Land off Watmore Lane, Winnersh

SuDS Maintenance Management Plan

For

Wokingham Borough Council

Project Number:

SE2326

August 2025

Iesis Civils

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Introduction

Iesis have been appointed by Taylor Wimpey West London to complete the SuDS maintenance and Management Plan for the above scheme. This technical note is aimed at assisting with the discharge Condition 8 pertaining to the outline planning permission 230208 and supporting the reserved matters application. Planning permission was granted approval in March 2024.

The approved Flood Risk Assessment (FRA) completed by SLR, reference 425.V62212.00001, dated January 2023 was submitted as part of the outline planning application.

The development itself comprises of 233 residential dwellings.

Design overview

The proposed surface water network consists of traditional pipe networks (chambers, pipes and trapped gullies) linking into detention basins and open swales. The system ultimately discharges into an existing river located to the east of the development site, the itself river flows north. Flow control devices are proposed in three locations, including on the final outfall from the northern attenuation basin to optimize the storage throughout the basins and swale. Prior to discharge in to the existing river, the proposed flows from the site will not exceed the allowable discharge rate outlined within the approved FRA. The discharge rates have been summarised below;

AEP 50% (2 YEAR RETURN PERIOD) = 20 l/s
AEP 3.3% (30 YEAR RETURN PERIOD) = 35 l/s
AEP 1% (100 YEAR RETURN PERIOD) = 49 l/s
AEP 1%+40%CC (100 YEAR RETURN PERIOD + 40%CC) = 69 l/s

The surface water network including the attenuation basin and cellular storage are designed to cater for a 1 in 100 year return storm plus a 40% allowance for climate change, and an additional 10% for urban creep.

The key features of the Surface Water Drainage System will be maintained long term by the appointed Management Company in accordance with the drainage suppliers' requirements/recommendations.

A more detailed description of the surface water strategy can be found in Iesis's drainage technical note, which will issued at the same time as this report, which is aimed at assisting with the discharge Condition 7 pertaining to the outline planning permission 230208 and supporting the reserved matters application.

Surface Water Drainage Management Plan

Outlined below are the inspection and maintenance specification for the surface water drainage, which the appointed Management Company will own and maintain.

The actions outlined below are common to all types of surface water drainage, and are the minimum standard of maintenance and inspection; indeed the Management Company may find it beneficial to vary the maintenance regularity at some sites, and to include extra tasks such as:

- To record the measurements of sediment levels;
- To make a photographic record of problem areas;
- To identify and clear areas where refuse is problem;

SuDs Feature	Ownership/Maintenance
Surface Water Plot Drainage (pipes and inspection chambers)	Private
Surface Water Sewers (pipes and Manholes)	Local Water Authority
Trapped Highway Gullies	Highway Authority
Flow Control Devices	Management Company
Swale and Basins	Management Company

The proposed surface water drainage network has been designed in accordance with the approved planning proposals, Wokingham Borough Council requirements and current design guides/best practice.

Pipe Systems, Gullies and Manholes

Drainage systems comprising of pipe runs, manholes and gullies are a more conventional method of draining surface water runoff from highway areas.

Surface water falling on impermeable areas, such as roads and footways, drain at surface level to gullies which convey the water below ground to the main drainage network. Manholes are also provided on the main drainage system at regular intervals, changes in sewer direction, gradient or pipe diameter. This type of drainage system can be accessed from the gullies or manholes for routine inspection and maintenance.

Gullies are trapped such that on collecting and conveying surface water they trap sediment and prevent any unpleasant odours returning from the sewers.

Pipe Systems, Gullies and Manholes Maintenance Activities & Frequency

Maintenance Category	Maintenance Activity	Comments	Frequency
Routine Maintenance	Inspect and identify any areas that are not operating correctly.	Gullies and manholes	Monthly (for the first 3 months) then annually.
	Remove debris from gratings, sumps / silt traps		Annually
Infrequent Maintenance	Clear blockages	Piped system	As required.

Pipe Systems, Gullies and Manholes Inspection & Frequency

Inspection Activity	Comments	Frequency
Clearing of gullies / sumps	Gullies found to be non-functioning/blocked on annual inspection will be noted and cleared at 6 monthly intervals	Annually (or 6 monthly if blocked annually).
Cleaning / jetting	Pipes and manholes	When required.

Headwalls

Cleaning outfalls and ditches is a simple way to improve drainage systems.

Blocked outfalls can cause the whole drainage system to fail (particularly in flat areas), resulting in poor drainage, pipe siltation and, potentially, blow holes. However, they can often be cleared quickly with a spade.

Ditches are best cleared in autumn to minimise soil damage.

A ditch will function if it has stable banks, the overall gradient is consistent (so it does not reduce drainage efficiency) and it is deep enough to allow drainage outfalls to discharge.

With respect to the maintenance of any exposed surfaces of concrete components, only routine (Annual) cleaning may be necessary using clean water and a power washer/ stiff brush should suffice. Concrete units are often expected to "weather" and some coverage will help them to blend into their environment. If damage to the structure of any pre-cast concrete components occurs we recommend their replacement not repair. If there is minor damage to corners during their normal life by grass cutting equipment etc. then repair with an epoxy compound such as 'Mason Mate 0868PR380 Polyester Resin'

To dispose of any Pre-Cast concrete components the preferred method is to recycle the material by crushing and grading, but if the quantity is too small to be cost effective then disposal in conventional landfill is acceptable as all the concrete components are inert with regard to having any environmental impact.

With regards to the grilles and handrails, as a minimum annual / bi-annual visual checks are basic recommendations. If gratings are in a water course subject to a higher level of debris/weed, then more regular checks may be required.

Clearing of debris/weeds from the grate will ensure no disruption to the flow, or backing up of the water course. Handrails should also only require a visual inspection - annually or at the same time as the headwall and grates.

The headwalls within the site are intended are to be included within the management company's scope. It is anticipated that the final the final headwall within the adjacent field will be adoptable by the water authority.

Basins and Swales (Lined)

Ponds are permanent water SUDS that are used in the later stages of the treatment train, and they are seen as site or regional controls. Ponds attenuate the treatment of the runoff through sedimentation and biological degradation.

The safety designs of the pond include shallow side slopes (maximum 1:3), a maximum depth of 1.0 Meters.

In addition, life saving equipment, and safety signs such as "Danger no swimming", "Danger deep water" as well as seasonal (ice) signs, are essential. Safety equipment should, of course, be easily accessible and safety signs should be highly visible and located around the perimeter of the ponds.

Ponds are visually pleasing and offer various types of planting, such as woodland and manicured parkland around the perimeter of the barrier or fenced off area, aquatic vegetation in the permanent pool, as well as ornamental shrubs.

Prior to discharging to the basins, the storm water drainage is collected by trapped gulleys catchpit chambers to catch heavy sedimentation to enhance the treatment train.

The water quality can be further improved, and path flow increased by using a low flow channel.

Hard engineered headwall structures with inspection and maintenance man entry chambers are used to house the Inlet and outlet structures. Inlet / outlet pipes may be either above or below the permanent water level and include flow dissipation measures such as rip-rap or Reno mattresses to minimise scour and erosion.

Emergency spillways for ponds are typically soft engineered grassed structures but may also be hard engineered using an outlet chamber and suitable flow control.

Pond Maintenance Activities & Frequency

Maintenance Category	Maintenance Activity	Comments	Frequency
Routine Maintenance	Litter and debris removal.	Litter & debris to be removed prior to any grass cutting activity (of perimeter areas) to minimise risk of shredding litter. Particular attention should be paid to inlet/outlet pipes and grilles (if in place)	Monthly.
	Grass cutting: landscaped areas, spillways and access routes.	All cuttings to be removed from SUDS component.	Monthly (during growing season) or as required.
	Grass cutting: meadow grass.	All cuttings to be removed from SUDS component.	Half yearly (Spring before nesting season, and Autumn).

	Remove dead vegetation from pond edge.		1-3 years, or as required.
	Hand cut submerged and emergent aquatic plants (at a minimum of 0.1m above pond base; max 1/3 of pond surface).	Thinning of emergent barrier vegetation. Areas of tall emergent plants obscuring visual inspection (for safety) of the open water should be regularly trimmed.	As required.
	Cut and remove bank vegetation from waters edge to a minimum of 1m above water level.	To provide access to pond edge / emergent vegetation for maintenance and inspection.	Monthly (for first 3 years) then as required.
	Manage other vegetation and remove nuisance plants.	To include wetland plants in permanent pools. Weeding should be conducted by hand or use non-toxic and biodegradable weedkiller. Invasive species should be removed in accordance with best practice.	Monthly (at implementation) then as required.
	Tidy all deal growth before start of growing season.		Annually.
	Remove sediment from pre-treatment(if applicable).	When level reaches 50% of inspection chambers sump / forebay.	Annually or as required.
	Ice warning safety signage.		To be erected at the end of September and removed at the end of March.
Infrequent Maintenance	Re-seed or replant areas of poor vegetation growth.		As required.
	Prune and trim trees and remove cuttings.	Where vegetation is planted as a barrier management of upward growth to encourage outward growth is necessary (after shrub seedlings are established).	As required.
	Remove sediment from forebay.	If pond is lined care should be taken to protect the liner; this may include digger	As required.

		buckets without teeth, etc. Care should be exercised to limit re-suspension of sediment into main pool.	
	Remove sediment from main body of large ponds when pool volume is reduced by 20%.	Sediment level will be dependent upon presence and type of upstream SUDS, size and land use of catchment as well as local soil conditions. Refer to above point for pond liner.	>25 years usually, or as required.
Corrective Maintenance	Repair erosion or other damage.		As required.
	Re-alignment of rip-rap.		As required.
	Aerate pond when signs of eutrophication are detected.		As required.
	Repair / rehabilitation of inlets, outlets and overflows.		As required.

Pond Inspection & Frequency

Inspection Activity	Comments	Frequency
Inspect structures for evidence of poor operation		Monthly.
Inspect banksides, structures, pipework etc. for evidence of physical damage.		Monthly.
Inspect water body for signs of eutrophication.		Monthly (May – October).
Inspect inlets and pre-treatment components for silt accumulation.	Includes visual inspection of chamber (where present) and inspection of flow control.	Half yearly.
Check mechanical devices within chambers.	Includes cracking of seals on penstocks, testing Hydro-Brake by-pass door.	Half yearly.
Safety signage and safety equipment inspection.	Ensure permanent and seasonal safety signs in place. Safety equipment should be inspected to ensure it is available and in good repair.	Monthly.

Flow Control Device

A flow control device usually comprises of a fixed orifice or an alternative form of throttle such as a vortex flow control unit. Its principal function is to throttle the discharge passed downstream and thereby retain water upstream within associated storage facilities.

This site utilises 3 no. vortex flow control devices (Hydrobrake or similar) within manhole chambers which contain a sump and associated parts for access and maintenance.

Normally, little maintenance is required as there are no moving parts within the Flow Control device and generally if blockages occur they do so at the intake and can be due to poor installation or upstream treatment of water entering the system.

Most vortex flow control are fitted with a pivoting by-pass door, which allows the manhole chamber to be drained down should blockages occur.

Flow Control Devices Maintenance Activities & Frequency

Maintenance Category	Maintenance Activity	Comments	Frequency
Routine Maintenance	Inspect and identify any areas that are not operating correctly.		Monthly (for the first 3 months) then six monthly.
	Remove sediment from upstream silt trap (sump).		Six monthly, or as required.
	Hose down unit / chamber		Six monthly, or as required.
Infrequent Maintenance	Clear blockages		As required.

Conclusion

The proposed surface water drainage network has been designed in accordance with the approved planning proposals, Wokingham Council requirements and current design guides/best practice.

The surface water run-off from the site will discharge into an existing ditch located along the northern boundary at a restricted discharge rates listed above (as outlined in the approved FRA).

SuDs are to remain private and will be under Management Company responsibility. SuDs systems/components will be maintained long term in accordance with this Maintenance Plan and the supplier/manufacturers specifications.

Supporting Documents

1. WHA Drainage layout
2. WHA Drainage details
3. Design Calculations

THE ABOVE IS SUBMITIED FOR ACCEPTANCE

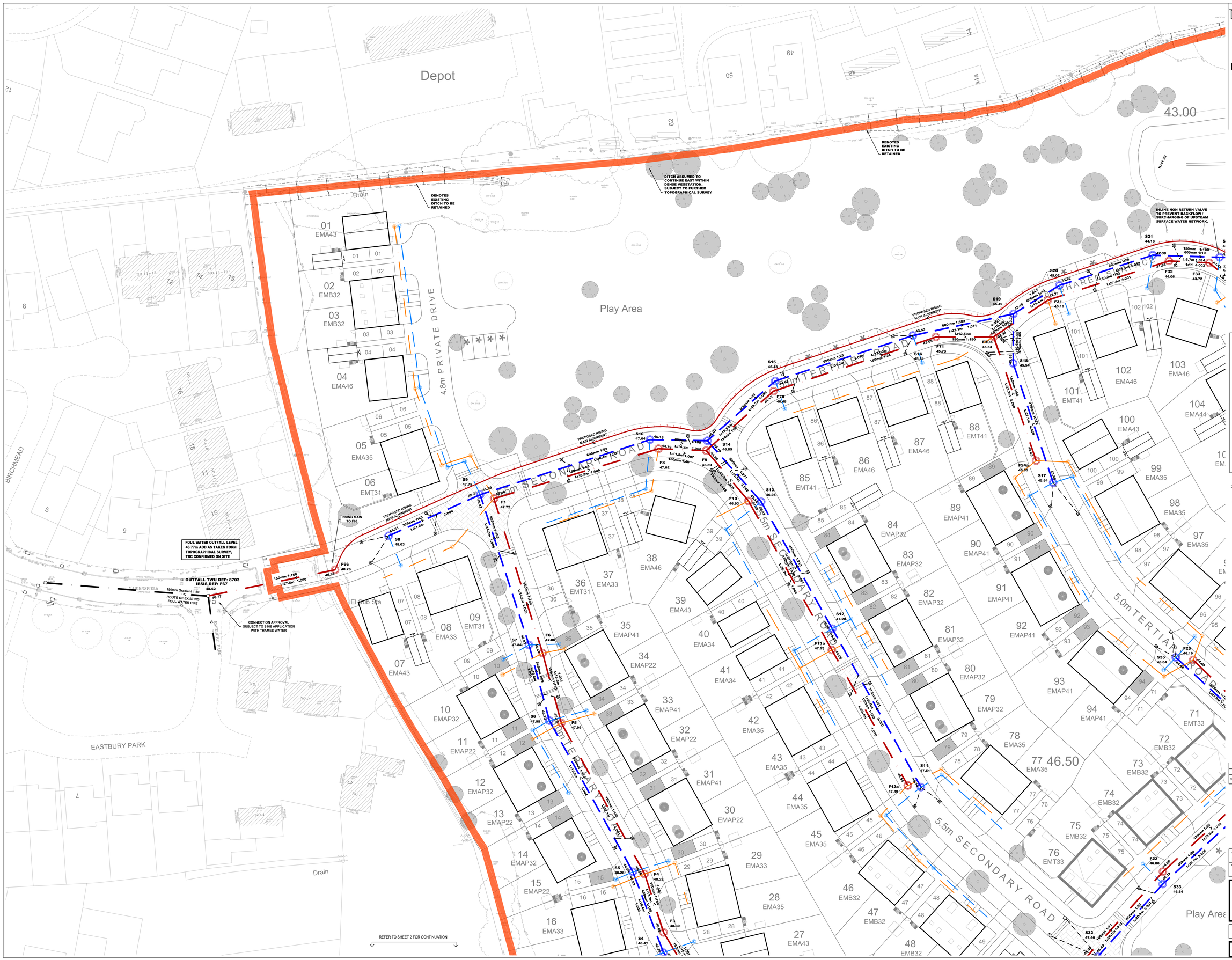
Signed:

Name: G Wilby

Director

WHA Ltd

Date: 07.08.2025



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6. SUITABILITY CODE

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   SHARED (NON-CONTRACTUAL):

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DESIGN SUBJECT TO TECHNICAL APPROVAL

DRAINAGE KEY

- EXISTING THAMES SURFACE WATER SEWER AND EASEMENT TO BE RETAINED
- EXISTING THAMES FOUL WATER SEWER TO BE RETAINED
- S15 10.00 — ADOPTABLE SURFACE WATER MANHOLE; MH REF (FOR DIA SEE MH SCHEDULE); COVER LEVEL; INVERT LEVEL
- CL 10.00 IL 8.80 — PRIVATE SURFACE INSPECTION CHAMBER; 0600mm UNO (STANDARD TYPE 1); PLOT DRAINAGE TBC AT DETAILED DESIGN; CL=COVER LEVEL; IL=INVERT LEVEL; 1:X=PIPE GRADIENT
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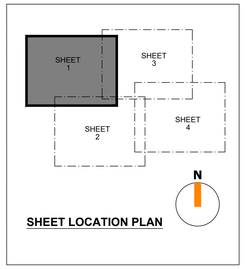

SHEET LOCATION PLAN

SCALE - 1:250

5m 0 5m 10m 15m 20m

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	02.05.25	KW

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Job Title: LAND AT WINNERSH FARM

Client: TAYLOR WIMPEY WEST LONDON

PHASE 1 PROPOSED DRAINAGE LAYOUT SHEET 1

drawn	date	scale @ A0	C1 checked	WA Project No.
KW	MAY'25	1:250	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-PH1-6001	S3	P1

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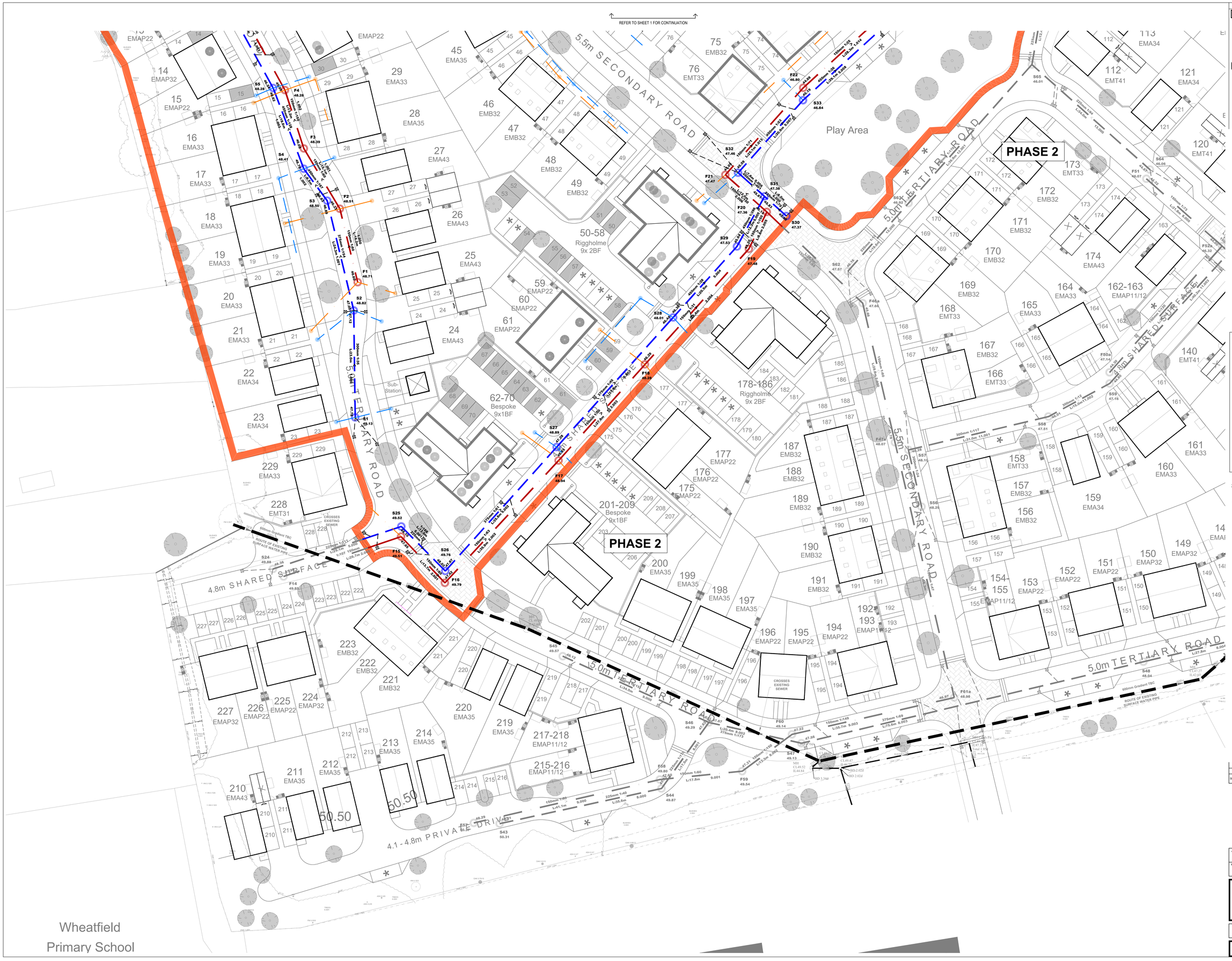

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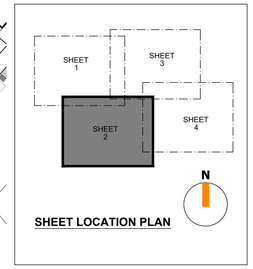

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PHASE 1
PROPOSED DRAINAGE LAYOUT
SHEET 2

drawn	date	scale @ A0	C1 checked	IRHA Project No.
KW	MAY'25	1:250	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-PH1-6002	S3	P1

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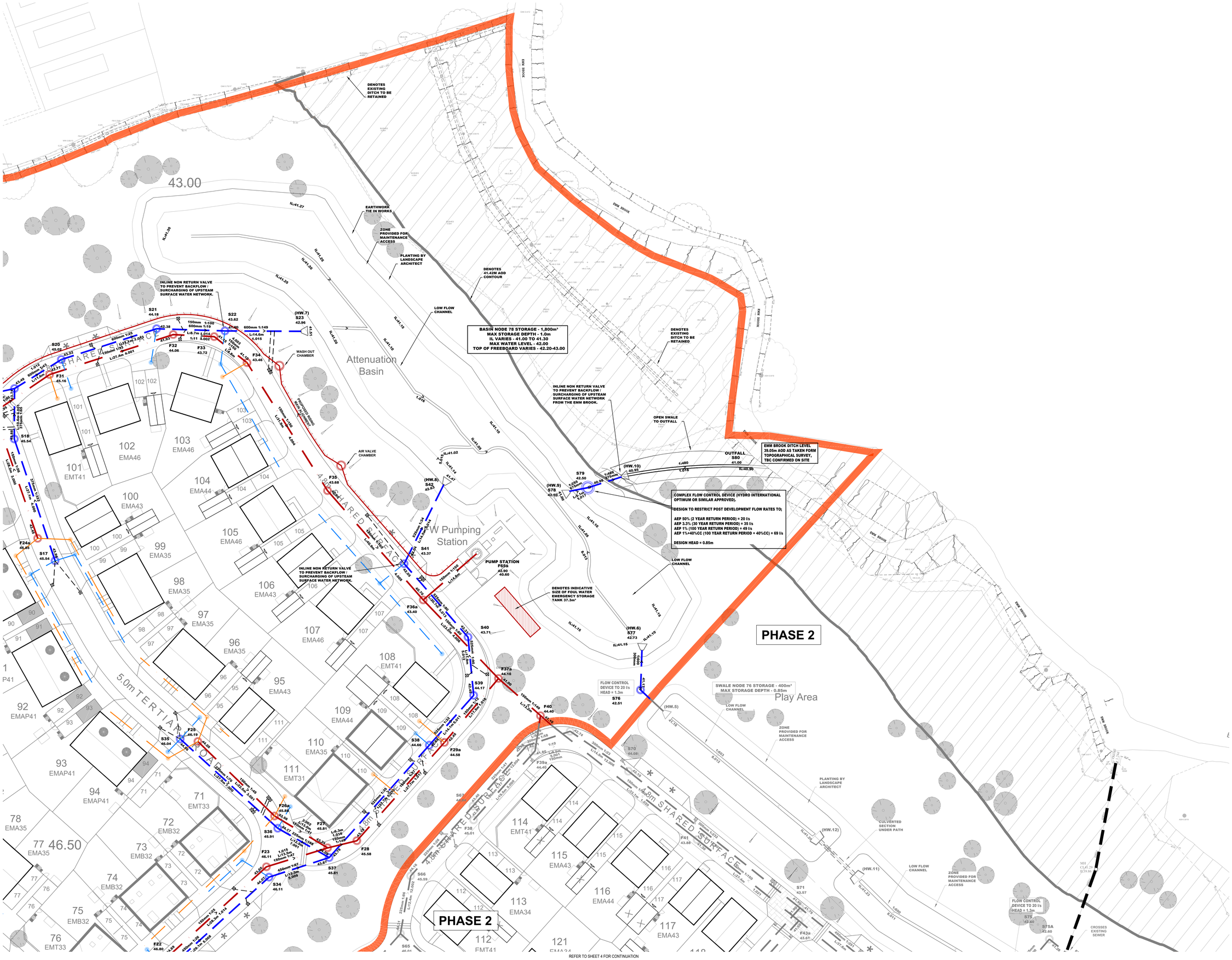

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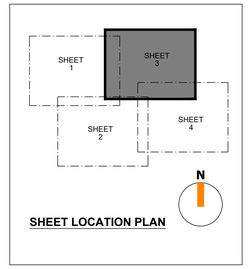

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IESIS-DR-C-PH1-6003	S3	P1

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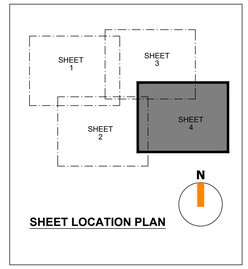

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drawn	date	scale @ A0	C1 checked	IRHA Project No.
KW	MAY'25	1:250	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-PH1-6004	S3	P1

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   WORK IN PROGRESS:

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   CONSTRUCTION:

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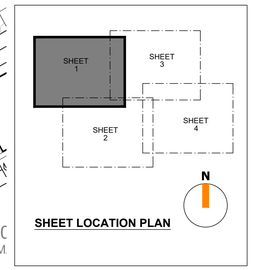
DESIGN SUBJECT TO TECHNICAL APPROVAL

DRAINAGE KEY

- EXISTING THAMES SURFACE WATER SEWER AND EASEMENT TO BE RETAINED
- EXISTING THAMES FOUL WATER SEWER TO BE RETAINED
- S10 10.00 / 1.80 — ADOPTABLE SURFACE WATER MANHOLE; MH REF (FOR DIA SEE MH SCHEDULE); COVER LEVEL; INVERT LEVEL
- CL 10.00 IL 8.80 / 1.80 — PRIVATE SURFACE INSPECTION CHAMBER (600mm UNO STANDARD TYPE !); PLOT DRAINAGE TBC AT DETAILED DESIGN; CL=COVER LEVEL; IL=INVERT LEVEL; 1:30=PIPE GRADIENT
- F10 10.00 / 8.85 — ADOPTABLE FOUL WATER MANHOLE; MH REF (FOR DIA SEE MH SCHEDULE); COVER LEVEL; INVERT LEVEL
- CL 10.00 IL 9.20 / 1:40 — PRIVATE FOUL INSPECTION CHAMBER (600mm UNO STANDARD TYPE !); PLOT DRAINAGE TBC AT DETAILED DESIGN; CL=COVER LEVEL; IL=INVERT LEVEL; 1:30=PIPE GRADIENT
- 10.000 — VERTICAL BACKDROP
- HP RG — HIGHWAY ROAD GULLY, 150mm DIA LATERAL



SHEET LOCATION PLAN

SCALE - 1:250

5m 0 5m 10m 15m 20m

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	02.05.25	KW

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Job Title: LAND AT WINNERSH FARM

Client: TAYLOR WIMPEY WEST LONDON

PHASE 2
PROPOSED DRAINAGE LAYOUT
SHEET 1

drawn	date	scale @ A0	C1 checked	WA Project No.
KW	MAY'25	1:250	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-PH2-6001	S3	P1

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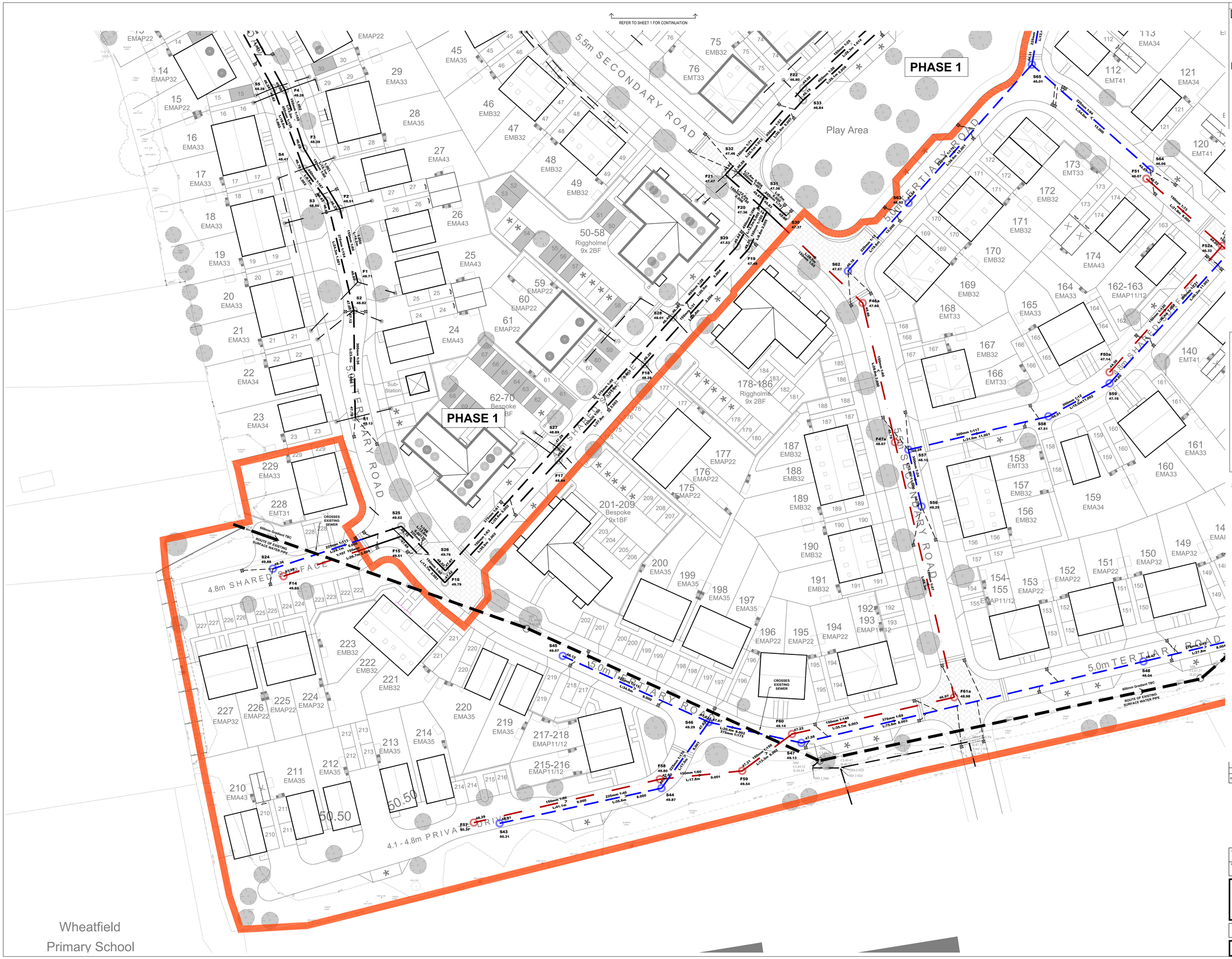

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DESIGN SUBJECT TO TECHNICAL APPROVAL

DRAINAGE KEY

EXISTING THAMES SURFACE WATER SEWER AND EASEMENT TO BE RETAINED

EXISTING THAMES FOUL WATER SEWER TO BE RETAINED

S10 10.00 — ADOPTABLE SURFACE WATER MANHOLE
MH REF (FOR DIA SEE MH SCHEDULE)
COVER LEVEL
INVERT LEVEL
0.65

CL 10.00 IL 9.40 — PRIVATE SURFACE INSPECTION CHAMBER
(1400mm UNO (STANDARD TYPE 1)
PLOT DRAINAGE TBC AT DETAILED DESIGN
1.80

CL=COVER LEVEL
IL=INVERT LEVEL
1:XX=PIPE GRADIENT

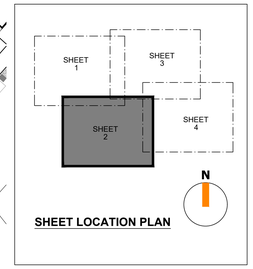
F10 10.00 — ADOPTABLE FOUL WATER MANHOLE
MH REF (FOR DIA SEE MH SCHEDULE)
COVER LEVEL
INVERT LEVEL
0.65

CL 10.00 IL 9.20 — PRIVATE FOUL INSPECTION CHAMBER
(1400mm UNO (STANDARD TYPE 1)
PLOT DRAINAGE TBC AT DETAILED DESIGN
1.40

CL=COVER LEVEL
IL=INVERT LEVEL
1:XX=PIPE GRADIENT

10.000 — VERTICAL BACKDROP

HW RG — HIGHWAY ROAD GULLY, 150mm DIA LATERAL



SHEET LOCATION PLAN

SCALE - 1:250

5m 0 5m 10m 15m 20m

REFER TO SHEET 4 FOR CONTINUATION

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	02.05.25	KW

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Job Title
LAND AT WINNERSH FARM

Client
TAYLOR WIMPEY WEST LONDON

PHASE 2
PROPOSED DRAINAGE LAYOUT
SHEET 2

drawn	date	scale @ A0	C1 checked	IWA Project No.
KW	MAY'25	1:250	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-PH2-6002	S3	P1

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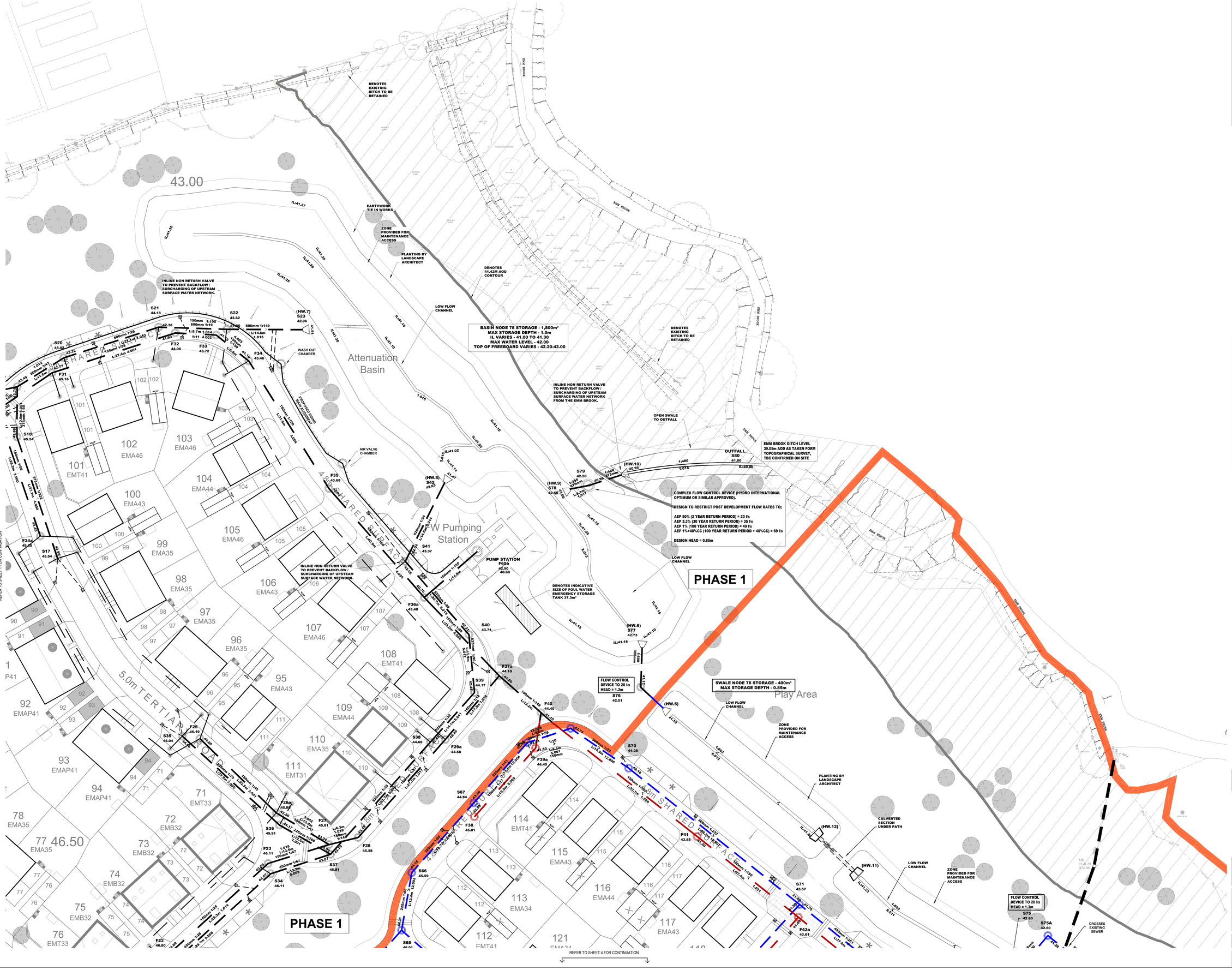

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DRAINAGE KEY

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- EXISTING THAMES FOUL WATER SEWER TO BE RETAINED
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- CL 10.00 IL 9.40 / 1:80 — PRIVATE SURFACE INSPECTION CHAMBER. 840mm UNO (STANDARD TYPE 1) PLOT DRAINAGE TBC AT DETAILED DESIGN. CL=COVER LEVEL, IL=INVERT LEVEL, 1:80=PIPE GRADIENT
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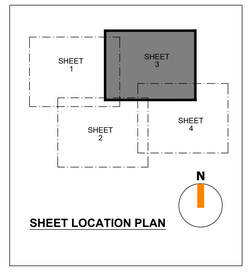
- 10.000 — VERTICAL BACKDROP
- HW 100 RG — HIGHWAY ROAD GULLY, 150mm DIA LATERAL



SHEET LOCATION PLAN

SCALE - 1:250

5m 0 5m 10m 15m 20m

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	02.05.25	KW

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Job Title: LAND AT WINNERSH FARM

Client: TAYLOR WIMPEY WEST LONDON

PHASE 2 PROPOSED DRAINAGE LAYOUT SHEET 3

drawn	date	scale @ A0	C1 checked	RHA Project No.
KW	MAY'25	1:250	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-PH2-6003	S3	P1

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PHASE 1

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S0 - Work in progress

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CONSTRUCTION:
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DRAINAGE KEY

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- EXISTING THAMES FOUL WATER SEWER TO BE RETAINED
- S15 10.50 — ADOPTABLE SURFACE WATER MANHOLE; MH REF (FOR DIA SEE MH SCHEDULE); COVER LEVEL; INVERT LEVEL
- CL 10.00; IL 9.40; 1.80 — PRIVATE SURFACE INSPECTION CHAMBER; Ø450mm UNO (STANDARD TYPE 1); PLOT DRAINAGE TBC AT DETAILED DESIGN; CL=COVER LEVEL; IL=INVERT LEVEL; 1.XX=PIPE GRADIENT
- F15 10.50 — ADOPTABLE FOUL WATER MANHOLE; MH REF (FOR DIA SEE MH SCHEDULE); COVER LEVEL; INVERT LEVEL
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- 10.000 — VERTICAL BACDROP
- HW RC — HIGHWAY ROAD GULLY, 150mm DIA LATERAL

SHEET LOCATION PLAN

SHEET 1 | SHEET 2 | SHEET 3 | SHEET 4 | N

SCALE - 1:250
5m 0 5m 10m 15m 20m

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	02.05.25	KW

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Job Title: LAND AT WINNERSH FARM
Client: TAYLOR WIMPEY WEST LONDON

PHASE 2
PROPOSED DRAINAGE LAYOUT
SHEET 4

drawn	date	scale @ A0	C1 checked	IRHA Project No.
KW	MAY'25	1:250	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-PH2-6004	S3	P1

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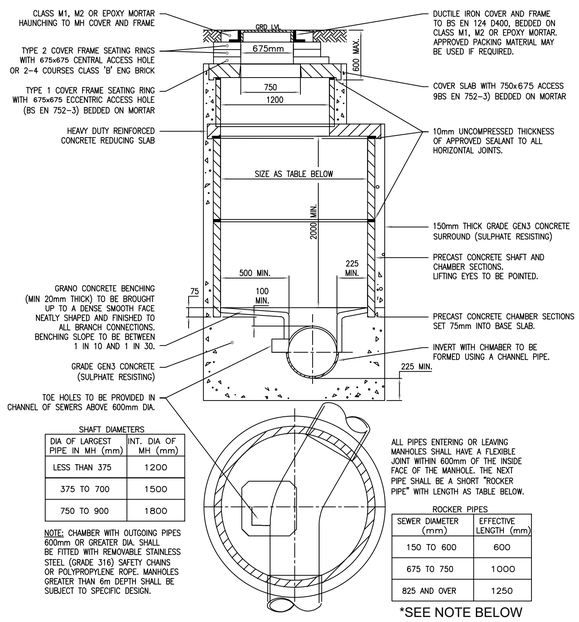


SHAFT DIAMETERS

DIA OF LARGEST PIPE IN MH (mm)	INT. DIA OF MH (mm)
LESS THAN 375	1200
375 TO 700	1500
750 TO 900	1800

NOTE: CHAMBER WITH OUTGOING PIPES 600mm OR GREATER DIA. SHALL BE FITTED WITH REMOVABLE STAINLESS STEEL (GRADE 316) SAFETY CHAINS OR POLYPROPYLENE ROPE. MANHOLES GREATER THAN 6m DEPTH SHALL BE SUBJECT TO SPECIFIC DESIGN.

ALL PIPES ENTERING OR LEAVING MANHOLES SHALL HAVE A FLEXIBLE JOINT WITHIN 600mm OF THE INSIDE FACE OF THE MANHOLE. THE NEXT PIPE SHALL BE A SHORT "ROCKER PIPE" WITH LENGTH AS TABLE BELOW.

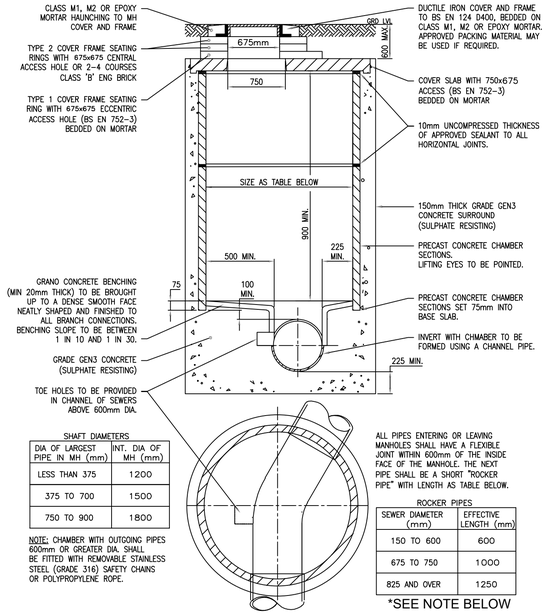
ROCKER PIPES

SEWER DIAMETER (mm)	EFFECTIVE LENGTH (mm)
150 TO 600	600
675 TO 750	1000
825 AND OVER	1250

*SEE NOTE BELOW

TYPICAL MANHOLE DETAIL - TYPE A

Depth from cover level to soffit of pipe 3 m to 6 m



SHAFT DIAMETERS

DIA OF LARGEST PIPE IN MH (mm)	INT. DIA OF MH (mm)
LESS THAN 375	1200
375 TO 700	1500
750 TO 900	1800

NOTE: CHAMBER WITH OUTGOING PIPES 600mm OR GREATER DIA. SHALL BE FITTED WITH REMOVABLE STAINLESS STEEL (GRADE 316) SAFETY CHAINS OR POLYPROPYLENE ROPE.

ALL PIPES ENTERING OR LEAVING MANHOLES SHALL HAVE A FLEXIBLE JOINT WITHIN 600mm OF THE INSIDE FACE OF THE MANHOLE. THE NEXT PIPE SHALL BE A SHORT "ROCKER PIPE" WITH LENGTH AS TABLE BELOW.

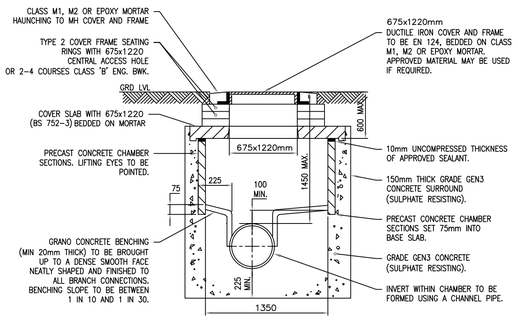
ROCKER PIPES

SEWER DIAMETER (mm)	EFFECTIVE LENGTH (mm)
150 TO 600	600
675 TO 750	1000
825 AND OVER	1250

*SEE NOTE BELOW

TYPICAL MANHOLE DETAIL - TYPE B

Depth from cover level to soffit of pipe 1.5 m to 3 m



SHAFT DIAMETERS

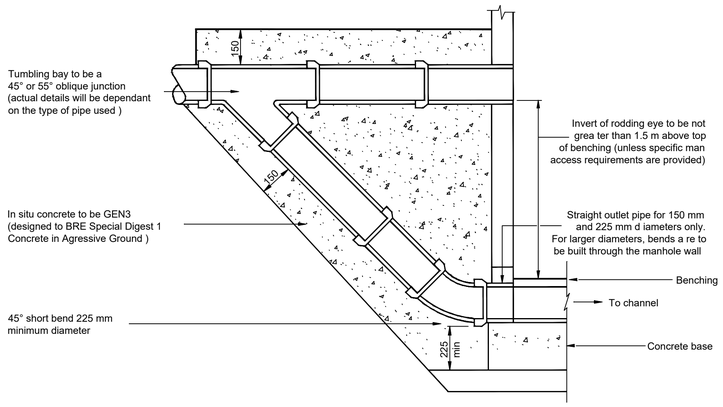
DIA. OF LARGEST PIPE IN MH (mm)	INT. DIA OF MH (mm)
UP TO 375	1350

NOTE: IF PIPE DIAMETER EXCEEDS 375mm USE MH TYPE B OR C

ALL PIPES ENTERING OR LEAVING MANHOLES SHALL HAVE A FLEXIBLE JOINT WITHIN 600mm OF THE INSIDE FACE OF THE MANHOLE. THE NEXT PIPE SHALL BE A SHORT "ROCKER PIPE" 600mm LONG.

TYPICAL MANHOLE DETAIL - MODIFIED TYPE E

Depth from cover level to soffit of pipe 1.0 - 1.5 m



External Ramped Backdrop

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SUBJECT TO TECHNICAL APPROVAL

DESIGNED TO CURRENT VERSION OF WATER UK'S 'DESIGN AND CONSTRUCTION GUIDANCE

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	16.09.24	KW

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0207 600 2912
www.iesisgroup.com

Job Title
LAND AT WINNERSH FARM

Client
TAYLOR WIMPEY WEST LONDON

DRAINAGE DETAILS
SHEET 1

drawn	date	scale @ A1	C1 checked	IESIS Project No.
KW	SEPT'24	NTS	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-6011	S3	P1

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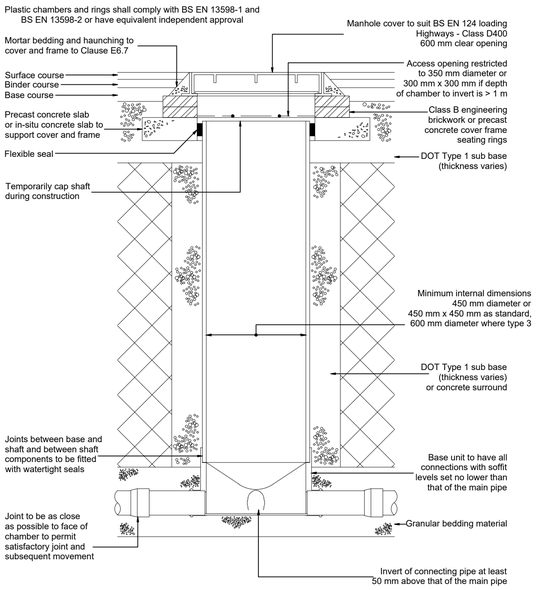
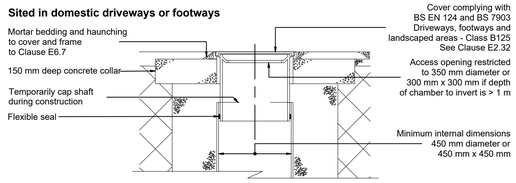
FIGURE B.16
TYPICAL INSPECTION CHAMBER DETAIL - WHA TYPE 1 (Flexible material detail)
Maximum depth from cover level to soffit of pipe
in areas subject to vehicle loading 3 m, non-entry
WHA TYPE 3 WHERE 600mm INTERNAL DIA.

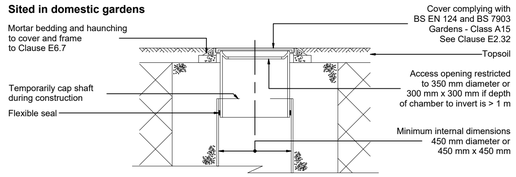


Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

Sited in domestic driveways or footways

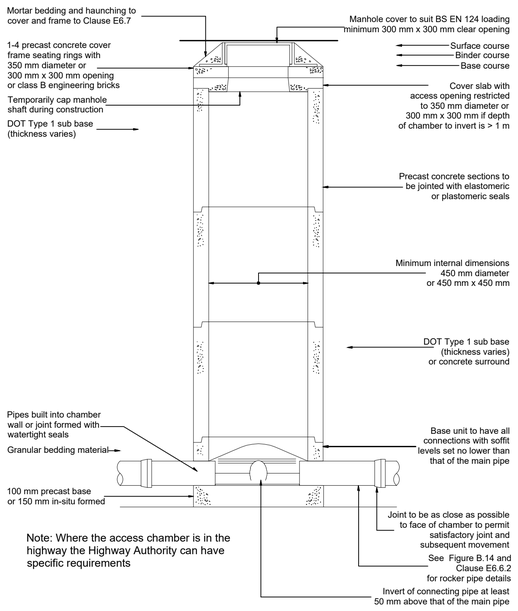


Sited in domestic gardens



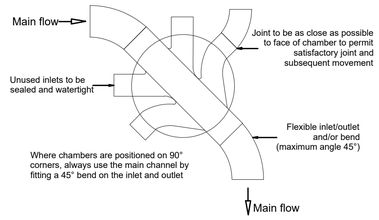
Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

FIGURE B.17
ALTERNATIVE TOP DETAILS FOR LIGHT VEHICLE LOADING AND LANDSCAPED AREAS
Plastic chambers and rings shall comply with BS EN 13598-1 and BS EN 13598-2 or have equivalent independent approval



Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

FIGURE B.18
TYPICAL INSPECTION CHAMBER DETAIL (Rigid material detail)
Maximum depth from cover level to soffit of pipe
in areas subject to vehicle loading 3 m, non-entry



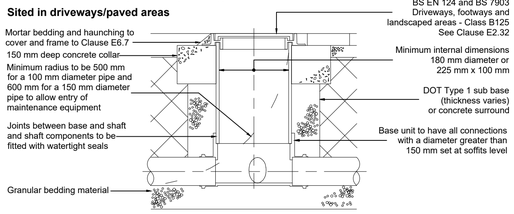
Note: Where a bend is used immediately outside the manhole, this may be used as the rocker pipe

FIGURE B.21
TYPICAL INSPECTION CHAMBER DETAIL - WHA TYPE 2 (Flexible material detail)
Maximum depth from cover level to soffit of pipe 2 m, non-entry

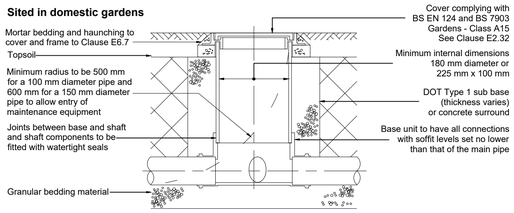
FIGURE B.21
TYPICAL INSPECTION CHAMBER DETAIL - WHA TYPE 2 (Flexible material detail)
Maximum depth from cover level to soffit of pipe 2 m, non-entry

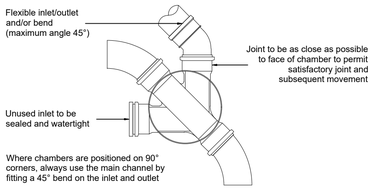
Plastic chambers and rings shall comply with BS EN 13598-1 and BS EN 13598-2 or have equivalent independent approval

Sited in driveways/paved areas



Sited in domestic gardens





Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

FIGURE B.26
JOINTS FOR CONCRETE ENCASED PIPES

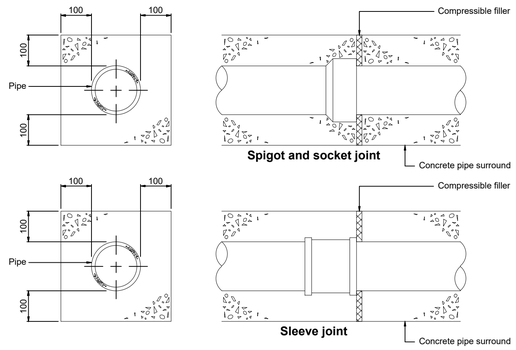
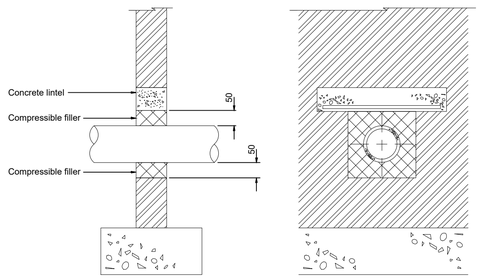


FIGURE B.27
PROTECTION OF PIPES PENETRATING SINGLE LEAF BOUNDARY WALLS



Not to scale, dimensions in millimetres
(all dimensions are minimum sizes)

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	16.09.24	KW

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Job Title
LAND AT WINNERSH FARM

Client
TAYLOR WIMPEY WEST LONDON

DRAINAGE DETAILS
SHEET 2

drawn	date	scale @ A1	C1 checked	IESIS Project No.
KW	SEPT'24	NTS	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-6012	S3	P1

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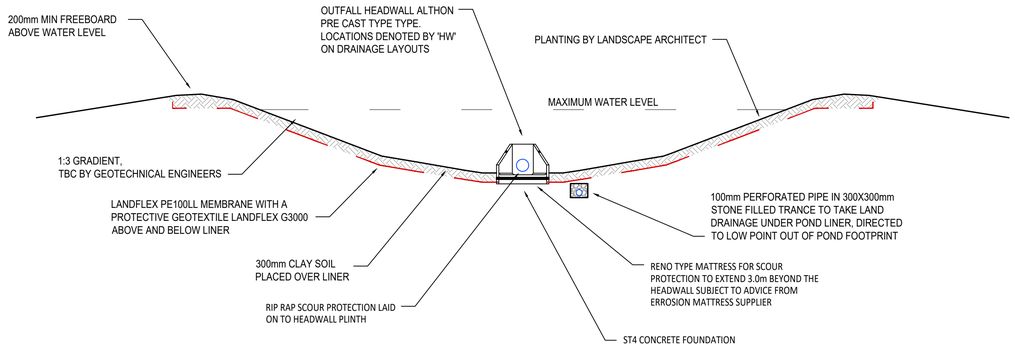
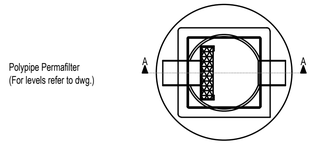
TYPICAL SECTION THROUGH ATTENUATION SWALES / BASINS

FENCING REQUIREMENTS TO BE CONFIRMED BY LANDSCAPE ARCHITECT

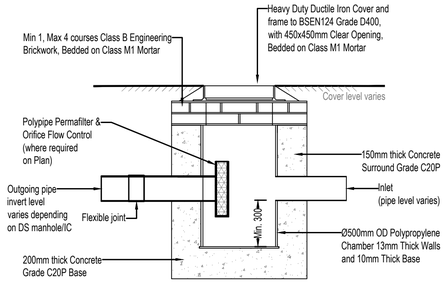
SAFETY SIGN, DISPLAYED IN VISIBLE LOCATION TO READ;

"STORM WATER LAGOON WARNING
This areas is used to store flood water.
Deep water may be present and for your own safety you re requested not to enter at such times".





PLAN
Scale (1:20)



SECTION A-A

TYPE 5 Ø500mm POLYPIPE CATCHPIT INSPECTION CHAMBER INCORPORATING FLOW CONTROL AND DEBRIS DEVICE

NOTES

1. DO NOT SCALE THIS DRAWING ON PRINT OR ELECTRONICALLY. WORK FROM FIGURED DIMENSIONS ONLY.
2. No deviation from the details shown on this drawing is allowed without IESIS's prior permission in writing.
3. Read this drawing with all Architects, Service Engineers and IESIS's relevant details and drawings. **NB.** Setting-out dimensions as per the Architect's drawings take precedence.
4. All work is to be in accordance with the relevant specifications issued by IESIS, British Standard Codes of Practice, Statutory requirements and the Contract Documents.
5. DRAWING STATUS

   P : **PRELIMINARY** - Evolving drawings for approvals,Tenders, Billings, etc.

   C : **CONSTRUCTION** - Fully developed drawings issued under instruction for construction.

   ONLY STATUS C DRAWINGS TO BE USED FOR CONSTRUCTION.

6. SUITABILITY CODE

   WORK IN PROGRESS:

   S0 - Work in progress

   SHARED (NON-CONTRACTUAL):

   S1 - For coordination, **S2** - For information, **S3** - For internal review and comment, **S4** - For construction approval.

   DOCUMENTATION (FOR CONTRACTOR PURPOSES):

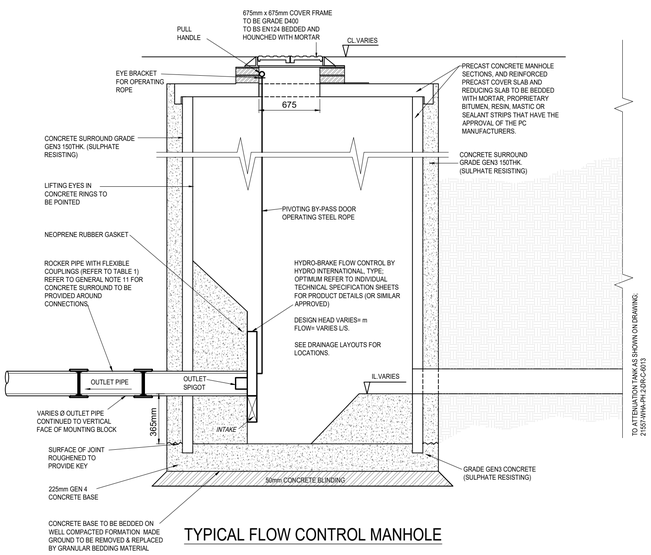
   D1 - For costing, **D2** - For Tender, **D3** - For contractor design, **D4** - For manufacture / procurement.

   CONSTRUCTION:

   A - For construction, **B** - For construction but with comments (i.e. areas in abeyance), **C** - Comprehensive revisions required.

SUBJECT TO TECHNICAL APPROVAL

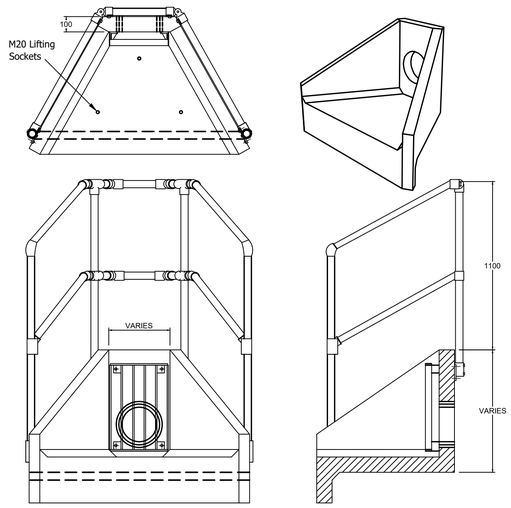
DESIGNED TO CURRENT VERSION OF WATER UK'S 'DESIGN AND CONSTRUCTION GUIDANCE



TYPICAL FLOW CONTROL MANHOLE

CONTROL MANHOLE NOTES

1. ALL DIMENSION ARE IN MILLIMETERS AND METERS
2. PRECAST CONCRETE UNITS TO BE BS5911 PART 200 AND TO BE CONSTRUCTED WITH A MINIMUM CLASS 3 SULPHATE RESISTING CEMENT.
3. ALL INSITU CONCRETE TO BE CLASS STANDARD MIX ST4 (GRADE C20) IN ACCORDANCE WITH SECTION 4 OF BS5328 PART 2.
4. MATERIALS FOR JOINTING MANHOLE RINGS TO BE A RUBBER BITUMEN COMPOUND OF APPROVED MANUFACTURER 'TOKSTRIP' OR SIMILAR.
5. ALL BRICKWORK TO BE CLASS B ENGINEERING -2 COURSES MIN.4 COURSES MAX; 225mm THICK - BS5628 PART 3.
6. 20mm THICK GRANOLITHIC CONCRETE BENCHING TO BE BROUGHT UP TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS. WHERE BENCHING IS LESS THAN 450mm WIDE, SLOPE TO BE 1:10; MORE THAN 450mm, 1:30
7. PIPES ENTERING MANHOLES TO HAVE A FLEXIBLE JOINT AS CLOSE AS FEASIBLE TO OUTSIDE FACE OF ANY STRUCTURE INTO WHICH THE PIPE IS BUILT IN ORDER TO FACILITATE MOVEMENT OF THE JOINT. THE LENGTH OF THE NEXT PIPE (ROCKER PIPELINES, BEDDING, LAYING AND JOINTING OF PIPES AND BACKFILING OF TRENCHES SHALL BE IN ACCORDANCE WITH THE DCG GUIDANCE.



HEADWALL ALTHON SFA TYPE (TYPICAL SPECIFICATION, VARIES)
OR SIMILAR APPROVED. WITH KEE KLAMP HANDRAIL AND SAFETY GRILLE.
Scale 1:20

Status/Rev	Description	Date	By
P1	ISSUED FOR APPROVAL	16.09.24	KW

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0207 600 2912
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Job Title
LAND AT WINNERSH FARM

Client
TAYLOR WIMPEY WEST LONDON

DRAINAGE DETAILS
SHEET 3

drawn	date	scale @ A1	C1 checked	IESIS Project No.
KW	SEPT'24	NTS	-	SE2326

Drg No.	Suitability	Status/Revision
IESIS-DR-C-6013	S3	P1

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Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.750
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		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.075	5.00	49.134	1200	478918.683	170622.890	1.355
2	0.085	5.00	48.821	1350	478918.364	170645.898	1.774
3	0.050	5.00	48.501	1350	478912.657	170669.494	1.686
4	0.050	5.00	48.414	1350	478907.616	170676.370	1.650
5	0.085	5.00	48.276	1350	478901.040	170693.726	1.732
6	0.095	5.00	47.976	1500	478883.084	170726.254	1.753
7	0.050	5.00	47.841	1500	478878.697	170742.520	1.807
8	0.052	5.00	48.034	1200	478848.505	170765.973	1.425
9	0.170	5.00	47.750	1500	478868.200	170774.842	1.860
10	0.055	5.00	47.040	1500	478904.735	170786.668	1.877
11	0.145	5.00	47.510	1350	478962.980	170711.961	1.506
12	0.125	5.00	47.200	1350	478943.908	170746.013	1.824
13	0.045	5.00	46.950	1500	478928.626	170773.299	1.798
14	0.030	5.00	46.850	1500	478918.819	170784.987	1.828
15	0.040	5.00	46.430	1500	478931.702	170799.165	1.800
16	0.040	5.00	45.810	1500	478961.248	170809.058	2.283
17	0.130	5.00	45.536	1350	478991.410	170777.411	1.575
18	0.050	5.00	45.536	1350	478982.811	170803.093	1.659
19	0.020	5.00	45.494	1500	478982.864	170813.710	2.005
20	0.020	5.00	45.020	1500	478992.731	170819.830	1.800
21	0.020	5.00	44.180	1500	479012.808	170826.330	1.800
22	0.055	5.00	43.619	1500	479027.198	170825.871	2.015
23	0.025	5.00	42.963	1500	479041.847	170825.854	1.457
24	0.065	5.00	49.875	1200	478900.986	170590.298	1.518
25	0.035	5.00	49.520	1200	478928.596	170599.446	1.425
26	0.045	5.00	49.760	1200	478938.052	170589.872	1.895
27	0.110	5.00	48.894	1350	478962.003	170616.526	1.614
28	0.180	5.00	48.014	1350	478987.049	170644.397	1.650
29	0.020	5.00	47.531	1350	479000.766	170659.662	1.894
30	0.066	5.00	47.371	1200	479012.669	170665.067	1.425
31			47.383	1350	479006.691	170670.424	1.777
32	0.110	5.00	47.457	1350	479001.012	170675.511	1.870
33	0.045	5.00	46.845	1350	479014.975	170691.111	1.652
34	0.045	5.00	46.110	1350	479036.494	170710.709	2.043
35		5.00	46.035	1200	479017.785	170739.822	1.471
36			45.909	1200	479038.331	170721.018	1.743
37	0.050	5.00	45.811	1350	479049.156	170714.831	2.019
38	0.045	5.00	44.661	1500	479070.263	170738.541	1.782
39	0.020	5.00	44.170	1500	479079.609	170749.041	1.725
40	0.015	5.00	43.710	1500	479078.343	170760.922	1.398
41	0.085	5.00	43.366	1500	479064.965	170776.780	1.325
42			42.628	1500	479076.408	170785.721	1.163

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
77	0.075	5.00	42.733	1200	479116.335	170761.382	1.660
78	0.310	5.00	42.500	1500	479098.236	170792.166	1.500
79			42.500	1500	479103.303	170792.747	1.520
80			42.000	1500	479141.477	170797.122	1.100

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	23.010	0.600	47.779	47.122	0.657	35.0	300	5.14	50.0
1.001	2	3	24.276	0.600	47.047	46.890	0.157	154.5	375	5.42	50.0
1.002	3	4	8.526	0.600	46.815	46.764	0.051	167.0	450	5.51	49.7
1.003	4	5	18.560	0.600	46.764	46.619	0.145	128.2	450	5.68	49.0
1.004	5	6	37.155	0.600	46.544	46.223	0.322	115.5	525	5.98	47.7
1.005	6	7	16.847	0.600	46.223	46.034	0.188	89.4	525	6.10	47.3
1.006	7	9	33.984	0.600	46.034	45.965	0.069	492.5	525	6.67	45.3
2.000	8	9	21.600	0.600	46.609	46.265	0.344	62.8	225	5.22	50.0
1.007	9	10	38.401	0.600	45.890	45.163	0.727	52.8	600	6.86	44.7
1.008	10	14	14.184	0.600	45.163	45.022	0.142	100.2	600	6.95	44.4
3.000	11	12	39.029	0.600	46.004	45.451	0.553	70.6	375	5.30	50.0
3.001	12	13	31.274	0.600	45.376	45.227	0.149	209.9	450	5.67	49.0
3.002	13	14	15.257	0.600	45.152	45.097	0.055	276.7	525	5.86	48.2
1.009	14	15	19.157	0.600	45.022	44.630	0.392	48.9	600	7.05	44.1
1.010	15	16	31.158	0.600	44.630	43.527	1.103	28.2	600	7.16	43.7
1.011	16	19	22.111	0.600	43.527	43.489	0.038	581.9	600	7.53	42.7
4.000	17	18	27.083	0.600	43.961	43.877	0.084	322.4	375	5.45	50.0
4.001	18	19	10.617	0.600	43.877	43.714	0.163	65.0	375	5.53	49.6
1.012	19	20	11.611	0.600	43.489	43.220	0.269	43.2	600	7.58	42.5

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.665	188.3	10.2	1.055	1.399	0.075	0.0	47	1.445
1.001	1.455	160.7	21.7	1.399	1.236	0.160	0.0	93	1.027
1.002	1.570	249.7	28.3	1.236	1.200	0.210	0.0	102	1.056
1.003	1.794	285.3	34.5	1.200	1.207	0.260	0.0	105	1.230
1.004	2.083	450.9	44.6	1.207	1.228	0.345	0.0	110	1.350
1.005	2.369	512.9	56.4	1.228	1.282	0.440	0.0	116	1.580
1.006	1.002	217.0	60.2	1.282	1.260	0.490	0.0	188	0.863
2.000	1.653	65.7	7.0	1.200	1.260	0.052	0.0	50	1.088
1.007	3.355	948.5	86.2	1.260	1.277	0.712	0.0	120	2.122
1.008	2.433	687.8	92.2	1.277	1.228	0.767	0.0	147	1.718
3.000	2.159	238.4	19.7	1.131	1.374	0.145	0.0	72	1.323
3.001	1.399	222.5	35.9	1.374	1.273	0.270	0.0	121	1.036
3.002	1.341	290.3	41.2	1.273	1.228	0.315	0.0	133	0.961
1.009	3.488	986.1	132.8	1.228	1.200	1.112	0.0	147	2.470
1.010	4.593	1298.7	136.6	1.200	1.683	1.152	0.0	130	3.033
1.011	1.002	283.3	137.9	1.683	1.405	1.192	0.0	295	0.995
4.000	1.003	110.8	17.6	1.200	1.284	0.130	0.0	101	0.741
4.001	2.250	248.5	24.2	1.284	1.405	0.180	0.0	78	1.443
1.012	3.711	1049.2	160.5	1.405	1.200	1.392	0.0	157	2.723

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.013	20	21	21.103	0.600	43.220	42.380	0.840	25.1	600	7.65	42.3
1.014	21	22	14.397	0.600	42.380	41.604	0.776	18.5	600	7.69	42.2
1.015	22	23	14.649	0.600	41.604	41.506	0.098	149.5	600	7.82	41.9
1.016	23	78	65.686	0.600	41.506	41.000	0.506	129.8	675	8.29	40.6
5.000	24	25	29.086	0.600	48.357	48.095	0.262	111.0	225	5.39	50.0
5.001	25	26	13.457	0.600	48.095	48.015	0.080	168.2	225	5.61	49.3
5.002	26	27	35.834	0.600	47.865	47.280	0.585	61.3	375	5.87	48.2
5.003	27	28	37.471	0.600	47.280	46.439	0.841	44.5	375	6.10	47.3
5.004	28	29	20.523	0.600	46.364	45.637	0.727	28.2	450	6.19	47.0
5.005	29	31	12.285	0.600	45.637	45.606	0.031	396.3	450	6.39	46.3
6.000	30	31	8.027	0.600	45.946	45.831	0.115	70.1	225	5.09	50.0
5.006	31	32	7.624	0.600	45.606	45.587	0.019	401.3	450	6.52	45.9
5.007	32	33	20.936	0.600	45.587	45.193	0.395	53.1	450	6.64	45.4
5.008	33	34	29.106	0.600	45.193	44.067	1.126	25.8	450	6.76	45.0
5.009	34	37	13.316	0.600	44.067	43.867	0.200	66.7	450	6.85	44.7
7.000	35	36	27.852	0.600	44.564	44.166	0.398	70.0	225	5.30	50.0
7.001	36	37	12.468	0.600	44.166	44.092	0.074	168.5	225	5.50	49.7
5.010	37	38	31.744	0.600	43.792	42.879	0.913	34.8	525	6.99	44.2
5.011	38	39	14.057	0.600	42.879	42.445	0.434	32.4	525	7.05	44.1
5.012	39	40	11.948	0.600	42.445	42.312	0.133	90.0	525	7.14	43.8
5.013	40	41	20.747	0.600	42.312	42.053	0.259	80.1	525	7.27	43.4
5.014	41	42	14.522	0.600	42.041	41.615	0.426	34.1	525	7.34	43.2
5.015	42	78	22.760	0.600	41.465	41.000	0.465	48.9	675	7.44	42.9
8.013	77	78	35.710	0.600	41.073	41.000	0.073	489.2	225	6.02	47.6

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.013	4.871	1377.2	162.0	1.200	1.200	1.412	0.0	137	3.321
1.014	5.672	1603.6	163.8	1.200	1.415	1.432	0.0	128	3.718
1.015	1.989	562.4	168.7	1.415	0.857	1.487	0.0	224	1.748
1.016	2.299	822.5	166.4	0.782	0.825	1.512	0.0	205	1.821
5.000	1.240	49.3	8.8	1.293	1.200	0.065	0.0	64	0.939
5.001	1.005	40.0	13.4	1.200	1.520	0.100	0.0	89	0.905
5.002	2.318	256.0	18.9	1.520	1.239	0.145	0.0	68	1.378
5.003	2.721	300.5	32.7	1.239	1.200	0.255	0.0	82	1.801
5.004	3.836	610.1	55.4	1.200	1.444	0.435	0.0	91	2.429
5.005	1.015	161.4	57.1	1.444	1.327	0.455	0.0	184	0.930
6.000	1.564	62.2	8.9	1.200	1.327	0.066	0.0	58	1.120
5.006	1.008	160.4	64.8	1.327	1.420	0.521	0.0	199	0.957
5.007	2.795	444.6	77.7	1.420	1.202	0.631	0.0	126	2.120
5.008	4.011	637.9	82.5	1.202	1.593	0.676	0.0	109	2.806
5.009	2.492	396.3	87.4	1.593	1.494	0.721	0.0	143	2.017
7.000	1.565	62.2	0.0	1.246	1.518	0.000	0.0	0	0.000
7.001	1.004	39.9	0.0	1.518	1.494	0.000	0.0	0	0.000
5.010	3.808	824.4	92.4	1.494	1.257	0.771	0.0	117	2.555
5.011	3.943	853.6	97.4	1.257	1.200	0.816	0.0	119	2.665
5.012	2.361	511.2	99.3	1.200	0.873	0.836	0.0	156	1.846
5.013	2.504	542.0	100.1	0.873	0.788	0.851	0.0	152	1.931
5.014	3.845	832.4	109.7	0.800	0.488	0.936	0.0	127	2.702
5.015	3.751	1342.4	108.9	0.488	0.825	0.936	0.0	128	2.304
8.013	0.584	23.2	9.7	1.435	1.275	0.075	0.0	102	0.559

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.017	78	79	5.100	0.600	41.000	40.980	0.020	255.0	675	8.34	40.5
1.018	79	80	38.424	0.600	40.980	40.900	0.080	480.3	675	8.88	39.2

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.017	1.636	585.5	310.8	0.825	0.845	2.833	0.0	350	1.659
1.018	1.189	425.4	300.6	0.845	0.425	2.833	0.0	420	1.284

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	✓	Check Discharge Volume	✓
Summer CV	0.750	Drain Down Time (mins)	240	100 year 360 minute (m³)	
Winter CV	0.840	Additional Storage (m³/ha)	20.0		
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

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 %)
2	0	0	0
30	0	0	0
100	0	0	0
100	40	10	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

Node 79 Online Head/Flow Control

Flap Valve	x	Invert Level (m)	40.980	Design Flow (l/s)	69.0
Replaces Downstream Link	✓	Design Depth (m)	0.850		

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Head (m)	Flow (l/s)
0.850	43.500

Node 78 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	41.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	2100.0	0.0	1.000	2100.0	0.0	1.001	0.0	0.0

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.826	0.047	9.9	0.1058	0.0000	OK
15 minute winter	2	10	47.141	0.094	21.0	0.2239	0.0000	OK
15 minute winter	3	10	46.926	0.111	27.1	0.2242	0.0000	OK
15 minute winter	4	11	46.873	0.109	33.4	0.2223	0.0000	OK
15 minute winter	5	11	46.656	0.112	44.2	0.2703	0.0000	OK
15 minute winter	6	11	46.349	0.127	56.4	0.3607	0.0000	OK
15 minute winter	7	11	46.229	0.195	63.2	0.4529	0.0000	OK
15 minute winter	8	10	46.659	0.050	6.9	0.0926	0.0000	OK
15 minute winter	9	11	46.012	0.122	89.3	0.4373	0.0000	OK
15 minute winter	10	11	45.331	0.168	95.7	0.3952	0.0000	OK
15 minute winter	11	10	46.076	0.072	19.2	0.2414	0.0000	OK
15 minute winter	12	11	45.499	0.123	35.2	0.3459	0.0000	OK
15 minute winter	13	11	45.292	0.140	40.5	0.3182	0.0000	OK
15 minute winter	14	11	45.190	0.168	139.0	0.3524	0.0000	OK
15 minute winter	15	11	44.762	0.132	143.5	0.2914	0.0000	OK
15 minute winter	16	12	43.795	0.268	147.6	0.5680	0.0000	OK
15 minute winter	17	10	44.061	0.100	17.2	0.3093	0.0000	OK
15 minute winter	18	10	43.960	0.083	23.4	0.1683	0.0000	OK
15 minute winter	19	12	43.680	0.191	171.3	0.3757	0.0000	OK
15 minute winter	20	12	43.377	0.157	174.5	0.3132	0.0000	OK
15 minute winter	21	12	42.515	0.135	177.2	0.2680	0.0000	OK
15 minute winter	22	11	41.900	0.296	183.4	0.6858	0.0000	OK
15 minute winter	23	11	41.839	0.333	188.5	0.7029	0.0000	OK
15 minute winter	24	10	48.420	0.063	8.6	0.1244	0.0000	OK
15 minute winter	25	11	48.187	0.092	13.0	0.1496	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	9.8	1.401	0.052	0.1602	
15 minute winter	2	1.001	3	20.6	0.996	0.128	0.5041	
15 minute winter	3	1.002	4	27.0	0.903	0.108	0.2547	
15 minute winter	4	1.003	5	33.6	1.184	0.118	0.5267	
15 minute winter	5	1.004	6	44.5	1.212	0.099	1.3672	
15 minute winter	6	1.005	7	57.0	1.018	0.111	0.9516	
15 minute winter	7	1.006	9	61.8	0.958	0.285	2.2113	
15 minute winter	8	2.000	9	6.7	1.057	0.103	0.1378	
15 minute winter	9	1.007	10	88.8	1.699	0.094	2.0212	
15 minute winter	10	1.008	14	94.6	1.485	0.137	0.9154	
15 minute winter	11	3.000	12	18.6	1.291	0.078	0.5642	
15 minute winter	12	3.001	13	34.9	1.019	0.157	1.0710	
15 minute winter	13	3.002	14	40.8	0.928	0.140	0.6710	
15 minute winter	14	1.009	15	138.5	2.520	0.140	1.0565	
15 minute winter	15	1.010	16	142.6	1.737	0.110	2.6099	
15 minute winter	16	1.011	19	148.4	1.497	0.524	2.1996	
15 minute winter	17	4.000	18	16.8	0.811	0.152	0.5639	
15 minute winter	18	4.001	19	23.2	1.360	0.093	0.1809	
15 minute winter	19	1.012	20	172.4	2.541	0.164	0.7895	
15 minute winter	20	1.013	21	175.1	3.307	0.127	1.1193	
15 minute winter	21	1.014	22	177.7	1.994	0.111	1.3330	
15 minute winter	22	1.015	23	185.9	1.384	0.331	2.1929	
15 minute winter	23	1.016	78	202.3	2.901	0.246	5.9017	
15 minute winter	24	5.000	25	8.4	0.704	0.171	0.3512	
15 minute winter	25	5.001	26	12.9	0.873	0.322	0.1982	

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	11	47.933	0.068	18.5	0.1086	0.0000	OK
15 minute winter	27	11	47.365	0.085	32.7	0.2370	0.0000	OK
15 minute winter	28	11	46.454	0.090	55.1	0.3259	0.0000	OK
15 minute winter	29	11	45.840	0.203	57.7	0.3334	0.0000	OK
15 minute winter	30	10	46.007	0.061	8.8	0.1247	0.0000	OK
15 minute winter	31	11	45.793	0.186	66.4	0.2666	0.0000	OK
15 minute winter	32	11	45.729	0.141	80.3	0.3681	0.0000	OK
15 minute winter	33	11	45.303	0.110	86.1	0.2178	0.0000	OK
15 minute winter	34	11	44.231	0.165	91.8	0.3081	0.0000	OK
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute summer	36	1	44.166	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37	11	43.917	0.125	97.8	0.2412	0.0000	OK
15 minute winter	38	11	43.008	0.130	103.3	0.2951	0.0000	OK
15 minute winter	39	11	42.628	0.183	105.4	0.3667	0.0000	OK
15 minute winter	40	11	42.482	0.170	106.7	0.3376	0.0000	OK
15 minute winter	41	11	42.188	0.147	116.0	0.4469	0.0000	OK
15 minute summer	42	10	41.708	0.243	110.9	0.4302	0.0000	OK
15 minute winter	77	8	41.217	0.144	9.9	0.2936	0.0000	OK
480 minute winter	78	392	41.217	0.217	56.4	456.5710	0.0000	OK
480 minute winter	79	392	41.217	0.236	12.1	0.4179	0.0000	OK
15 minute summer	80	1	40.900	0.000	4.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	18.6	1.160	0.073	0.5753	
15 minute winter	27	5.003	28	32.6	1.783	0.108	0.6844	
15 minute winter	28	5.004	29	55.2	1.243	0.090	0.9432	
15 minute winter	29	5.005	31	58.1	0.885	0.360	0.8064	
15 minute winter	30	6.000	31	8.7	1.059	0.139	0.0657	
15 minute winter	31	5.006	32	66.6	1.280	0.415	0.3980	
15 minute winter	32	5.007	33	80.6	2.229	0.181	0.7590	
15 minute winter	33	5.008	34	86.2	2.107	0.135	1.2005	
15 minute winter	34	5.009	37	91.7	1.901	0.231	0.6423	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0000	
15 minute summer	36	7.001	37	0.0	0.000	0.000	0.0000	
15 minute winter	37	5.010	38	97.7	2.418	0.119	1.2834	
15 minute winter	38	5.011	39	102.9	1.906	0.121	0.7635	
15 minute winter	39	5.012	40	104.8	1.642	0.205	0.7632	
15 minute winter	40	5.013	41	106.6	1.879	0.197	1.1781	
15 minute winter	41	5.014	42	116.2	2.562	0.140	0.6592	
15 minute summer	42	5.015	78	114.8	3.121	0.086	1.3363	
15 minute winter	77	8.013	78	11.0	1.116	0.475	0.4840	
480 minute winter	78	1.017	79	12.1	0.350	0.021	0.5360	
480 minute winter	79	Head/Flow	80	12.1				337.4

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.859	0.080	29.5	0.1797	0.0000	OK
15 minute winter	2	10	47.218	0.171	62.7	0.4093	0.0000	OK
15 minute winter	3	10	47.025	0.210	81.0	0.4250	0.0000	OK
15 minute winter	4	10	46.964	0.200	100.1	0.4071	0.0000	OK
15 minute winter	5	10	46.750	0.206	131.9	0.4960	0.0000	OK
15 minute winter	6	11	46.474	0.251	167.5	0.7168	0.0000	OK
15 minute winter	7	11	46.399	0.365	187.4	0.8478	0.0000	OK
15 minute winter	8	10	46.698	0.089	20.4	0.1659	0.0000	OK
15 minute winter	9	11	46.114	0.224	269.4	0.8066	0.0000	OK
15 minute winter	10	11	45.497	0.333	289.9	0.7846	0.0000	OK
15 minute winter	11	10	46.128	0.124	57.0	0.4178	0.0000	OK
15 minute winter	12	10	45.604	0.229	105.5	0.6403	0.0000	OK
15 minute winter	13	11	45.417	0.265	120.6	0.6014	0.0000	OK
15 minute winter	14	11	45.345	0.324	421.3	0.6777	0.0000	OK
15 minute winter	15	11	44.876	0.246	436.1	0.5433	0.0000	OK
15 minute winter	16	11	44.076	0.550	450.8	1.1642	0.0000	OK
15 minute winter	17	10	44.143	0.182	51.1	0.5603	0.0000	OK
15 minute winter	18	10	44.030	0.153	69.9	0.3119	0.0000	OK
15 minute winter	19	11	43.873	0.384	522.3	0.7550	0.0000	OK
15 minute winter	20	11	43.516	0.296	527.6	0.5885	0.0000	OK
15 minute winter	21	11	42.686	0.306	533.3	0.6091	0.0000	OK
15 minute winter	22	11	42.243	0.640	551.2	1.4794	0.0000	SURCHARGED
15 minute summer	23	11	42.046	0.540	541.0	1.1396	0.0000	OK
15 minute winter	24	10	48.470	0.113	25.5	0.2243	0.0000	OK
15 minute winter	25	11	48.287	0.192	39.0	0.3114	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	29.3	1.742	0.156	0.3981	
15 minute winter	2	1.001	3	61.4	1.325	0.382	1.1305	
15 minute winter	3	1.002	4	80.5	1.146	0.322	0.5986	
15 minute winter	4	1.003	5	99.7	1.570	0.349	1.1789	
15 minute winter	5	1.004	6	132.4	1.472	0.294	3.3458	
15 minute winter	6	1.005	7	168.9	1.284	0.329	2.2111	
15 minute winter	7	1.006	9	187.0	1.318	0.862	4.8118	
15 minute winter	8	2.000	9	20.1	1.419	0.305	0.3055	
15 minute winter	9	1.007	10	269.6	2.103	0.284	4.9324	
15 minute winter	10	1.008	14	289.5	1.847	0.421	2.2390	
15 minute winter	11	3.000	12	56.4	1.563	0.236	1.4506	
15 minute winter	12	3.001	13	103.5	1.354	0.465	2.4013	
15 minute winter	13	3.002	14	120.7	1.183	0.416	1.6011	
15 minute winter	14	1.009	15	421.3	3.209	0.427	2.5230	
15 minute winter	15	1.010	16	436.1	2.218	0.336	5.9038	
15 minute winter	16	1.011	19	446.7	1.938	1.577	5.0945	
15 minute winter	17	4.000	18	50.3	1.056	0.454	1.2903	
15 minute winter	18	4.001	19	69.0	1.766	0.278	0.4592	
15 minute winter	19	1.012	20	520.2	3.172	0.496	1.9085	
15 minute winter	20	1.013	21	525.9	3.814	0.382	2.9859	
15 minute winter	21	1.014	22	533.8	2.443	0.333	3.0685	
15 minute winter	22	1.015	23	554.9	2.059	0.987	3.9998	
15 minute summer	23	1.016	78	562.9	3.592	0.684	10.8696	
15 minute winter	24	5.000	25	25.2	0.892	0.510	0.8122	
15 minute winter	25	5.001	26	38.1	1.131	0.953	0.4511	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	10	47.982	0.117	55.1	0.1881	0.0000	OK
15 minute winter	27	11	47.433	0.153	97.7	0.4268	0.0000	OK
15 minute winter	28	10	46.528	0.164	165.6	0.5914	0.0000	OK
15 minute winter	29	11	46.041	0.404	172.3	0.6632	0.0000	OK
15 minute winter	30	10	46.061	0.115	25.9	0.2361	0.0000	OK
15 minute winter	31	11	45.957	0.351	197.7	0.5019	0.0000	OK
15 minute winter	32	11	45.857	0.270	239.1	0.7040	0.0000	OK
15 minute winter	33	11	45.393	0.201	256.6	0.3964	0.0000	OK
15 minute winter	34	11	44.400	0.333	274.3	0.6233	0.0000	OK
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute summer	36	1	44.166	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37	11	44.021	0.229	293.9	0.4407	0.0000	OK
15 minute winter	38	11	43.146	0.268	311.0	0.6087	0.0000	OK
15 minute winter	39	11	42.818	0.373	318.2	0.7465	0.0000	OK
15 minute winter	40	11	42.648	0.336	323.1	0.6653	0.0000	OK
15 minute winter	41	11	42.330	0.289	353.0	0.8821	0.0000	OK
15 minute winter	42	8	41.799	0.334	352.1	0.5904	0.0000	OK
240 minute winter	77	236	41.476	0.403	5.6	0.8195	0.0000	SURCHARGED
240 minute winter	78	236	41.476	0.476	210.2	1001.4510	0.0000	OK
240 minute winter	79	236	41.475	0.495	25.4	0.8752	0.0000	OK
15 minute summer	80	1	40.900	0.000	11.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	55.1	1.547	0.215	1.2786	
15 minute winter	27	5.003	28	97.0	2.389	0.323	1.5224	
15 minute winter	28	5.004	29	164.4	1.575	0.269	2.0658	
15 minute winter	29	5.005	31	173.1	1.220	1.072	1.7351	
15 minute winter	30	6.000	31	25.6	1.359	0.411	0.1709	
15 minute winter	31	5.006	32	198.4	1.702	1.237	0.8837	
15 minute winter	32	5.007	33	240.0	2.863	0.540	1.7541	
15 minute winter	33	5.008	34	257.7	2.633	0.404	2.8243	
15 minute winter	34	5.009	37	275.4	2.439	0.695	1.4987	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0000	
15 minute summer	36	7.001	37	0.0	0.000	0.000	0.0000	
15 minute winter	37	5.010	38	294.4	2.930	0.357	3.1902	
15 minute winter	38	5.011	39	310.8	2.250	0.364	1.9331	
15 minute winter	39	5.012	40	317.6	2.047	0.621	1.8521	
15 minute winter	40	5.013	41	321.6	2.430	0.593	2.7486	
15 minute winter	41	5.014	42	352.1	3.283	0.423	1.5577	
15 minute winter	42	5.015	78	354.9	3.954	0.264	2.1619	
240 minute winter	77	8.013	78	5.2	0.534	0.223	1.4202	
240 minute winter	78	1.017	79	25.4	0.357	0.043	1.4011	
240 minute winter	79	Head/Flow	80	25.3				500.2

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.869	0.090	38.0	0.2023	0.0000	OK
15 minute winter	2	10	47.247	0.200	80.7	0.4774	0.0000	OK
15 minute winter	3	10	47.062	0.247	104.5	0.5006	0.0000	OK
15 minute winter	4	10	46.997	0.233	129.2	0.4752	0.0000	OK
15 minute winter	5	10	46.787	0.242	170.4	0.5850	0.0000	OK
15 minute winter	6	11	46.529	0.307	216.3	0.8743	0.0000	OK
15 minute winter	7	11	46.467	0.433	241.0	1.0043	0.0000	OK
15 minute winter	8	10	46.712	0.103	26.3	0.1923	0.0000	OK
15 minute winter	9	11	46.154	0.264	347.0	0.9484	0.0000	OK
15 minute winter	10	11	45.562	0.399	373.5	0.9386	0.0000	OK
15 minute winter	11	10	46.146	0.142	73.4	0.4773	0.0000	OK
15 minute winter	12	10	45.645	0.269	135.9	0.7529	0.0000	OK
15 minute winter	13	11	45.473	0.321	156.1	0.7280	0.0000	OK
15 minute winter	14	11	45.405	0.383	543.2	0.8032	0.0000	OK
15 minute winter	15	11	44.943	0.313	562.6	0.6922	0.0000	OK
15 minute winter	16	11	44.261	0.734	581.0	1.5544	0.0000	SURCHARGED
15 minute winter	17	10	44.175	0.214	65.8	0.6586	0.0000	OK
15 minute winter	18	11	44.067	0.190	89.7	0.3873	0.0000	OK
15 minute winter	19	11	43.954	0.465	675.8	0.9145	0.0000	OK
15 minute winter	20	11	43.572	0.352	683.3	0.7009	0.0000	OK
15 minute winter	21	11	42.805	0.425	691.0	0.8448	0.0000	OK
15 minute winter	22	11	42.462	0.858	712.1	1.9850	0.0000	SURCHARGED
15 minute summer	23	11	42.148	0.642	695.9	1.3555	0.0000	OK
15 minute winter	24	10	48.489	0.132	32.9	0.2625	0.0000	OK
15 minute winter	25	10	48.362	0.267	50.2	0.4324	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	37.7	1.744	0.200	0.5241	
15 minute winter	2	1.001	3	79.2	1.409	0.493	1.3713	
15 minute winter	3	1.002	4	103.9	1.207	0.416	0.7338	
15 minute winter	4	1.003	5	128.2	1.669	0.449	1.4284	
15 minute winter	5	1.004	6	170.5	1.500	0.378	4.2340	
15 minute winter	6	1.005	7	217.2	1.343	0.423	2.7069	
15 minute winter	7	1.006	9	240.8	1.429	1.110	5.6805	
15 minute winter	8	2.000	9	25.9	1.513	0.394	0.3699	
15 minute winter	9	1.007	10	347.3	2.177	0.366	6.1095	
15 minute winter	10	1.008	14	373.4	1.934	0.543	2.7592	
15 minute winter	11	3.000	12	72.6	1.560	0.304	1.8668	
15 minute winter	12	3.001	13	133.3	1.431	0.599	2.9260	
15 minute winter	13	3.002	14	155.5	1.214	0.536	2.0609	
15 minute winter	14	1.009	15	543.5	3.257	0.551	3.2444	
15 minute winter	15	1.010	16	561.9	2.296	0.433	6.7033	
15 minute winter	16	1.011	19	579.6	2.112	2.046	5.7047	
15 minute winter	17	4.000	18	64.4	1.087	0.582	1.6241	
15 minute winter	18	4.001	19	87.1	1.803	0.350	0.6933	
15 minute winter	19	1.012	20	673.8	3.308	0.642	2.3592	
15 minute winter	20	1.013	21	681.5	3.853	0.495	4.0659	
15 minute winter	21	1.014	22	686.6	2.589	0.428	3.5631	
15 minute winter	22	1.015	23	715.3	2.540	1.272	4.1263	
15 minute summer	23	1.016	78	724.5	3.662	0.881	12.7535	
15 minute winter	24	5.000	25	32.5	0.918	0.659	0.9306	
15 minute winter	25	5.001	26	49.1	1.251	1.228	0.5020	

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	10	48.000	0.135	71.4	0.2175	0.0000	OK
15 minute winter	27	11	47.458	0.177	126.2	0.4959	0.0000	OK
15 minute winter	28	11	46.547	0.183	213.5	0.6602	0.0000	OK
15 minute winter	29	11	46.170	0.533	222.0	0.8752	0.0000	SURCHARGED
15 minute winter	30	11	46.094	0.148	33.4	0.3034	0.0000	OK
15 minute winter	31	11	46.063	0.456	255.3	0.6530	0.0000	SURCHARGED
15 minute winter	32	11	45.910	0.323	308.2	0.8419	0.0000	OK
15 minute winter	33	11	45.431	0.238	330.5	0.4710	0.0000	OK
15 minute winter	34	11	44.484	0.417	352.9	0.7805	0.0000	OK
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute summer	36	1	44.166	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37	11	44.059	0.267	377.0	0.5137	0.0000	OK
15 minute winter	38	11	43.210	0.331	398.7	0.7525	0.0000	OK
15 minute winter	39	11	42.903	0.458	408.2	0.9159	0.0000	OK
15 minute winter	40	11	42.716	0.404	414.8	0.7999	0.0000	OK
15 minute winter	41	11	42.386	0.345	453.8	1.0510	0.0000	OK
15 minute winter	42	7	41.832	0.367	453.2	0.6485	0.0000	OK
240 minute winter	77	240	41.598	0.525	7.1	1.0683	0.0000	SURCHARGED
240 minute winter	78	236	41.598	0.598	264.7	1258.9480	0.0000	OK
240 minute winter	79	236	41.598	0.618	31.6	1.0912	0.0000	OK
15 minute summer	80	1	40.900	0.000	14.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	71.0	1.639	0.277	1.5554	
15 minute winter	27	5.003	28	125.2	2.544	0.417	1.8453	
15 minute winter	28	5.004	29	212.5	1.660	0.348	2.2454	
15 minute winter	29	5.005	31	223.3	1.410	1.384	1.9465	
15 minute winter	30	6.000	31	32.7	1.371	0.526	0.2703	
15 minute winter	31	5.006	32	255.8	1.783	1.595	1.0680	
15 minute winter	32	5.007	33	309.1	2.975	0.695	2.1662	
15 minute winter	33	5.008	34	331.5	2.687	0.520	3.4710	
15 minute winter	34	5.009	37	353.3	2.536	0.891	1.8295	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0000	
15 minute summer	36	7.001	37	0.0	0.000	0.000	0.0000	
15 minute winter	37	5.010	38	377.3	2.978	0.458	4.0243	
15 minute winter	38	5.011	39	398.7	2.289	0.467	2.4141	
15 minute winter	39	5.012	40	407.7	2.150	0.797	2.2589	
15 minute winter	40	5.013	41	413.3	2.555	0.763	3.3505	
15 minute winter	41	5.014	42	453.2	3.453	0.544	1.9028	
15 minute winter	42	5.015	78	456.7	4.097	0.340	2.6852	
240 minute winter	77	8.013	78	6.9	0.560	0.295	1.4202	
240 minute winter	78	1.017	79	31.6	0.360	0.054	1.7254	
240 minute winter	79	Head/Flow	80	31.6				623.5

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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.892	0.113	58.5	0.2665	0.0000	OK
15 minute winter	2	10	47.321	0.273	124.4	0.6797	0.0000	OK
15 minute winter	3	10	47.149	0.334	161.1	0.6954	0.0000	OK
15 minute winter	4	10	47.073	0.309	198.0	0.6478	0.0000	OK
15 minute winter	5	11	46.889	0.344	262.3	0.8647	0.0000	OK
15 minute winter	6	11	46.797	0.574	335.8	1.6994	0.0000	SURCHARGED
15 minute winter	7	11	46.659	0.625	366.4	1.4851	0.0000	SURCHARGED
15 minute winter	8	10	46.745	0.136	40.5	0.2624	0.0000	OK
15 minute winter	9	12	46.438	0.548	529.2	2.0714	0.0000	OK
15 minute winter	10	12	46.212	1.048	546.0	2.5284	0.0000	SURCHARGED
15 minute winter	11	12	46.250	0.246	113.0	0.8746	0.0000	OK
15 minute winter	12	12	46.198	0.822	209.5	2.4170	0.0000	SURCHARGED
15 minute winter	13	12	46.096	0.944	235.4	2.1881	0.0000	SURCHARGED
15 minute winter	14	12	46.053	1.031	772.7	2.1945	0.0000	SURCHARGED
15 minute winter	15	12	45.688	1.058	781.1	2.3864	0.0000	SURCHARGED
15 minute winter	16	12	45.159	1.633	763.5	3.5148	0.0000	SURCHARGED
15 minute winter	17	12	44.828	0.867	101.3	2.8139	0.0000	SURCHARGED
15 minute winter	18	12	44.767	0.890	126.5	1.8636	0.0000	SURCHARGED
15 minute winter	19	12	44.704	1.215	888.3	2.4142	0.0000	SURCHARGED
15 minute winter	20	12	44.257	1.037	901.8	2.0862	0.0000	SURCHARGED
15 minute winter	21	12	43.633	1.253	915.5	2.5210	0.0000	SURCHARGED
15 minute winter	22	11	43.115	1.511	950.7	3.5792	0.0000	SURCHARGED
15 minute winter	23	11	42.570	1.064	968.1	2.2827	0.0000	SURCHARGED
15 minute winter	24	11	48.895	0.538	50.7	1.1151	0.0000	SURCHARGED
15 minute winter	25	11	48.595	0.500	74.0	0.8347	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	58.1	1.738	0.309	0.8494	
15 minute winter	2	1.001	3	122.1	1.472	0.760	2.0292	
15 minute winter	3	1.002	4	159.0	1.317	0.637	1.0316	
15 minute winter	4	1.003	5	197.7	1.840	0.693	1.9922	
15 minute winter	5	1.004	6	261.7	1.537	0.580	6.8017	
15 minute winter	6	1.005	7	329.7	1.526	0.643	3.6395	
15 minute winter	7	1.006	9	365.6	1.735	1.685	7.1545	
15 minute winter	8	2.000	9	39.9	1.671	0.607	0.5726	
15 minute winter	9	1.007	10	505.1	2.203	0.532	10.5923	
15 minute winter	10	1.008	14	526.9	1.944	0.766	3.9953	
15 minute winter	11	3.000	12	112.0	1.564	0.470	3.6501	
15 minute winter	12	3.001	13	200.3	1.452	0.900	4.9552	
15 minute winter	13	3.002	14	222.4	1.234	0.766	3.2960	
15 minute winter	14	1.009	15	750.0	3.193	0.761	5.3961	
15 minute winter	15	1.010	16	745.6	2.647	0.574	8.7765	
15 minute winter	16	1.011	19	770.1	2.734	2.718	6.2282	
15 minute winter	17	4.000	18	89.8	1.123	0.810	2.9872	
15 minute winter	18	4.001	19	120.9	1.765	0.487	1.1710	
15 minute winter	19	1.012	20	889.6	3.266	0.848	3.2706	
15 minute winter	20	1.013	21	903.3	3.871	0.656	5.9442	
15 minute winter	21	1.014	22	917.2	3.256	0.572	4.0553	
15 minute winter	22	1.015	23	952.9	3.383	1.694	4.1263	
15 minute winter	23	1.016	78	979.9	3.587	1.191	18.6032	
15 minute winter	24	5.000	25	48.3	1.215	0.980	1.1568	
15 minute winter	25	5.001	26	74.3	1.868	1.859	0.5284	

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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	11	48.038	0.173	107.3	0.2854	0.0000	OK
15 minute winter	27	11	47.514	0.233	190.7	0.6842	0.0000	OK
15 minute winter	28	11	46.986	0.622	329.1	2.3829	0.0000	SURCHARGED
15 minute winter	29	12	46.702	1.065	325.4	1.7721	0.0000	SURCHARGED
15 minute winter	30	12	46.574	0.628	51.5	1.3509	0.0000	SURCHARGED
15 minute winter	31	12	46.483	0.876	368.5	1.2542	0.0000	SURCHARGED
15 minute winter	32	12	46.252	0.665	446.3	1.8116	0.0000	SURCHARGED
15 minute winter	33	12	45.679	0.486	470.4	0.9872	0.0000	SURCHARGED
15 minute summer	34	11	44.857	0.790	492.9	1.5135	0.0000	SURCHARGED
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36	12	44.210	0.044	2.2	0.0498	0.0000	OK
15 minute winter	37	11	44.206	0.414	529.1	0.8173	0.0000	OK
15 minute winter	38	11	43.742	0.864	561.2	2.0059	0.0000	SURCHARGED
15 minute winter	39	11	43.384	0.939	573.8	1.8986	0.0000	SURCHARGED
15 minute winter	40	11	43.036	0.724	583.5	1.4508	0.0000	SURCHARGED
15 minute winter	41	11	42.504	0.463	645.1	1.4716	0.0000	OK
360 minute winter	42	344	41.928	0.463	97.4	0.8186	0.0000	OK
360 minute winter	77	344	41.928	0.855	7.8	1.8178	0.0000	SURCHARGED
360 minute winter	78	344	41.928	0.928	294.2	1955.1940	0.0000	SURCHARGED
360 minute winter	79	344	41.929	0.949	45.8	1.6761	0.0000	SURCHARGED
15 minute summer	80	1	40.900	0.000	22.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	107.8	1.802	0.421	2.1789	
15 minute winter	27	5.003	28	188.8	2.571	0.628	3.4173	
15 minute winter	28	5.004	29	310.7	1.961	0.509	3.2517	
15 minute winter	29	5.005	31	323.0	2.039	2.001	1.9465	
15 minute winter	30	6.000	31	45.5	1.329	0.732	0.3192	
15 minute winter	31	5.006	32	365.6	2.308	2.280	1.2080	
15 minute winter	32	5.007	33	437.4	3.025	0.984	3.3172	
15 minute winter	33	5.008	34	464.6	2.932	0.728	4.6117	
15 minute summer	34	5.009	37	492.7	3.110	1.243	2.0885	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0253	
15 minute winter	36	7.001	37	-2.2	0.321	-0.055	0.1505	
15 minute winter	37	5.010	38	528.2	2.938	0.641	6.3254	
15 minute winter	38	5.011	39	559.1	2.588	0.655	3.0368	
15 minute winter	39	5.012	40	572.5	2.651	1.120	2.5812	
15 minute winter	40	5.013	41	582.7	2.698	1.075	4.4120	
15 minute winter	41	5.014	42	642.4	3.648	0.772	2.5274	
360 minute winter	42	5.015	78	97.3	1.917	0.073	7.0340	
360 minute winter	77	8.013	78	7.5	0.538	0.324	1.4202	
360 minute winter	78	1.017	79	45.8	0.366	0.078	1.8206	
360 minute winter	79	Head/Flow	80	43.5				1114.7

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Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.750
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		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.075	5.00	49.134	1200	478918.683	170622.890	1.355
2	0.085	5.00	48.821	1350	478918.364	170645.898	1.774
3	0.050	5.00	48.501	1350	478912.657	170669.494	1.686
4	0.050	5.00	48.414	1350	478907.616	170676.370	1.650
5	0.085	5.00	48.276	1350	478901.040	170693.726	1.732
6	0.095	5.00	47.976	1500	478883.084	170726.254	1.753
7	0.050	5.00	47.841	1500	478878.697	170742.520	1.807
8	0.052	5.00	48.034	1200	478848.505	170765.973	1.425
9	0.170	5.00	47.750	1500	478868.200	170774.842	1.860
10	0.055	5.00	47.040	1500	478904.735	170786.668	1.877
11	0.145	5.00	47.510	1350	478962.980	170711.961	1.506
12	0.125	5.00	47.200	1350	478943.908	170746.013	1.824
13	0.045	5.00	46.950	1500	478928.626	170773.299	1.798
14	0.030	5.00	46.850	1500	478918.819	170784.987	1.828
15	0.040	5.00	46.430	1500	478931.702	170799.165	1.800
16	0.040	5.00	45.810	1500	478961.248	170809.058	2.283
17	0.130	5.00	45.536	1350	478991.410	170777.411	1.575
18	0.050	5.00	45.536	1350	478982.811	170803.093	1.659
19	0.020	5.00	45.494	1500	478982.864	170813.710	2.005
20	0.020	5.00	45.020	1500	478992.731	170819.830	1.800
21	0.020	5.00	44.180	1500	479012.808	170826.330	1.800
22	0.055	5.00	43.619	1500	479027.198	170825.871	2.015
23	0.025	5.00	42.963	1500	479041.847	170825.854	1.457
24	0.065	5.00	49.875	1200	478900.986	170590.298	1.518
25	0.035	5.00	49.520	1200	478928.596	170599.446	1.425
26	0.045	5.00	49.760	1200	478938.052	170589.872	1.895
27	0.110	5.00	48.894	1350	478962.003	170616.526	1.614
28	0.180	5.00	48.014	1350	478987.049	170644.397	1.650
29	0.020	5.00	47.531	1350	479000.766	170659.662	1.894
30	0.066	5.00	47.371	1200	479012.669	170665.067	1.425
31			47.383	1350	479006.691	170670.424	1.777
32	0.110	5.00	47.457	1350	479001.012	170675.511	1.870
33	0.045	5.00	46.845	1350	479014.975	170691.111	1.652
34	0.045	5.00	46.110	1350	479036.494	170710.709	2.043
35		5.00	46.035	1200	479017.785	170739.822	1.471
36			45.909	1200	479038.331	170721.018	1.743
37	0.050	5.00	45.811	1350	479049.156	170714.831	2.019
38	0.045	5.00	44.661	1500	479070.263	170738.541	1.782
39	0.020	5.00	44.170	1500	479079.609	170749.041	1.725
40	0.015	5.00	43.710	1500	479078.343	170760.922	1.398
41	0.085	5.00	43.366	1500	479064.965	170776.780	1.325
42			42.628	1500	479076.408	170785.721	1.163

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
43	0.110	5.00	50.315	1200	478949.748	170535.541	1.504
44	0.045	5.00	49.865	1200	478984.543	170543.098	1.939
45	0.050	5.00	49.567	1200	478963.297	170571.547	1.443
46	0.080	5.00	49.291	1350	478994.718	170557.305	1.618
47	0.055	5.00	49.130	1350	479014.637	170552.839	1.575
48	0.120	5.00	48.041	1350	479088.169	170570.352	1.575
49	0.020	5.00	47.416	1350	479115.259	170576.803	1.575
50	0.075	5.00	46.542	1350	479145.667	170603.465	1.575
51	0.075	5.00	46.181	1200	479134.354	170636.452	1.443
52	0.015	5.00	46.094	1200	479145.044	170626.939	1.441
53	0.010	5.00	46.185	1200	479148.759	170619.442	1.582
54	0.030	5.00	45.739	1350	479163.304	170618.589	1.575
55	0.060	5.00	44.900	1350	479180.989	170638.466	1.575
56	0.095	5.00	48.293	1200	479040.454	170603.688	1.500
57	0.050	5.00	48.103	1200	479037.635	170615.901	1.827
58	0.030	5.00	47.511	1200	479067.747	170623.072	1.500
59	0.060	5.00	47.161	1200	479080.905	170630.195	2.359
60			46.329	1200	479107.990	170659.912	1.834
61	0.060	5.00	45.039	1200	479127.585	170681.411	2.206
62		5.00	47.572	1200	479024.634	170654.348	1.408
63			46.919	1200	479037.665	170668.988	2.377
64	0.040	5.00	46.060	1200	479089.573	170676.177	1.393
65	0.045	5.00	46.014	1200	479064.178	170698.775	1.707
66			45.588	1200	479066.344	170710.960	1.425
67	0.035	5.00	44.944	1200	479079.451	170725.689	1.540
68	0.015	5.00	44.410	1200	479090.814	170738.457	1.500
69			44.243	1200	479099.944	170741.451	1.500
70			44.076	1200	479112.221	170733.041	1.977
71	0.070	5.00	43.570	1350	479148.362	170704.207	1.820
72	0.080	5.00	43.057	1500	479177.613	170680.556	1.607
73	0.080	5.00	43.593	1500	479201.357	170661.357	2.271
74			43.210	1500	479209.608	170664.499	1.903
75	0.250	5.00	42.600	1500	479209.886	170683.921	1.325
76			42.510	1500	479161.818	170723.722	1.339
77	0.075	5.00	42.733	1500	479116.335	170761.382	1.660
78	0.310	5.00	42.500	1500	479098.236	170792.166	1.500
79			42.500	1500	479103.303	170792.747	1.520
80			42.000	1500	479141.477	170797.122	1.100

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	23.010	0.600	47.779	47.122	0.657	35.0	300	5.14	50.0
1.001	2	3	24.276	0.600	47.047	46.890	0.157	154.5	375	5.42	50.0
1.002	3	4	8.526	0.600	46.815	46.764	0.051	167.0	450	5.51	49.7
1.003	4	5	18.560	0.600	46.764	46.619	0.145	128.2	450	5.68	49.0
1.004	5	6	37.155	0.600	46.544	46.223	0.322	115.5	525	5.98	47.7
1.005	6	7	16.847	0.600	46.223	46.034	0.188	89.4	525	6.10	47.3
1.006	7	9	33.984	0.600	46.034	45.965	0.069	492.5	525	6.67	45.3
2.000	8	9	21.600	0.600	46.609	46.265	0.344	62.8	225	5.22	50.0
1.007	9	10	38.401	0.600	45.890	45.163	0.727	52.8	600	6.86	44.7
1.008	10	14	14.184	0.600	45.163	45.022	0.142	100.2	600	6.95	44.4
3.000	11	12	39.029	0.600	46.004	45.451	0.553	70.6	375	5.30	50.0
3.001	12	13	31.274	0.600	45.376	45.227	0.149	209.9	450	5.67	49.0
3.002	13	14	15.257	0.600	45.152	45.097	0.055	276.7	525	5.86	48.2
1.009	14	15	19.157	0.600	45.022	44.630	0.392	48.9	600	7.05	44.1
1.010	15	16	31.158	0.600	44.630	43.527	1.103	28.2	600	7.16	43.7
1.011	16	19	22.111	0.600	43.527	43.489	0.038	581.9	600	7.53	42.7
4.000	17	18	27.083	0.600	43.961	43.877	0.084	322.4	375	5.45	50.0
4.001	18	19	10.617	0.600	43.877	43.714	0.163	65.0	375	5.53	49.6
1.012	19	20	11.611	0.600	43.489	43.220	0.269	43.2	600	7.58	42.5
1.013	20	21	21.103	0.600	43.220	42.380	0.840	25.1	600	7.65	42.3
1.014	21	22	14.397	0.600	42.380	41.604	0.776	18.5	600	7.69	42.2
1.015	22	23	14.649	0.600	41.604	41.506	0.098	149.5	600	7.82	41.9
1.016	23	78	65.686	0.600	41.506	41.000	0.506	129.8	675	8.29	40.6
5.000	24	25	29.086	0.600	48.357	48.095	0.262	111.0	225	5.39	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.665	188.3	10.2	1.055	1.399	0.075	0.0	47	1.445
1.001	1.455	160.7	21.7	1.399	1.236	0.160	0.0	93	1.027
1.002	1.570	249.7	28.3	1.236	1.200	0.210	0.0	102	1.056
1.003	1.794	285.3	34.5	1.200	1.207	0.260	0.0	105	1.230
1.004	2.083	450.9	44.6	1.207	1.228	0.345	0.0	110	1.350
1.005	2.369	512.9	56.4	1.228	1.282	0.440	0.0	116	1.580
1.006	1.002	217.0	60.2	1.282	1.260	0.490	0.0	188	0.863
2.000	1.653	65.7	7.0	1.200	1.260	0.052	0.0	50	1.088
1.007	3.355	948.5	86.2	1.260	1.277	0.712	0.0	120	2.122
1.008	2.433	687.8	92.2	1.277	1.228	0.767	0.0	147	1.718
3.000	2.159	238.4	19.7	1.131	1.374	0.145	0.0	72	1.323
3.001	1.399	222.5	35.9	1.374	1.273	0.270	0.0	121	1.036
3.002	1.341	290.3	41.2	1.273	1.228	0.315	0.0	133	0.961
1.009	3.488	986.1	132.8	1.228	1.200	1.112	0.0	147	2.470
1.010	4.593	1298.7	136.6	1.200	1.683	1.152	0.0	130	3.033
1.011	1.002	283.3	137.9	1.683	1.405	1.192	0.0	295	0.995
4.000	1.003	110.8	17.6	1.200	1.284	0.130	0.0	101	0.741
4.001	2.250	248.5	24.2	1.284	1.405	0.180	0.0	78	1.443
1.012	3.711	1049.2	160.5	1.405	1.200	1.392	0.0	157	2.723
1.013	4.871	1377.2	162.0	1.200	1.200	1.412	0.0	137	3.321
1.014	5.672	1603.6	163.8	1.200	1.415	1.432	0.0	128	3.718
1.015	1.989	562.4	168.7	1.415	0.857	1.487	0.0	224	1.748
1.016	2.299	822.5	166.4	0.782	0.825	1.512	0.0	205	1.821
5.000	1.240	49.3	8.8	1.293	1.200	0.065	0.0	64	0.939

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
5.001	25	26	13.457	0.600	48.095	48.015	0.080	168.2	225	5.61	49.3
5.002	26	27	35.834	0.600	47.865	47.280	0.585	61.3	375	5.87	48.2
5.003	27	28	37.471	0.600	47.280	46.439	0.841	44.5	375	6.10	47.3
5.004	28	29	20.523	0.600	46.364	45.637	0.727	28.2	450	6.19	47.0
5.005	29	31	12.285	0.600	45.637	45.606	0.031	396.3	450	6.39	46.3
6.000	30	31	8.027	0.600	45.946	45.831	0.115	70.1	225	5.09	50.0
5.006	31	32	7.624	0.600	45.606	45.587	0.019	401.3	450	6.52	45.9
5.007	32	33	20.936	0.600	45.587	45.193	0.395	53.1	450	6.64	45.4
5.008	33	34	29.106	0.600	45.193	44.067	1.126	25.8	450	6.76	45.0
5.009	34	37	13.316	0.600	44.067	43.867	0.200	66.7	450	6.85	44.7
7.000	35	36	27.852	0.600	44.564	44.166	0.398	70.0	225	5.30	50.0
7.001	36	37	12.468	0.600	44.166	44.092	0.074	168.5	225	5.50	49.7
5.010	37	38	31.744	0.600	43.792	42.879	0.913	34.8	525	6.99	44.2
5.011	38	39	14.057	0.600	42.879	42.445	0.434	32.4	525	7.05	44.1
5.012	39	40	11.948	0.600	42.445	42.312	0.133	90.0	525	7.14	43.8
5.013	40	41	20.747	0.600	42.312	42.053	0.259	80.1	525	7.27	43.4
5.014	41	42	14.522	0.600	42.041	41.615	0.426	34.1	525	7.34	43.2
5.015	42	78	22.760	0.600	41.465	41.000	0.465	48.9	675	7.44	42.9
8.000	43	44	35.606	0.600	48.811	47.926	0.885	40.2	225	5.29	50.0
8.001	44	46	17.475	0.600	47.926	47.823	0.103	169.7	225	5.58	49.4
9.000	45	46	34.498	0.600	48.124	47.823	0.301	114.7	225	5.47	49.9
8.002	46	47	20.414	0.600	47.673	47.555	0.118	172.8	375	5.83	48.4
8.003	47	48	75.589	0.600	47.555	46.466	1.089	69.4	375	6.40	46.2
8.004	48	49	27.848	0.600	46.466	45.841	0.625	44.6	375	6.57	45.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
5.001	1.005	40.0	13.4	1.200	1.520	0.100	0.0	89	0.905
5.002	2.318	256.0	18.9	1.520	1.239	0.145	0.0	68	1.378
5.003	2.721	300.5	32.7	1.239	1.200	0.255	0.0	82	1.801
5.004	3.836	610.1	55.4	1.200	1.444	0.435	0.0	91	2.429
5.005	1.015	161.4	57.1	1.444	1.327	0.455	0.0	184	0.930
6.000	1.564	62.2	8.9	1.200	1.327	0.066	0.0	58	1.120
5.006	1.008	160.4	64.8	1.327	1.420	0.521	0.0	199	0.957
5.007	2.795	444.6	77.7	1.420	1.202	0.631	0.0	126	2.120
5.008	4.011	637.9	82.5	1.202	1.593	0.676	0.0	109	2.806
5.009	2.492	396.3	87.4	1.593	1.494	0.721	0.0	143	2.017
7.000	1.565	62.2	0.0	1.246	1.518	0.000	0.0	0	0.000
7.001	1.004	39.9	0.0	1.518	1.494	0.000	0.0	0	0.000
5.010	3.808	824.4	92.4	1.494	1.257	0.771	0.0	117	2.555
5.011	3.943	853.6	97.4	1.257	1.200	0.816	0.0	119	2.665
5.012	2.361	511.2	99.3	1.200	0.873	0.836	0.0	156	1.846
5.013	2.504	542.0	100.1	0.873	0.788	0.851	0.0	152	1.931
5.014	3.845	832.4	109.7	0.800	0.488	0.936	0.0	127	2.702
5.015	3.751	1342.4	108.9	0.488	0.825	0.936	0.0	128	2.304
8.000	2.068	82.2	14.9	1.279	1.714	0.110	0.0	65	1.580
8.001	1.001	39.8	20.8	1.714	1.243	0.155	0.0	116	1.012
9.000	1.220	48.5	6.8	1.218	1.243	0.050	0.0	57	0.865
8.002	1.375	151.9	37.4	1.243	1.200	0.285	0.0	126	1.146
8.003	2.177	240.4	42.6	1.200	1.200	0.340	0.0	106	1.654
8.004	2.720	300.5	56.9	1.200	1.200	0.460	0.0	110	2.113

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
8.005	49	50	40.441	0.600	45.841	44.967	0.874	46.3	375	6.83	44.8
8.006	50	54	23.234	0.600	44.967	44.164	0.803	28.9	375	6.94	44.4
10.000	51	52	14.310	0.600	44.738	44.653	0.085	168.4	225	5.24	50.0
10.001	52	53	8.367	0.600	44.653	44.603	0.050	167.3	225	5.38	50.0
10.002	53	54	14.570	0.600	44.603	44.314	0.289	50.4	225	5.51	49.7
8.007	54	55	26.606	0.600	44.164	43.325	0.839	31.7	375	7.08	44.0
8.008	55	73	30.641	0.600	43.325	41.622	1.703	18.0	375	7.20	43.6
11.000	56	57	12.534	0.600	46.793	46.276	0.517	24.2	300	5.07	50.0
11.001	57	58	30.954	0.600	46.276	46.011	0.265	117.0	300	5.42	50.0
11.002	58	59	14.962	0.600	46.011	44.802	1.209	12.4	300	5.48	49.8
11.003	59	60	40.208	0.600	44.802	44.495	0.307	130.8	300	5.96	47.8
11.004	60	61	29.089	0.600	44.495	42.833	1.662	17.5	300	6.09	47.3
11.005	61	71	30.844	0.600	42.833	41.900	0.933	33.1	300	6.28	46.7
12.000	62	63	19.599	0.600	46.164	44.542	1.622	12.1	225	5.09	50.0
12.001	63	65	39.877	0.600	44.542	44.307	0.235	169.7	225	5.75	48.7
13.000	64	65	33.994	0.600	44.667	44.307	0.360	94.4	225	5.42	50.0
12.002	65	66	12.376	0.600	44.307	44.163	0.144	86.0	225	5.90	48.1
12.003	66	67	19.716	0.600	44.163	43.404	0.759	26.0	225	6.02	47.5
12.004	67	68	17.092	0.600	43.404	42.985	0.419	40.8	225	6.16	47.1
12.005	68	69	9.608	0.600	42.910	42.743	0.167	57.5	300	6.24	46.8
12.006	69	70	14.881	0.600	42.743	42.099	0.644	23.1	300	6.32	46.5
12.007	70	71	46.234	0.600	42.099	41.900	0.199	232.3	300	7.07	44.0
11.006	71	72	37.616	0.600	41.750	41.600	0.150	250.8	450	7.56	42.6
11.007	72	73	30.535	0.600	41.450	41.397	0.053	576.1	600	8.06	41.2

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
8.005	2.669	294.8	58.3	1.200	1.200	0.480	0.0	112	2.095
8.006	3.379	373.2	66.8	1.200	1.200	0.555	0.0	107	2.579
10.000	1.005	39.9	10.2	1.218	1.216	0.075	0.0	77	0.840
10.001	1.008	40.1	12.2	1.216	1.357	0.090	0.0	85	0.886
10.002	1.846	73.4	13.5	1.357	1.200	0.100	0.0	65	1.410
8.007	3.227	356.4	81.6	1.200	1.200	0.685	0.0	121	2.635
8.008	4.288	473.6	88.1	1.200	1.596	0.745	0.0	109	3.310
11.000	3.207	226.7	12.9	1.200	1.527	0.095	0.0	48	1.766
11.001	1.452	102.7	19.7	1.527	1.200	0.145	0.0	89	1.129
11.002	4.492	317.5	23.6	1.200	2.059	0.175	0.0	55	2.667
11.003	1.373	97.0	30.4	2.059	1.534	0.235	0.0	115	1.219
11.004	3.775	266.9	30.1	1.534	1.906	0.235	0.0	68	2.532
11.005	2.743	193.9	37.3	1.906	1.370	0.295	0.0	89	2.135
12.000	3.785	150.5	0.0	1.183	2.152	0.000	0.0	0	0.000
12.001	1.001	39.8	0.0	2.152	1.482	0.000	0.0	0	0.000
13.000	1.346	53.5	5.4	1.168	1.482	0.040	0.0	48	0.867
12.002	1.410	56.1	11.1	1.482	1.200	0.085	0.0	67	1.100
12.003	2.576	102.4	11.0	1.200	1.315	0.085	0.0	50	1.699
12.004	2.055	81.7	15.3	1.315	1.200	0.120	0.0	65	1.581
12.005	2.076	146.8	17.1	1.200	1.200	0.135	0.0	69	1.404
12.006	3.284	232.1	17.0	1.200	1.677	0.135	0.0	55	1.948
12.007	1.027	72.6	16.1	1.677	1.370	0.135	0.0	96	0.831
11.006	1.279	203.4	57.7	1.370	1.007	0.500	0.0	163	1.106
11.007	1.007	284.8	64.7	1.007	1.596	0.580	0.0	194	0.822

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
8.009	73	74	8.829	0.600	41.322	41.307	0.015	600.0	675	8.20	40.8
8.010	74	75	19.424	0.600	41.307	41.275	0.032	607.0	675	8.51	40.1
8.011	75	76	62.407	0.600	41.275	41.171	0.104	600.1	675	9.49	37.8
8.012	76	77	59.051	0.600	41.171	41.073	0.098	602.6	675	10.41	35.9
8.013	77	78	35.710	0.600	41.073	41.000	0.073	489.2	675	10.92	35.0
1.017	78	79	5.100	0.600	41.000	40.980	0.020	255.0	675	10.97	34.9
1.018	79	80	38.424	0.600	40.980	40.900	0.080	480.3	675	11.51	34.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
8.009	1.062	380.2	155.5	1.596	1.228	1.405	0.0	300	1.012
8.010	1.056	378.0	152.6	1.228	0.650	1.405	0.0	298	1.002
8.011	1.062	380.2	169.7	0.650	0.664	1.655	0.0	315	1.033
8.012	1.060	379.4	161.3	0.664	0.985	1.655	0.0	307	1.019
8.013	1.178	421.5	164.1	0.985	0.825	1.730	0.0	292	1.107
1.017	1.636	585.5	424.6	0.825	0.845	4.488	0.0	427	1.775
1.018	1.189	425.4	413.6	0.845	0.425	4.488	0.0	542	1.344

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	23.010	35.0	300	Circular_Default Sewer Type	49.134	47.779	1.055	48.821	47.122	1.399
1.001	24.276	154.5	375	Circular_Default Sewer Type	48.821	47.047	1.399	48.501	46.890	1.236
1.002	8.526	167.0	450	Circular_Default Sewer Type	48.501	46.815	1.236	48.414	46.764	1.200
1.003	18.560	128.2	450	Circular_Default Sewer Type	48.414	46.764	1.200	48.276	46.619	1.207
1.004	37.155	115.5	525	Circular_Default Sewer Type	48.276	46.544	1.207	47.976	46.223	1.228
1.005	16.847	89.4	525	Circular_Default Sewer Type	47.976	46.223	1.228	47.841	46.034	1.282
1.006	33.984	492.5	525	Circular_Default Sewer Type	47.841	46.034	1.282	47.750	45.965	1.260
2.000	21.600	62.8	225	Circular_Default Sewer Type	48.034	46.609	1.200	47.750	46.265	1.260
1.007	38.401	52.8	600	Circular_Default Sewer Type	47.750	45.890	1.260	47.040	45.163	1.277
1.008	14.184	100.2	600	Circular_Default Sewer Type	47.040	45.163	1.277	46.850	45.022	1.228
3.000	39.029	70.6	375	Circular_Default Sewer Type	47.510	46.004	1.131	47.200	45.451	1.374
3.001	31.274	209.9	450	Circular_Default Sewer Type	47.200	45.376	1.374	46.950	45.227	1.273
3.002	15.257	276.7	525	Circular_Default Sewer Type	46.950	45.152	1.273	46.850	45.097	1.228

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	Manhole	Adoptable	2	1350	Manhole	Adoptable
1.001	2	1350	Manhole	Adoptable	3	1350	Manhole	Adoptable
1.002	3	1350	Manhole	Adoptable	4	1350	Manhole	Adoptable
1.003	4	1350	Manhole	Adoptable	5	1350	Manhole	Adoptable
1.004	5	1350	Manhole	Adoptable	6	1500	Manhole	Adoptable
1.005	6	1500	Manhole	Adoptable	7	1500	Manhole	Adoptable
1.006	7	1500	Manhole	Adoptable	9	1500	Manhole	Adoptable
2.000	8	1200	Manhole	Adoptable	9	1500	Manhole	Adoptable
1.007	9	1500	Manhole	Adoptable	10	1500	Manhole	Adoptable
1.008	10	1500	Manhole	Adoptable	14	1500	Manhole	Adoptable
3.000	11	1350	Manhole	Adoptable	12	1350	Manhole	Adoptable
3.001	12	1350	Manhole	Adoptable	13	1500	Manhole	Adoptable
3.002	13	1500	Manhole	Adoptable	14	1500	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.009	19.157	48.9	600	Circular_Default Sewer Type	46.850	45.022	1.228	46.430	44.630	1.200
1.010	31.158	28.2	600	Circular_Default Sewer Type	46.430	44.630	1.200	45.810	43.527	1.683
1.011	22.111	581.9	600	Circular_Default Sewer Type	45.810	43.527	1.683	45.494	43.489	1.405
4.000	27.083	322.4	375	Circular_Default Sewer Type	45.536	43.961	1.200	45.536	43.877	1.284
4.001	10.617	65.0	375	Circular_Default Sewer Type	45.536	43.877	1.284	45.494	43.714	1.405
1.012	11.611	43.2	600	Circular_Default Sewer Type	45.494	43.489	1.405	45.020	43.220	1.200
1.013	21.103	25.1	600	Circular_Default Sewer Type	45.020	43.220	1.200	44.180	42.380	1.200
1.014	14.397	18.5	600	Circular_Default Sewer Type	44.180	42.380	1.200	43.619	41.604	1.415
1.015	14.649	149.5	600	Circular_Default Sewer Type	43.619	41.604	1.415	42.963	41.506	0.857
1.016	65.686	129.8	675	Circular_Default Sewer Type	42.963	41.506	0.782	42.500	41.000	0.825
5.000	29.086	111.0	225	Circular_Default Sewer Type	49.875	48.357	1.293	49.520	48.095	1.200
5.001	13.457	168.2	225	Circular_Default Sewer Type	49.520	48.095	1.200	49.760	48.015	1.520
5.002	35.834	61.3	375	Circular_Default Sewer Type	49.760	47.865	1.520	48.894	47.280	1.239
5.003	37.471	44.5	375	Circular_Default Sewer Type	48.894	47.280	1.239	48.014	46.439	1.200
5.004	20.523	28.2	450	Circular_Default Sewer Type	48.014	46.364	1.200	47.531	45.637	1.444
5.005	12.285	396.3	450	Circular_Default Sewer Type	47.531	45.637	1.444	47.383	45.606	1.327
6.000	8.027	70.1	225	Circular_Default Sewer Type	47.371	45.946	1.200	47.383	45.831	1.327
5.006	7.624	401.3	450	Circular_Default Sewer Type	47.383	45.606	1.327	47.457	45.587	1.420
5.007	20.936	53.1	450	Circular_Default Sewer Type	47.457	45.587	1.420	46.845	45.193	1.202
5.008	29.106	25.8	450	Circular_Default Sewer Type	46.845	45.193	1.202	46.110	44.067	1.593
5.009	13.316	66.7	450	Circular_Default Sewer Type	46.110	44.067	1.593	45.811	43.867	1.494
7.000	27.852	70.0	225	Circular_Default Sewer Type	46.035	44.564	1.246	45.909	44.166	1.518
7.001	12.468	168.5	225	Circular_Default Sewer Type	45.909	44.166	1.518	45.811	44.092	1.494
5.010	31.744	34.8	525	Circular_Default Sewer Type	45.811	43.792	1.494	44.661	42.879	1.257
5.011	14.057	32.4	525	Circular_Default Sewer Type	44.661	42.879	1.257	44.170	42.445	1.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.009	14	1500	Manhole	Adoptable	15	1500	Manhole	Adoptable
1.010	15	1500	Manhole	Adoptable	16	1500	Manhole	Adoptable
1.011	16	1500	Manhole	Adoptable	19	1500	Manhole	Adoptable
4.000	17	1350	Manhole	Adoptable	18	1350	Manhole	Adoptable
4.001	18	1350	Manhole	Adoptable	19	1500	Manhole	Adoptable
1.012	19	1500	Manhole	Adoptable	20	1500	Manhole	Adoptable
1.013	20	1500	Manhole	Adoptable	21	1500	Manhole	Adoptable
1.014	21	1500	Manhole	Adoptable	22	1500	Manhole	Adoptable
1.015	22	1500	Manhole	Adoptable	23	1500	Manhole	Adoptable
1.016	23	1500	Manhole	Adoptable	78	1500	Manhole	Adoptable
5.000	24	1200	Manhole	Adoptable	25	1200	Manhole	Adoptable
5.001	25	1200	Manhole	Adoptable	26	1200	Manhole	Adoptable
5.002	26	1200	Manhole	Adoptable	27	1350	Manhole	Adoptable
5.003	27	1350	Manhole	Adoptable	28	1350	Manhole	Adoptable
5.004	28	1350	Manhole	Adoptable	29	1350	Manhole	Adoptable
5.005	29	1350	Manhole	Adoptable	31	1350	Manhole	Adoptable
6.000	30	1200	Manhole	Adoptable	31	1350	Manhole	Adoptable
5.006	31	1350	Manhole	Adoptable	32	1350	Manhole	Adoptable
5.007	32	1350	Manhole	Adoptable	33	1350	Manhole	Adoptable
5.008	33	1350	Manhole	Adoptable	34	1350	Manhole	Adoptable
5.009	34	1350	Manhole	Adoptable	37	1350	Manhole	Adoptable
7.000	35	1200	Manhole	Adoptable	36	1200	Manhole	Adoptable
7.001	36	1200	Manhole	Adoptable	37	1350	Manhole	Adoptable
5.010	37	1350	Manhole	Adoptable	38	1500	Manhole	Adoptable
5.011	38	1500	Manhole	Adoptable	39	1500	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
5.012	11.948	90.0	525	Circular_Default Sewer Type	44.170	42.445	1.200	43.710	42.312	0.873
5.013	20.747	80.1	525	Circular_Default Sewer Type	43.710	42.312	0.873	43.366	42.053	0.788
5.014	14.522	34.1	525	Circular_Default Sewer Type	43.366	42.041	0.800	42.628	41.615	0.488
5.015	22.760	48.9	675	Circular_Default Sewer Type	42.628	41.465	0.488	42.500	41.000	0.825
8.000	35.606	40.2	225	Circular_Default Sewer Type	50.315	48.811	1.279	49.865	47.926	1.714
8.001	17.475	169.7	225	Circular_Default Sewer Type	49.865	47.926	1.714	49.291	47.823	1.243
9.000	34.498	114.7	225	Circular_Default Sewer Type	49.567	48.124	1.218	49.291	47.823	1.243
8.002	20.414	172.8	375	Circular_Default Sewer Type	49.291	47.673	1.243	49.130	47.555	1.200
8.003	75.589	69.4	375	Circular_Default Sewer Type	49.130	47.555	1.200	48.041	46.466	1.200
8.004	27.848	44.6	375	Circular_Default Sewer Type	48.041	46.466	1.200	47.416	45.841	1.200
8.005	40.441	46.3	375	Circular_Default Sewer Type	47.416	45.841	1.200	46.542	44.967	1.200
8.006	23.234	28.9	375	Circular_Default Sewer Type	46.542	44.967	1.200	45.739	44.164	1.200
10.000	14.310	168.4	225	Circular_Default Sewer Type	46.181	44.738	1.218	46.094	44.653	1.216
10.001	8.367	167.3	225	Circular_Default Sewer Type	46.094	44.653	1.216	46.185	44.603	1.357
10.002	14.570	50.4	225	Circular_Default Sewer Type	46.185	44.603	1.357	45.739	44.314	1.200
8.007	26.606	31.7	375	Circular_Default Sewer Type	45.739	44.164	1.200	44.900	43.325	1.200
8.008	30.641	18.0	375	Circular_Default Sewer Type	44.900	43.325	1.200	43.593	41.622	1.596
11.000	12.534	24.2	300	Circular_Default Sewer Type	48.293	46.793	1.200	48.103	46.276	1.527
11.001	30.954	117.0	300	Circular_Default Sewer Type	48.103	46.276	1.527	47.511	46.011	1.200
11.002	14.962	12.4	300	Circular_Default Sewer Type	47.511	46.011	1.200	47.161	44.802	2.059
11.003	40.208	130.8	300	Circular_Default Sewer Type	47.161	44.802	2.059	46.329	44.495	1.534
11.004	29.089	17.5	300	Circular_Default Sewer Type	46.329	44.495	1.534	45.039	42.833	1.906
11.005	30.844	33.1	300	Circular_Default Sewer Type	45.039	42.833	1.906	43.570	41.900	1.370
12.000	19.599	12.1	225	Circular_Default Sewer Type	47.572	46.164	1.183	46.919	44.542	2.152
12.001	39.877	169.7	225	Circular_Default Sewer Type	46.919	44.542	2.152	46.014	44.307	1.482

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
5.012	39	1500	Manhole	Adoptable	40	1500	Manhole	Adoptable
5.013	40	1500	Manhole	Adoptable	41	1500	Manhole	Adoptable
5.014	41	1500	Manhole	Adoptable	42	1500	Manhole	Adoptable
5.015	42	1500	Manhole	Adoptable	78	1500	Manhole	Adoptable
8.000	43	1200	Manhole	Adoptable	44	1200	Manhole	Adoptable
8.001	44	1200	Manhole	Adoptable	46	1350	Manhole	Adoptable
9.000	45	1200	Manhole	Adoptable	46	1350	Manhole	Adoptable
8.002	46	1350	Manhole	Adoptable	47	1350	Manhole	Adoptable
8.003	47	1350	Manhole	Adoptable	48	1350	Manhole	Adoptable
8.004	48	1350	Manhole	Adoptable	49	1350	Manhole	Adoptable
8.005	49	1350	Manhole	Adoptable	50	1350	Manhole	Adoptable
8.006	50	1350	Manhole	Adoptable	54	1350	Manhole	Adoptable
10.000	51	1200	Manhole	Adoptable	52	1200	Manhole	Adoptable
10.001	52	1200	Manhole	Adoptable	53	1200	Manhole	Adoptable
10.002	53	1200	Manhole	Adoptable	54	1350	Manhole	Adoptable
8.007	54	1350	Manhole	Adoptable	55	1350	Manhole	Adoptable
8.008	55	1350	Manhole	Adoptable	73	1500	Manhole	Adoptable
11.000	56	1200	Manhole	Adoptable	57	1200	Manhole	Adoptable
11.001	57	1200	Manhole	Adoptable	58	1200	Manhole	Adoptable
11.002	58	1200	Manhole	Adoptable	59	1200	Manhole	Adoptable
11.003	59	1200	Manhole	Adoptable	60	1200	Manhole	Adoptable
11.004	60	1200	Manhole	Adoptable	61	1200	Manhole	Adoptable
11.005	61	1200	Manhole	Adoptable	71	1350	Manhole	Adoptable
12.000	62	1200	Manhole	Adoptable	63	1200	Manhole	Adoptable
12.001	63	1200	Manhole	Adoptable	65	1200	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
13.000	33.994	94.4	225	Circular_Default Sewer Type	46.060	44.667	1.168	46.014	44.307	1.482
12.002	12.376	86.0	225	Circular_Default Sewer Type	46.014	44.307	1.482	45.588	44.163	1.200
12.003	19.716	26.0	225	Circular_Default Sewer Type	45.588	44.163	1.200	44.944	43.404	1.315
12.004	17.092	40.8	225	Circular_Default Sewer Type	44.944	43.404	1.315	44.410	42.985	1.200
12.005	9.608	57.5	300	Circular_Default Sewer Type	44.410	42.910	1.200	44.243	42.743	1.200
12.006	14.881	23.1	300	Circular_Default Sewer Type	44.243	42.743	1.200	44.076	42.099	1.677
12.007	46.234	232.3	300	Circular_Default Sewer Type	44.076	42.099	1.677	43.570	41.900	1.370
11.006	37.616	250.8	450	Circular_Default Sewer Type	43.570	41.750	1.370	43.057	41.600	1.007
11.007	30.535	576.1	600	Circular_Default Sewer Type	43.057	41.450	1.007	43.593	41.397	1.596
8.009	8.829	600.0	675	Circular_Default Sewer Type	43.593	41.322	1.596	43.210	41.307	1.228
8.010	19.424	607.0	675	Circular_Default Sewer Type	43.210	41.307	1.228	42.600	41.275	0.650
8.011	62.407	600.1	675	Circular_Default Sewer Type	42.600	41.275	0.650	42.510	41.171	0.664
8.012	59.051	602.6	675	Circular_Default Sewer Type	42.510	41.171	0.664	42.733	41.073	0.985
8.013	35.710	489.2	675	Circular_Default Sewer Type	42.733	41.073	0.985	42.500	41.000	0.825
1.017	5.100	255.0	675	Circular_Default Sewer Type	42.500	41.000	0.825	42.500	40.980	0.845
1.018	38.424	480.3	675	Circular_Default Sewer Type	42.500	40.980	0.845	42.000	40.900	0.425

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
13.000	64	1200	Manhole	Adoptable	65	1200	Manhole	Adoptable
12.002	65	1200	Manhole	Adoptable	66	1200	Manhole	Adoptable
12.003	66	1200	Manhole	Adoptable	67	1200	Manhole	Adoptable
12.004	67	1200	Manhole	Adoptable	68	1200	Manhole	Adoptable
12.005	68	1200	Manhole	Adoptable	69	1200	Manhole	Adoptable
12.006	69	1200	Manhole	Adoptable	70	1200	Manhole	Adoptable
12.007	70	1200	Manhole	Adoptable	71	1350	Manhole	Adoptable
11.006	71	1350	Manhole	Adoptable	72	1500	Manhole	Adoptable
11.007	72	1500	Manhole	Adoptable	73	1500	Manhole	Adoptable
8.009	73	1500	Manhole	Adoptable	74	1500	Manhole	Adoptable
8.010	74	1500	Manhole	Adoptable	75	1500	Manhole	Adoptable
8.011	75	1500	Manhole	Adoptable	76	1500	Manhole	Adoptable
8.012	76	1500	Manhole	Adoptable	77	1500	Manhole	Adoptable
8.013	77	1500	Manhole	Adoptable	78	1500	Manhole	Adoptable
1.017	78	1500	Manhole	Adoptable	79	1500	Manhole	Adoptable
1.018	79	1500	Manhole	Adoptable	80	1500	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
1	478918.683	170622.890	49.134	1.355	1200		0	1.000	47.779	300
2	478918.364	170645.898	48.821	1.774	1350		1	1.000	47.122	300
							0	1.001	47.047	375
3	478912.657	170669.494	48.501	1.686	1350		1	1.001	46.890	375
							0	1.002	46.815	450

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
4	478907.616	170676.370	48.414	1.650	1350		1	1.002	46.764	450
							0	1.003	46.764	450
5	478901.040	170693.726	48.276	1.732	1350		1	1.003	46.619	450
							0	1.004	46.544	525
6	478883.084	170726.254	47.976	1.753	1500		1	1.004	46.223	525
							0	1.005	46.223	525
7	478878.697	170742.520	47.841	1.807	1500		1	1.005	46.034	525
							0	1.006	46.034	525
8	478848.505	170765.973	48.034	1.425	1200					
							0	2.000	46.609	225
9	478868.200	170774.842	47.750	1.860	1500		1	2.000	46.265	225
							2	1.006	45.965	525
							0	1.007	45.890	600
10	478904.735	170786.668	47.040	1.877	1500		1	1.007	45.163	600
							0	1.008	45.163	600
11	478962.980	170711.961	47.510	1.506	1350					
							0	3.000	46.004	375
12	478943.908	170746.013	47.200	1.824	1350		1	3.000	45.451	375
							0	3.001	45.376	450
13	478928.626	170773.299	46.950	1.798	1500		1	3.001	45.227	450
							0	3.002	45.152	525
14	478918.819	170784.987	46.850	1.828	1500		1	3.002	45.097	525
							2	1.008	45.022	600
							0	1.009	45.022	600
15	478931.702	170799.165	46.430	1.800	1500		1	1.009	44.630	600
							0	1.010	44.630	600
16	478961.248	170809.058	45.810	2.283	1500		1	1.010	43.527	600
							0	1.011	43.527	600

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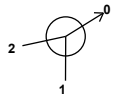
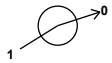
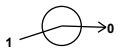
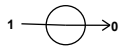
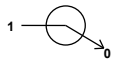
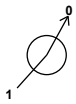
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
17	478991.410	170777.411	45.536	1.575	1350		0	4.000	43.961	375
18	478982.811	170803.093	45.536	1.659	1350		1	4.000	43.877	375
							0	4.001	43.877	375
19	478982.864	170813.710	45.494	2.005	1500		1	4.001	43.714	375
							2	1.011	43.489	600
							0	1.012	43.489	600
20	478992.731	170819.830	45.020	1.800	1500		1	1.012	43.220	600
							0	1.013	43.220	600
21	479012.808	170826.330	44.180	1.800	1500		1	1.013	42.380	600
							0	1.014	42.380	600
22	479027.198	170825.871	43.619	2.015	1500		1	1.014	41.604	600
							0	1.015	41.604	600
23	479041.847	170825.854	42.963	1.457	1500		1	1.015	41.506	600
							0	1.016	41.506	675
24	478900.986	170590.298	49.875	1.518	1200		0	5.000	48.357	225
25	478928.596	170599.446	49.520	1.425	1200		1	5.000	48.095	225
							0	5.001	48.095	225
26	478938.052	170589.872	49.760	1.895	1200		1	5.001	48.015	225
							0	5.002	47.865	375
27	478962.003	170616.526	48.894	1.614	1350		1	5.002	47.280	375
							0	5.003	47.280	375
28	478987.049	170644.397	48.014	1.650	1350		1	5.003	46.439	375
							0	5.004	46.364	450
29	479000.766	170659.662	47.531	1.894	1350		1	5.004	45.637	450
							0	5.005	45.637	450

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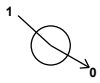
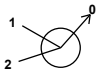
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
30	479012.669	170665.067	47.371	1.425	1200		0	6.000	45.946	225
31	479006.691	170670.424	47.383	1.777	1350		1 2 0	6.000 5.005 5.006	45.831 45.606 45.606	225 450 450
32	479001.012	170675.511	47.457	1.870	1350		1 0	5.006 5.007	45.587 45.587	450 450
33	479014.975	170691.111	46.845	1.652	1350		1 0	5.007 5.008	45.193 45.193	450 450
34	479036.494	170710.709	46.110	2.043	1350		1 0	5.008 5.009	44.067 44.067	450 450
35	479017.785	170739.822	46.035	1.471	1200		0	7.000	44.564	225
36	479038.331	170721.018	45.909	1.743	1200		1 0	7.000 7.001	44.166 44.166	225 225
37	479049.156	170714.831	45.811	2.019	1350		1 2 0	7.001 5.009 5.010	44.092 43.867 43.792	225 450 525
38	479070.263	170738.541	44.661	1.782	1500		1 0	5.010 5.011	42.879 42.879	525 525
39	479079.609	170749.041	44.170	1.725	1500		1 0	5.011 5.012	42.445 42.445	525 525
40	479078.343	170760.922	43.710	1.398	1500		1 0	5.012 5.013	42.312 42.312	525 525
41	479064.965	170776.780	43.366	1.325	1500		1 0	5.013 5.014	42.053 42.041	525 525
42	479076.408	170785.721	42.628	1.163	1500		1 0	5.014 5.015	41.615 41.465	525 675

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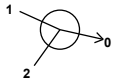
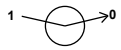
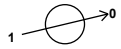
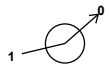
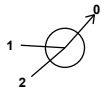
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
43	478949.748	170535.541	50.315	1.504	1200				
						0	8.000	48.811	225
44	478984.543	170543.098	49.865	1.939	1200		1	8.000	47.926	225
							0	8.001	47.926	225
45	478963.297	170571.547	49.567	1.443	1200				
						0	9.000	48.124	225
46	478994.718	170557.305	49.291	1.618	1350		1	9.000	47.823	225
							2	8.001	47.823	225
							0	8.002	47.673	375
47	479014.637	170552.839	49.130	1.575	1350		1	8.002	47.555	375
										
						0	8.003	47.555	375
48	479088.169	170570.352	48.041	1.575	1350		1	8.003	46.466	375
										
						0	8.004	46.466	375
49	479115.259	170576.803	47.416	1.575	1350		1	8.004	45.841	375
										
						0	8.005	45.841	375
50	479145.667	170603.465	46.542	1.575	1350		1	8.005	44.967	375
						0	8.006	44.967	375
51	479134.354	170636.452	46.181	1.443	1200				
						0	10.000	44.738	225
52	479145.044	170626.939	46.094	1.441	1200		1	10.000	44.653	225
						0	10.001	44.653	225
53	479148.759	170619.442	46.185	1.582	1200		1	10.001	44.603	225
						0	10.002	44.603	225
54	479163.304	170618.589	45.739	1.575	1350		1	10.002	44.314	225
							2	8.006	44.164	375
							0	8.007	44.164	375
55	479180.989	170638.466	44.900	1.575	1350		1	8.007	43.325	375
						0	8.008	43.325	375

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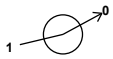
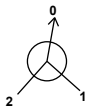
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
56	479040.454	170603.688	48.293	1.500	1200	0	11.000	46.793	300
57	479037.635	170615.901	48.103	1.827	1200	1 0	11.000 11.001	46.276 46.276	300 300
58	479067.747	170623.072	47.511	1.500	1200	1  0	11.001 11.002	46.011 46.011	300 300
59	479080.905	170630.195	47.161	2.359	1200	1 0	11.002 11.003	44.802 44.802	300 300
60	479107.990	170659.912	46.329	1.834	1200	1 0	11.003 11.004	44.495 44.495	300 300
61	479127.585	170681.411	45.039	2.206	1200	1 0	11.004 11.005	42.833 42.833	300 300
62	479024.634	170654.348	47.572	1.408	1200	0	12.000	46.164	225
63	479037.665	170668.988	46.919	2.377	1200	1 0	12.000 12.001	44.542 44.542	225 225
64	479089.573	170676.177	46.060	1.393	1200	0	13.000	44.667	225
65	479064.178	170698.775	46.014	1.707	1200	1 2  0	13.000 12.001 12.002	44.307 44.307 44.307	225 225 225
66	479066.344	170710.960	45.588	1.425	1200	1 0	12.002 12.003	44.163 44.163	225 225
67	479079.451	170725.689	44.944	1.540	1200	1 0	12.003 12.004	43.404 43.404	225 225
68	479090.814	170738.457	44.410	1.500	1200	1 0	12.004 12.005	42.985 42.910	225 300

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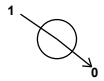
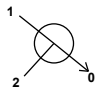
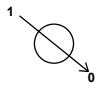
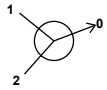
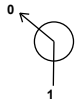
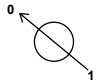
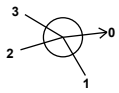
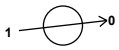
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
69	479099.944	170741.451	44.243	1.500	1200		1	12.005	42.743	300
							0	12.006	42.743	300
70	479112.221	170733.041	44.076	1.977	1200		1	12.006	42.099	300
							0	12.007	42.099	300
71	479148.362	170704.207	43.570	1.820	1350		1	12.007	41.900	300
							2	11.005	41.900	300
							0	11.006	41.750	450
72	479177.613	170680.556	43.057	1.607	1500		1	11.006	41.600	450
							0	11.007	41.450	600
73	479201.357	170661.357	43.593	2.271	1500		1	11.007	41.397	600
							2	8.008	41.622	375
							0	8.009	41.322	675
74	479209.608	170664.499	43.210	1.903	1500		1	8.009	41.307	675
							0	8.010	41.307	675
75	479209.886	170683.921	42.600	1.325	1500		1	8.010	41.275	675
							0	8.011	41.275	675
76	479161.818	170723.722	42.510	1.339	1500		1	8.011	41.171	675
							0	8.012	41.171	675
77	479116.335	170761.382	42.733	1.660	1500		1	8.012	41.073	675
							0	8.013	41.073	675
78	479098.236	170792.166	42.500	1.500	1500		1	8.013	41.000	675
							2	5.015	41.000	675
							3	1.016	41.000	675
							0	1.017	41.000	675
79	479103.303	170792.747	42.500	1.520	1500		1	1.017	40.980	675
							0	1.018	40.980	675
80	479141.477	170797.122	42.000	1.100	1500		1	1.018	40.900	675

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Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	✓	Check Discharge Volume	✓
Summer CV	0.750	Drain Down Time (mins)	240	100 year 360 minute (m³)	
Winter CV	0.840	Additional Storage (m³/ha)	20.0		
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

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 %)
2	0	0	0
30	0	0	0
100	0	0	0
100	40	10	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

Node 79 Online Head/Flow Control

Flap Valve	x	Invert Level (m)	40.980	Design Flow (l/s)	69.0
Replaces Downstream Link	✓	Design Depth (m)	0.850		

Head (m)	Flow (l/s)
0.850	69.000

Node 75 Online Orifice Control

Flap Valve	x	Invert Level (m)	41.275	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.127		

Node 76 Online Head/Flow Control

Flap Valve	x	Invert Level (m)	41.171	Design Flow (l/s)	20.0
Replaces Downstream Link	✓	Design Depth (m)	1.300		

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Head (m)	Flow (l/s)
1.300	20.000

Node 75 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	41.275
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1350.0	0.0	1.000	1350.0	0.0	1.010	0.0	0.0

Node 78 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	41.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	256

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	2100.0	0.0	1.000	2100.0	0.0	1.001	0.0	0.0

Node 76 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	41.171
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	450.0	0.0	1.000	450.0	0.0	1.001	0.0	0.0

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.826	0.047	9.9	0.1058	0.0000	OK
15 minute winter	2	10	47.141	0.094	21.0	0.2239	0.0000	OK
15 minute winter	3	10	46.926	0.111	27.1	0.2242	0.0000	OK
15 minute winter	4	11	46.873	0.109	33.4	0.2223	0.0000	OK
15 minute winter	5	11	46.656	0.112	44.2	0.2703	0.0000	OK
15 minute winter	6	11	46.349	0.127	56.4	0.3607	0.0000	OK
15 minute winter	7	11	46.229	0.195	63.2	0.4529	0.0000	OK
15 minute winter	8	10	46.659	0.050	6.9	0.0926	0.0000	OK
15 minute winter	9	11	46.012	0.122	89.3	0.4372	0.0000	OK
15 minute winter	10	11	45.331	0.168	95.7	0.3952	0.0000	OK
15 minute winter	11	10	46.076	0.072	19.2	0.2414	0.0000	OK
15 minute winter	12	11	45.499	0.123	35.2	0.3459	0.0000	OK
15 minute winter	13	11	45.292	0.140	40.5	0.3182	0.0000	OK
15 minute winter	14	11	45.190	0.168	139.1	0.3524	0.0000	OK
15 minute winter	15	11	44.762	0.132	143.5	0.2913	0.0000	OK
15 minute winter	16	12	43.795	0.268	147.6	0.5679	0.0000	OK
15 minute winter	17	10	44.061	0.100	17.2	0.3093	0.0000	OK
15 minute winter	18	10	43.960	0.083	23.4	0.1683	0.0000	OK
15 minute winter	19	12	43.680	0.191	171.3	0.3757	0.0000	OK
15 minute winter	20	12	43.377	0.157	174.4	0.3132	0.0000	OK
15 minute winter	21	12	42.515	0.135	177.2	0.2679	0.0000	OK
15 minute winter	22	11	41.900	0.296	183.4	0.6855	0.0000	OK
15 minute winter	23	11	41.839	0.333	188.5	0.7024	0.0000	OK
15 minute winter	24	10	48.420	0.063	8.6	0.1244	0.0000	OK
15 minute winter	25	11	48.187	0.092	13.0	0.1496	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	9.8	1.401	0.052	0.1602	
15 minute winter	2	1.001	3	20.6	0.996	0.128	0.5041	
15 minute winter	3	1.002	4	27.0	0.903	0.108	0.2547	
15 minute winter	4	1.003	5	33.6	1.184	0.118	0.5267	
15 minute winter	5	1.004	6	44.5	1.212	0.099	1.3672	
15 minute winter	6	1.005	7	57.0	1.018	0.111	0.9516	
15 minute winter	7	1.006	9	61.8	0.957	0.285	2.2113	
15 minute winter	8	2.000	9	6.7	1.057	0.103	0.1378	
15 minute winter	9	1.007	10	88.8	1.699	0.094	2.0210	
15 minute winter	10	1.008	14	94.6	1.485	0.137	0.9153	
15 minute winter	11	3.000	12	18.6	1.291	0.078	0.5642	
15 minute winter	12	3.001	13	34.9	1.019	0.157	1.0710	
15 minute winter	13	3.002	14	40.8	0.928	0.140	0.6710	
15 minute winter	14	1.009	15	138.5	2.520	0.140	1.0564	
15 minute winter	15	1.010	16	142.6	1.737	0.110	2.6096	
15 minute winter	16	1.011	19	148.3	1.497	0.523	2.1991	
15 minute winter	17	4.000	18	16.8	0.811	0.152	0.5639	
15 minute winter	18	4.001	19	23.2	1.360	0.093	0.1809	
15 minute winter	19	1.012	20	172.3	2.540	0.164	0.7893	
15 minute winter	20	1.013	21	175.1	3.307	0.127	1.1191	
15 minute winter	21	1.014	22	177.7	1.993	0.111	1.3326	
15 minute winter	22	1.015	23	185.9	1.384	0.331	2.1913	
15 minute winter	23	1.016	78	202.2	2.901	0.246	5.8961	
15 minute winter	24	5.000	25	8.4	0.704	0.171	0.3512	
15 minute winter	25	5.001	26	12.9	0.873	0.322	0.1982	

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	11	47.933	0.068	18.5	0.1086	0.0000	OK
15 minute winter	27	11	47.365	0.085	32.7	0.2370	0.0000	OK
15 minute winter	28	11	46.454	0.090	55.1	0.3259	0.0000	OK
15 minute winter	29	11	45.840	0.203	57.7	0.3334	0.0000	OK
15 minute winter	30	10	46.007	0.061	8.8	0.1247	0.0000	OK
15 minute winter	31	11	45.793	0.186	66.4	0.2666	0.0000	OK
15 minute winter	32	11	45.729	0.141	80.3	0.3681	0.0000	OK
15 minute winter	33	11	45.303	0.110	86.1	0.2178	0.0000	OK
15 minute winter	34	11	44.231	0.165	91.8	0.3081	0.0000	OK
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute summer	36	1	44.166	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37	11	43.917	0.125	97.8	0.2412	0.0000	OK
15 minute winter	38	11	43.008	0.130	103.3	0.2951	0.0000	OK
15 minute winter	39	11	42.628	0.183	105.4	0.3667	0.0000	OK
15 minute winter	40	11	42.482	0.170	106.7	0.3375	0.0000	OK
15 minute winter	41	11	42.188	0.147	116.0	0.4468	0.0000	OK
15 minute summer	42	10	41.708	0.243	110.9	0.4288	0.0000	OK
15 minute winter	43	10	48.874	0.063	14.6	0.1646	0.0000	OK
15 minute winter	44	11	48.045	0.119	20.4	0.1891	0.0000	OK
15 minute winter	45	11	48.180	0.056	6.6	0.1014	0.0000	OK
15 minute winter	46	11	47.804	0.131	36.3	0.3161	0.0000	OK
15 minute winter	47	11	47.662	0.107	43.5	0.2289	0.0000	OK
15 minute winter	48	11	46.582	0.116	58.7	0.3422	0.0000	OK
15 minute winter	49	11	45.960	0.119	61.1	0.2011	0.0000	OK
15 minute winter	50	11	45.078	0.111	70.1	0.2655	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	18.6	1.160	0.072	0.5753	
15 minute winter	27	5.003	28	32.6	1.783	0.108	0.6844	
15 minute winter	28	5.004	29	55.2	1.243	0.090	0.9432	
15 minute winter	29	5.005	31	58.1	0.885	0.360	0.8064	
15 minute winter	30	6.000	31	8.7	1.059	0.139	0.0657	
15 minute winter	31	5.006	32	66.6	1.280	0.415	0.3980	
15 minute winter	32	5.007	33	80.5	2.229	0.181	0.7590	
15 minute winter	33	5.008	34	86.2	2.107	0.135	1.2004	
15 minute winter	34	5.009	37	91.6	1.901	0.231	0.6423	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0000	
15 minute summer	36	7.001	37	0.0	0.000	0.000	0.0000	
15 minute winter	37	5.010	38	97.7	2.418	0.119	1.2833	
15 minute winter	38	5.011	39	102.9	1.906	0.121	0.7634	
15 minute winter	39	5.012	40	104.8	1.642	0.205	0.7631	
15 minute winter	40	5.013	41	106.6	1.879	0.197	1.1777	
15 minute winter	41	5.014	42	116.2	2.562	0.140	0.6590	
15 minute summer	42	5.015	78	114.8	3.120	0.086	1.3304	
15 minute winter	43	8.000	44	14.4	0.968	0.175	0.5364	
15 minute winter	44	8.001	46	20.0	0.978	0.502	0.3568	
15 minute winter	45	9.000	46	6.4	0.846	0.131	0.2598	
15 minute winter	46	8.002	47	36.6	1.220	0.241	0.6139	
15 minute winter	47	8.003	48	43.7	1.592	0.182	2.0755	
15 minute winter	48	8.004	49	58.6	1.985	0.195	0.8217	
15 minute winter	49	8.005	50	60.7	2.112	0.206	1.1627	
15 minute winter	50	8.006	54	69.5	2.217	0.186	0.7313	

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	51	10	44.818	0.080	9.9	0.1729	0.0000	OK
15 minute winter	52	10	44.740	0.087	11.8	0.1161	0.0000	OK
15 minute winter	53	11	44.670	0.067	12.9	0.0839	0.0000	OK
15 minute winter	54	11	44.299	0.135	86.2	0.2441	0.0000	OK
15 minute winter	55	11	43.436	0.111	93.2	0.2439	0.0000	OK
15 minute winter	56	10	46.841	0.048	12.6	0.1142	0.0000	OK
15 minute winter	57	10	46.370	0.094	19.1	0.1580	0.0000	OK
15 minute winter	58	10	46.065	0.054	22.8	0.0825	0.0000	OK
15 minute winter	59	11	44.927	0.125	30.6	0.2045	0.0000	OK
15 minute winter	60	11	44.563	0.068	30.5	0.0770	0.0000	OK
15 minute winter	61	11	42.926	0.093	38.1	0.1557	0.0000	OK
15 minute summer	62	1	46.164	0.000	0.0	0.0000	0.0000	OK
15 minute summer	63	1	44.542	0.000	0.0	0.0000	0.0000	OK
15 minute winter	64	10	44.714	0.047	5.3	0.0802	0.0000	OK
15 minute winter	65	11	44.379	0.072	11.2	0.1202	0.0000	OK
15 minute winter	66	11	44.212	0.049	10.9	0.0559	0.0000	OK
15 minute winter	67	11	43.473	0.069	15.3	0.1091	0.0000	OK
15 minute winter	68	11	42.986	0.076	17.2	0.1014	0.0000	OK
15 minute winter	69	11	42.798	0.055	17.2	0.0622	0.0000	OK
15 minute winter	70	12	42.198	0.099	17.2	0.1121	0.0000	OK
15 minute winter	71	12	42.004	0.254	62.6	0.5600	0.0000	OK
15 minute winter	72	12	41.977	0.527	77.9	1.4573	0.0000	OK
15 minute summer	73	12	41.959	0.637	207.4	1.5745	0.0000	OK
15 minute summer	74	12	41.952	0.645	236.2	1.1404	0.0000	OK
360 minute winter	75	272	41.450	0.175	40.4	237.0969	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	51	10.000	52	9.8	0.733	0.244	0.1907	
15 minute winter	52	10.001	53	11.6	0.976	0.290	0.0998	
15 minute winter	53	10.002	54	12.9	1.359	0.176	0.1387	
15 minute winter	54	8.007	55	85.7	2.731	0.241	0.8367	
15 minute winter	55	8.008	73	92.7	2.953	0.196	1.9978	
15 minute winter	56	11.000	57	12.5	0.987	0.055	0.1633	
15 minute winter	57	11.001	58	18.8	1.394	0.183	0.4250	
15 minute winter	58	11.002	59	22.6	1.290	0.071	0.2707	
15 minute winter	59	11.003	60	30.5	1.560	0.314	0.7973	
15 minute winter	60	11.004	61	30.6	2.012	0.115	0.4443	
15 minute winter	61	11.005	71	38.1	2.107	0.196	0.5992	
15 minute summer	62	12.000	63	0.0	0.000	0.000	0.0000	
15 minute summer	63	12.001	65	0.0	0.000	0.000	0.2126	
15 minute winter	64	13.000	65	5.2	0.620	0.097	0.2884	
15 minute winter	65	12.002	66	10.9	1.257	0.194	0.1081	
15 minute winter	66	12.003	67	10.9	1.316	0.107	0.1646	
15 minute winter	67	12.004	68	15.3	1.542	0.188	0.1700	
15 minute winter	68	12.005	69	17.2	1.518	0.117	0.1099	
15 minute winter	69	12.006	70	17.2	1.261	0.074	0.2141	
15 minute winter	70	12.007	71	16.9	0.825	0.233	0.9727	
15 minute winter	71	11.006	72	71.8	1.036	0.353	4.4078	
15 minute winter	72	11.007	73	123.0	0.691	0.432	8.1759	
15 minute summer	73	8.009	74	236.2	0.897	0.621	3.0924	
15 minute summer	74	8.010	75	257.4	2.261	0.681	3.4426	
360 minute winter	75	Orifice	76	11.2				

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	76	705	41.426	0.255	10.5	115.3987	0.0000	OK
480 minute winter	77	360	41.198	0.125	3.8	0.3350	0.0000	OK
480 minute winter	78	360	41.198	0.198	57.1	417.5936	0.0000	OK
480 minute winter	79	360	41.197	0.217	17.7	0.3843	0.0000	OK
15 minute summer	80	1	40.900	0.000	7.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	76	Head/Flow	77	3.9				
480 minute winter	77	8.013	78	3.9	0.284	0.009	2.3729	
480 minute winter	78	1.017	79	17.7	0.448	0.030	0.4757	
480 minute winter	79	Head/Flow	80	17.7				479.1

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.859	0.080	29.5	0.1797	0.0000	OK
15 minute winter	2	10	47.218	0.171	62.7	0.4092	0.0000	OK
15 minute winter	3	10	47.025	0.210	81.0	0.4250	0.0000	OK
15 minute winter	4	10	46.964	0.200	100.1	0.4071	0.0000	OK
15 minute winter	5	10	46.750	0.206	131.9	0.4960	0.0000	OK
15 minute winter	6	11	46.474	0.251	167.5	0.7168	0.0000	OK
15 minute winter	7	11	46.399	0.365	187.4	0.8478	0.0000	OK
15 minute winter	8	10	46.698	0.089	20.4	0.1659	0.0000	OK
15 minute winter	9	11	46.114	0.224	269.4	0.8066	0.0000	OK
15 minute winter	10	11	45.497	0.333	289.9	0.7846	0.0000	OK
15 minute winter	11	10	46.128	0.124	57.0	0.4178	0.0000	OK
15 minute winter	12	10	45.604	0.229	105.4	0.6403	0.0000	OK
15 minute winter	13	11	45.417	0.265	120.6	0.6014	0.0000	OK
15 minute winter	14	11	45.345	0.324	421.3	0.6777	0.0000	OK
15 minute winter	15	11	44.876	0.246	436.1	0.5433	0.0000	OK
15 minute winter	16	11	44.076	0.550	450.8	1.1642	0.0000	OK
15 minute winter	17	10	44.143	0.182	51.1	0.5603	0.0000	OK
15 minute winter	18	10	44.030	0.153	69.9	0.3119	0.0000	OK
15 minute winter	19	11	43.873	0.384	522.3	0.7550	0.0000	OK
15 minute winter	20	11	43.516	0.296	527.6	0.5885	0.0000	OK
15 minute winter	21	11	42.686	0.306	533.3	0.6092	0.0000	OK
15 minute winter	22	11	42.243	0.640	551.2	1.4799	0.0000	SURCHARGED
15 minute summer	23	11	42.046	0.541	541.0	1.1405	0.0000	OK
15 minute winter	24	10	48.470	0.113	25.5	0.2243	0.0000	OK
15 minute winter	25	11	48.287	0.192	38.9	0.3114	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	29.3	1.742	0.156	0.3981	
15 minute winter	2	1.001	3	61.4	1.325	0.382	1.1305	
15 minute winter	3	1.002	4	80.5	1.146	0.322	0.5986	
15 minute winter	4	1.003	5	99.7	1.570	0.349	1.1789	
15 minute winter	5	1.004	6	132.4	1.472	0.294	3.3458	
15 minute winter	6	1.005	7	168.9	1.284	0.329	2.2111	
15 minute winter	7	1.006	9	187.0	1.318	0.862	4.8118	
15 minute winter	8	2.000	9	20.1	1.419	0.305	0.3055	
15 minute winter	9	1.007	10	269.6	2.103	0.284	4.9324	
15 minute winter	10	1.008	14	289.5	1.847	0.421	2.2390	
15 minute winter	11	3.000	12	56.4	1.563	0.236	1.4506	
15 minute winter	12	3.001	13	103.5	1.354	0.465	2.4013	
15 minute winter	13	3.002	14	120.7	1.183	0.416	1.6011	
15 minute winter	14	1.009	15	421.3	3.209	0.427	2.5230	
15 minute winter	15	1.010	16	436.0	2.217	0.336	5.9037	
15 minute winter	16	1.011	19	446.7	1.938	1.577	5.0944	
15 minute winter	17	4.000	18	50.3	1.056	0.454	1.2904	
15 minute winter	18	4.001	19	69.0	1.766	0.278	0.4592	
15 minute winter	19	1.012	20	520.2	3.171	0.496	1.9084	
15 minute winter	20	1.013	21	525.9	3.813	0.382	2.9861	
15 minute winter	21	1.014	22	533.7	2.443	0.333	3.0687	
15 minute winter	22	1.015	23	554.8	2.058	0.986	4.0002	
15 minute summer	23	1.016	78	562.9	3.591	0.684	10.8745	
15 minute winter	24	5.000	25	25.2	0.891	0.510	0.8122	
15 minute winter	25	5.001	26	38.1	1.131	0.953	0.4511	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	10	47.982	0.117	55.1	0.1881	0.0000	OK
15 minute winter	27	11	47.433	0.153	97.7	0.4268	0.0000	OK
15 minute winter	28	10	46.528	0.164	165.6	0.5914	0.0000	OK
15 minute winter	29	11	46.041	0.404	172.3	0.6632	0.0000	OK
15 minute winter	30	10	46.061	0.115	25.9	0.2361	0.0000	OK
15 minute winter	31	11	45.957	0.351	197.7	0.5019	0.0000	OK
15 minute winter	32	11	45.857	0.270	239.1	0.7040	0.0000	OK
15 minute winter	33	11	45.393	0.201	256.6	0.3964	0.0000	OK
15 minute winter	34	11	44.400	0.333	274.3	0.6233	0.0000	OK
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute summer	36	1	44.166	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37	11	44.021	0.229	293.9	0.4407	0.0000	OK
15 minute winter	38	11	43.146	0.268	311.0	0.6087	0.0000	OK
15 minute winter	39	11	42.818	0.373	318.2	0.7465	0.0000	OK
15 minute winter	40	11	42.648	0.336	323.1	0.6653	0.0000	OK
15 minute winter	41	11	42.330	0.289	353.0	0.8821	0.0000	OK
15 minute winter	42	8	41.798	0.333	352.1	0.5881	0.0000	OK
15 minute winter	43	10	48.925	0.114	43.2	0.2970	0.0000	OK
15 minute winter	44	11	48.295	0.368	60.5	0.5876	0.0000	SURCHARGED
15 minute winter	45	10	48.225	0.101	19.6	0.1840	0.0000	OK
15 minute winter	46	10	47.918	0.245	108.0	0.5937	0.0000	OK
15 minute winter	47	11	47.751	0.196	128.4	0.4181	0.0000	OK
15 minute winter	48	11	46.689	0.223	174.2	0.6582	0.0000	OK
15 minute winter	49	11	46.068	0.227	182.5	0.3828	0.0000	OK
15 minute winter	50	11	45.184	0.217	210.3	0.5183	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	55.1	1.547	0.215	1.2786	
15 minute winter	27	5.003	28	97.0	2.389	0.323	1.5224	
15 minute winter	28	5.004	29	164.4	1.575	0.269	2.0658	
15 minute winter	29	5.005	31	173.1	1.220	1.072	1.7351	
15 minute winter	30	6.000	31	25.6	1.359	0.411	0.1709	
15 minute winter	31	5.006	32	198.4	1.702	1.237	0.8837	
15 minute winter	32	5.007	33	240.0	2.863	0.540	1.7541	
15 minute winter	33	5.008	34	257.7	2.633	0.404	2.8243	
15 minute winter	34	5.009	37	275.4	2.439	0.695	1.4987	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0000	
15 minute summer	36	7.001	37	0.0	0.000	0.000	0.0000	
15 minute winter	37	5.010	38	294.4	2.930	0.357	3.1902	
15 minute winter	38	5.011	39	310.8	2.250	0.364	1.9331	
15 minute winter	39	5.012	40	317.6	2.047	0.621	1.8521	
15 minute winter	40	5.013	41	321.6	2.430	0.593	2.7486	
15 minute winter	41	5.014	42	352.1	3.283	0.423	1.5577	
15 minute winter	42	5.015	78	354.8	3.955	0.264	2.1622	
15 minute winter	43	8.000	44	42.8	1.249	0.521	1.0692	
15 minute winter	44	8.001	46	58.9	1.484	1.481	0.6722	
15 minute winter	45	9.000	46	19.0	1.138	0.392	0.5796	
15 minute winter	46	8.002	47	108.2	1.604	0.712	1.3747	
15 minute winter	47	8.003	48	129.8	2.052	0.540	4.7831	
15 minute winter	48	8.004	49	175.1	2.538	0.583	1.9216	
15 minute winter	49	8.005	50	182.6	2.687	0.619	2.7507	
15 minute winter	50	8.006	54	210.0	2.763	0.563	1.7610	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	51	10	44.898	0.160	29.5	0.3476	0.0000	OK
15 minute winter	52	10	44.818	0.165	34.9	0.2213	0.0000	OK
15 minute winter	53	10	44.728	0.125	38.4	0.1577	0.0000	OK
15 minute winter	54	11	44.435	0.271	259.3	0.4914	0.0000	OK
15 minute winter	55	10	43.540	0.215	280.5	0.4725	0.0000	OK
15 minute winter	56	10	46.875	0.082	37.3	0.1956	0.0000	OK
15 minute winter	57	10	46.448	0.172	56.7	0.2892	0.0000	OK
15 minute winter	58	10	46.104	0.093	67.7	0.1426	0.0000	OK
15 minute winter	59	10	45.050	0.247	91.0	0.4056	0.0000	OK
15 minute winter	60	11	44.614	0.119	90.1	0.1350	0.0000	OK
15 minute winter	61	10	43.033	0.200	112.7	0.3349	0.0000	OK
15 minute summer	62	1	46.164	0.000	0.0	0.0000	0.0000	OK
15 minute summer	63	1	44.542	0.000	0.0	0.0000	0.0000	OK
15 minute winter	64	10	44.749	0.082	15.7	0.1403	0.0000	OK
15 minute winter	65	11	44.441	0.134	33.1	0.2229	0.0000	OK
15 minute winter	66	11	44.250	0.087	32.3	0.0979	0.0000	OK
15 minute winter	67	11	43.535	0.131	45.4	0.2070	0.0000	OK
15 minute winter	68	11	43.050	0.140	51.2	0.1864	0.0000	OK
15 minute summer	69	10	42.862	0.119	49.2	0.1351	0.0000	OK
15 minute summer	70	10	42.761	0.662	56.9	0.7483	0.0000	SURCHARGED
15 minute summer	71	10	42.661	0.911	191.3	2.0054	0.0000	SURCHARGED
15 minute summer	72	10	42.461	1.011	234.8	2.7946	0.0000	SURCHARGED
15 minute winter	73	9	42.385	1.063	571.4	2.6283	0.0000	SURCHARGED
15 minute winter	74	9	42.333	1.026	589.8	1.8135	0.0000	SURCHARGED
360 minute winter	75	352	41.684	0.409	88.5	553.8512	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	51	10.000	52	29.0	0.944	0.727	0.4400	
15 minute winter	52	10.001	53	34.5	1.273	0.860	0.2260	
15 minute winter	53	10.002	54	38.2	1.767	0.520	0.3233	
15 minute winter	54	8.007	55	258.3	3.491	0.725	1.9950	
15 minute winter	55	8.008	73	283.2	3.630	0.598	2.6932	
15 minute winter	56	11.000	57	37.1	1.310	0.164	0.3594	
15 minute winter	57	11.001	58	55.9	1.862	0.545	0.9361	
15 minute winter	58	11.002	59	67.4	1.634	0.212	0.6040	
15 minute winter	59	11.003	60	90.1	2.003	0.929	1.7712	
15 minute winter	60	11.004	61	90.6	2.716	0.339	1.0980	
15 minute winter	61	11.005	71	117.3	2.403	0.605	1.8550	
15 minute summer	62	12.000	63	0.0	0.000	0.000	0.0000	
15 minute summer	63	12.001	65	0.0	0.000	0.000	0.4782	
15 minute winter	64	13.000	65	15.5	0.819	0.289	0.6433	
15 minute winter	65	12.002	66	32.3	1.668	0.577	0.2401	
15 minute winter	66	12.003	67	32.5	1.713	0.317	0.3739	
15 minute winter	67	12.004	68	45.7	2.019	0.560	0.3871	
15 minute winter	68	12.005	69	51.4	2.006	0.350	0.2470	
15 minute summer	69	12.006	70	56.9	1.585	0.245	0.7184	
15 minute summer	70	12.007	71	61.5	1.026	0.847	3.2558	
15 minute summer	71	11.006	72	206.3	1.339	1.014	5.9600	
15 minute summer	72	11.007	73	249.1	0.885	0.875	8.6010	
15 minute winter	73	8.009	74	589.8	1.652	1.551	3.1518	
15 minute winter	74	8.010	75	609.4	3.199	1.612	3.7164	
360 minute winter	75	Orifice	76	17.5				

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	76	735	41.655	0.484	13.6	218.5557	0.0000	OK
240 minute winter	77	228	41.431	0.358	5.6	0.9557	0.0000	OK
240 minute winter	78	228	41.431	0.431	209.2	907.1733	0.0000	OK
240 minute winter	79	228	41.430	0.450	36.5	0.7955	0.0000	OK
15 minute summer	80	1	40.900	0.000	18.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	76	Head/Flow	77	6.1				
240 minute winter	77	8.013	78	5.2	0.461	0.012	7.7208	
240 minute winter	78	1.017	79	36.5	0.455	0.062	1.2578	
240 minute winter	79	Head/Flow	80	36.5				699.8

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.869	0.090	38.0	0.2023	0.0000	OK
15 minute winter	2	10	47.247	0.200	80.7	0.4774	0.0000	OK
15 minute winter	3	10	47.062	0.247	104.5	0.5006	0.0000	OK
15 minute winter	4	10	46.997	0.233	129.2	0.4752	0.0000	OK
15 minute winter	5	10	46.787	0.242	170.4	0.5850	0.0000	OK
15 minute winter	6	11	46.529	0.307	216.3	0.8743	0.0000	OK
15 minute winter	7	11	46.467	0.433	241.0	1.0043	0.0000	OK
15 minute winter	8	10	46.712	0.103	26.3	0.1923	0.0000	OK
15 minute winter	9	11	46.154	0.264	346.9	0.9484	0.0000	OK
15 minute winter	10	11	45.562	0.399	373.5	0.9386	0.0000	OK
15 minute winter	11	10	46.146	0.142	73.4	0.4773	0.0000	OK
15 minute winter	12	10	45.645	0.269	135.9	0.7529	0.0000	OK
15 minute winter	13	11	45.473	0.321	156.1	0.7279	0.0000	OK
15 minute winter	14	11	45.405	0.383	543.2	0.8032	0.0000	OK
15 minute winter	15	11	44.943	0.313	562.6	0.6922	0.0000	OK
15 minute winter	16	11	44.261	0.734	581.0	1.5544	0.0000	SURCHARGED
15 minute winter	17	10	44.175	0.214	65.8	0.6586	0.0000	OK
15 minute winter	18	11	44.067	0.190	89.7	0.3873	0.0000	OK
15 minute winter	19	11	43.954	0.465	675.8	0.9145	0.0000	OK
15 minute winter	20	11	43.572	0.352	683.3	0.7009	0.0000	OK
15 minute winter	21	11	42.805	0.425	690.9	0.8450	0.0000	OK
15 minute winter	22	11	42.462	0.859	712.1	1.9864	0.0000	SURCHARGED
15 minute summer	23	11	42.148	0.643	696.0	1.3564	0.0000	OK
15 minute winter	24	10	48.489	0.132	32.9	0.2625	0.0000	OK
15 minute winter	25	10	48.362	0.267	50.2	0.4324	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	37.7	1.744	0.200	0.5241	
15 minute winter	2	1.001	3	79.2	1.409	0.493	1.3712	
15 minute winter	3	1.002	4	103.9	1.207	0.416	0.7338	
15 minute winter	4	1.003	5	128.2	1.669	0.449	1.4284	
15 minute winter	5	1.004	6	170.5	1.500	0.378	4.2340	
15 minute winter	6	1.005	7	217.2	1.343	0.423	2.7069	
15 minute winter	7	1.006	9	240.8	1.429	1.110	5.6804	
15 minute winter	8	2.000	9	25.9	1.513	0.394	0.3699	
15 minute winter	9	1.007	10	347.3	2.177	0.366	6.1094	
15 minute winter	10	1.008	14	373.4	1.934	0.543	2.7591	
15 minute winter	11	3.000	12	72.6	1.560	0.304	1.8668	
15 minute winter	12	3.001	13	133.3	1.431	0.599	2.9260	
15 minute winter	13	3.002	14	155.5	1.214	0.536	2.0607	
15 minute winter	14	1.009	15	543.5	3.256	0.551	3.2443	
15 minute winter	15	1.010	16	561.9	2.296	0.433	6.7033	
15 minute winter	16	1.011	19	579.6	2.112	2.046	5.7047	
15 minute winter	17	4.000	18	64.4	1.087	0.582	1.6241	
15 minute winter	18	4.001	19	87.1	1.803	0.350	0.6933	
15 minute winter	19	1.012	20	673.8	3.308	0.642	2.3592	
15 minute winter	20	1.013	21	681.4	3.852	0.495	4.0666	
15 minute winter	21	1.014	22	686.6	2.589	0.428	3.5636	
15 minute winter	22	1.015	23	715.4	2.540	1.272	4.1263	
15 minute summer	23	1.016	78	724.5	3.662	0.881	12.7537	
15 minute winter	24	5.000	25	32.5	0.919	0.659	0.9306	
15 minute winter	25	5.001	26	49.1	1.251	1.228	0.5020	

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	10	48.000	0.135	71.4	0.2175	0.0000	OK
15 minute winter	27	11	47.458	0.177	126.2	0.4959	0.0000	OK
15 minute winter	28	11	46.547	0.183	213.5	0.6601	0.0000	OK
15 minute winter	29	11	46.170	0.533	222.0	0.8752	0.0000	SURCHARGED
15 minute winter	30	11	46.093	0.147	33.4	0.3034	0.0000	OK
15 minute winter	31	11	46.063	0.456	255.3	0.6530	0.0000	SURCHARGED
15 minute winter	32	11	45.910	0.323	308.2	0.8419	0.0000	OK
15 minute winter	33	11	45.431	0.238	330.5	0.4710	0.0000	OK
15 minute winter	34	11	44.484	0.417	352.8	0.7805	0.0000	OK
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute summer	36	1	44.166	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37	11	44.059	0.267	377.0	0.5137	0.0000	OK
15 minute winter	38	11	43.210	0.331	398.7	0.7525	0.0000	OK
15 minute winter	39	11	42.903	0.458	408.2	0.9159	0.0000	OK
15 minute winter	40	11	42.716	0.404	414.8	0.7999	0.0000	OK
15 minute winter	41	11	42.386	0.345	453.8	1.0510	0.0000	OK
15 minute summer	42	10	41.830	0.365	437.0	0.6455	0.0000	OK
15 minute winter	43	10	48.962	0.151	55.7	0.3914	0.0000	OK
15 minute winter	44	11	48.498	0.572	76.7	0.9123	0.0000	SURCHARGED
15 minute winter	45	10	48.241	0.117	25.3	0.2134	0.0000	OK
15 minute winter	46	11	47.966	0.293	138.3	0.7085	0.0000	OK
15 minute winter	47	11	47.786	0.231	165.2	0.4916	0.0000	OK
15 minute winter	48	11	46.734	0.268	223.5	0.7919	0.0000	OK
15 minute winter	49	11	46.113	0.272	233.4	0.4582	0.0000	OK
15 minute winter	50	11	45.231	0.264	268.8	0.6284	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	71.0	1.639	0.277	1.5554	
15 minute winter	27	5.003	28	125.2	2.544	0.417	1.8453	
15 minute winter	28	5.004	29	212.5	1.660	0.348	2.2453	
15 minute winter	29	5.005	31	223.3	1.410	1.384	1.9465	
15 minute winter	30	6.000	31	32.7	1.371	0.526	0.2703	
15 minute winter	31	5.006	32	255.8	1.783	1.595	1.0680	
15 minute winter	32	5.007	33	309.1	2.975	0.695	2.1662	
15 minute winter	33	5.008	34	331.5	2.687	0.520	3.4710	
15 minute winter	34	5.009	37	353.2	2.536	0.891	1.8295	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0000	
15 minute summer	36	7.001	37	0.0	0.000	0.000	0.0000	
15 minute winter	37	5.010	38	377.3	2.978	0.458	4.0242	
15 minute winter	38	5.011	39	398.7	2.289	0.467	2.4140	
15 minute winter	39	5.012	40	407.7	2.150	0.797	2.2589	
15 minute winter	40	5.013	41	413.3	2.555	0.763	3.3505	
15 minute winter	41	5.014	42	453.2	3.453	0.544	1.9027	
15 minute summer	42	5.015	78	441.4	4.112	0.329	2.5591	
15 minute winter	43	8.000	44	53.9	1.448	0.656	1.2119	
15 minute winter	44	8.001	46	75.5	1.899	1.898	0.6868	
15 minute winter	45	9.000	46	24.9	1.115	0.514	0.8064	
15 minute winter	46	8.002	47	139.0	1.692	0.915	1.6686	
15 minute winter	47	8.003	48	166.4	2.138	0.692	5.8739	
15 minute winter	48	8.004	49	223.9	2.637	0.745	2.3652	
15 minute winter	49	8.005	50	233.2	2.787	0.791	3.4047	
15 minute winter	50	8.006	54	268.3	2.817	0.719	2.2020	

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	51	10	44.942	0.204	38.0	0.4421	0.0000	OK
15 minute winter	52	10	44.853	0.200	44.7	0.2679	0.0000	OK
15 minute winter	53	11	44.753	0.150	49.2	0.1885	0.0000	OK
15 minute winter	54	11	44.512	0.348	331.7	0.6309	0.0000	OK
15 minute winter	55	10	43.604	0.279	357.7	0.6108	0.0000	OK
15 minute winter	56	10	46.886	0.093	48.1	0.2230	0.0000	OK
15 minute winter	57	10	46.478	0.203	73.2	0.3401	0.0000	OK
15 minute winter	58	10	46.117	0.106	87.4	0.1629	0.0000	OK
15 minute winter	59	11	45.270	0.468	117.3	0.7677	0.0000	SURCHARGED
15 minute winter	60	11	44.630	0.136	113.9	0.1533	0.0000	OK
15 minute winter	61	11	43.317	0.484	142.2	0.8105	0.0000	SURCHARGED
15 minute summer	62	1	46.164	0.000	0.0	0.0000	0.0000	OK
15 minute summer	63	1	44.542	0.000	0.0	0.0000	0.0000	OK
15 minute winter	64	10	44.762	0.095	20.3	0.1613	0.0000	OK
15 minute winter	65	11	44.466	0.159	42.8	0.2637	0.0000	OK
15 minute winter	66	11	44.263	0.100	41.7	0.1126	0.0000	OK
15 minute winter	67	11	43.561	0.157	58.6	0.2484	0.0000	OK
15 minute winter	68	11	43.087	0.177	66.1	0.2351	0.0000	OK
15 minute summer	69	11	42.979	0.236	63.3	0.2669	0.0000	OK
15 minute summer	70	9	42.954	0.855	68.3	0.9670	0.0000	SURCHARGED
15 minute summer	71	10	42.769	1.019	250.3	2.2433	0.0000	SURCHARGED
15 minute winter	72	9	42.561	1.111	295.3	3.0699	0.0000	SURCHARGED
15 minute winter	73	9	42.503	1.181	701.3	2.9204	0.0000	SURCHARGED
15 minute winter	74	9	42.413	1.106	712.8	1.9548	0.0000	SURCHARGED
360 minute winter	75	352	41.799	0.524	110.4	709.6868	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	51	10.000	52	37.1	0.988	0.930	0.5378	
15 minute winter	52	10.001	53	44.1	1.337	1.102	0.2730	
15 minute winter	53	10.002	54	49.0	1.808	0.668	0.4747	
15 minute winter	54	8.007	55	329.1	3.547	0.923	2.5781	
15 minute winter	55	8.008	73	360.2	3.654	0.761	3.0346	
15 minute winter	56	11.000	57	47.9	1.386	0.211	0.4337	
15 minute winter	57	11.001	58	72.2	1.977	0.703	1.1299	
15 minute winter	58	11.002	59	86.9	1.651	0.274	0.6941	
15 minute winter	59	11.003	60	113.9	2.076	1.174	2.0366	
15 minute winter	60	11.004	61	113.7	2.821	0.426	1.4734	
15 minute winter	61	11.005	71	148.5	2.366	0.766	2.1720	
15 minute summer	62	12.000	63	0.0	0.000	0.000	0.0000	
15 minute summer	63	12.001	65	0.0	0.000	0.000	0.5796	
15 minute winter	64	13.000	65	20.0	0.868	0.374	0.7791	
15 minute winter	65	12.002	66	41.7	1.767	0.744	0.2905	
15 minute winter	66	12.003	67	41.9	1.794	0.409	0.4578	
15 minute winter	67	12.004	68	59.0	2.122	0.723	0.4752	
15 minute winter	68	12.005	69	66.2	1.995	0.451	0.4851	
15 minute summer	69	12.006	70	68.3	1.592	0.294	0.9662	
15 minute summer	70	12.007	71	78.4	1.113	1.079	3.2558	
15 minute summer	71	11.006	72	258.7	1.633	1.272	5.9600	
15 minute winter	72	11.007	73	303.0	1.076	1.064	8.6010	
15 minute winter	73	8.009	74	712.8	1.997	1.875	3.1518	
15 minute winter	74	8.010	75	727.1	3.367	1.924	3.9110	
360 minute winter	75	Orifice	76	19.1				

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	76	750	41.761	0.590	14.6	266.3448	0.0000	OK
240 minute winter	77	224	41.540	0.467	7.1	1.2463	0.0000	OK
240 minute winter	78	224	41.540	0.540	262.4	1136.3610	0.0000	OK
240 minute winter	79	224	41.539	0.559	45.4	0.9878	0.0000	OK
15 minute summer	80	1	40.900	0.000	23.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	76	Head/Flow	77	7.0				
240 minute winter	77	8.013	78	5.8	0.489	0.014	10.1609	
240 minute winter	78	1.017	79	45.4	0.457	0.078	1.5860	
240 minute winter	79	Head/Flow	80	45.4				866.3

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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	47.892	0.113	58.5	0.2665	0.0000	OK
15 minute winter	2	10	47.321	0.273	124.4	0.6797	0.0000	OK
15 minute winter	3	10	47.149	0.334	161.1	0.6954	0.0000	OK
15 minute winter	4	10	47.073	0.309	198.0	0.6478	0.0000	OK
15 minute winter	5	11	46.889	0.344	262.3	0.8647	0.0000	OK
15 minute winter	6	11	46.797	0.574	335.8	1.6993	0.0000	SURCHARGED
15 minute winter	7	11	46.659	0.625	366.4	1.4851	0.0000	SURCHARGED
15 minute winter	8	10	46.745	0.136	40.5	0.2624	0.0000	OK
15 minute winter	9	12	46.438	0.548	529.2	2.0716	0.0000	OK
15 minute winter	10	12	46.212	1.048	546.0	2.5286	0.0000	SURCHARGED
15 minute winter	11	12	46.250	0.246	113.0	0.8743	0.0000	OK
15 minute winter	12	12	46.198	0.822	209.5	2.4168	0.0000	SURCHARGED
15 minute winter	13	12	46.096	0.944	235.4	2.1883	0.0000	SURCHARGED
15 minute winter	14	12	46.053	1.031	772.7	2.1947	0.0000	SURCHARGED
15 minute winter	15	12	45.688	1.058	781.2	2.3867	0.0000	SURCHARGED
15 minute winter	16	12	45.159	1.633	763.3	3.5152	0.0000	SURCHARGED
15 minute winter	17	12	44.828	0.867	101.3	2.8147	0.0000	SURCHARGED
15 minute winter	18	12	44.767	0.890	126.5	1.8642	0.0000	SURCHARGED
15 minute winter	19	12	44.704	1.215	888.1	2.4148	0.0000	SURCHARGED
15 minute winter	20	12	44.257	1.037	901.7	2.0871	0.0000	SURCHARGED
15 minute winter	21	12	43.634	1.254	915.3	2.5222	0.0000	SURCHARGED
15 minute winter	22	11	43.115	1.512	950.5	3.5799	0.0000	SURCHARGED
15 minute winter	23	11	42.570	1.065	968.0	2.2836	0.0000	SURCHARGED
15 minute winter	24	11	48.895	0.538	50.7	1.1151	0.0000	SURCHARGED
15 minute winter	25	11	48.595	0.500	74.0	0.8347	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	58.1	1.738	0.309	0.8494	
15 minute winter	2	1.001	3	122.1	1.472	0.760	2.0292	
15 minute winter	3	1.002	4	159.0	1.317	0.637	1.0316	
15 minute winter	4	1.003	5	197.7	1.840	0.693	1.9922	
15 minute winter	5	1.004	6	261.7	1.537	0.581	6.8017	
15 minute winter	6	1.005	7	329.7	1.526	0.643	3.6395	
15 minute winter	7	1.006	9	365.6	1.735	1.685	7.1549	
15 minute winter	8	2.000	9	39.9	1.671	0.607	0.5727	
15 minute winter	9	1.007	10	505.1	2.203	0.532	10.5928	
15 minute winter	10	1.008	14	526.9	1.944	0.766	3.9953	
15 minute winter	11	3.000	12	112.0	1.564	0.470	3.6496	
15 minute winter	12	3.001	13	200.3	1.452	0.900	4.9552	
15 minute winter	13	3.002	14	222.4	1.234	0.766	3.2960	
15 minute winter	14	1.009	15	750.0	3.188	0.761	5.3961	
15 minute winter	15	1.010	16	745.4	2.647	0.574	8.7765	
15 minute winter	16	1.011	19	770.0	2.734	2.718	6.2282	
15 minute winter	17	4.000	18	89.8	1.122	0.810	2.9872	
15 minute winter	18	4.001	19	120.9	1.765	0.487	1.1710	
15 minute winter	19	1.012	20	889.5	3.267	0.848	3.2706	
15 minute winter	20	1.013	21	903.2	3.867	0.656	5.9442	
15 minute winter	21	1.014	22	917.0	3.256	0.572	4.0553	
15 minute winter	22	1.015	23	952.8	3.383	1.694	4.1263	
15 minute winter	23	1.016	78	979.7	3.587	1.191	18.5189	
15 minute winter	24	5.000	25	48.3	1.215	0.980	1.1568	
15 minute winter	25	5.001	26	74.3	1.868	1.859	0.5284	

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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	11	48.038	0.173	107.3	0.2854	0.0000	OK
15 minute winter	27	11	47.514	0.233	190.7	0.6842	0.0000	OK
15 minute winter	28	11	46.986	0.622	329.1	2.3828	0.0000	SURCHARGED
15 minute winter	29	12	46.702	1.065	325.4	1.7720	0.0000	SURCHARGED
15 minute winter	30	12	46.574	0.628	51.5	1.3508	0.0000	SURCHARGED
15 minute winter	31	12	46.483	0.876	368.5	1.2541	0.0000	SURCHARGED
15 minute winter	32	12	46.252	0.665	446.3	1.8115	0.0000	SURCHARGED
15 minute winter	33	12	45.679	0.486	470.4	0.9871	0.0000	SURCHARGED
15 minute summer	34	11	44.857	0.790	492.9	1.5136	0.0000	SURCHARGED
15 minute summer	35	1	44.564	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36	12	44.210	0.044	2.2	0.0498	0.0000	OK
15 minute winter	37	11	44.206	0.414	529.1	0.8172	0.0000	OK
15 minute winter	38	11	43.742	0.863	561.2	2.0056	0.0000	SURCHARGED
15 minute winter	39	11	43.384	0.939	573.7	1.8984	0.0000	SURCHARGED
15 minute winter	40	11	43.036	0.724	583.5	1.4507	0.0000	SURCHARGED
15 minute winter	41	11	42.504	0.463	645.0	1.4715	0.0000	OK
15 minute summer	42	10	41.890	0.425	623.8	0.7515	0.0000	OK
15 minute winter	43	12	50.130	1.319	85.8	3.6141	0.0000	FLOOD RISK
15 minute winter	44	12	49.478	1.551	103.7	2.5474	0.0000	SURCHARGED
15 minute winter	45	12	48.903	0.779	39.0	1.4740	0.0000	SURCHARGED
15 minute winter	46	12	48.797	1.123	196.0	2.8297	0.0000	SURCHARGED
15 minute winter	47	12	48.607	1.052	234.3	2.3152	0.0000	SURCHARGED
15 minute winter	48	12	47.828	1.362	298.3	4.2341	0.0000	FLOOD RISK
15 minute winter	49	12	47.208	1.367	284.3	2.3384	0.0000	FLOOD RISK
15 minute winter	50	12	46.299	1.332	327.2	3.3032	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	26	5.002	27	107.8	1.802	0.421	2.1789	
15 minute winter	27	5.003	28	188.8	2.571	0.628	3.4172	
15 minute winter	28	5.004	29	310.7	1.961	0.509	3.2517	
15 minute winter	29	5.005	31	323.0	2.039	2.001	1.9465	
15 minute winter	30	6.000	31	45.5	1.330	0.732	0.3192	
15 minute winter	31	5.006	32	365.6	2.308	2.280	1.2080	
15 minute winter	32	5.007	33	437.4	3.025	0.984	3.3172	
15 minute winter	33	5.008	34	464.6	2.932	0.728	4.6117	
15 minute summer	34	5.009	37	492.7	3.110	1.243	2.0885	
15 minute summer	35	7.000	36	0.0	0.000	0.000	0.0253	
15 minute winter	36	7.001	37	-2.2	0.322	-0.055	0.1505	
15 minute winter	37	5.010	38	528.2	2.943	0.641	6.3251	
15 minute winter	38	5.011	39	559.0	2.588	0.655	3.0368	
15 minute winter	39	5.012	40	572.5	2.650	1.120	2.5812	
15 minute winter	40	5.013	41	582.6	2.697	1.075	4.4120	
15 minute winter	41	5.014	42	642.3	3.648	0.772	2.5272	
15 minute summer	42	5.015	78	627.2	4.294	0.467	3.8724	
15 minute winter	43	8.000	44	68.8	1.731	0.837	1.4161	
15 minute winter	44	8.001	46	97.7	2.457	2.456	0.6950	
15 minute winter	45	9.000	46	36.0	1.114	0.741	1.3720	
15 minute winter	46	8.002	47	191.4	1.741	1.260	2.2516	
15 minute winter	47	8.003	48	210.7	2.136	0.876	8.3372	
15 minute winter	48	8.004	49	269.6	2.651	0.897	3.0716	
15 minute winter	49	8.005	50	276.9	2.662	0.939	4.4605	
15 minute winter	50	8.006	54	315.2	2.858	0.845	2.5626	

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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	51	12	46.039	1.301	58.5	2.9589	0.0000	FLOOD RISK
15 minute winter	52	12	45.896	1.243	56.4	1.6901	0.0000	FLOOD RISK
15 minute winter	53	12	45.757	1.154	59.4	1.4661	0.0000	SURCHARGED
15 minute winter	54	12	45.504	1.340	391.4	2.4791	0.0000	FLOOD RISK
15 minute winter	55	11	44.145	0.820	427.9	1.8612	0.0000	SURCHARGED
15 minute winter	56	10	46.917	0.124	74.1	0.3132	0.0000	OK
15 minute winter	57	11	46.605	0.329	112.6	0.5709	0.0000	SURCHARGED
15 minute winter	58	12	46.293	0.282	131.8	0.4423	0.0000	OK
15 minute winter	59	12	46.045	1.243	173.6	2.1019	0.0000	SURCHARGED
15 minute winter	60	11	45.047	0.552	160.6	0.6245	0.0000	SURCHARGED
15 minute winter	61	11	44.318	1.485	199.7	2.5669	0.0000	SURCHARGED
15 minute summer	62	1	46.164	0.000	0.0	0.0000	0.0000	OK
15 minute winter	63	12	44.627	0.085	5.5	0.0961	0.0000	OK
15 minute winter	64	10	44.788	0.121	31.2	0.2142	0.0000	OK
15 minute winter	65	11	44.605	0.298	65.9	0.5099	0.0000	SURCHARGED
15 minute winter	66	11	44.424	0.261	58.7	0.2949	0.0000	SURCHARGED
15 minute winter	67	11	44.173	0.768	82.6	1.2531	0.0000	SURCHARGED
15 minute winter	68	11	43.680	0.770	88.2	1.0401	0.0000	SURCHARGED
15 minute winter	69	11	43.577	0.834	90.0	0.9431	0.0000	SURCHARGED
15 minute winter	70	11	43.439	1.340	92.7	1.5153	0.0000	SURCHARGED
15 minute winter	71	10	43.104	1.354	337.7	3.0851	0.0000	SURCHARGED
15 minute summer	72	9	42.762	1.312	385.5	3.7538	0.0000	FLOOD RISK
15 minute winter	73	8	42.668	1.346	879.0	3.4217	0.0000	SURCHARGED
15 minute winter	74	8	42.563	1.256	882.4	2.2202	0.0000	SURCHARGED
720 minute winter	75	705	42.118	0.843	92.7	1142.6020	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	51	10.000	52	45.4	1.141	1.136	0.5691	
15 minute winter	52	10.001	53	53.3	1.340	1.330	0.3328	
15 minute winter	53	10.002	54	61.0	1.764	0.831	0.5795	
15 minute winter	54	8.007	55	395.3	3.584	1.109	2.9346	
15 minute winter	55	8.008	73	430.0	3.899	0.908	3.3796	
15 minute winter	56	11.000	57	73.6	1.453	0.325	0.6123	
15 minute winter	57	11.001	58	109.2	1.990	1.063	2.0974	
15 minute winter	58	11.002	59	126.8	1.954	0.399	1.0404	
15 minute winter	59	11.003	60	160.6	2.320	1.655	2.8314	
15 minute winter	60	11.004	61	163.0	2.601	0.611	2.0484	
15 minute winter	61	11.005	71	202.1	2.870	1.042	2.1720	
15 minute summer	62	12.000	63	0.0	0.000	0.000	0.0299	
15 minute winter	63	12.001	65	-5.5	-0.206	-0.138	1.0664	
15 minute winter	64	13.000	65	30.8	0.940	0.576	1.0475	
15 minute winter	65	12.002	66	58.7	1.828	1.046	0.4922	
15 minute winter	66	12.003	67	62.1	1.781	0.607	0.7841	
15 minute winter	67	12.004	68	80.4	2.095	0.984	0.6798	
15 minute winter	68	12.005	69	90.0	1.945	0.613	0.6766	
15 minute winter	69	12.006	70	92.7	1.591	0.399	1.0479	
15 minute winter	70	12.007	71	95.6	1.357	1.317	3.2558	
15 minute winter	71	11.006	72	342.5	2.162	1.684	5.9600	
15 minute summer	72	11.007	73	390.7	1.387	1.372	8.6010	
15 minute winter	73	8.009	74	882.4	2.472	2.321	3.1518	
15 minute winter	74	8.010	75	889.6	3.509	2.354	4.9519	
720 minute winter	75	Orifice	76	18.1				

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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	76	765	42.053	0.882	18.7	398.2772	0.0000	SURCHARGED
240 minute winter	77	224	41.827	0.754	10.9	2.0813	0.0000	SURCHARGED
240 minute winter	78	224	41.827	0.827	402.5	1741.5220	0.0000	SURCHARGED
240 minute winter	79	228	41.826	0.846	72.2	1.4942	0.0000	SURCHARGED
15 minute summer	80	1	40.900	0.000	34.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	76	Head/Flow	77	9.2				
240 minute winter	77	8.013	78	7.2	0.539	0.017	12.7477	
240 minute winter	78	1.017	79	72.2	0.463	0.123	1.8206	
240 minute winter	79	Head/Flow	80	68.7				1304.0

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