1440 minute winter	02	1.002	05	0.2	0.361	0.010	0.0090	
1440 minute winter	03	1.003	04	0.2	0.372	0.007	0.0057	
1440 minute winter	04	1.004	06	0.5	0.773	0.013	0.0087	
1440 minute winter	05	1.005	06	0.3	0.167	0.015	0.0981	
1440 minute winter	06	Orifice	07	0.9				
1440 minute winter	07	1.007	08	0.9	0.558	0.044	0.0107	32.3

Results for 30 year 15 minute winter. 75 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 winter	01	10	64.937	0.037	2.7	0.0129	0.0000	OK
15 minute winter	02	10	64.844	0.069	8.1	0.0350	0.0000	OK
15 minute winter	03	10	65.798	0.048	6.3	0.0346	0.0000	OK
15 minute winter	04	10	65.567	0.079	19.6	0.1000	0.0000	OK
15 minute winter	05	10	63.894	0.094	13.6	0.0991	0.0000	OK
15 minute winter	06	19	63.866	0.276	42.1	18.0307	0.0000	SURCHARGED
15 minute winter	07	19	63.557	0.031	1.7	0.0266	0.0000	OK
15 minute winter	08	19	63.471	0.030	1.7	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)
15 minute winter	01	1.001	02	2.7	0.481	0.134	0.0561	
15 minute winter	02	1.002	05	7.9	1.037	0.396	0.1240	
15 minute winter	03	1.003	04	6.3	0.882	0.222	0.0749	
15 minute winter	04	1.004	06	19.4	2.159	0.487	0.1216	
15 minute winter	05	1.005	06	13.6	1.180	0.685	0.2394	
15 minute winter	06	Orifice	07	1.7				
15 minute winter	07	1.007	08	1.7	0.672	0.085	0.0171	6.2

Results for 30 year 30 minute winter. 90 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
30 minute winter	01	18	64.933	0.033	2.1	0.0114	0.0000	OK
30 minute winter	02	18	64.835	0.060	6.3	0.0306	0.0000	OK
30 minute winter	03	18	65.792	0.042	4.9	0.0304	0.0000	OK
30 minute winter	04	18	65.556	0.068	15.4	0.0865	0.0000	OK
30 minute winter	05	33	63.944	0.144	10.7	0.1516	0.0000	OK
30 minute winter	06	33	63.944	0.354	33.1	23.1292	0.0000	SURCHARGED
30 minute winter	07	33	63.559	0.033	1.9	0.0285	0.0000	OK
30 minute winter	08	33	63.473	0.032	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)
30 minute winter	01	1.001	02	2.1	0.453	0.106	0.0472	
30 minute winter	02	1.002	05	6.3	0.980	0.317	0.1047	
30 minute winter	03	1.003	04	4.9	0.831	0.174	0.0624	
30 minute winter	04	1.004	06	15.4	2.045	0.385	0.1017	
30 minute winter	05	1.005	06	10.7	1.013	0.538	0.2939	
30 minute winter	06	Orifice	07	1.9				
30 minute winter	07	1.007	08	1.9	0.698	0.097	0.0188	8.2

Results for 30 year 60 minute winter. 120 minute analysis at 1 minute timestep. Mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	01	33	64.927	0.027	1.4	0.0094	0.0000	OK
60 minute winter	02	34	64.823	0.048	4.2	0.0245	0.0000	OK
60 minute winter	03	32	65.785	0.035	3.3	0.0249	0.0000	OK
60 minute winter	04	33	65.543	0.055	10.4	0.0691	0.0000	OK
60 minute winter	05	60	64.014	0.214	7.2	0.2251	0.0000	SURCHARGED
60 minute winter	06	61	64.014	0.424	22.3	27.6864	0.0000	SURCHARGED
60 minute winter	07	61	63.561	0.035	2.1	0.0299	0.0000	OK
60 minute winter	08	61	63.474	0.033	2.1	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	01	1.001	02	1.4	0.407	0.070	0.0351	
60 minute winter	02	1.002	05	4.2	0.880	0.211	0.0778	
60 minute winter	03	1.003	04	3.3	0.756	0.117	0.0465	
60 minute winter	04	1.004	06	10.4	1.852	0.260	0.0758	
60 minute winter	05	1.005	06	7.2	0.899	0.362	0.2958	
60 minute winter	06	Orifice	07	2.1				
60 minute winter	07	1.007	08	2.1	0.716	0.107	0.0202	11.4

Results for 30 year 120 minute winter. 180 minute analysis at 2 minute timestep. Mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	01	64	64.922	0.022	0.9	0.0075	0.0000	OK
120 minute winter	02	64	64.813	0.038	2.7	0.0195	0.0000	OK
120 minute winter	03	64	65.778	0.028	2.1	0.0200	0.0000	OK
120 minute winter	04	64	65.531	0.043	6.6	0.0540	0.0000	OK
120 minute winter	05	114	64.056	0.256	4.6	0.2691	0.0000	SURCHARGED
120 minute winter	06	114	64.056	0.466	13.8	30.3910	0.0000	SURCHARGED
120 minute winter	07	114	63.561	0.035	2.2	0.0307	0.0000	OK
120 minute winter	08	114	63.475	0.034	2.2	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)
120 minute winter	01	1.001	02	0.9	0.366	0.045	0.0255	
120 minute winter	02	1.002	05	2.7	0.779	0.136	0.0565	
120 minute winter	03	1.003	04	2.1	0.669	0.074	0.0333	
120 minute winter	04	1.004	06	6.6	1.640	0.165	0.0543	
120 minute winter	05	1.005	06	4.4	0.773	0.219	0.2958	
120 minute winter	06	Orifice	07	2.2				
120 minute winter	07	1.007	08	2.2	0.725	0.112	0.0209	17.1

Results for 30 year 180 minute winter. 240 minute analysis at 4 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
180 minute winter	01	96	64.919	0.019	0.7	0.0067	0.0000	OK
180 minute winter	02	96	64.808	0.033	2.0	0.0167	0.0000	OK
180 minute winter	03	96	65.774	0.024	1.6	0.0175	0.0000	OK
180 minute winter	04	96	65.525	0.037	4.9	0.0462	0.0000	OK
180 minute winter	05	144	64.062	0.262	3.4	0.2749	0.0000	SURCHARGED
180 minute winter	06	144	64.061	0.471	10.2	30.7512	0.0000	SURCHARGED
180 minute winter	07	144	63.562	0.036	2.2	0.0308	0.0000	OK
180 minute winter	08	144	63.475	0.034	2.2	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)
180 minute winter	01	1.001	02	0.7	0.344	0.035	0.0207	
180 minute winter	02	1.002	05	2.0	0.716	0.101	0.0455	
180 minute winter	03	1.003	04	1.6	0.628	0.057	0.0271	
180 minute winter	04	1.004	06	4.9	1.511	0.123	0.0438	
180 minute winter	05	1.005	06	3.3	0.685	0.165	0.2958	
180 minute winter	06	Orifice	07	2.2				
180 minute winter	07	1.007	08	2.2	0.727	0.113	0.0210	22.2

Results for 30 year 240 minute winter. 300 minute analysis at 4 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
240 minute winter	01	116	64.916	0.016	0.5	0.0057	0.0000	OK
240 minute winter	02	124	64.804	0.029	1.6	0.0149	0.0000	OK
240 minute winter	03	124	65.772	0.022	1.3	0.0158	0.0000	OK
240 minute winter	04	124	65.521	0.033	4.0	0.0417	0.0000	OK
240 minute winter	05	184	64.063	0.263	2.8	0.2769	0.0000	SURCHARGED
240 minute winter	06	184	64.063	0.473	8.4	30.8744	0.0000	SURCHARGED
240 minute winter	07	184	63.562	0.036	2.2	0.0308	0.0000	OK
240 minute winter	08	184	63.475	0.034	2.2	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)
240 minute winter	01	1.001	02	0.5	0.313	0.025	0.0173	
240 minute winter	02	1.002	05	1.6	0.672	0.081	0.0388	
240 minute winter	03	1.003	04	1.3	0.591	0.046	0.0233	
240 minute winter	04	1.004	06	4.0	1.428	0.100	0.0378	
240 minute winter	05	1.005	06	2.6	0.647	0.131	0.2958	
240 minute winter	06	Orifice	07	2.2				
240 minute winter	07	1.007	08	2.2	0.727	0.113	0.0210	27.3

Results for 30 year 360 minute winter. 424 minute analysis at 8 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	01	176	64.915	0.015	0.4	0.0051	0.0000	OK
360 minute winter	02	184	64.800	0.025	1.2	0.0129	0.0000	OK
360 minute winter	03	176	65.768	0.018	0.9	0.0133	0.0000	OK
360 minute winter	04	184	65.516	0.028	2.9	0.0354	0.0000	OK
360 minute winter	05	256	64.041	0.241	2.1	0.2536	0.0000	SURCHARGED
360 minute winter	06	256	64.041	0.451	6.2	29.4330	0.0000	SURCHARGED
360 minute winter	07	256	63.561	0.035	2.2	0.0304	0.0000	OK
360 minute winter	08	256	63.475	0.034	2.2	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)
360 minute winter	01	1.001	02	0.4	0.297	0.020	0.0143	
360 minute winter	02	1.002	05	1.2	0.618	0.060	0.0317	
360 minute winter	03	1.003	04	0.9	0.530	0.032	0.0183	
360 minute winter	04	1.004	06	2.9	1.301	0.073	0.0301	
360 minute winter	05	1.005	06	2.0	0.567	0.098	0.2958	
360 minute winter	06	Orifice	07	2.2				
360 minute winter	07	1.007	08	2.2	0.722	0.110	0.0207	36.6

Results for 30 year 480 minute winter. 544 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 winter	01	216	64.913	0.013	0.3	0.0045	0.0000	OK
480 minute winter	02	224	64.797	0.022	0.9	0.0112	0.0000	OK
480 minute winter	03	248	65.767	0.017	0.8	0.0125	0.0000	OK
480 minute winter	04	248	65.513	0.025	2.4	0.0322	0.0000	OK
480 minute winter	05	328	64.013	0.213	1.6	0.2243	0.0000	SURCHARGED
480 minute winter	06	328	64.013	0.423	5.0	27.6077	0.0000	SURCHARGED
480 minute winter	07	328	63.561	0.035	2.1	0.0299	0.0000	OK
480 minute winter	08	328	63.474	0.033	2.1	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)
480 minute winter	01	1.001	02	0.3	0.277	0.015	0.0116	
480 minute winter	02	1.002	05	0.9	0.568	0.045	0.0258	
480 minute winter	03	1.003	04	0.8	0.520	0.028	0.0163	
480 minute winter	04	1.004	06	2.4	1.232	0.060	0.0263	
480 minute winter	05	1.005	06	1.5	0.586	0.076	0.2958	
480 minute winter	06	Orifice	07	2.1				
480 minute winter	07	1.007	08	2.1	0.716	0.107	0.0202	44.3

Results for 30 year 600 minute winter. 660 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 winter	01	300	64.913	0.013	0.3	0.0045	0.0000	OK
600 minute winter	02	300	64.796	0.021	0.8	0.0106	0.0000	OK
600 minute winter	03	285	65.765	0.015	0.6	0.0109	0.0000	OK
600 minute winter	04	315	65.511	0.023	2.0	0.0295	0.0000	OK
600 minute winter	05	405	63.995	0.195	1.4	0.2049	0.0000	SURCHARGED
600 minute winter	06	405	63.995	0.405	4.2	26.4081	0.0000	SURCHARGED
600 minute winter	07	405	63.560	0.034	2.1	0.0295	0.0000	OK
600 minute winter	08	405	63.474	0.033	2.1	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)
600 minute winter	01	1.001	02	0.3	0.278	0.015	0.0110	
600 minute winter	02	1.002	05	0.8	0.549	0.040	0.0238	
600 minute winter	03	1.003	04	0.6	0.478	0.021	0.0140	
600 minute winter	04	1.004	06	2.0	1.170	0.050	0.0231	
600 minute winter	05	1.005	06	1.3	0.523	0.066	0.2958	
600 minute winter	06	Orifice	07	2.1				
600 minute winter	07	1.007	08	2.1	0.711	0.104	0.0198	51.0

Results for 30 year 720 minute winter. 780 minute analysis at 15 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
720 minute winter	01	300	64.911	0.011	0.2	0.0037	0.0000	OK
720 minute winter	02	360	64.794	0.019	0.7	0.0099	0.0000	OK
720 minute winter	03	375	65.765	0.015	0.6	0.0109	0.0000	OK
720 minute winter	04	375	65.510	0.022	1.8	0.0280	0.0000	OK
720 minute winter	05	480	63.968	0.168	1.2	0.1771	0.0000	SURCHARGED
720 minute winter	06	480	63.968	0.378	3.7	24.6827	0.0000	SURCHARGED
720 minute winter	07	480	63.559	0.033	2.0	0.0290	0.0000	OK
720 minute winter	08	480	63.473	0.032	2.0	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)
720 minute winter	01	1.001	02	0.2	0.252	0.010	0.0094	
720 minute winter	02	1.002	05	0.7	0.528	0.035	0.0216	
720 minute winter	03	1.003	04	0.6	0.478	0.021	0.0133	
720 minute winter	04	1.004	06	1.8	1.134	0.045	0.0214	
720 minute winter	05	1.005	06	1.2	0.422	0.060	0.2958	
720 minute winter	06	Orifice	07	2.0				
720 minute winter	07	1.007	08	2.0	0.704	0.101	0.0193	56.2

Results for 30 year 960 minute winter. 1020 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 winter	01	435	64.911	0.011	0.2	0.0037	0.0000	OK
960 minute winter	02	465	64.793	0.018	0.6	0.0092	0.0000	OK
960 minute winter	03	435	65.763	0.013	0.4	0.0090	0.0000	OK
960 minute winter	04	495	65.508	0.020	1.4	0.0247	0.0000	OK
960 minute winter	05	615	63.919	0.119	1.0	0.1248	0.0000	OK
960 minute winter	06	615	63.919	0.329	3.0	21.4464	0.0000	SURCHARGED
960 minute winter	07	615	63.558	0.032	1.9	0.0279	0.0000	OK
960 minute winter	08	615	63.472	0.031	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)
960 minute winter	01	1.001	02	0.2	0.253	0.010	0.0088	
960 minute winter	02	1.002	05	0.6	0.503	0.030	0.0194	
960 minute winter	03	1.003	04	0.4	0.424	0.014	0.0107	
960 minute winter	04	1.004	06	1.4	1.053	0.035	0.0179	
960 minute winter	05	1.005	06	1.0	0.405	0.050	0.2735	
960 minute winter	06	Orifice	07	1.9				
960 minute winter	07	1.007	08	1.9	0.690	0.093	0.0183	66.0

Results for 30 year 1440 minute winter. 1500 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 winter	01	480	64.908	0.008	0.1	0.0027	0.0000	OK
1440 minute winter	02	690	64.790	0.015	0.4	0.0076	0.0000	OK
1440 minute winter	03	660	65.761	0.011	0.3	0.0079	0.0000	OK
1440 minute winter	04	720	65.505	0.017	1.0	0.0211	0.0000	OK
1440 minute winter	05	870	63.849	0.049	0.7	0.0514	0.0000	OK
1440 minute winter	06	870	63.849	0.259	2.2	16.8908	0.0000	SURCHARGED
1440 minute winter	07	870	63.556	0.030	1.6	0.0261	0.0000	OK
1440 minute winter	08	870	63.470	0.029	1.6	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)
1440 minute winter	01	1.001	02	0.1	0.225	0.005	0.0062	
1440 minute winter	02	1.002	05	0.4	0.446	0.020	0.0146	
1440 minute winter	03	1.003	04	0.3	0.390	0.011	0.0086	
1440 minute winter	04	1.004	06	1.0	0.952	0.025	0.0142	
1440 minute winter	05	1.005	06	0.7	0.169	0.035	0.1898	
1440 minute winter	06	Orifice	07	1.6				
1440 minute winter	07	1.007	08	1.6	0.666	0.082	0.0167	76.2

Results for 100 year +40% CC 15 minute winter. 75 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
15 minute winter	01	10	64.950	0.050	4.9	0.0175	0.0000	OK
15 minute winter	02	10	64.875	0.100	14.5	0.0511	0.0000	OK
15 minute winter	03	10	65.817	0.067	11.3	0.0478	0.0000	OK
15 minute winter	04	10	65.612	0.124	35.5	0.1565	0.0000	OK
15 minute winter	05	11	64.242	0.442	24.5	0.4641	0.0000	SURCHARGED
15 minute winter	06	19	64.098	0.508	73.7	33.1256	0.0000	SURCHARGED
15 minute winter	07	19	63.562	0.036	2.3	0.0314	0.0000	OK
15 minute winter	08	20	63.476	0.035	2.3	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)
15 minute winter	01	1.001	02	4.9	0.548	0.244	0.0885	
15 minute winter	02	1.002	05	14.2	1.186	0.716	0.1961	
15 minute winter	03	1.003	04	11.2	0.961	0.398	0.1211	
15 minute winter	04	1.004	06	35.1	2.398	0.878	0.1973	
15 minute winter	05	1.005	06	23.0	1.306	1.157	0.2958	
15 minute winter	06	Orifice	07	2.3				
15 minute winter	07	1.007	08	2.3	0.734	0.117	0.0216	8.8

Results for 100 year +40% CC 30 minute winter. 90 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 winter	01	18	64.944	0.044	3.8	0.0154	0.0000	OK
30 minute winter	02	18	64.861	0.086	11.5	0.0440	0.0000	OK
30 minute winter	03	18	65.808	0.058	9.0	0.0419	0.0000	OK
30 minute winter	04	18	65.590	0.102	28.2	0.1287	0.0000	OK
30 minute winter	05	33	64.254	0.454	19.6	0.4770	0.0000	SURCHARGED
30 minute winter	06	33	64.254	0.664	59.6	43.3392	0.0000	SURCHARGED
30 minute winter	07	33	63.565	0.039	2.7	0.0338	0.0000	OK
30 minute winter	08	34	63.478	0.037	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)
30 minute winter	01	1.001	02	3.8	0.517	0.191	0.0741	
30 minute winter	02	1.002	05	11.5	1.134	0.578	0.1652	
30 minute winter	03	1.003	04	9.0	0.944	0.319	0.0998	
30 minute winter	04	1.004	06	28.2	2.334	0.705	0.1631	
30 minute winter	05	1.005	06	18.6	1.124	0.936	0.2958	
30 minute winter	06	Orifice	07	2.7				
30 minute winter	07	1.007	08	2.7	0.763	0.135	0.0239	11.6

Results for 100 year +40% CC 60 minute winter. 120 minute analysis at 1 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	01	33	64.937	0.037	2.6	0.0127	0.0000	OK
60 minute winter	02	33	64.843	0.068	7.8	0.0346	0.0000	OK
60 minute winter	03	33	65.797	0.047	6.1	0.0341	0.0000	OK
60 minute winter	04	33	65.566	0.078	19.2	0.0990	0.0000	OK
60 minute winter	05	61	64.627	0.827	13.3	0.8690	0.0000	SURCHARGED
60 minute winter	06	61	64.627	1.037	40.6	52.5053	0.0000	SURCHARGED
60 minute winter	07	61	63.570	0.044	3.4	0.0382	0.0000	OK
60 minute winter	08	61	63.483	0.042	3.4	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 winter	01	1.001	02	2.6	0.480	0.131	0.0553	
60 minute winter	02	1.002	05	7.8	1.035	0.392	0.1229	
60 minute winter	03	1.003	04	6.1	0.874	0.216	0.0737	
60 minute winter	04	1.004	06	19.2	2.155	0.480	0.1203	
60 minute winter	05	1.005	06	12.7	1.009	0.638	0.2958	
60 minute winter	06	Orifice	07	3.4				
60 minute winter	07	1.007	08	3.4	0.811	0.170	0.0283	16.4

Results for 100 year +40% CC 120 minute winter. 180 minute analysis at 2 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	01	110	65.556	0.656	1.9	0.2275	0.0000	SURCHARGED
120 minute winter	02	110	65.555	0.780	4.9	0.3980	0.0000	FLOOD RISK
120 minute winter	03	62	65.787	0.037	3.8	0.0268	0.0000	OK
120 minute winter	04	110	65.555	0.067	12.0	0.0849	0.0000	OK
120 minute winter	05	110	65.555	1.755	8.8	1.8445	0.0000	FLOOD RISK
120 minute winter	06	110	65.554	1.964	25.5	53.5528	0.0000	FLOOD RISK
120 minute winter	07	110	63.579	0.053	4.7	0.0456	0.0000	OK
120 minute winter	08	110	63.490	0.049	4.7	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)
120 minute winter	01	1.001	02	1.6	0.421	0.081	0.1760	
120 minute winter	02	1.002	05	4.9	0.917	0.247	0.2870	
120 minute winter	03	1.003	04	3.8	0.785	0.135	0.0517	
120 minute winter	04	1.004	06	12.0	1.922	0.300	0.1702	
120 minute winter	05	1.005	06	8.0	0.869	0.404	0.2958	
120 minute winter	06	Orifice	07	4.7				
120 minute winter	07	1.007	08	4.7	0.883	0.234	0.0359	28.5

Results for 100 year +40% CC 180 minute winter. 240 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 winter	01	140	65.776	0.876	1.3	0.3039	0.0000	FLOOD RISK
180 minute winter	02	140	65.776	1.001	3.7	0.5104	0.0000	FLOOD RISK
180 minute winter	03	96	65.783	0.033	2.9	0.0234	0.0000	OK
180 minute winter	04	140	65.776	0.288	9.0	0.3654	0.0000	SURCHARGED
180 minute winter	05	140	65.775	1.975	6.3	2.0758	0.0000	FLOOD RISK
180 minute winter	06	140	65.773	2.183	19.1	53.8016	0.0000	FLOOD RISK
180 minute winter	07	140	63.580	0.054	4.9	0.0470	0.0000	OK
180 minute winter	08	140	63.492	0.051	4.9	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)
180 minute winter	01	1.001	02	1.2	0.390	0.060	0.1760	
180 minute winter	02	1.002	05	3.7	0.850	0.186	0.2870	
180 minute winter	03	1.003	04	2.9	0.733	0.103	0.1034	
180 minute winter	04	1.004	06	9.0	1.783	0.225	0.2377	
180 minute winter	05	1.005	06	6.0	0.771	0.303	0.2958	
180 minute winter	06	Orifice	07	4.9				
180 minute winter	07	1.007	08	4.9	0.895	0.247	0.0373	38.2

Results for 100 year +40% CC 240 minute winter. 300 minute analysis at 4 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
240 minute winter	01	176	65.784	0.884	3.4	0.3066	0.0000	FLOOD RISK
240 minute winter	02	176	65.784	1.009	4.5	0.5144	0.0000	FLOOD RISK
240 minute winter	03	176	65.784	0.034	2.3	0.0248	0.0000	OK
240 minute winter	04	176	65.784	0.296	7.3	0.3754	0.0000	SURCHARGED
240 minute winter	05	176	65.783	1.983	5.1	2.0841	0.0000	FLOOD RISK
240 minute winter	06	176	65.781	2.191	15.5	53.8105	0.0000	FLOOD RISK
240 minute winter	07	176	63.580	0.054	4.9	0.0470	0.0000	OK
240 minute winter	08	176	63.492	0.051	4.9	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)
240 minute winter	01	1.001	02	-2.7	0.377	-0.135	0.1760	
240 minute winter	02	1.002	05	-3.2	0.803	-0.160	0.2870	
240 minute winter	03	1.003	04	2.3	0.687	0.082	0.1084	
240 minute winter	04	1.004	06	7.3	1.685	0.182	0.2377	
240 minute winter	05	1.005	06	4.9	0.723	0.246	0.2958	
240 minute winter	06	Orifice	07	4.9				
240 minute winter	07	1.007	08	4.9	0.896	0.248	0.0374	46.4

Results for 100 year +40% CC 360 minute winter. 424 minute analysis at 8 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	01	248	65.571	0.671	2.0	0.2330	0.0000	FLOOD RISK
360 minute winter	02	248	65.571	0.796	2.2	0.4062	0.0000	FLOOD RISK
360 minute winter	03	184	65.775	0.025	1.7	0.0180	0.0000	OK
360 minute winter	04	248	65.571	0.083	5.4	0.1055	0.0000	OK
360 minute winter	05	248	65.571	1.771	3.8	1.8613	0.0000	FLOOD RISK
360 minute winter	06	248	65.570	1.980	11.5	53.5710	0.0000	FLOOD RISK
360 minute winter	07	248	63.579	0.053	4.7	0.0457	0.0000	OK
360 minute winter	08	248	63.490	0.049	4.7	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)
360 minute winter	01	1.001	02	-1.5	0.336	-0.075	0.1760	
360 minute winter	02	1.002	05	2.2	0.735	0.110	0.2870	
360 minute winter	03	1.003	04	1.7	0.633	0.060	0.0582	
360 minute winter	04	1.004	06	5.4	1.551	0.135	0.1866	
360 minute winter	05	1.005	06	3.6	0.700	0.183	0.2958	
360 minute winter	06	Orifice	07	4.7				
360 minute winter	07	1.007	08	4.7	0.884	0.235	0.0360	59.6

Results for 100 year +40% CC 480 minute winter. 544 minute analysis at 8 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	01	328	65.211	0.311	0.6	0.1081	0.0000	SURCHARGED
480 minute winter	02	328	65.211	0.436	1.8	0.2226	0.0000	SURCHARGED
480 minute winter	03	248	65.773	0.023	1.4	0.0164	0.0000	OK
480 minute winter	04	248	65.522	0.034	4.3	0.0432	0.0000	OK
480 minute winter	05	328	65.211	1.411	3.0	1.4829	0.0000	SURCHARGED
480 minute winter	06	328	65.210	1.620	9.2	53.1639	0.0000	SURCHARGED
480 minute winter	07	328	63.576	0.050	4.2	0.0432	0.0000	OK
480 minute winter	08	328	63.488	0.047	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)
480 minute winter	01	1.001	02	0.6	0.330	0.030	0.1760	
480 minute winter	02	1.002	05	1.8	0.695	0.091	0.2870	
480 minute winter	03	1.003	04	1.4	0.604	0.050	0.0246	
480 minute winter	04	1.004	06	4.3	1.457	0.108	0.1322	
480 minute winter	05	1.005	06	2.9	0.538	0.146	0.2958	
480 minute winter	06	Orifice	07	4.2				
480 minute winter	07	1.007	08	4.2	0.861	0.213	0.0334	70.4

Results for 100 year +40% CC 600 minute winter. 660 minute analysis at 15 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	01	300	64.916	0.016	0.5	0.0057	0.0000	OK
600 minute winter	02	405	64.910	0.135	1.5	0.0689	0.0000	OK
600 minute winter	03	300	65.770	0.020	1.1	0.0146	0.0000	OK
600 minute winter	04	315	65.519	0.031	3.6	0.0395	0.0000	OK
600 minute winter	05	405	64.910	1.110	2.5	1.1665	0.0000	SURCHARGED
600 minute winter	06	405	64.909	1.319	7.6	52.8238	0.0000	SURCHARGED
600 minute winter	07	405	63.573	0.047	3.8	0.0408	0.0000	OK
600 minute winter	08	405	63.485	0.044	3.8	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)
600 minute winter	01	1.001	02	0.5	0.314	0.025	0.0864	
600 minute winter	02	1.002	05	1.5	0.659	0.075	0.2797	
600 minute winter	03	1.003	04	1.1	0.563	0.039	0.0213	
600 minute winter	04	1.004	06	3.6	1.385	0.090	0.0909	
600 minute winter	05	1.005	06	2.4	0.542	0.122	0.2958	
600 minute winter	06	Orifice	07	3.8				
600 minute winter	07	1.007	08	3.8	0.838	0.192	0.0309	79.8

Results for 100 year +40% CC 720 minute winter. 780 minute analysis at 15 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	01	330	64.915	0.015	0.4	0.0051	0.0000	OK
720 minute winter	02	375	64.801	0.026	1.3	0.0135	0.0000	OK
720 minute winter	03	360	65.769	0.019	1.0	0.0139	0.0000	OK
720 minute winter	04	360	65.517	0.029	3.1	0.0366	0.0000	OK
720 minute winter	05	480	64.568	0.768	2.2	0.8074	0.0000	SURCHARGED
720 minute winter	06	480	64.568	0.978	6.6	52.4377	0.0000	SURCHARGED
720 minute winter	07	480	63.569	0.043	3.3	0.0376	0.0000	OK
720 minute winter	08	480	63.482	0.041	3.3	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)
720 minute winter	01	1.001	02	0.4	0.298	0.020	0.0149	
720 minute winter	02	1.002	05	1.3	0.632	0.065	0.0335	
720 minute winter	03	1.003	04	1.0	0.547	0.035	0.0194	
720 minute winter	04	1.004	06	3.1	1.327	0.078	0.0315	
720 minute winter	05	1.005	06	2.1	0.523	0.107	0.2958	
720 minute winter	06	Orifice	07	3.3				
720 minute winter	07	1.007	08	3.3	0.805	0.164	0.0276	89.5

Results for 100 year +40% CC 960 minute winter. 1020 minute analysis at 15 minute timestep. Mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	01	420	64.913	0.013	0.3	0.0045	0.0000	OK
960 minute winter	02	480	64.798	0.023	1.0	0.0118	0.0000	OK
960 minute winter	03	465	65.767	0.017	0.8	0.0125	0.0000	OK
960 minute winter	04	480	65.514	0.026	2.5	0.0329	0.0000	OK
960 minute winter	05	645	64.309	0.509	1.7	0.5349	0.0000	SURCHARGED
960 minute winter	06	645	64.308	0.718	5.3	46.8840	0.0000	SURCHARGED
960 minute winter	07	645	63.566	0.040	2.8	0.0345	0.0000	OK
960 minute winter	08	645	63.479	0.038	2.8	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)
960 minute winter	01	1.001	02	0.3	0.277	0.015	0.0122	
960 minute winter	02	1.002	05	1.0	0.587	0.050	0.0278	
960 minute winter	03	1.003	04	0.8	0.519	0.028	0.0166	
960 minute winter	04	1.004	06	2.5	1.247	0.063	0.0271	
960 minute winter	05	1.005	06	1.7	0.572	0.083	0.2958	
960 minute winter	06	Orifice	07	2.8				
960 minute winter	07	1.007	08	2.8	0.771	0.140	0.0246	105.3

Results for 100 year +40% CC 1440 minute winter. 1500 minute analysis at 30 minute timestep. Mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	01	750	64.913	0.013	0.3	0.0045	0.0000	OK
1440 minute winter	02	750	64.796	0.021	0.8	0.0106	0.0000	OK
1440 minute winter	03	720	65.765	0.015	0.6	0.0109	0.0000	OK
1440 minute winter	04	750	65.511	0.023	1.9	0.0287	0.0000	OK
1440 minute winter	05	900	64.180	0.380	1.3	0.3996	0.0000	SURCHARGED
1440 minute winter	06	900	64.180	0.590	4.0	38.4775	0.0000	SURCHARGED
1440 minute winter	07	900	63.564	0.038	2.5	0.0327	0.0000	OK
1440 minute winter	08	900	63.477	0.036	2.5	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)
1440 minute winter	01	1.001	02	0.3	0.278	0.015	0.0110	
1440 minute winter	02	1.002	05	0.8	0.549	0.040	0.0238	
1440 minute winter	03	1.003	04	0.6	0.478	0.021	0.0136	
1440 minute winter	04	1.004	06	1.9	1.152	0.048	0.0223	
1440 minute winter	05	1.005	06	1.3	0.372	0.064	0.2958	
1440 minute winter	06	Orifice	07	2.5				
1440 minute winter	07	1.007	08	2.5	0.750	0.127	0.0229	128.6