

Discharge of Planning Conditions 14 & 15: FP McCann, Brascote Lane (22/00420/FUL)

Prepared for Heatons

August 2023



CONFIDENTIAL

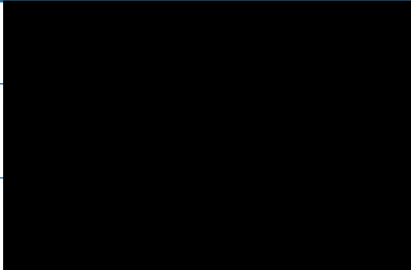
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Quality Control Sheet

Title	Discharge Of Planning Conditions 14 & 15: FP McCann, Brascote Lane (22/00420/FUL)
Client	FP McCann
Issue Date	29/08/2023
Reference	3490645 Heatons Cadeby Dis Con \ RPT Cadeby Cond 14 & 15

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Revision History

Revision	Details	Prepared by	Checked by	Approved by	Issue Date
REV01	Draft for Comment	LC	JD	JD	25/08/2023
REV02	Final (Headwall change)	LC	JD	JD	29/08/2023

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1 INTRODUCTION

1.1 Background

Full planning permission has been granted by Hinckley & Bosworth Borough Council (Ref. 22/00420/FUL) for the erection of a roof tile manufacturing facility at FP McCann, Brascote Lane, Cadeby, Nuneaton, Leicestershire CV13 OBB ('the Site').

The proposed roof tile factory will consist of several elements of built development including the main manufacturing buildings (2no), material storage silos (4no), and ancillary tanks. The outline development layout plan is presented in Appendix A.

1.2 Scope of Work

This report has been prepared to provide information to discharge Condition 14 and 15 of the planning permission (22/00420/FUL).

2 CONDITION 14

2.1 Wording of Condition

The wording of Condition 14 is provided below:

"Notwithstanding the details already submitted, development shall not begin until a scheme to provide a sustainable surface water drainage system in accordance with the Flood Risk Assessment and Drainage Strategy dated April 2022 and details in relation to the long term maintenance of the sustainable surface water drainage system have been submitted to and approved by the Local Planning Authority, and the scheme shall subsequently be implemented in accordance with the approved details before the development is completed."

Reason: *To ensure that the development is provided with satisfactory means of surface water drainage to prevent flooding and minimise the risk of pollution in accordance with Policy DM7 of the adopted Site Allocations and Development Management Policies Development Plan Document (2016)."*

2.2 Planning Policies and Guidance

This report has been prepared in line with the following policies and guidance:

- Leicestershire County Council Interim LLFA Guidance Note: Planning and Development in Leicestershire, October 2018, Rev A;
- Policy DM7 of the adopted Site Allocations and Development Management Policies Development Plan Document (2016);
- CIRIA SuDS Manual C753;
- National Planning Policy Framework (NPPF) and Planning Practice Guidance: Flood Risk and Coastal Change;

- Building Regulations Part H;
- CIRIA: Guidance on construction of SuDS (C768); and
- Non-Statutory Technical Standards for SuDS.

2.3 Sustainable Surface Water Drainage Scheme

2.3.1 Design and layout

An overview of the proposed surface water drainage scheme is provided in Appendix B. Drainage details are provided in drainage drawings provided in Appendix C.

The scheme has been designed to capture all runoff from the proposed hardstanding areas and direct this runoff to existing bunded basins.

The existing bunded basins require minor modifications to facilitate flow, maximise storage safely and restrict outflows to Greenfield runoff rates.

2.3.2 Hydraulic calculations

Hydraulic calculations supporting the drainage scheme are provided in Appendix D. Modelling has been undertaken using Causeway Flow+ v10.6.234.

Model node plans and modelled drainage cross sections are also provided in Appendix D.

A Greenfield runoff rate estimation output for the site is presented in the model results providing a Q_{bar} of 23.3 l/s (4.35 l/s/ha). The restricted outflow has been designed to this value. The maximum modelled outflow is presented in the model results at a value of 22.4 l/s.

A 400mm+ freeboard is provided in the final basin for all durations of the 1 in 100 year + 40% climate change event.

2.3.3 Flood Exceedance Routes

Flood exceedance routes are provided in Appendix E. These have been determined by finished floor levels proposed across the site along with interactions with buildings. The exceedance routes would flow towards the basins and a spill point from the final basin for an extreme event (i.e. greater than a 1 in 100 year +40% CC event).

Modelling results show minor flooding of the drainage system for the 1 in 100 year +40% climate change event, resulting in ~30m³ of flood water. This water will route to the basins and will not impact on the basins freeboard and ability to restrict the discharge to Q_{bar} .

2.4 Sustainable Drainage Maintenance Plan

2.4.1 Maintenance responsibility

The surface water drainage system will be inspected and maintained by FP McCann.

2.4.2 Maintenance schedules

This section outlines the maintenance and management schedules for the proposed drainage system. The schedules have been formulated in line with guidelines contained within the CIRIA SuDS Manual (Woods Ballard, et al., 2015). There are three categories of maintenance activities (including inspections and monitoring) referred to in this report:

- **Regular maintenance** – tasks which are required to be undertaken on a weekly or monthly basis, or as required.
- **Occasional maintenance** – tasks which are required to be undertaken periodically, typically at intervals of 3 months or more.
- **Remedial maintenance** – tasks which are not required on a regular basis but are done when necessary.

This section is intended to give an overview of the operation and maintenance for the range of drainage features included within the surface water drainage scheme and in relation to typical/standard details only.

Maintenance schedules for the proposed SuDS components are provided in Tables 1 to 4. These schedules are not exhaustive and should be reassessed at regular intervals to determine if any additional maintenance requirements are required to preserve the performance and condition of the drainage system.

Drainage Pipes and Manholes

A maintenance schedule for drainage pipes and manholes is provided in Table 1.

Table 1 Drainage Pipes and Manholes Maintenance Schedule

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove any accumulation of silt, sediment, leaves and debris etc	Monthly, or as required
	Inspect for evidence of poor operation	Monthly (during the first year), then half yearly
Occasional maintenance	High pressure water jet removal of silt build-up and avoid blockages, particularly at bends or changes in direction	Six monthly, or as required
	Remove or control tree roots where they are encroaching pipe runs, using recommended methods	As required
Remedial actions	Clear pipework and gully grates of blockages	As required
	Replace any damaged or failed pipes, gullies or manholes	As required

Concrete Drainage Channels

A maintenance schedule for linear drainage channels is provided in Table 2.

Table 2 Concrete Drainage Channel Maintenance Schedule

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly, or as required
	Inspect inlets and outlet for blockages and clear if required	Monthly
Occasional maintenance	Remove sediment from inlets	Every 1 year, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair damaged inlets / pipework	As required

Swale

A typical schedule of maintenance activities for a swale is included in Table 3.

Table 3 Swale Maintenance Schedule

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly, or as required
	Cut grass – to retain grass height within specified design range (75-150mm)	Monthly (during growing season), or as required.
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets and outlet for blockages and clear if required	Monthly
	Inspect base of swale for ponding, compaction, silt accumulation, record areas where water is ponding for >48 hours	Monthly, or when required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect banksides for evidence of physical damage	Monthly
	Inspect inlets, outlets and swale surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year), then half yearly, or as required
	Remove sediment from inlets and outlets base of swale	Annually (or as required)
Occasional maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale area

Maintenance schedule	Required action	Typical frequency
	Remove sediment from inlet, outlets and swale surface when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseedling or re-turfing and re-armouring	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

Flow Controls

A typical schedule of maintenance activities for flow controls is included in Table 4.

Table 4 Flow Controls Maintenance Schedule

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect/check pipework to ensure that the flow control is in good condition and operating as designed	Monthly
	Inspect for evidence of poor operation	Monthly, or as required
Occasional maintenance	High pressure water jet removal of silt build-up	Six monthly, or as required
Remedial actions	Replace the flow control if it becomes damaged	As required
	Clear pipework of blockages	As required

3 CONDITION 15

3.1 Wording of Condition

The wording of Condition 15 is provided below:

“Prior to commencement of development details in relation to the management of surface water on site during construction of the development shall be submitted to, and approved in writing by, the Local Planning Authority. Details should demonstrate how surface water will be managed on site to prevent an increase in flood risk during the various construction stages of development from initial site works through to completion. This shall include temporary attenuation, additional treatment, controls, maintenance and protection. Details regarding the protection of any proposed infiltration areas should also be provided.

Reason: *To ensure that the development is provided with satisfactory means of surface water drainage to prevent flooding and minimise the risk of pollution in accordance with Policy DM7 of the adopted Site Allocations and Development Management Policies Development Plan Document (2016).”*

3.2 Construction Phases

The development will be constructed over two phases: Phase 1 and Phase 2. The following sections provide an overview of the works to be carried out during each phase.

The existing basins will be modified during Phase 1 to ensure flood risk is managed.

3.2.1 Phase 1

Phase 1 will comprise the construction of the Production Building 1, Aggregate Store Mixer House, Aggregate Bins & Silos. The works will include:

- 1) Site clearance and groundworks including surfacing of western storage area.
- 2) Foundations (for building 1 and all fixed plant items).
- 3) Foundations for curing chambers (building 1).
- 4) Erection of steelwork.
- 5) Installation of concrete wall panels, roofing and cladding.
- 6) Installation of aggregate bins, loading hopper, conveyors and mixers.
- 7) Cladding to aggregate bins and mixers.
- 8) Erection of cement silos.
- 9) Construction of internal roads and upgraded entrance.
- 10) Foundations for aggregate store.
- 11) Installation of concrete wall panels, roofing and cladding to aggregate store.

3.2.2 Phase 2

Phase 2 of the construction works will involve the creation of Production Building 2 and completion of remaining storage areas. The works will include:

- 1) Foundations (for production building 2 and all fixed plant items)
- 2) Foundations for curing chambers (building 2)
- 3) Erection of steelwork
- 4) Installation of concrete wall panels, roofing and cladding
- 5) Installation of aggregate bins and mixers
- 6) Cladding to aggregate bins and mixers

3.3 Construction Surface Water Management

A plan for managing surface water runoff during all phases of construction of the development, including specific measures tailored to the level of risk at the Site has been developed with reference to the approaches outlined in CIRIA: Guidance on construction of SuDS (C768) (Illman & Wilson, 2017).

Construction of the drainage system will be carried out in accordance with the following “drainage action points”:

- Establish drainage and runoff controls before starting site clearance and earthworks;
- Only strip soils for the relevant phase when necessary to limit the extent and duration of exposure;
- Minimising the area of exposed ground at each phase of the development construction;
- Retain as much vegetation as possible;
- Delay clearing and stripping of each phase of work until ready to proceed;
- Establish vegetation as soon as practical on all areas where soil has been exposed;
- Close and backfill any trenches/excavations as soon as practicably possible;
- Work in appropriate weather conditions and suspend work activities in advance of forecasted extreme wet weather; and
- Ensure fuels/chemicals are stored in bunded areas. Spill kits will be provided at regular locations around the working areas and site workers to be trained in their effective use.

3.4 Surface Water Mitigation and Treatment

3.4.1 Phased site strip and levelling

Earth will be stripped and levelled, where and when necessary, at each relevant phase of construction. This will reduce the risk of potential overland flows and increased silt content of any flow.

3.4.2 Gully bags

Gully bags will be installed, as required, at the access gullies to prevent silts entering surface water drainage systems. All onsite gullies will be regularly inspected by the site team. Silts removed from the gully bags will be suitably stored onsite or removed off-site to an appropriate licenced waste facility.

3.4.3 Straw bales check dams

Straw bales will be placed at regular intervals along the proposed swales, as required, as a temporary form of check dam and silt treatment until vegetation (grass) has been established. Straw bales are an effective natural measure for reducing flow velocities and trapping silt and sediments behind the dam, thereby minimising erosion and generation of silt downstream. Regular inspections of the drainage network downstream of the straw bales will be undertaken to check for potential blockages to headwalls, pipes and flow controls.

3.4.4 Silt fencing

Silt fencing will be used as required during excavation works (i.e. forming foundations).

3.4.5 Silt bags

Silt bags will be used as required during excavation works (i.e. forming foundations). Silt bags are an effective way to collect silt and sediment from dirty water pumped out of excavations. Sediment-laden water is pumped into the high-quality filter bags, which trap the solids inside and allow filtered water to flow freely out through the geotextile fabric to disperse into the surrounding ground or another collection point.

3.4.6 Pre-emptive management and timing

The works programme for the initial construction stage of the development will take account of weather forecasts, and predicted rainfall. Any large excavations and movements of subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works should be scaled back or suspended will relate directly to the amount of rainfall forecast.

Works shall be suspended if forecasting suggests either of the following is likely to occur:

- >10 mm/hr (i.e. high intensity local rainfall events); or
- >25 mm in a 24 hour period (heavy frontal rainfall lasting most of the day); or,
- >half monthly average rainfall in any 7 days.

Prior to works being suspended the following control measures shall be completed:

- Secure all open excavations to prevent ingress of rainwater/runoff;
- Provide temporary or emergency drainage in the form of diversion channels to prevent back-up of surface runoff; and,
- Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.

Construction of the site drainage system will only be carried out during periods of low rainfall, and therefore low runoff rates would be expected. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway.

3.4.7 Hydrocarbon control measures

The following procedures will be implemented for on-site storage of fuels, lubricants and hydraulic fluids used during construction:

- Fuels, lubricants and hydraulic fluids will be stored in a secure compound at the site;
- Fuels and oils will be carefully handled to avoid spillages;
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and disposed of appropriately;
- Any waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling;
- As a minimum, simple spill protection equipment that will be held locally will include specialist absorbent mats / pillows and granules for containment / clean-up of oil.
- Adequate quantities will be held in stock and be available for immediate use.
- Appropriate spill control equipment, such as oil soakage pads, will be available on site to deal with any accidental spillage and emergency response procedures will be put in place.
- Designated contractors' personnel will be trained and certified in oil spill control and clean up procedures, and in the proper and safe disposal of any waste generated through such an event.

3.4.8 Drainage Inspection and Maintenance

During construction, the effectiveness of measures designed to minimise runoff entering works areas and capture and treatment of potentially silt-laden water from the works areas will be monitored periodically (daily, weekly, and event-based monitoring, i.e. after heavy rainfall events).

Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water within the system. Any excess build-up of silt levels that may decrease the effectiveness of the drainage feature, will be removed.

4 CONCLUSIONS

Full planning permission for the development (Ref. 22/00420/FUL) for the erection of a roof tile manufacturing facility at FP McCann, Brascote Lane, Cadeby, Nuneaton, Leicestershire CV13 OBB ('the Site') has been granted. This technical note is in fulfilment of planning condition No. 14 & 15 relating to drainage, phasing and maintenance.

The scheme has been designed to capture all runoff from the proposed hardstanding areas and direct this runoff to existing bunded basins. The existing bunded basins require minor modifications to facilitate flow, maximise storage safely and restrict outflows to Greenfield runoff rates.

A 400mm+ freeboard is provided in the final basin for all durations of the 1 in 100 year + 40% climate change event.

Development details in relation to the management of surface water on site during construction of the development have been provided. The existing basins will be modified during Phase 1 of the works to ensure flood risk is managed appropriately.

The maintenance schedule includes regular and occasional maintenance requirements and actions along with remedial actions and timings. A record of maintenance works will be kept by FP McCann Ltd.

Based on the information submitted in this report Envireau Water consider that Planning Condition 14 & 15 can be discharged.

REFERENCES

Illman, S., & Wilson, S. (2017). *Guidance on the construction of SuDS (C768)*. CIRIA.

Woods Ballard, B., Wilson, S., Udale-Clarke, H., Illman, S., Scott, T., Ashley, R., & Kellagher, R. (2015). *The SuDS Manual (C753)*. CIRIA.

APPENDICES

Appendix A Outline Development Layout Plan



FIGURE 4

Heatons
Planning Environment Design

PROJECT
Cadeby - FP McCann

DRAWING TITLE
Proposed Site Layout Plan

DATE
March 2022

REFERENCE
FPM-001-C.D.004

SCALE
1:2,500 @ A3

STATUS
FINAL

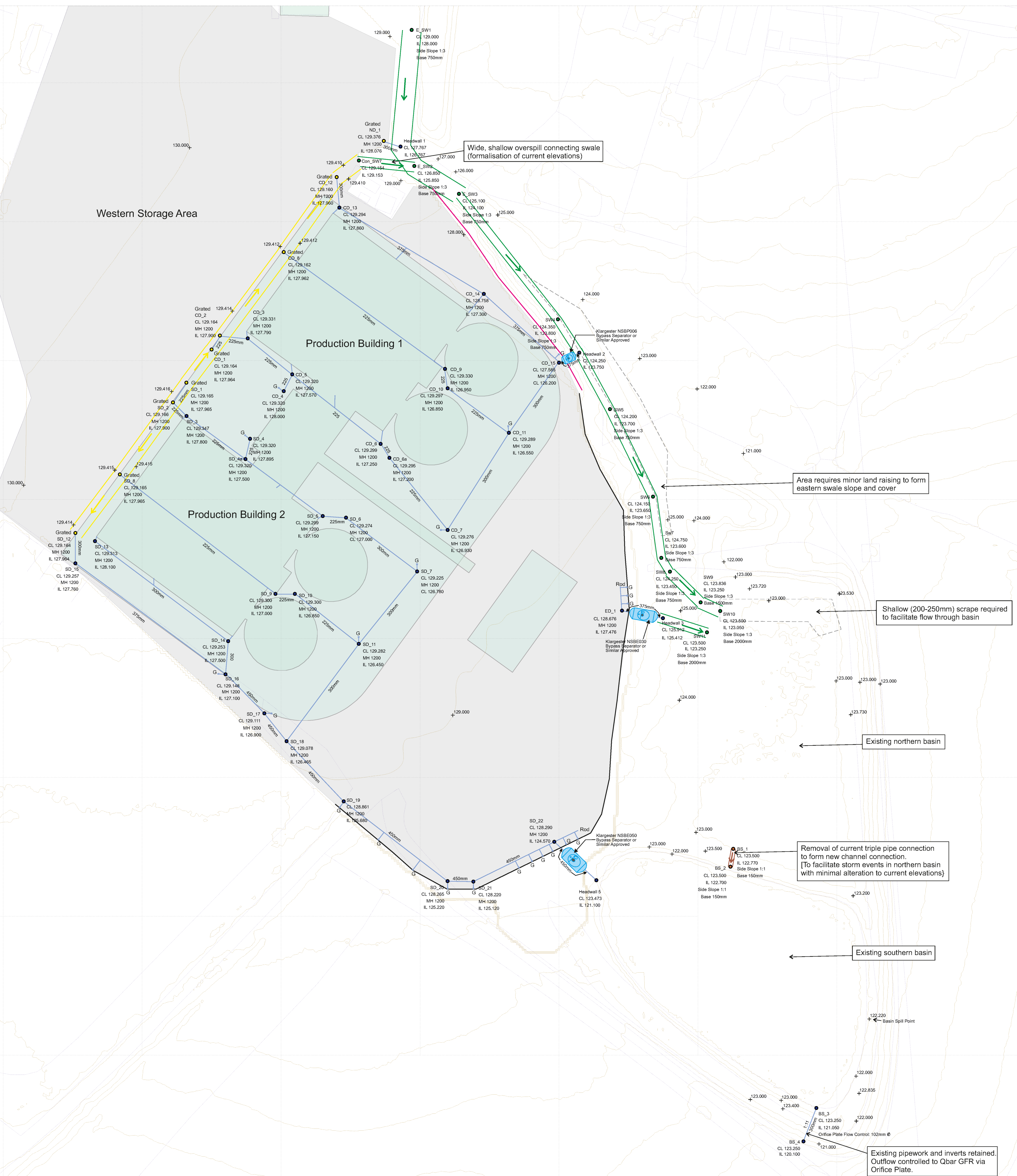
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Appendix B Overview of Surface Water Drainage

FP McCann Drainage Overview
Cadeby, Leicestershire

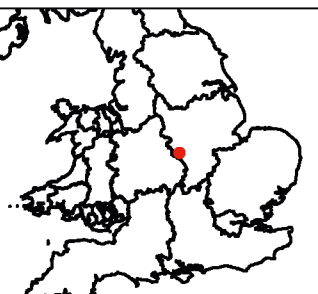


- New Eastern Kerb Line
- Finished Contour (1m intervals)
- Acoustic Bund
- New Hardstanding
- Platform
- Building Footprint
- Concrete Formed, Low Angle Drainage Channel
(Arrow denotes flow direction)
- Swale
(Arrow denotes flow direction)
- Basin Connection Channel
(Arrow denotes flow direction)
- Pipe Connections



Notes:

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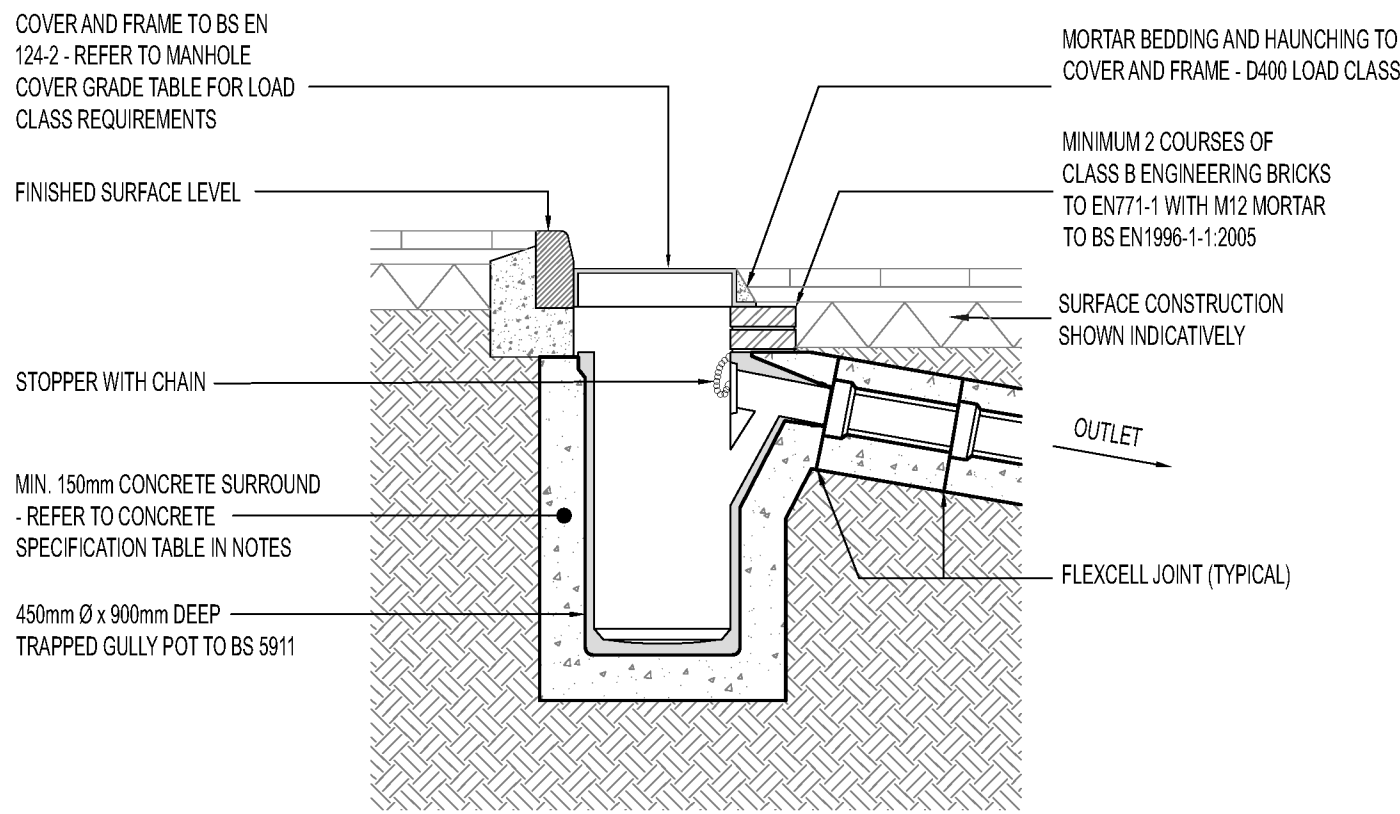


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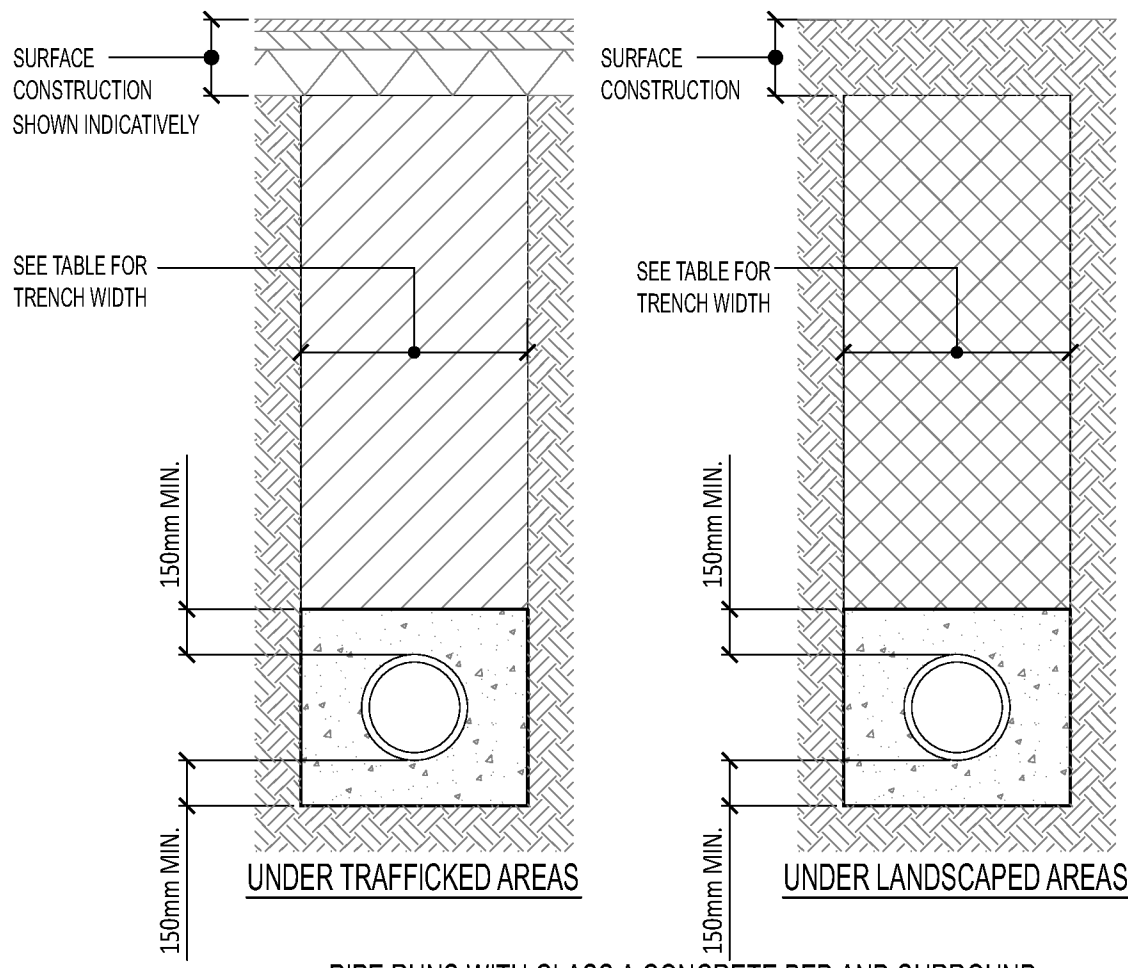
Project No. 3490645
Client: FP McCann
Drawn by: LC
Ref: DR_Overview

envireau
WATER

Appendix C Surface Water Drainage Drawings



TYPICAL PRECAST CONCRETE TRAPPED GULLY DETAIL
(SCALE 1:25)



PIPE RUNS WITH CLASS A CONCRETE BED AND SURROUND

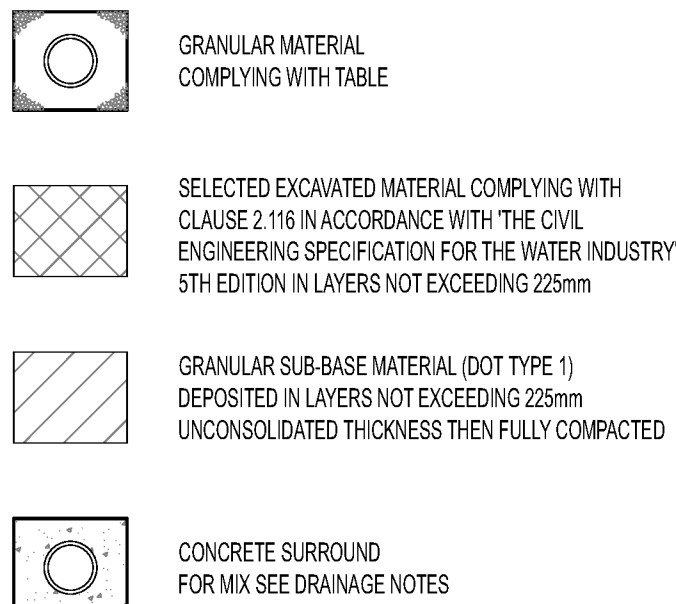
TYPE 'A' APPLICABLE UNDER ROADS AND PARKING AREAS WHERE DRAINS HAVE LESS THAN 1200mm COVER

TYPE 'A' APPLICABLE UNDER FOOTPATHS, VERGES AND OTHER NON-TRAFFICKED AREAS WHERE DRAINS HAVE LESS THAN 600mm COVER

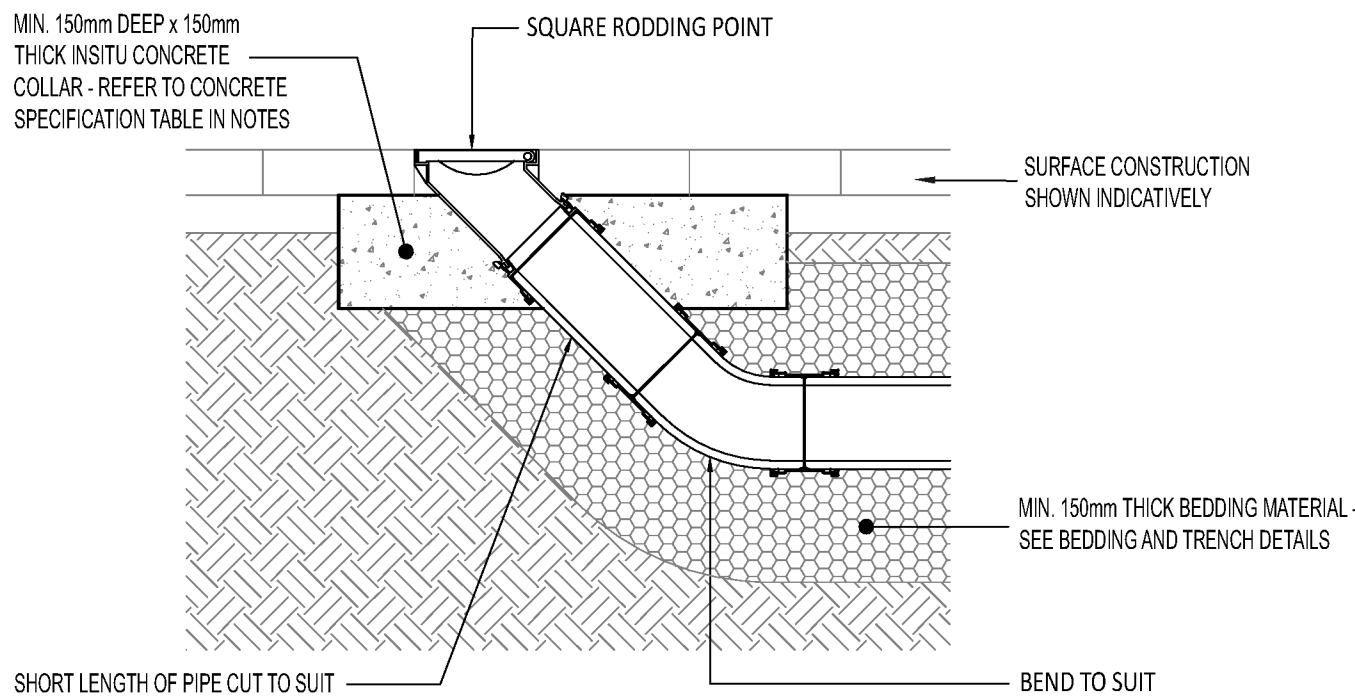
TYPICAL PIPE BEDDING AND TRENCH DETAILS

NOTE: NO MECHANICAL COMPACTION WITHIN 300mm OF CROWN PIPE.

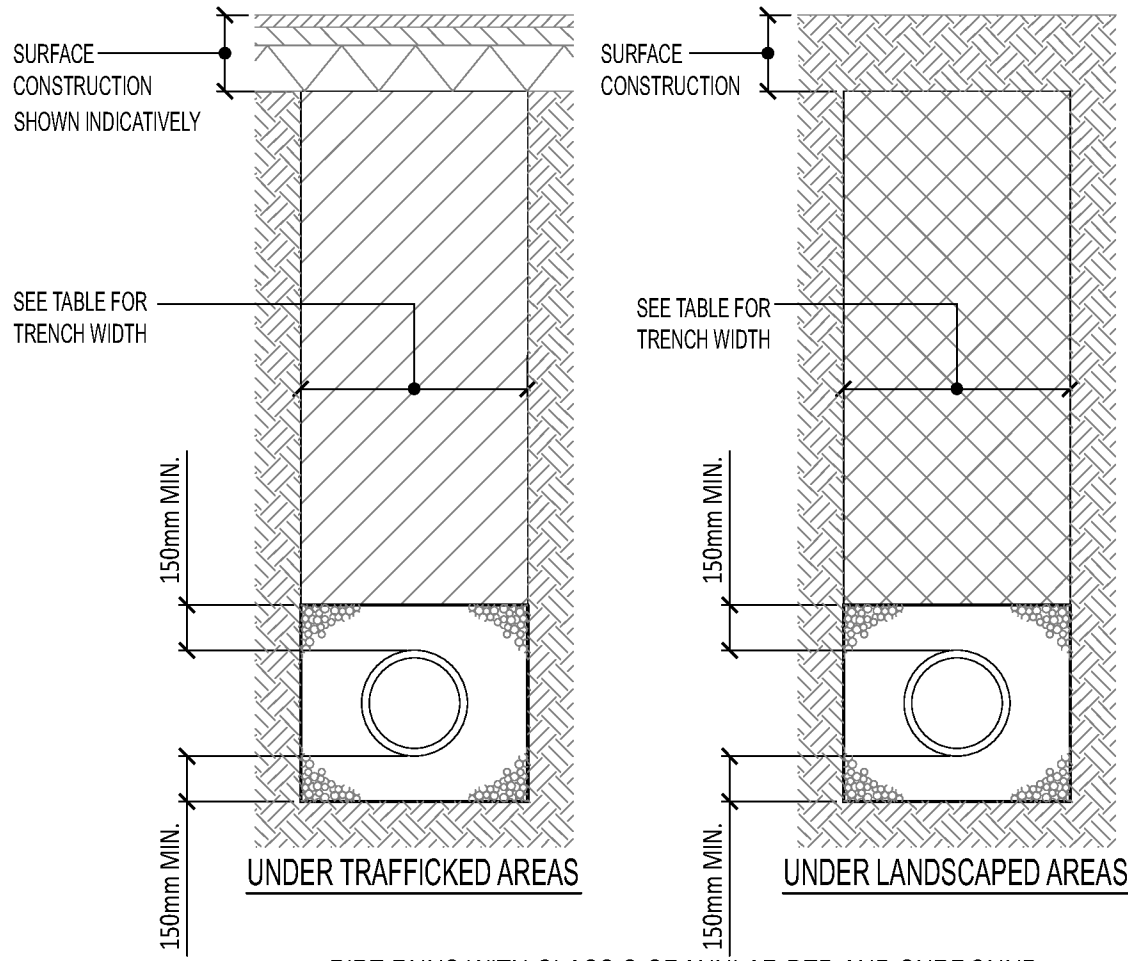
PIPE BEDDING AND TRENCH KEY



GRANULAR MATERIAL TABLE	
DIAMETER OF DRAIN (mm)	AGGREGATE
100	10mm SINGLE SIZE
150	10 OR 14mm SINGLE SIZE OR 14-5mm GRADED
150-500	10, 14 OR 20mm SINGLE SIZE OR 20-5mm GRADED
OVER 500	10, 14, 20 OR 40mm SINGLE SIZE OR 40-5mm GRADED
NOTE: NO MECHANICAL COMPACTION WITHIN 300mm OF CROWN OF PIPE	



TYPICAL RODDING EYE DETAIL
(SCALE 1:10)



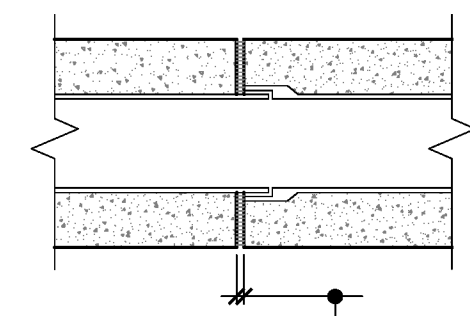
PIPE RUNS WITH CLASS S GRANULAR BED AND SURROUND

TYPE 'S' APPLICABLE UNDER ROADS AND PARKING AREAS WHERE DRAINS HAVE MORE THAN 1200mm COVER

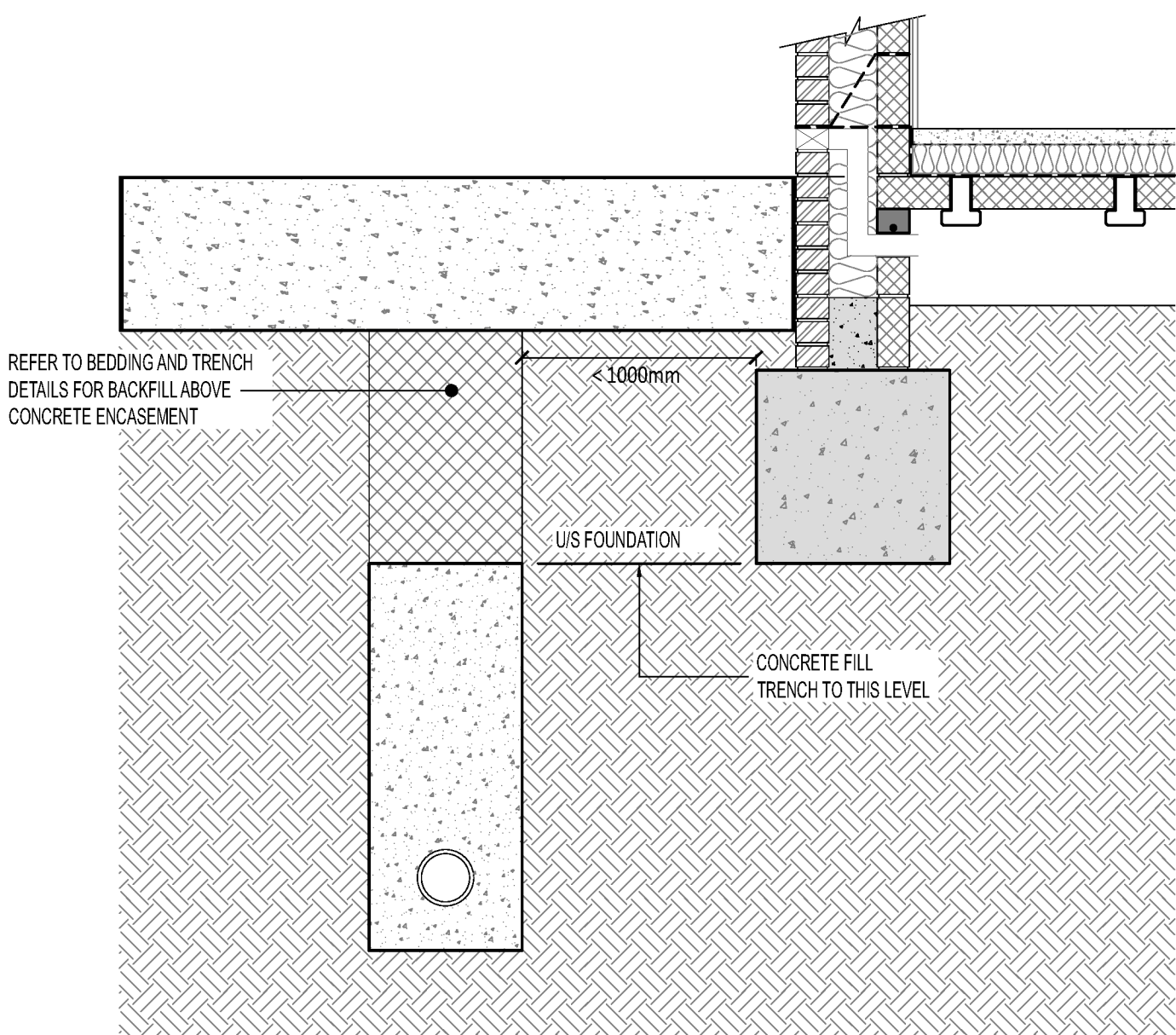
TYPE 'S' APPLICABLE UNDER FOOTPATHS, VERGES AND OTHER NON-TRAFFICKED AREAS WHERE DRAINS HAVE MORE THAN 600mm COVER

TYPICAL PIPE BEDDING AND TRENCH DETAILS

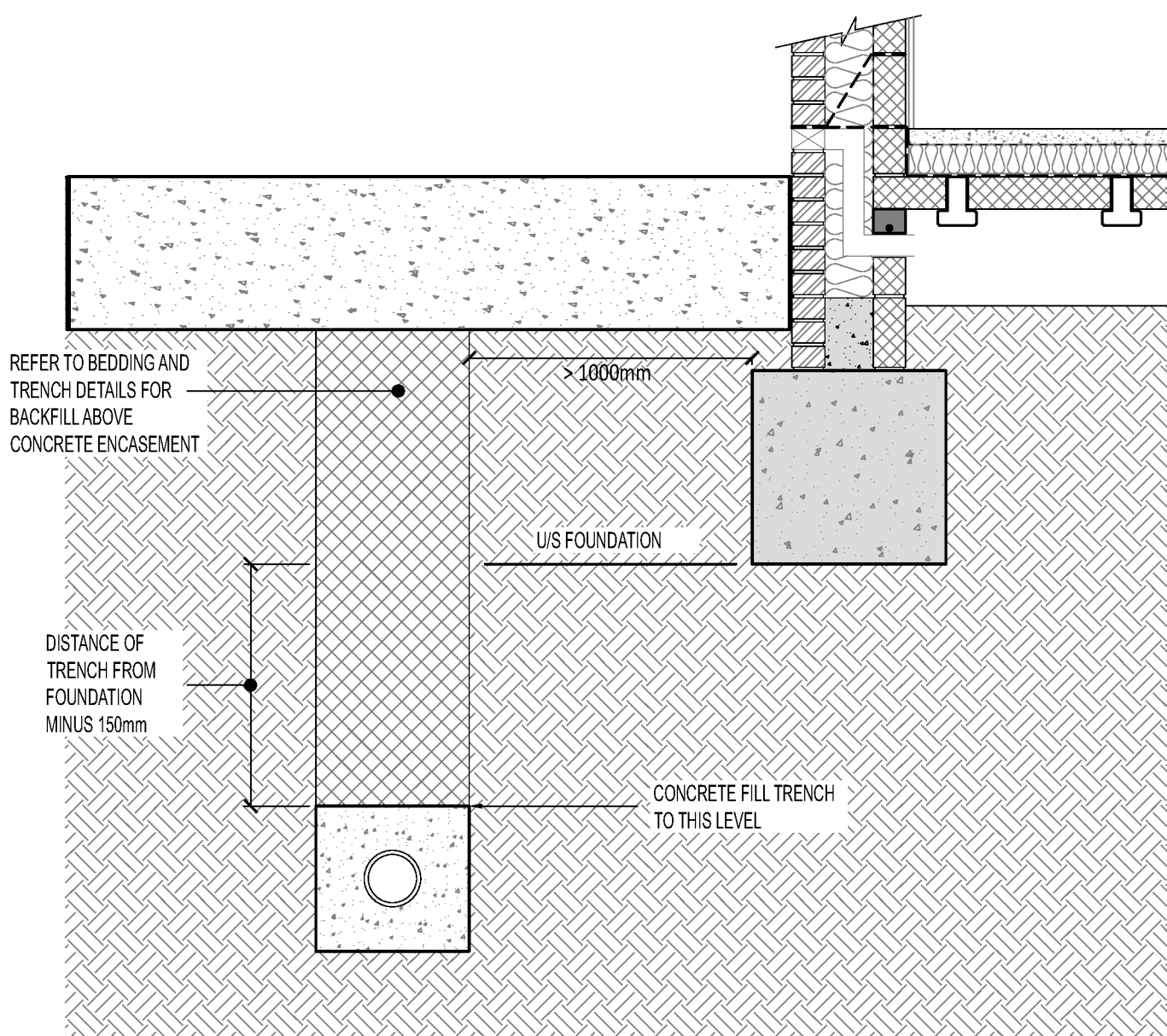
NOTE: NO MECHANICAL COMPACTION WITHIN 300mm OF CROWN PIPE.



SECTION ON DRAIN WITH CONCRETE BED AND SURROUND AT PIPE JOINTS



TRENCH CLOSER THAN 1m TO FOUNDATION



TRENCH GREATER THAN 1m FROM FOUNDATION

PIPE RUNS NEAR BUILDINGS

(SCALE 1:20)

PRIVATE DRAINAGE DETAIL NOTES

ALL WORK TO PRIVATE SEWERS IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND EUROCODES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING THE EXISTING LINE, INVERT LEVEL AND PIPE DIAMETER OF THE EXISTING CONNECTION POINTS FOR BOTH THE FOLL AND SURFACE WATER SYSTEMS. PRIOR TO UNDERTAKING INSTALLATION OF ANY NEW DRAINAGE WORKS ANY DEVIATION TO THE LEVELS AND POSITIONS INDICATED ON THE DRAWING SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE PROJECT ENGINEER.

FOR DETAILS OF GROUND CONDITIONS REFER TO THE GROUND INVESTIGATION REPORT.

THE FOLLOWING PIPE STRENGTHS SHALL BE ADOPTED UNLESS NOTED OTHERWISE:-

PRIVATE PIPES UP TO AND INCLUDING 300mm DIAMETER TO BE CLAY WARE TO BS EN206 CLASS 180 OR PLASTIC TO BS EN 1401-1:2009 AND BS EN 13508.

PRIVATE PIPES OVER 300mm DIAMETER TO BE CONCRETE TO BS5911 CLASS M.

WHERE PIPES AND OTHER DRAINAGE COMPONENTS ARE TO RECEIVE TRADE EFFLUENT THE PRINCIPAL CONTRACTOR SHALL ENSURE THEY ARE ADEQUATE TO RECEIVE THE DISPOSAL OF CHEMICALS AS LISTED IN THE CONTRACT DOCUMENTS.

ALL PIPE RUNS TO BE LAID WITH FLEXIBLE JOINTS.

PIPES LOCATED IN HIGHWAYS TO BE LAID A MINIMUM OF 1m FROM THE KERB EDGE.

ALL PIPES ENTERING AND EXITING MANHOLES ARE TO BE CONNECTED WITH PIPE SOFFITS LEVEL, UNLESS NOTED OTHERWISE.

ALL INVERTS SPECIFIED ARE OUTGOING (EXCEPT BACKDROP).

CONNECTIONS TO BE MADE BY PURPOSE MADE JUNCTIONS AS FAR AS PRACTICABLE, OR USING PIPE BENDS TO BE TURNED IN DIRECTION OF FLOW.

ALL DRAINS TO BE PRESSURE TESTED PRIOR TO BACKFILLING, AND UPON COMPLETION OF SURFACING ALL DRAINS TO BE INSPECTED BY CCTV IMMEDIATELY PRIOR TO PRACTICAL COMPLETION.

PRE-FORMED CHANNELS ARE TO BE USED IN MANHOLES WHERE APPLICABLE.

GRANULITHIC CONCRETE BENCHING TO BE STEEL TROWELLED TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS.

ROAD GULLY CONNECTIONS TO BE 150mm DIAMETER LAID AT A MINIMUM GRADIENT OF 1:150 UNLESS NOTED OTHERWISE.

ALL DRAINAGE WORKS WITHIN THE ZONE OF INFLUENCE OF TREES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE N-HC STANDARDS.

ALL BYPASS INTERCEPTORS ARE TO BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

CONCRETE MIXES

THE FOLLOWING CONCRETE MIXES ARE TO BE USED (IN ACCORDANCE WITH BS 8500) :-

CONCRETE SPECIFICATION	
DC-CLASS	CONCRETE MIX
DC1	ST4 GEN3
DC2	FND 2
DC2	FND 2
DC3	FND 3
DC3	FND 3
DC4	FND 4
DC4	FND 4
DC4	FND 4
DC4	FND 4
SLUMP CLASS S3 FOR ALL DRAINAGE WORKS	

MANHOLE COVER REQUIREMENTS

ALL COVERS TO BE IN ACCORDANCE WITH BS EN 124 MATERIAL AND COVER TYPE TO SUIT ARCHITECTURAL FINISHES.

LOAD CLASS REQUIREMENTS	
LOCATION	CLASS
LANDSCAPE	A15
FOOTPATHS	B125
PARKING AREAS / CARRIAGEWAYS	D400

ROCKER PIPE

ROCKER PIPE TABLE	
PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
150-600	600
675-750	1000
OVER 750	1250

MANHOLE CHAMBER DIAMETER

MANHOLE CHAMBER SIZES	
DIA. OF LARGER PIPE IN MH	INTERNAL CHAMBER DIA. (mm)
LESS THAN 375mm	1200
375mm-700mm	1500
750mm-900mm	1800
GREATER THAN 900mm	PIPE DIA. + 900

TRENCH WIDTH REQUIREMENTS

TRENCH WIDTHS TABLE	
DIAMETER OF DRAIN (mm)	TRENCH WIDTH (mm)
100	550
150	600
225	700
300	750

FP McCann

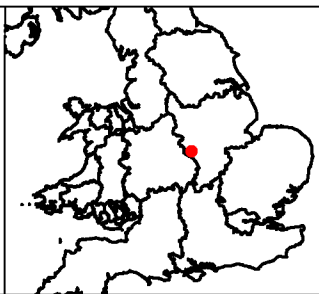
Cadeby, Leicestershire

PRIVATE DRAINAGE DETAILS SHEET 1

CONTRACTUAL RESIDUAL CDM RISKS

RISK ITEM	MITIGATION MEASURES BY CONTRACTOR
CLOSE PROXIMITY OF TREES.	ALL NECESSARY PRECAUTIONS TO BE TAKEN WHEN CRANING.
EXISTING ON SITE / CROSS SITE SERVICES.	LOCATE, DEMARK AND PROTECT OR MAKE SAFE ALL EXISTING ON SITE / CROSS SITE SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
LIVE SITE	CONTRACTOR TO PROVIDE PROTECTION TO PREVENT UNAUTHORISED ACCESS TO THE CONSTRUCTION AREA & ANY OPEN EXCAVATIONS.
EXISTING ROAD	CARE TO BE TAKEN NOT TO UNDERMINE EXISTING ROAD AND PAVEMENT GIVEN THE PROXIMITY OF REQUIRED EXCAVATIONS.

- Notes:
- DO NOT SCALE THIS DRAWING. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS ON SITE PRIOR TO COMMENCING THE WORKS.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
 - ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE.
 - ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.



17 August 2023
NGR: 443,349 E / 302,364 N

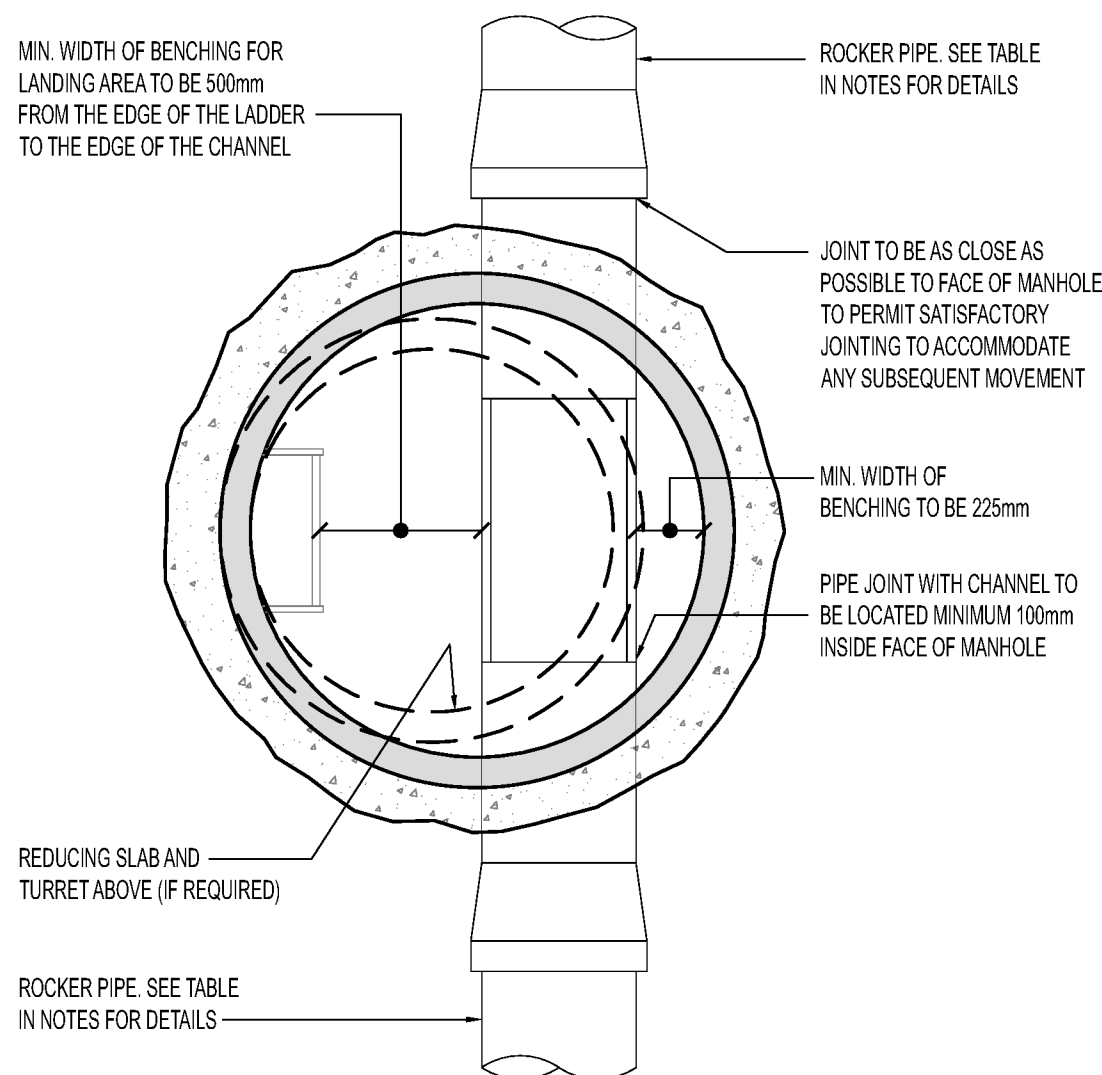
Project No. 3490645
Client: FP McCann
Drawn by: LC
Ref: PD Details 1

envireau
water

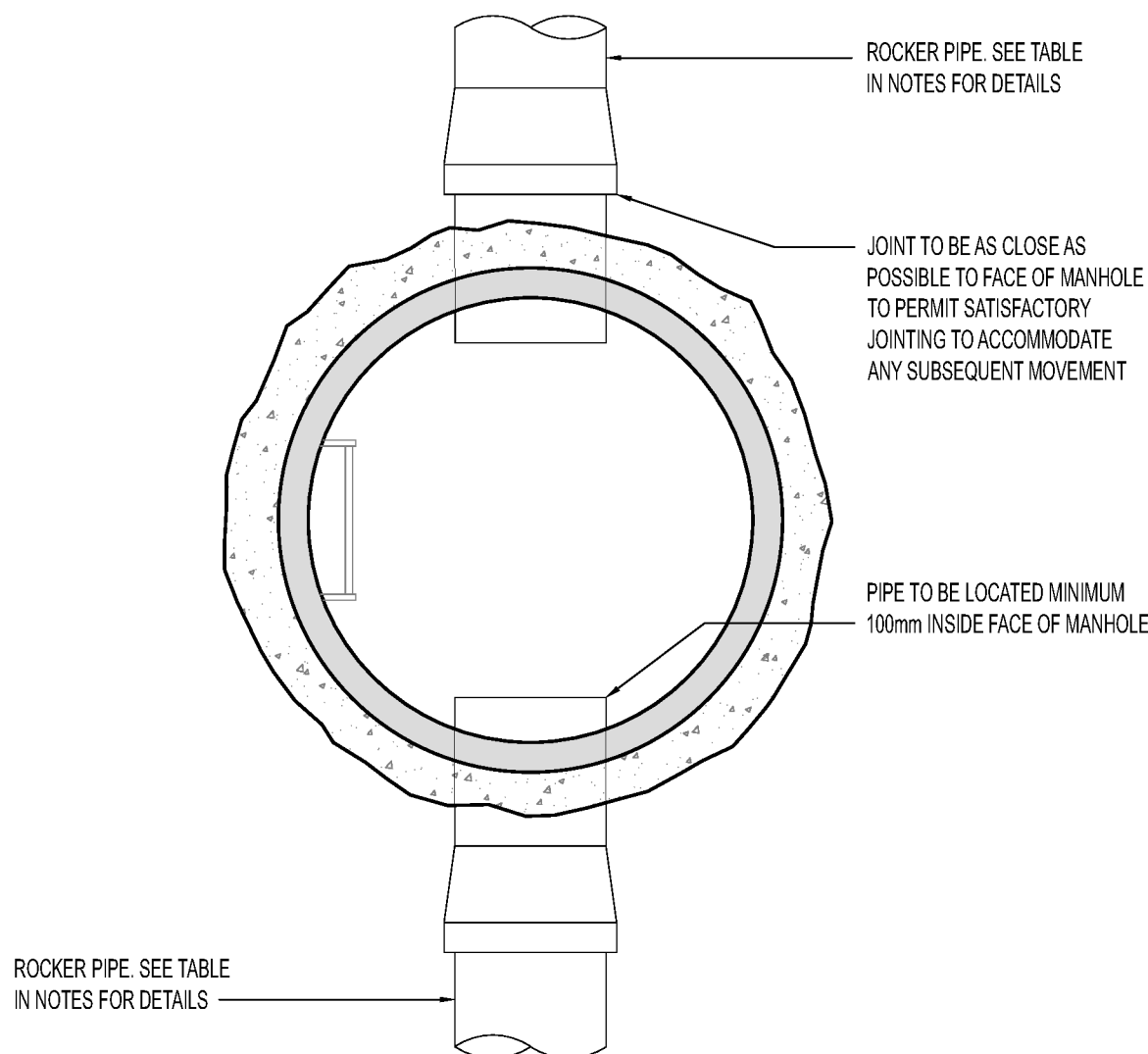
PRIVATE DRAINAGE DETAILS
SHEET 2



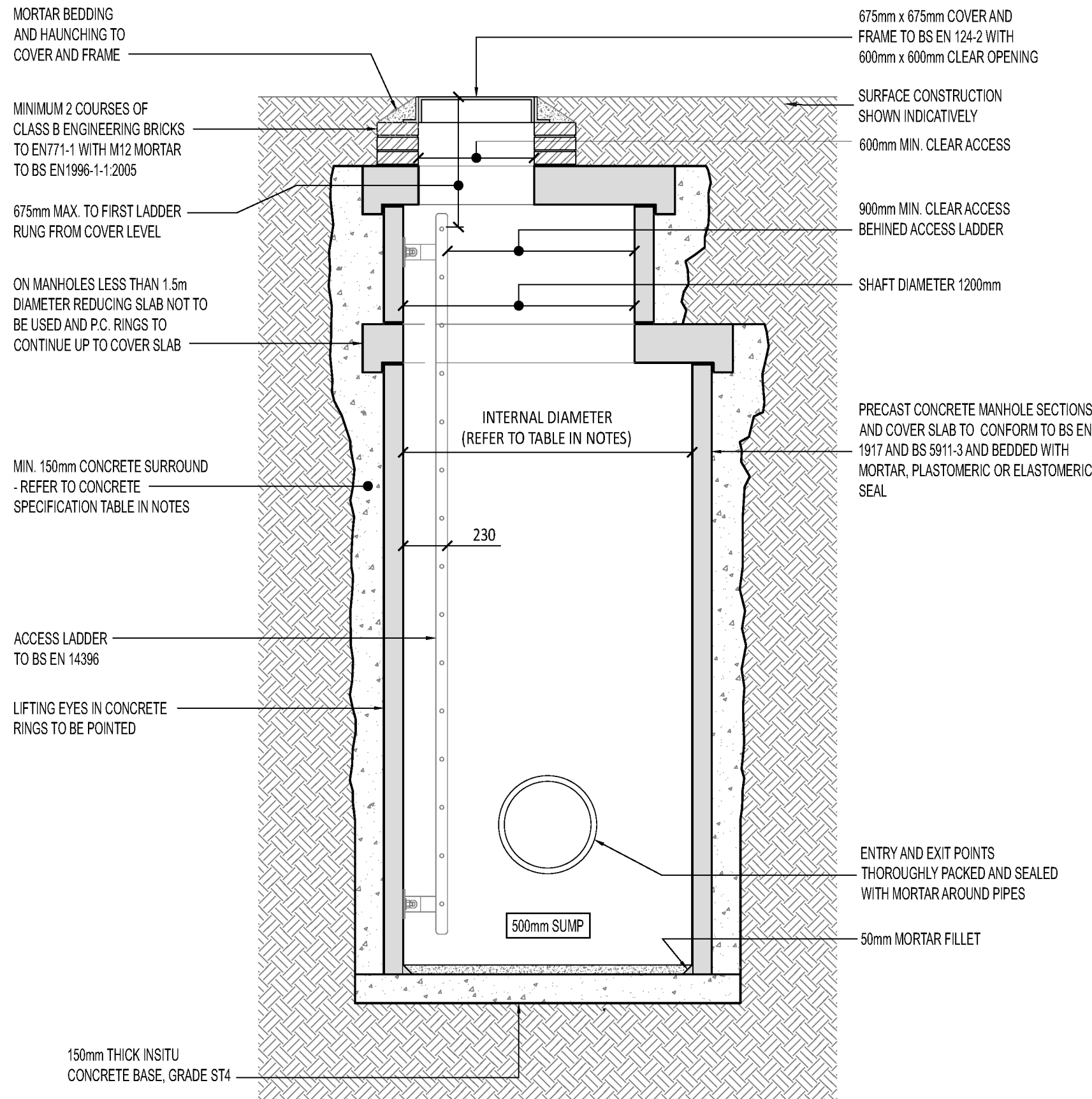
RISK ITEM	MITIGATION MEASURES BY CONTRACTOR
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EXISTING ON SITE / CROSS SITE SERVICES.	LOCATE, DEMARK AND PROTECT OR MAKE SAFE ALL EXISTING ON SITE / CROSS SITE SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
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EXISTING ROAD	CARE TO BE TAKEN NOT TO UNDERMINE EXISTING ROAD AND PAVEMENT GIVEN THE PROXIMITY OF REQUIRED EXCAVATIONS.



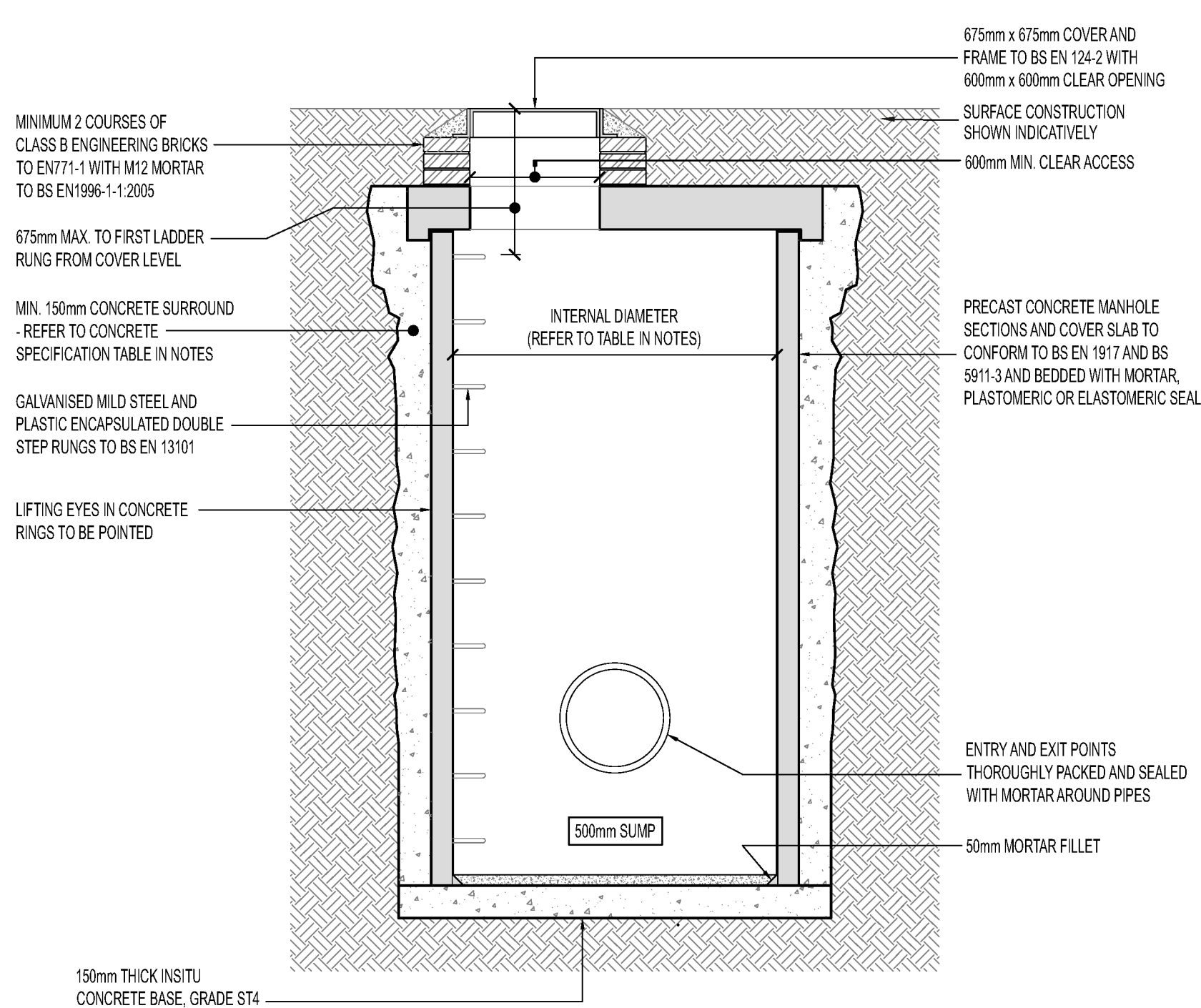
TYPICAL PLAN OVER MANHOLE TYPE Y
(SCALE 1:25)



TYPICAL PLAN OVER MANHOLE TYPE Z
(SCALE 1:25)



PRIVATE MANHOLE DETAIL TYPE Y
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3.0m - 6.0m
(SCALE 1:25)



PRIVATE MANHOLE DETAIL TYPE Z (WITH SUMP)
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.5m - 3.0m
(SCALE 1:25)

PRIVATE DRAINAGE DETAIL NOTES

ALL WORK TO PRIVATE SEWERS IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND EUROCODES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING THE EXISTING LINE, INVERT LEVEL AND PIPE DIAMETER OF THE EXISTING CONNECTION POINTS FOR BOTH THE FOUL AND SURFACE WATER SYSTEMS, PRIOR TO UNDERTAKING INSTALLATION OF ANY NEW DRAINAGE WORKS. ANY DEVIATION TO THE LEVELS AND POSITIONS INDICATED ON THE DRAWINGS SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE PROJECT ENGINEER.

FOR DETAILS OF GROUND CONDITIONS REFER TO THE GROUND INVESTIGATION REPORT.

THE FOLLOWING PIPE STRENGTHS SHALL BE ADOPTED UNLESS NOTED OTHERWISE:-

PRIVATE PIPES UP TO AND INCLUDING 300mm DIAMETER TO BE CLAY WARE TO BS EN 1401-1:2009 AND BS EN 13598.

PRIVATE PIPES OVER 300mm DIAMETER TO BE CONCRETE TO BS5911 CLASS M.

WHERE PIPES AND OTHER DRAINAGE COMPONENTS ARE TO RECEIVE TRADE EFFLUENT THE PRINCIPAL CONTRACTOR SHALL ENSURE THEY ARE ADEQUATE TO RECEIVE THE DISPOSAL OF CHEMICALS AS LISTED IN THE CONTRACT DOCUMENTS.

ALL PIPE RUNS TO BE LAID WITH FLEXIBLE JOINTS.

PIPES LOCATED IN HIGHWAYS TO BE LAID A MINIMUM OF 1m FROM THE KERB EDGE.

ALL PIPES ENTERING AND EXITING MANHOLES ARE TO BE CONNECTED WITH PIPE SOFFITS LEVEL UNLESS NOTED OTHERWISE.

ALL INVERTS SPECIFIED ARE OUTGOING (EXCEPT BACKDROPS).

CONNECTIONS TO BE MADE BY PURPOSE MADE JUNCTIONS AS FAR AS PRACTICABLE, OR USING PIPE BENDS TO BE TURNED IN DIRECTION OF FLOW.

ALL DRAINS TO BE PRESSURE TESTED PRIOR TO BACKFILLING AND UPON COMPLETION OF SURFACING. ALL DRAINS TO BE INSPECTED BY CCTV IMMEDIATELY PRIOR TO PRACTICAL COMPLETION.

PRE-FORMED CHANNELS ARE TO BE USED IN MANHOLES WHERE APPLICABLE.

GRANULITHIC CONCRETE BENCHING TO BE STEEL TROWELLED TO A DENSE SMOOTH FACE NEARLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS.

THE FIRST MANHOLE UPSTREAM FROM THE CONNECTION TO THE CONNECTION TO THE EXISTING DRAINAGE SHOULD BE FITTED WITH A SCREEN IN ORDER TO PREVENT DEBRIS ENTERING THE EXISTING SEWER/DRAIN. THE SCREEN SHOULD NOT BE REMOVED UNTIL IMMEDIATELY PRIOR TO THE OCCUPATION OF THE PREMISES TO BE SERVED BY THE SEWER.

ROAD GULLY CONNECTIONS TO BE 150mm DIAMETER LAID AT A MINIMUM GRADIENT OF 1:150 UNLESS NOTED OTHERWISE.

ALL DRAINAGE WORKS WITHIN THE ZONE OF INFLUENCE OF TREES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE NHBC STANDARDS.

ALL BYPASS INTERCEPTORS ARE TO BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

CONCRETE MIXES

THE FOLLOWING CONCRETE MIXES ARE TO BE USED (IN ACCORDANCE WITH BS 8502) :-

DC-CLASS	CONCRETE MIX
DC1	ST4 / GEN 3
DC2	FND 2
DC2	FND 2
DC3	FND 3
DC3	FND 3
DC4	FND 4
DC4	FND 4
SUMP CLASS S3 FOR ALL DRAINAGE WORKS	

MANHOLE COVER REQUIREMENTS

ALL COVERS TO BE IN ACCORDANCE WITH BS EN 124. MATERIAL AND COVER TYPE TO SUIT ARCHITECTURAL FINISHES.

LOCATION	CLASS
REAR GARDENS	A15
FRONT GARDENS	B125
FOOTPATHS / PRIVATE DRIVES	B125
PARKING AREAS / CARRIAGEWAYS	D400

ROCKER PIPE REQUIREMENTS

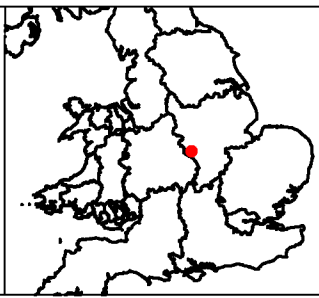
PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
150-400	600
450-750	1000
OVER 750	1250

MANHOLE CHAMBER DIAMETER

DIA. OF LARGER PIPE IN MH	INTERNAL CHAMBER DIA. (mm)
LESS THAN 375mm	1200
375mm-700mm	1500
750mm-900mm	1800
GREATER THAN 900mm	PIPE DIA. + 800

TRENCH WIDTH REQUIREMENTS

DIAMETER OF DRAIN (mm)	TRENCH WIDTH (mm)
100	550
150	600
225	700
300	750



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NGR: 443,349 E / 302,364 N

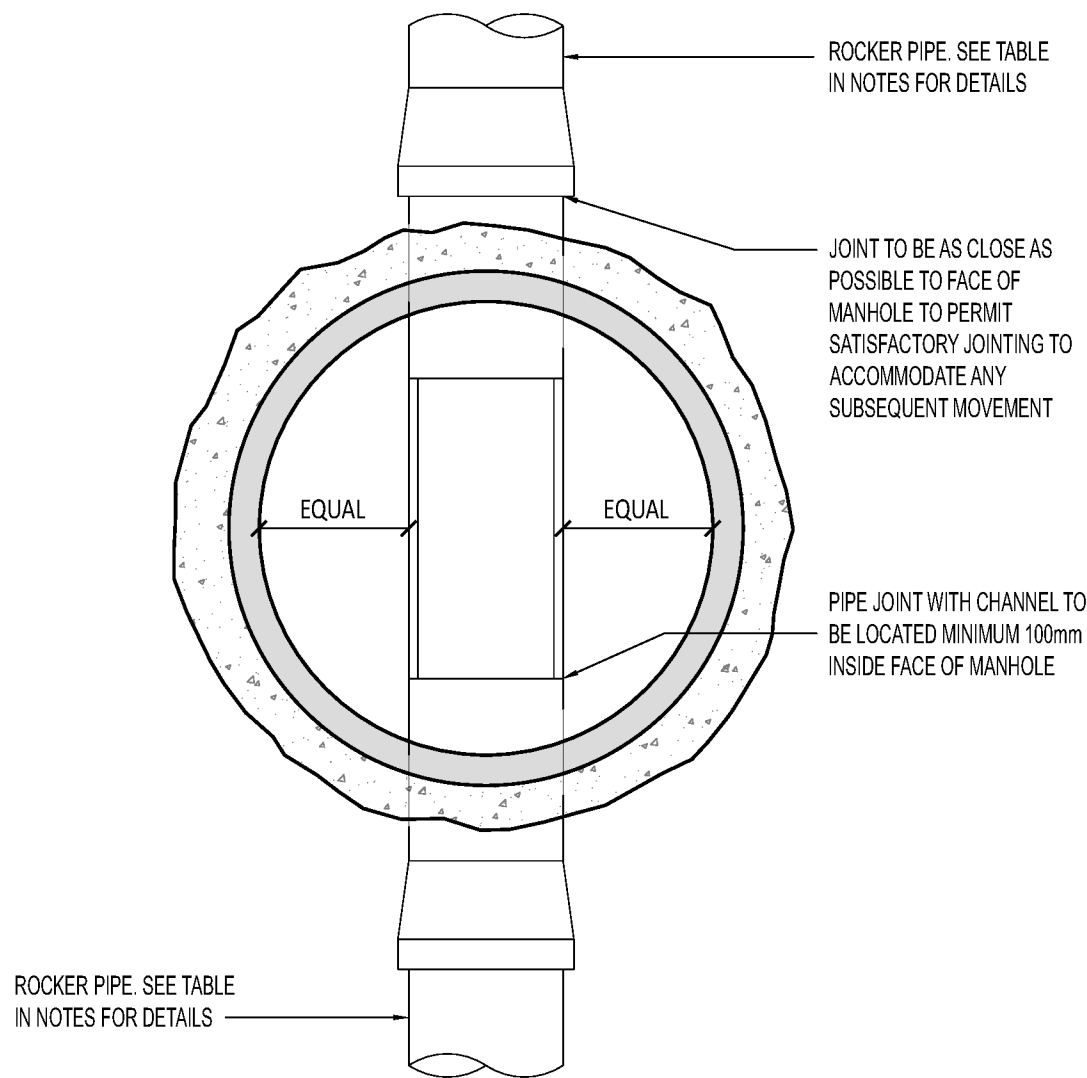
Project No. 3490645
Client: FP McCann
Drawn by: LC
Ref: PD Details 2



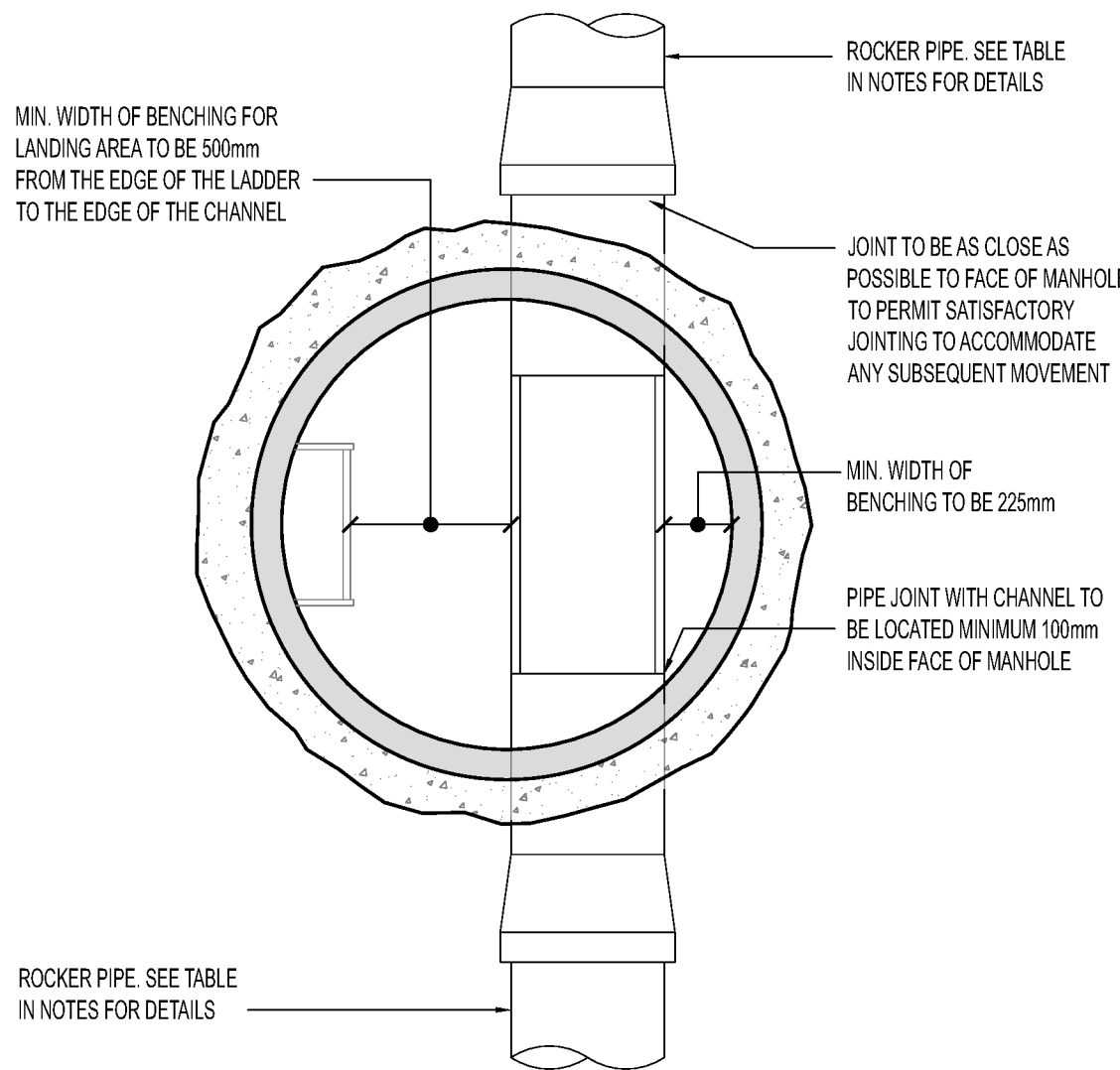
PRIVATE DRAINAGE DETAILS
SHEET 3

 CONTRACTUAL RESIDUAL CDM RISKS

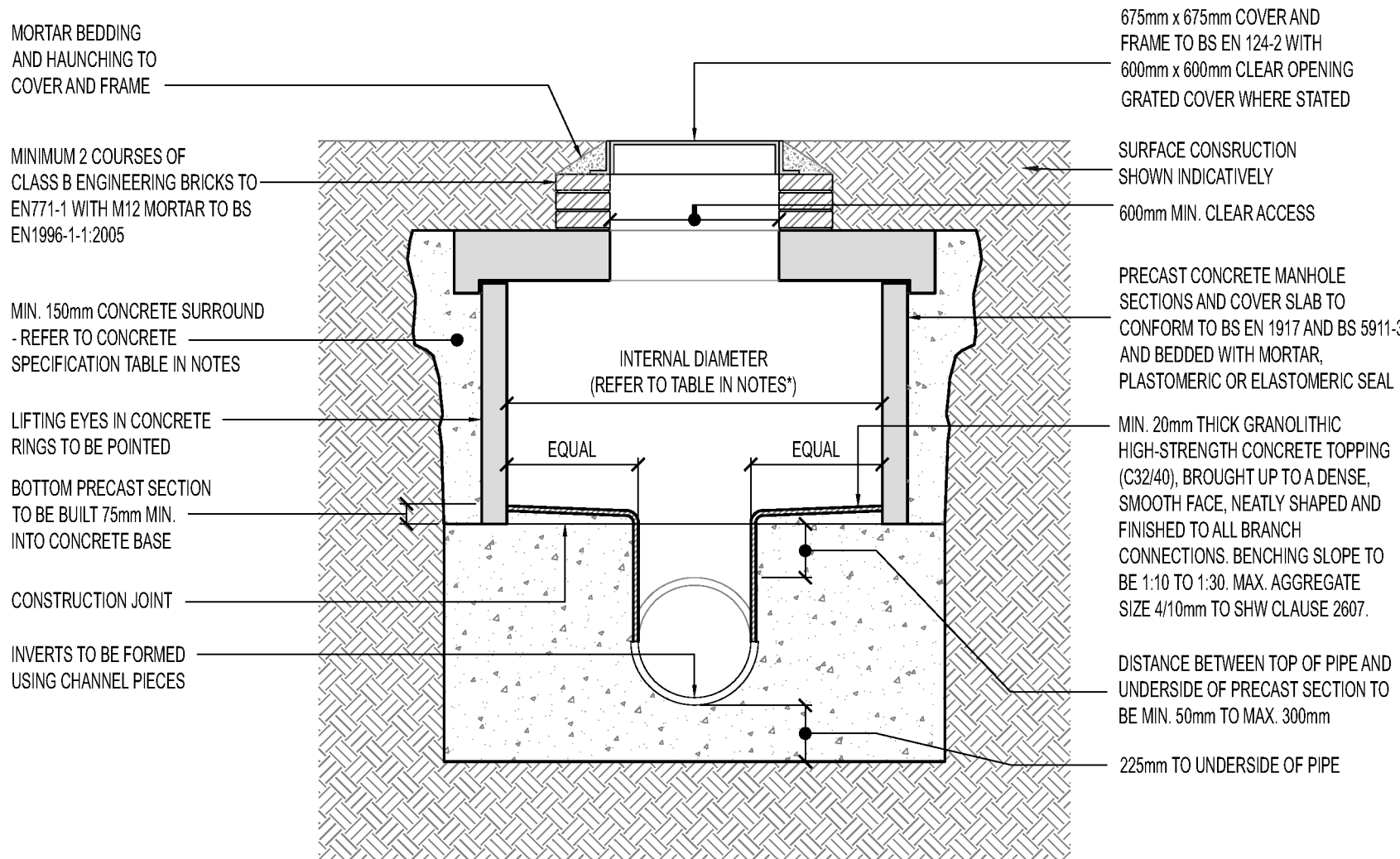
RISK ITEM	MITIGATION MEASURES BY CONTRACTOR
CLOSE PROXIMITY OF TREES.	ALL NECESSARY PRECAUTIONS TO BE TAKEN WHEN CRANING.
EXISTING ON SITE / CROSS SITE SERVICES.	LOCATE, DEMARK AND PROTECT OR MAKE SAFE ALL EXISTING ON SITE / CROSS SITE SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
LIVE SITE	CONTRACTOR TO PROVIDE PROTECTION TO PREVENT UNAUTHORISED ACCESS TO THE CONSTRUCTION AREA & ANY OPEN EXCAVATIONS.
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TYPICAL PLAN OVER MANHOLE TYPE W
(SCALE 1:25)

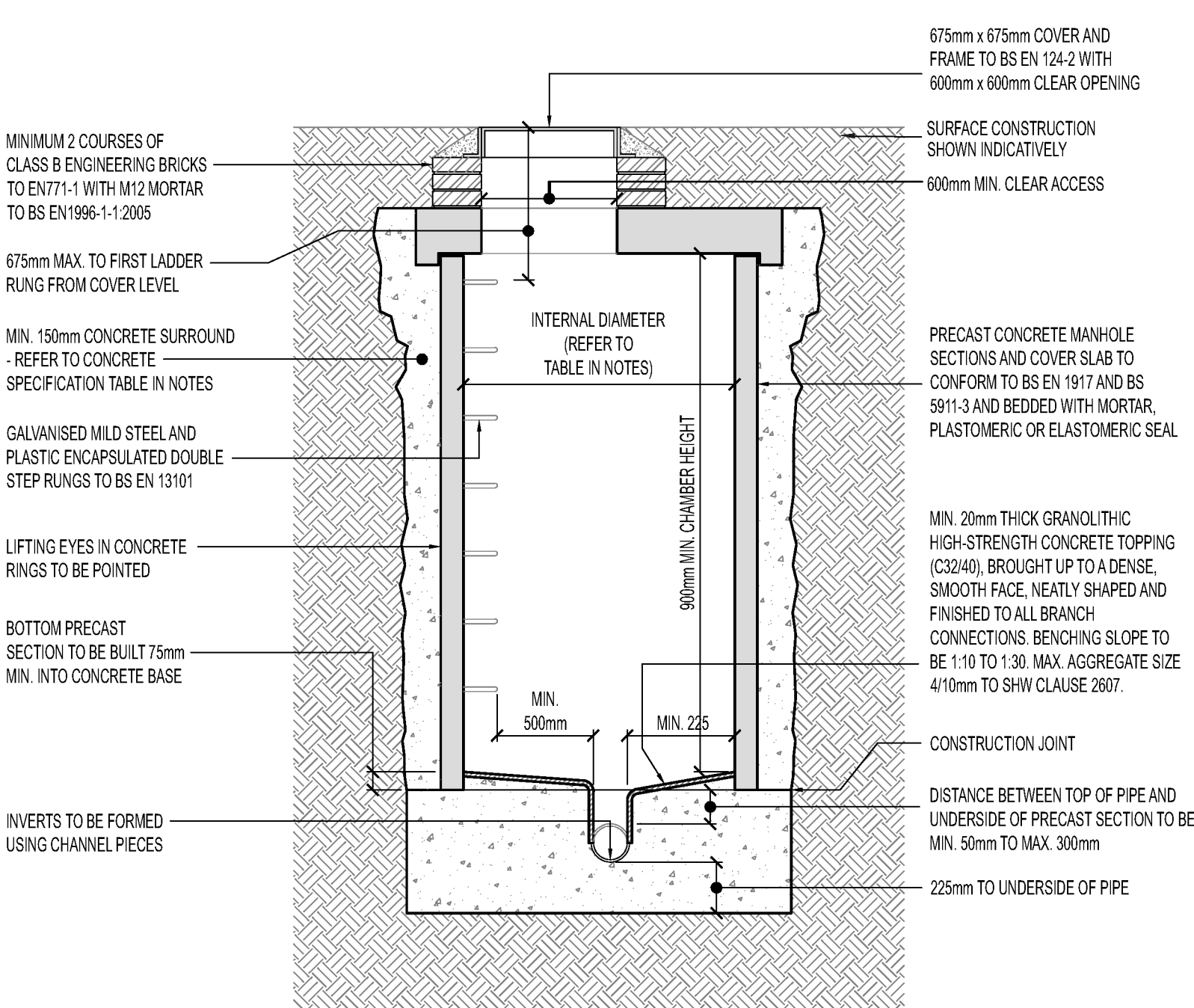


TYPICAL PLAN OVER MANHOLE TYPE X
(SCALE 1:25)



PRIVATE MANHOLE DETAIL TYPE W
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.0m - 1.5m
(SCALE 1:25)

* MIN. INTERNAL CHAMBER DIAMETER TO BE 1200mm TO ACCOMMODATE 600mm x 600mm ACCESS OPENING. SUBJECT TO A SAFE SYSTEM OF WORK BEING PUT IN PLACE.



PRIVATE MANHOLE DETAIL TYPE X
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.5m - 3.0m
(SCALE 1:25)

PRIVATE DRAINAGE DETAIL NOTES

ALL WORK TO PRIVATE SEWERS IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND EUROCODES.

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FOR DETAILS OF GROUND CONDITIONS REFER TO THE GROUND INVESTIGATION REPORT. THE FOLLOWING PIPE STRENGTHS SHALL BE ADOPTED UNLESS NOTED OTHERWISE:-

PRIVATE PIPES UP TO AND INCLUDING 300mm DIAMETER TO BE CLAY WARE TO BS EN 1245 CLASS B OR PLASTIC TO BS EN 1401-1:2009 AND BS EN 13598.

PRIVATE PIPES OVER 300mm DIAMETER TO BE CONCRETE TO BS EN 1245 CLASS M.

WHERE PIPES AND OTHER DRAINAGE COMPONENTS ARE TO RECEIVE TRADE EFFLUENT THE PRINCIPAL CONTRACTOR SHALL ENSURE THEY ARE ADEQUATE TO RECEIVE THE DISPOSAL OF CHEMICALS AS LISTED IN THE CONTRACT DOCUMENTS.

ALL PIPE RUNS TO BE LAID WITH FLEXIBLE JOINTS.

PIPES LOCATED IN HIGHWAYS TO BE LAID A MINIMUM OF 1m FROM THE KERB EDGE.

ALL PIPES ENTERING AND EXITING MANHOLES ARE TO BE CONNECTED WITH PIPE SOFFITS LEVEL UNLESS NOTED OTHERWISE.

ALL INVERTS SPECIFIED ARE OUTGOING (EXCEPT BACKDROP).

CONNECTIONS TO BE MADE BY PURPOSE MADE JUNCTIONS AS FAR AS PRACTICABLE, OR USING PIPE BENDS TO BE TURNED IN DIRECTION OF FLOW.

ALL DRAINS TO BE PRESSURE TESTED PRIOR TO BACKFILLING AND UPON COMPLETION OF SURFACING. ALL DRAINS TO BE INSPECTED BY CCTV IMMEDIATELY PRIOR TO PRACTICAL COMPLETION.

PRE-FORMED CHANNELS ARE TO BE USED IN MANHOLES WHERE APPLICABLE.

GRANOLITHIC CONCRETE BENCHING TO BE STEEL TROWELLED TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS.

THE FIRST MANHOLE UPSTREAM FROM THE CONNECTION TO THE CONNECTION TO THE EXISTING DRAINAGE SHOULD BE FITTED WITH A SCREEN IN ORDER TO PREVENT DEBRIS ENTERING THE EXISTING SEWER/DRAIN. THE SCREEN SHOULD NOT BE REMOVED UNTIL IMMEDIATELY PRIOR TO THE OCCUPATION OF THE PREMISES TO BE SERVED BY THE SEWER.

ROAD GULLY CONNECTIONS TO BE 150mm DIAMETER LAID AT A MINIMUM GRADIENT OF 1:150 UNLESS NOTED OTHERWISE.

ALL DRAINAGE WORKS WITHIN THE ZONE OF INFLUENCE OF TREES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE NHBC STANDARDS.

ALL BYPASS INTERCEPTORS ARE TO BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

CONCRETE MIXES

THE FOLLOWING CONCRETE MIXES ARE TO BE USED (IN ACCORDANCE WITH BS 8502) >

CONCRETE SPECIFICATION	
DC CLASS	CONCRETE MIX
DC1	ST4 / GEN 3
DC2	FND 2
DC2	FND 2
DC3	FND 3
DC3	FND 3
DC4	FND 4
DC4	FND 4
DC4	FND 4
SUMP CLASS S3 FOR ALL DRAINAGE WORKS	

MANHOLE COVER REQUIREMENTS

ALL COVERS TO BE IN ACCORDANCE WITH BS EN 124. MATERIAL AND COVER TYPE TO SUIT ARCHITECTURAL FINISHES.

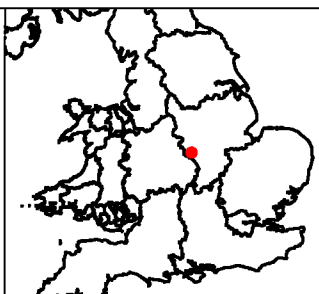
LOAD CLASS REQUIREMENTS	
LOCATION	CLASS
REAR GARDENS	A15
FRONT GARDENS	B125
FOOTPATHS / PRIVATE DRIVES	B125
PARKING AREAS / CARRIAGEWAYS	D400

ROCKER PIPE REQUIREMENTS	
ROCKER PIPE TABLE	
PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
150-600	600
675-750	1000
OVER 750	1250

MANHOLE CHAMBER DIMETER

MANHOLE CHAMBER SIZES	
DIA. OF LARGER PIPE IN MH	INTERNAL CHAMBER DIA. (mm)
LESS THAN 375mm	1200
375mm-700mm	1500
750mm-900mm	1800
GREATER THAN 900mm	PIPE DIA. + 900

TRENCH WIDTH REQUIREMENTS	
TRENCH WIDTH TABLE	
DIAMETER OF DRAIN (mm)	TRENCH WIDTH (mm)
100	550
150	600
225	700
300	750



17 August 2023
NGR: 443,349 E / 302,364 N

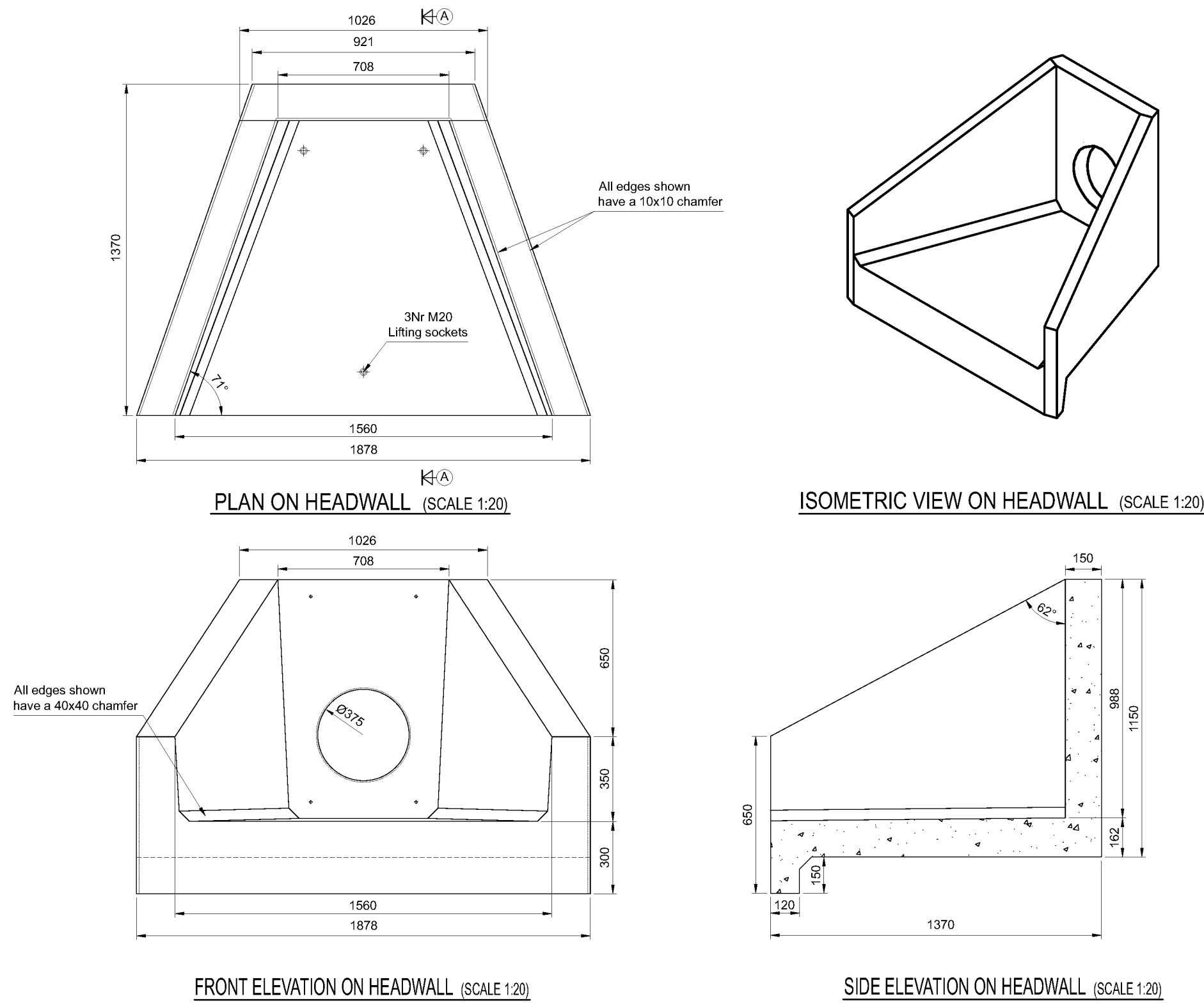
Project No. 3490645
Client: FP McCann
Drawn by: LC
Ref: PD Details 3



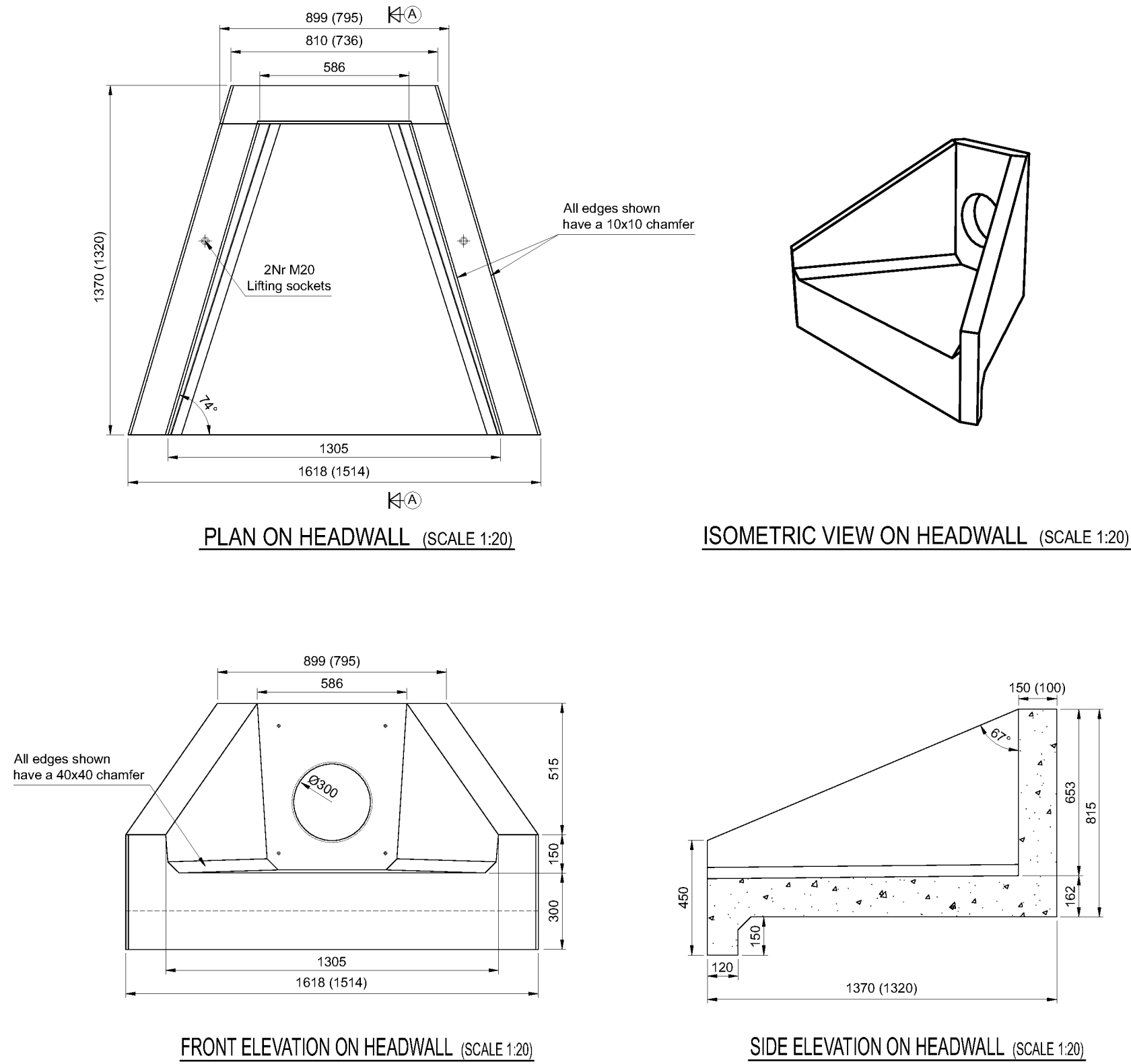
HEADWALL DETAILS

CONTRACTUAL RESIDUAL CDM RISKS

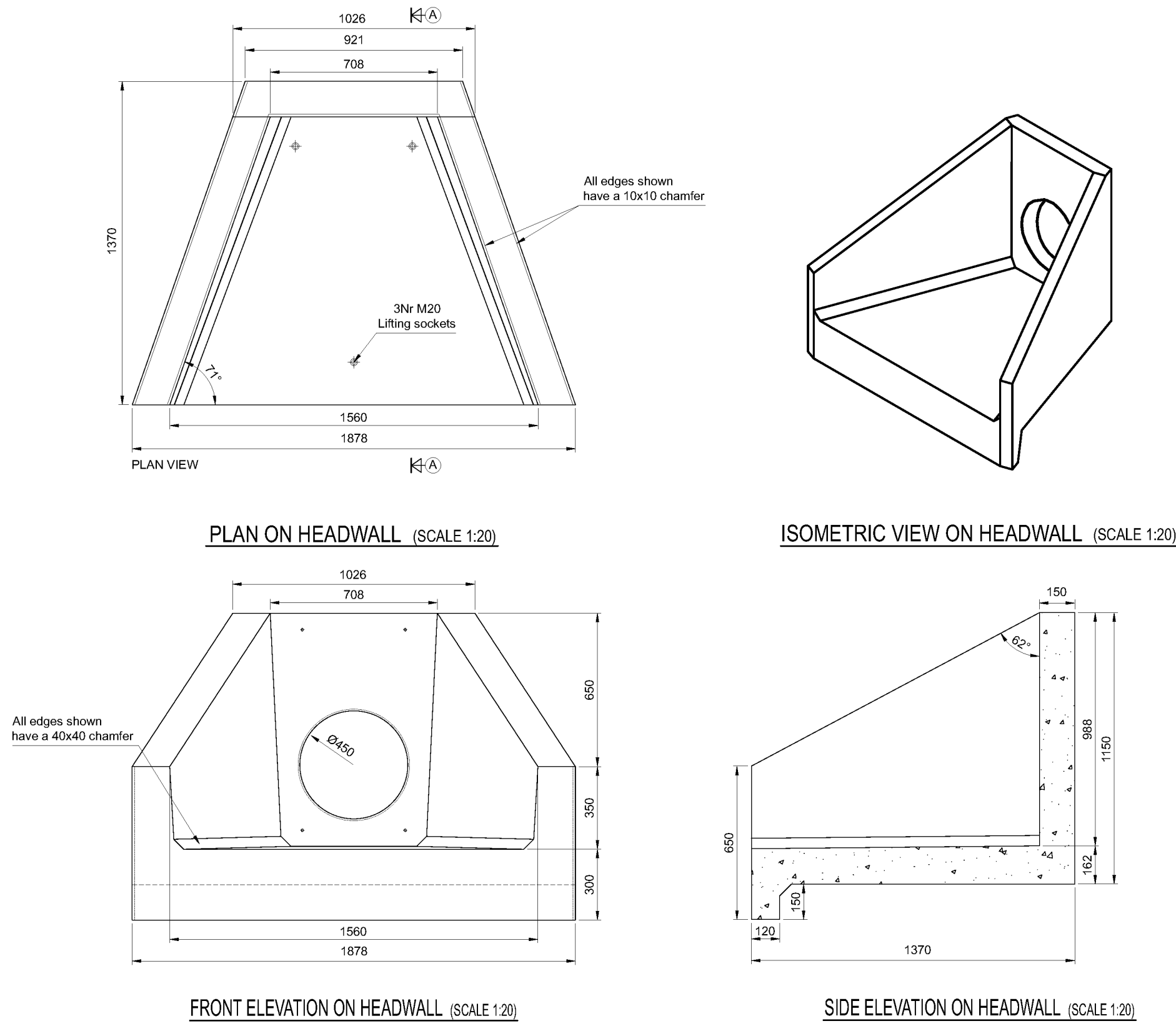
RISK ITEM	MITIGATION MEASURES BY CONTRACTOR
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EXISTING ON SITE / CROSS SITE SERVICES.	LOCATE, DEMARK AND PROTECT OR MAKE SAFE ALL EXISTING ON SITE / CROSS SITE SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
LIVE SITE	CONTRACTOR TO PROVIDE PROTECTION TO PREVENT UNAUTHORISED ACCESS TO THE CONSTRUCTION AREA & ANY OPEN EXCAVATIONS.
EXISTING ROAD	CARE TO BE TAKEN NOT TO UNDERMINE EXISTING ROAD AND PAVEMENT GIVEN THE PROXIMITY OF REQUIRED EXCAVATIONS.



HEADWALL 2 & 3
FP McCANN HW MED 150 PRECAST
CONCRETE HEADWALL OR SIMILAR
APPROVED TO SUIT A 375Ø PIPE



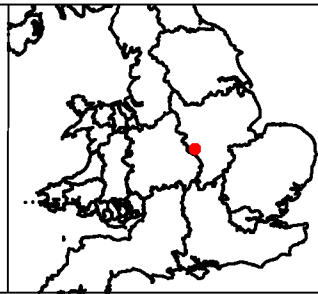
HEADWALL 1
FP McCANN HW SMALL 150 PRECAST
CONCRETE HEADWALL OR SIMILAR
APPROVED TO SUIT A 300Ø PIPE



HEADWALL 4
FP McCANN HW MED 150 PRECAST
CONCRETE HEADWALL OR SIMILAR
APPROVED TO SUIT A 450Ø PIPE

CD1	27.08.23	REVISED HEADWALL MANUFACTURER	LC	LC
CD1	21.08.23	FIRST ISSUE	LC	JED
Rev	Date	Revision Description	Drawn	Auth'd

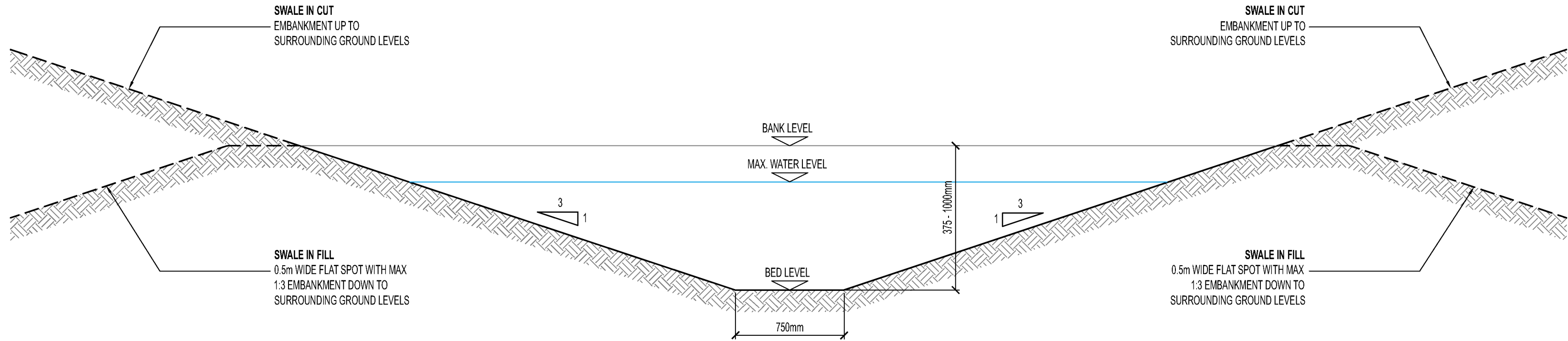
- Notes:
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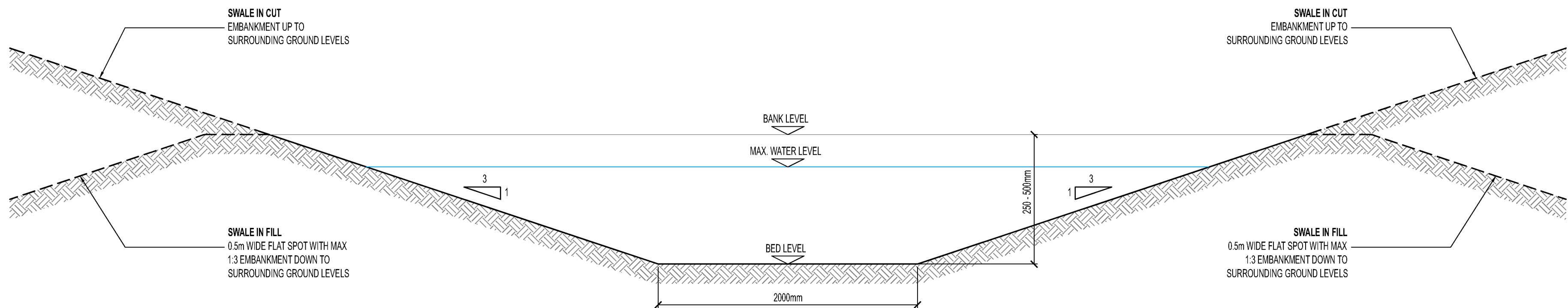
PROPOSED SWALE & CONCRETE
PAD CHANNEL DETAILS

 CONTRACTUAL RESIDUAL CDM RISKS

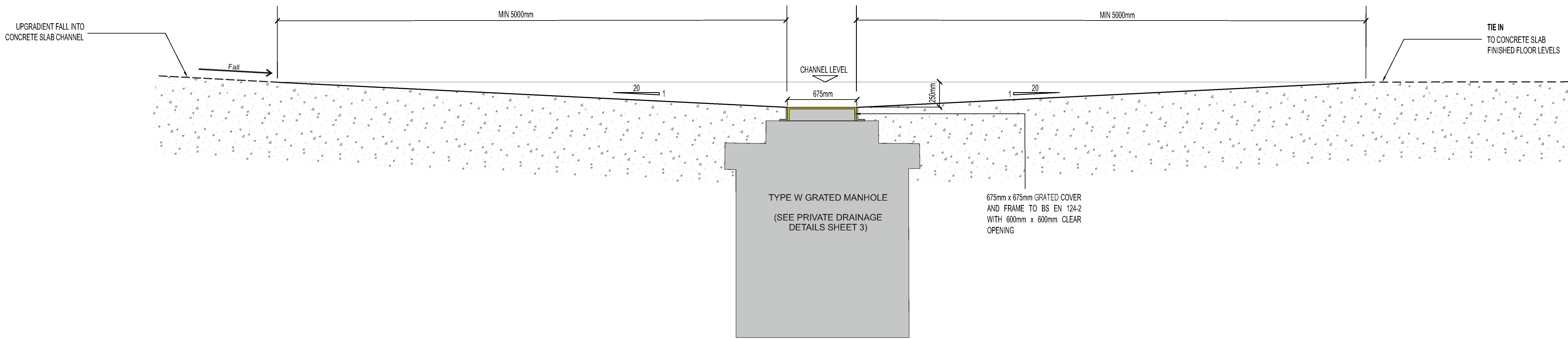
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TYPICAL EARTHEN SWALE CROSS SECTION WITH 0.75m WIDE BASE SCALE 1:25



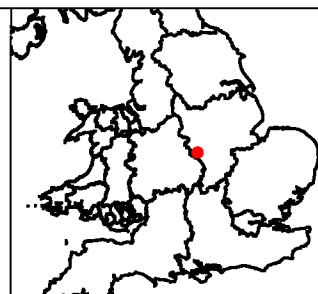
TYPICAL EARTHEN SWALE CROSS SECTION WITH 2.0m WIDE BASE SCALE 1:25



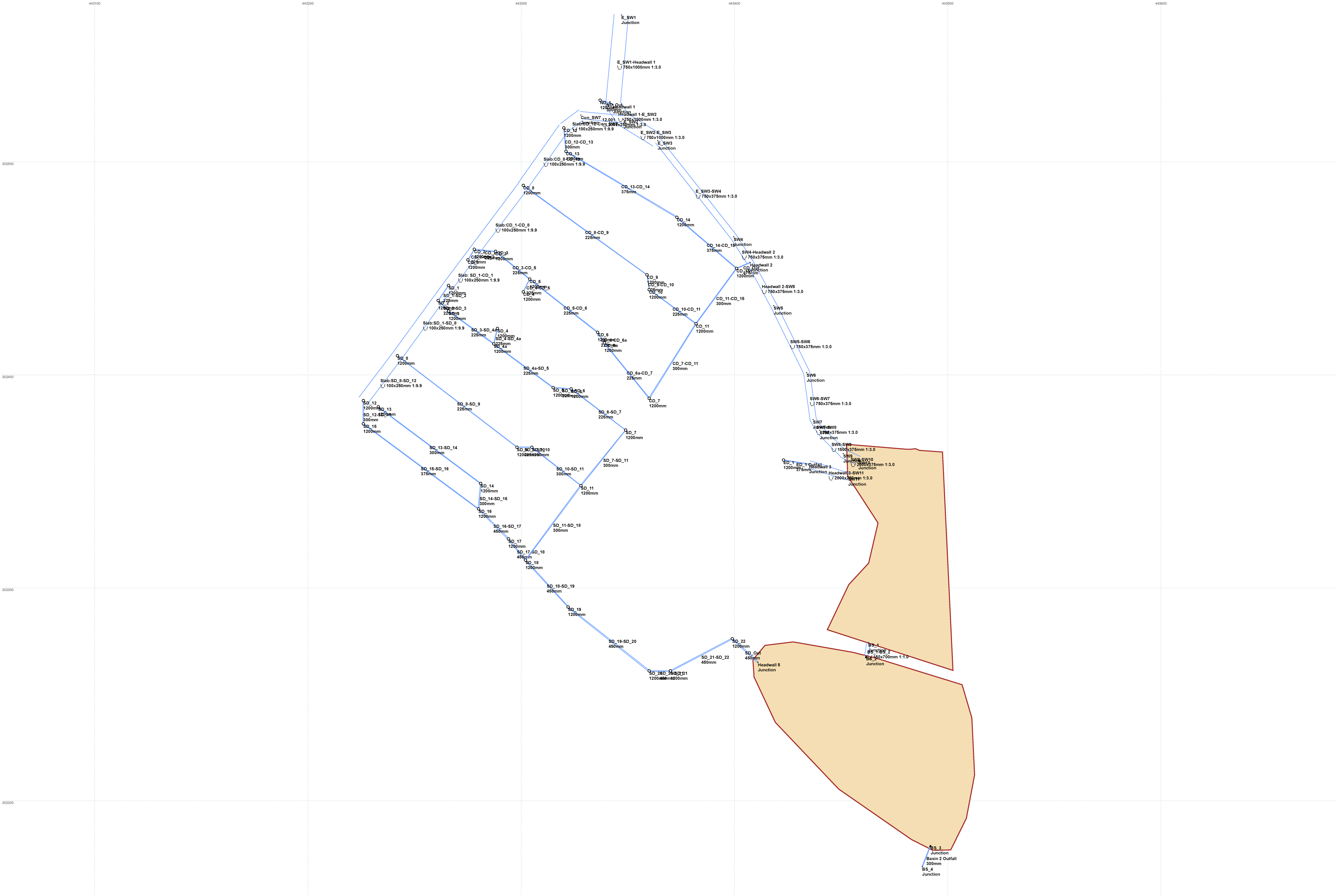
TYPICAL CONCRETE PAD CHANNEL CROSS SECTION WITH 0.675m WIDE BASE AT GRATE SCALE 1:25

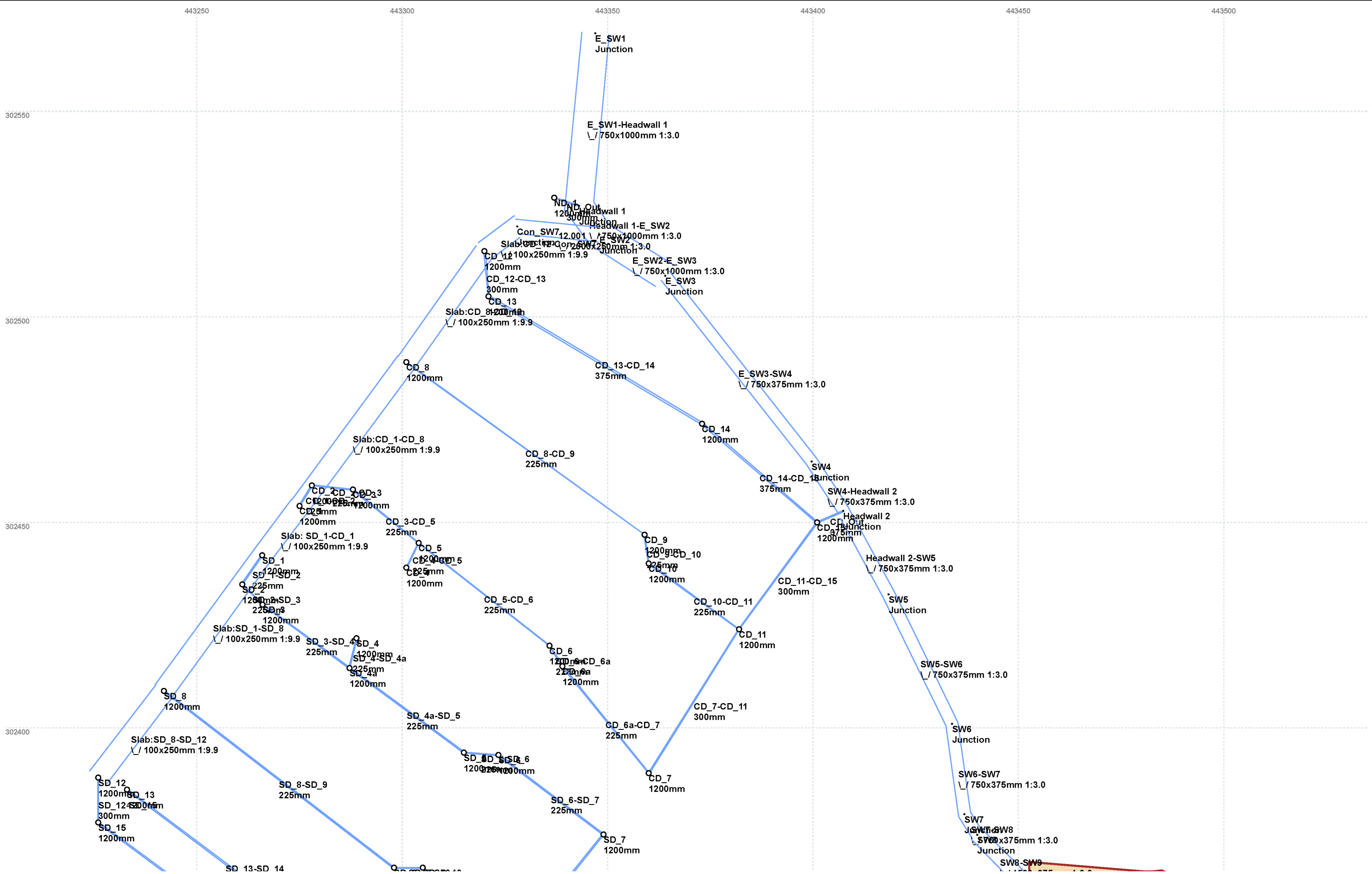
C01	22.08.23	FIRST ISSUE	LC	JED	
Rev.	Date	Revision Description	Drawn	Auth'd	

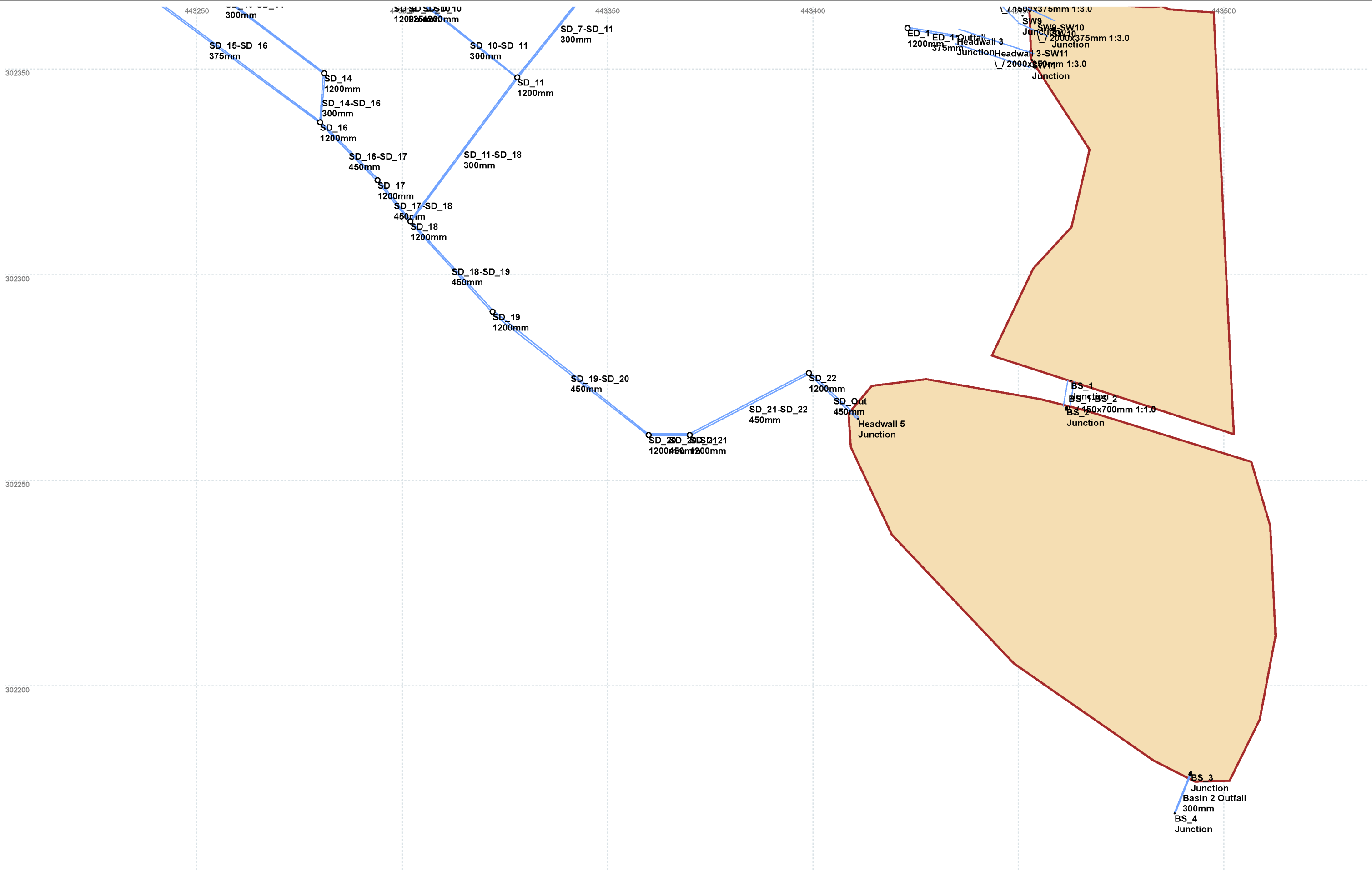
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Appendix D Drainage Model Hydraulic Calculations







Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	0.950	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Pipe Link Type

Shape Circular | Barrels 1 | Auto Increment (mm) 75 | Follow Ground x

Available Diameters (mm)

100 | 150

Basin Conn Link Type

Shape Trapezoidal | Height (mm) 700 | Auto Increment (mm) 75
Barrels 1 | Side Slope (1:X) 1.0 | Follow Ground x

Available Diameters (mm)

150

Swale 1 Link Type

Shape Trapezoidal | Height (mm) 1000 | Auto Increment (mm) 250
Barrels 1 | Side Slope (1:X) 3.0 | Follow Ground x

Available Diameters (mm)

750

Swale 3 Link Type

Shape Trapezoidal | Height (mm) 375 | Auto Increment (mm) 250
Barrels 1 | Side Slope (1:X) 3.0 | Follow Ground x

Available Diameters (mm)

1500

Con Slab Channel Link Type

Shape	Trapezoidal	Height (mm)	250	Auto Increment (mm)	250
Barrels	1	Side Slope (1:X)	9.9	Follow Ground	x

Available Diameters (mm)

100

Swale 2 Link Type

Shape	Trapezoidal	Height (mm)	250	Auto Increment (mm)	250
Barrels	1	Side Slope (1:X)	3.0	Follow Ground	x

Available Diameters (mm)

2000

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SD_15	0.055	5.00	129.257	1200	443226.000	302377.000	1.797
SD_16	0.079	5.00	129.148	1200	443280.000	302337.080	2.348
SD_14	0.040	5.00	129.253	1200	443281.000	302349.000	2.053
SD_17	0.041	5.00	129.111	1200	443294.000	302323.000	2.511
SD_18	0.068	5.00	129.078	1200	443302.000	302313.000	3.378
SD_19	0.065	5.00	128.861	1200	443322.000	302291.000	3.481
SD_20	0.075	5.00	128.265	1200	443360.000	302261.000	3.345
SD_21	0.059	5.00	128.220	1200	443370.000	302261.000	3.400
SD_22	1.166	5.00	128.290	1200	443399.000	302276.080	4.020
Headwall 5			123.473		443411.000	302265.000	2.423
BS_2			123.500		443461.761	302267.833	2.360
SD_4		5.00	129.320	1200	443288.863	302421.827	1.425
BS_1		5.00	123.500		443462.787	302274.264	0.730

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
BS_4			123.250		443488.041	302169.000	3.150
SD_4a	0.008	5.00	129.320	1200	443287.166	302414.563	1.820
BS_3		5.00	123.250		443492.000	302179.000	2.200
ED_1	0.311	5.00	128.676	1200	443423.000	302360.000	1.500
Headwall 3			125.912		443435.000	302358.000	0.500
SW11			123.500		443453.341	302352.190	0.597
SW10			123.500		443458.100	302359.842	0.597
SW9			123.836		443451.000	302363.000	0.586
SW8			124.250		443440.000	302374.000	0.800
SW7			124.750		443436.855	302379.000	1.150
SW6			124.150		443433.854	302401.000	0.500
SW5			124.200		443418.400	302432.500	0.500
Headwall 2			124.250		443407.366	302452.799	0.500
SW4			124.350		443399.654	302464.800	0.550
E_SW3			125.100		443364.033	302510.000	1.000
E_SW2			126.850		443348.000	302520.000	1.000
Headwall 1			127.767		443343.041	302527.000	1.000
ND_1	0.394	5.00	129.376	1200	443337.000	302529.000	1.300
CD_12	0.257	5.00	129.410	1200	443320.000	302516.000	1.450
CD_13	0.044	5.00	129.294	1200	443321.000	302505.000	1.434
CD_14	0.044	5.00	128.758	1200	443373.000	302474.000	1.458
CD_15	0.269	5.00	127.585	1200	443401.000	302450.000	1.385
CD_11	0.020	5.00	129.289	1200	443382.000	302424.000	2.739
CD_7	0.014	5.00	129.276	1200	443360.000	302389.000	2.346
CD_6a	0.021	5.00	129.295	1200	443339.000	302415.000	2.095
CD_6	0.087	5.00	129.299	1200	443335.841	302420.000	2.049
CD_10	0.034	5.00	129.297	1200	443360.000	302440.000	2.447
CD_9	0.156	5.00	129.330	1200	443359.000	302447.000	2.380

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
CD_5	0.008	5.00	129.320	1200	443304.000	302445.000	1.750
CD_4		5.00	129.320	1200	443301.000	302439.000	1.320
CD_3	0.043	5.00	129.331	1200	443288.000	302458.000	1.541
CD_2			129.414	1200	443278.000	302459.000	1.514
CD_1	0.151	5.00	129.414	1200	443275.000	302454.000	1.450
CD_8	0.440	5.00	129.412	1200	443301.000	302489.000	1.450
E_SW1	0.040	5.00	129.000		443347.000	302569.000	1.000
SD_1		5.00	129.415	1200	443265.916	302442.000	1.750
SD_2			129.416	1200	443261.068	302434.918	1.816
SD_3	0.044	5.00	129.347	1200	443266.000	302430.000	1.847
SD_5	0.080	5.00	129.299	1200	443315.000	302394.000	2.449
SD_6	0.022	5.00	129.274	1200	443323.406	302393.424	2.574
SD_7	0.018	5.00	129.225	1200	443349.000	302374.080	2.745
SD_11	0.020	5.00	129.282	1200	443328.000	302348.000	3.132
SD_10	0.028	5.00	129.300	1200	443305.000	302366.000	2.750
SD_9	0.157	5.00	129.300	1200	443298.000	302366.000	2.600
SD_8	0.284	5.00	129.416	1200	443241.973	302409.000	1.751
SD_13	0.043	5.00	129.313	1200	443233.000	302385.000	1.513
SD_12	0.094	5.00	129.414	1200	443226.000	302387.920	1.750
Con_SW7	0.338	5.00	129.404		443328.000	302522.000	0.251

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)
SD_12-SD_15	SD_12	SD_15	7.585	0.600	127.964	127.760	0.204	37.2	300	7.49	50.0
SD_13-SD_14	SD_13	SD_14	60.000	0.600	128.100	127.500	0.600	100.0	300	5.64	50.0
SD_14-SD_16	SD_14	SD_16	11.962	0.600	127.500	127.350	0.150	79.7	300	5.75	50.0
SD_15-SD_16	SD_15	SD_16	67.154	0.600	127.760	127.100	0.660	101.7	375	8.11	45.0
SD_16-SD_17	SD_16	SD_17	19.856	0.600	127.100	126.900	0.200	99.3	450	8.27	44.6
SD_17-SD_18	SD_17	SD_18	12.806	0.600	126.900	126.465	0.435	29.4	450	8.33	44.4
SD_18-SD_19	SD_18	SD_19	29.732	0.600	126.000	125.680	0.320	92.9	450	11.50	37.2
SD_19-SD_20	SD_19	SD_20	48.415	0.600	125.680	125.220	0.460	105.2	450	11.91	36.5
SD_20-SD_21	SD_20	SD_21	10.000	0.600	125.220	125.120	0.100	100.0	450	11.99	36.3
SD_21-SD_22	SD_21	SD_22	32.686	0.600	125.120	124.570	0.550	59.4	450	12.20	36.0
SD_Out	SD_22	Headwall 5	16.333	0.600	124.650	121.050	3.600	4.5	450	12.23	35.9
BS_1-BS_2	BS_1	BS_2	6.512	0.600	122.770	122.700	0.070	93.0	150	5.03	50.0
Basin 2 Outfall	BS_3	BS_4	10.755	0.600	121.050	120.100	0.950	11.3	300	5.04	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)
SD_12-SD_15	2.586	182.8	16.1	1.150	1.197	0.094	0.0	59	1.609
SD_13-SD_14	1.572	111.1	7.3	0.913	1.453	0.043	0.0	52	0.900
SD_14-SD_16	1.762	124.5	14.2	1.453	1.498	0.083	0.0	68	1.185
SD_15-SD_16	1.796	198.3	23.1	1.122	1.673	0.149	0.0	85	1.211
SD_16-SD_17	2.040	324.5	47.7	1.598	1.761	0.312	0.0	116	1.475
SD_17-SD_18	3.757	597.6	53.8	1.761	2.163	0.353	0.0	90	2.366
SD_18-SD_19	2.109	335.5	138.3	2.628	2.731	1.083	0.0	201	2.011
SD_19-SD_20	1.981	315.1	143.7	2.731	2.595	1.148	0.0	213	1.937
SD_20-SD_21	2.033	323.3	152.5	2.595	2.650	1.223	0.0	218	2.005
SD_21-SD_22	2.641	420.0	158.3	2.650	3.270	1.282	0.0	191	2.463
SD_Out	9.592	1525.5	301.9	3.190	1.973	2.448	0.0	135	7.546
BS_1-BS_2	3.713	2209.0	0.0	0.030	0.100	0.000	0.0	0	0.000
Basin 2 Outfall	4.697	332.0	0.0	1.900	2.850	0.000	0.0	0	0.000

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)
ED_1 Outfall	ED_1	Headwall 3	12.166	0.600	127.476	125.412	2.064	5.9	375	5.03	50.0
SD_8-SD_9	SD_8	SD_9	70.605	0.600	127.965	127.000	0.965	73.2	225	10.49	44.9
SD_9-SD_10	SD_9	SD_10	7.000	0.600	127.000	126.850	0.150	46.7	225	10.55	43.4
SD_10-SD_11	SD_10	SD_11	29.206	0.600	126.850	126.450	0.400	73.0	300	10.81	42.6
SD_11-SD_18	SD_11	SD_18	43.600	0.600	126.450	126.000	0.450	96.9	300	11.27	41.8
SD_1-SD_2	SD_1	SD_2	8.630	0.600	127.965	127.900	0.065	132.8	225	5.13	50.0
SD_2-SD_3	SD_2	SD_3	6.965	0.600	127.900	127.800	0.100	69.7	225	5.20	50.0
SD_4a-SD_5	SD_4a	SD_5	34.606	0.600	127.500	127.150	0.350	98.9	225	5.95	50.0
SD_5-SD_6	SD_5	SD_6	17.088	0.600	127.150	127.000	0.150	113.9	225	6.18	50.0
SD_6-SD_7	SD_6	SD_7	22.754	0.600	127.000	126.780	0.220	103.4	225	6.48	50.0
SD_7-SD_11	SD_7	SD_11	33.484	0.600	126.780	126.450	0.330	101.5	300	6.84	50.0
CD_1-CD_2	CD_1	CD_2	5.831	0.600	127.964	127.900	0.064	91.1	225	5.90	50.0
CD_2-CD_3	CD_2	CD_3	10.050	0.600	127.900	127.790	0.110	91.4	225	6.03	50.0
CD_3-CD_5	CD_3	CD_5	20.616	0.600	127.790	127.570	0.220	93.7	225	6.28	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)
ED_1 Outfall	7.502	828.6	53.4	0.825	0.125	0.311	0.0	64	4.303
SD_8-SD_9	1.530	60.8	43.8	1.226	2.075	0.284	0.0	142	1.662
SD_9-SD_10	1.919	76.3	65.8	2.075	2.225	0.441	0.0	161	2.150
SD_10-SD_11	1.842	130.2	68.6	2.150	2.532	0.469	0.0	155	1.866
SD_11-SD_18	1.597	112.9	95.0	2.532	2.778	0.662	0.0	212	1.782
SD_1-SD_2	1.133	45.0	0.0	1.225	1.291	0.000	0.0	0	0.000
SD_2-SD_3	1.569	62.4	0.0	1.291	1.322	0.000	0.0	0	0.000
SD_4a-SD_5	1.315	52.3	9.0	1.595	1.924	0.053	0.0	63	0.988
SD_5-SD_6	1.224	48.7	22.8	1.924	2.049	0.133	0.0	109	1.206
SD_6-SD_7	1.285	51.1	26.5	2.049	2.220	0.155	0.0	115	1.295
SD_7-SD_11	1.560	110.3	29.7	2.145	2.532	0.173	0.0	106	1.329
CD_1-CD_2	1.370	54.5	25.9	1.225	1.289	0.151	0.0	109	1.354
CD_2-CD_3	1.368	54.4	25.9	1.289	1.316	0.151	0.0	109	1.352
CD_3-CD_5	1.351	53.7	33.3	1.316	1.525	0.194	0.0	129	1.422

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)
CD_5-CD_6	CD_5	CD_6	40.608	0.600	127.570	127.250	0.320	126.9	225	6.86	50.0
CD_4-CD_5	CD_4	CD_5	6.708	0.600	128.000	127.800	0.200	33.5	225	5.05	50.0
CD_6-CD_6a	CD_6	CD_6a	5.831	0.600	127.250	127.200	0.050	116.6	225	6.94	50.0
CD_6a-CD_7	CD_6a	CD_7	33.422	0.600	127.200	126.930	0.270	123.8	225	7.42	50.0
CD_7-CD_11	CD_7	CD_11	41.340	0.600	126.930	126.550	0.380	108.8	300	7.88	50.0
CD_11-CD_15	CD_11	CD_15	32.202	0.600	126.550	126.200	0.350	92.0	300	10.72	49.6
CD_Out	CD_15	Headwall 2	10.770	0.600	126.200	123.750	2.450	4.4	375	10.74	49.3
E_SW2-E_SW3	E_SW2	E_SW3	18.896	0.600	125.850	124.100	1.750	10.8	750	5.44	50.0
E_SW3-SW4	E_SW3	SW4	66.687	0.600	124.100	123.800	0.300	222.3	750	5.97	50.0
SW4-Headwall 2	SW4	Headwall 2	6.403	0.600	123.800	123.750	0.050	128.1	750	6.01	50.0
Headwall 2-SW5	Headwall 2	SW5	22.472	0.600	123.750	123.700	0.050	449.4	750	10.99	38.5
SW5-SW6	SW5	SW6	35.735	0.600	123.700	123.650	0.050	714.7	750	11.50	37.8
SW6-SW7	SW6	SW7	22.204	0.600	123.650	123.600	0.050	444.1	750	11.75	37.4
SW7-SW8	SW7	SW8	5.907	0.600	123.600	123.450	0.150	39.4	750	11.77	37.3

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)
CD_5-CD_6	1.159	46.1	34.6	1.525	1.824	0.202	0.0	146	1.270
CD_4-CD_5	2.266	90.1	0.0	1.095	1.295	0.000	0.0	0	0.000
CD_6-CD_6a	1.210	48.1	49.6	1.824	1.870	0.289	0.0	193	1.368
CD_6a-CD_7	1.174	46.7	53.2	1.870	2.121	0.310	0.0	225	1.195
CD_7-CD_11	1.507	106.5	55.6	2.046	2.439	0.324	0.0	154	1.522
CD_11-CD_15	1.639	115.9	165.9	2.439	1.085	0.974	0.0	300	1.660
CD_Out	8.689	959.7	268.8	1.010	0.125	1.588	0.0	135	7.497
E_SW2-E_SW3	16.143	60537.9	132.5	0.000	0.000	0.772	0.0	46	3.191
E_SW3-SW4	2.098	1475.5	132.5	0.625	0.175	0.772	0.0	110	1.115
SW4-Headwall 2	2.769	1946.9	132.5	0.175	0.125	0.772	0.0	94	1.355
Headwall 2-SW5	1.472	1035.0	312.0	0.125	0.125	2.360	0.0	208	1.086
SW5-SW6	1.165	819.0	306.3	0.125	0.125	2.360	0.0	233	0.909
SW6-SW7	1.481	1041.3	303.1	0.125	0.775	2.360	0.0	205	1.083
SW7-SW8	5.004	3518.2	302.3	0.775	0.425	2.360	0.0	107	2.628

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)
SW8-SW9	SW8	SW9	15.556	0.600	123.450	123.250	0.200	77.8	1500	11.84	37.0
SW9-SW10	SW9	SW10	7.616	0.600	123.250	123.050	0.200	38.1	2000	11.86	36.9
Headwall 1-E_SW2	Headwall 1	E_SW2	8.579	0.600	126.767	125.850	0.917	9.4	750	5.09	50.0
ND_Out	ND_1	Headwall 1	6.325	0.600	128.076	126.770	1.306	4.8	300	5.01	50.0
CD_8-CD_9	CD_8	CD_9	71.610	0.600	127.962	126.950	1.012	70.8	225	9.98	50.0
CD_9-CD_10	CD_9	CD_10	7.071	0.600	126.950	126.850	0.100	70.7	225	10.06	50.0
CD_10-CD_11	CD_10	CD_11	27.203	0.600	126.850	126.550	0.300	90.7	225	10.39	50.0
CD_12-CD_13	CD_12	CD_13	11.045	0.600	127.960	127.860	0.100	110.5	300	7.88	50.0
CD_13-CD_14	CD_13	CD_14	60.539	0.600	127.860	127.300	0.560	108.1	375	8.46	50.0
CD_14-CD_15	CD_14	CD_15	36.878	0.600	127.300	126.200	1.100	33.5	375	8.66	50.0
SD_3-SD_4a	SD_3	SD_4a	26.197	0.600	127.800	127.500	0.300	87.3	225	5.51	50.0
SD_4-SD_4a	SD_4	SD_4a	7.460	0.600	127.895	127.720	0.175	42.6	225	5.06	50.0
Slab:CD_12-Con_SW7	CD_12	Con_SW7	10.000	0.600	129.157	129.153	0.004	2500.0	100	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)
SW8-SW9	3.833	3772.9	299.8	0.425	0.211	2.360	0.0	92	1.836
SW9-SW10	5.665	6638.4	299.0	0.211	0.075	2.360	0.0	63	2.163
Headwall 1-E_SW2	17.345	65042.3	74.5	0.000	0.000	0.434	0.0	32	2.752
ND_Out	7.189	508.2	67.7	1.000	0.697	0.394	0.0	74	5.056
CD_8-CD_9	1.556	61.9	75.6	1.225	2.155	0.440	0.0	225	1.585
CD_9-CD_10	1.557	61.9	102.3	2.155	2.222	0.596	0.0	225	1.586
CD_10-CD_11	1.373	54.6	108.2	2.222	2.514	0.630	0.0	225	1.399
CD_12-CD_13	1.495	105.7	44.1	1.150	1.134	0.257	0.0	135	1.430
CD_13-CD_14	1.742	192.4	51.7	1.059	1.083	0.301	0.0	132	1.485
CD_14-CD_15	3.138	346.6	59.2	1.083	1.010	0.345	0.0	104	2.368
SD_3-SD_4a	1.400	55.7	7.6	1.322	1.595	0.044	0.0	56	0.985
SD_4-SD_4a	2.009	79.9	0.0	1.200	1.375	0.000	0.0	0	0.000
Slab:CD_12-Con_SW7	0.429	276.2	0.0	0.003	0.001	0.000	0.0	0	0.000

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)
12.001	Con_SW7	E_SW2	20.100	0.600	129.153	125.850	3.303	6.1	2000	5.42	50.0
E_SW1-Headwall 1	E_SW1	Headwall 1	42.190	0.600	128.000	126.767	1.233	34.2	750	5.08	50.0
Slab:SD_8-SD_12	SD_8	SD_12	26.464	0.600	129.164	129.162	0.002	13232.0	100	7.44	50.0
Slab:SD_1-SD_8	SD_1	SD_8	40.820	0.600	129.166	129.164	0.002	20410.0	100	9.72	22.3
Slab:SD_1-CD_1	SD_1	CD_1	15.000	0.600	129.166	129.163	0.003	5000.0	100	5.83	50.0
Slab:CD_1-CD_8	CD_1	CD_8	43.600	0.600	129.163	129.160	0.003	14533.3	100	9.22	42.0
Slab:CD_8-CD_12	CD_8	CD_12	33.015	0.600	129.160	129.157	0.003	11005.0	100	7.76	50.0
Headwall 3-SW11	Headwall 3	SW11	19.239	0.600	125.412	123.250	2.162	8.9	2000	5.06	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)
12.001	11.551	7941.2	58.0	0.001	0.750	0.338	0.0	13	2.029
E_SW1-Headwall 1	9.063	33985.2	6.8	0.000	0.000	0.040	0.0	11	0.747
Slab:SD_8-SD_12	0.181	116.5	0.0	0.002	0.002	0.000	0.0	0	0.000
Slab:SD_1-SD_8	0.144	92.8	0.0	-0.001	0.002	0.000	0.0	0	0.000
Slab:SD_1-CD_1	0.300	193.3	0.0	-0.001	0.001	0.000	0.0	0	0.000
Slab:CD_1-CD_8	0.172	110.9	0.0	0.001	0.002	0.000	0.0	0	0.000
Slab:CD_8-CD_12	0.199	128.3	0.0	0.002	0.003	0.000	0.0	0	0.000
Headwall 3-SW11	9.550	6565.4	53.4	0.250	0.000	0.311	0.0	14	1.757

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)
SD_12-SD_15	7.585	37.2	300	Pipe	129.414	127.964	1.150	129.257	127.760	1.197
SD_13-SD_14	60.000	100.0	300	Pipe	129.313	128.100	0.913	129.253	127.500	1.453
SD_14-SD_16	11.962	79.7	300	Pipe	129.253	127.500	1.453	129.148	127.350	1.498
SD_15-SD_16	67.154	101.7	375	Pipe	129.257	127.760	1.122	129.148	127.100	1.673
SD_16-SD_17	19.856	99.3	450	Pipe	129.148	127.100	1.598	129.111	126.900	1.761
SD_17-SD_18	12.806	29.4	450	Pipe	129.111	126.900	1.761	129.078	126.465	2.163
SD_18-SD_19	29.732	92.9	450	Pipe	129.078	126.000	2.628	128.861	125.680	2.731
SD_19-SD_20	48.415	105.2	450	Pipe	128.861	125.680	2.731	128.265	125.220	2.595
SD_20-SD_21	10.000	100.0	450	Pipe	128.265	125.220	2.595	128.220	125.120	2.650
SD_21-SD_22	32.686	59.4	450	Pipe	128.220	125.120	2.650	128.290	124.570	3.270
SD_Out	16.333	4.5	450	Pipe	128.290	124.650	3.190	123.473	121.050	1.973
BS_1-BS_2	6.512	93.0	150	Basin Conn	123.500	122.770	0.030	123.500	122.700	0.100
Basin 2 Outfall	10.755	11.3	300	Pipe	123.250	121.050	1.900	123.250	120.100	2.850
ED_1 Outfall	12.166	5.9	375	Pipe	128.676	127.476	0.825	125.912	125.412	0.125

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
SD_12-SD_15	SD_12	1200	Manhole	Adoptable	SD_15	1200	Manhole	Adoptable
SD_13-SD_14	SD_13	1200	Manhole	Adoptable	SD_14	1200	Manhole	Adoptable
SD_14-SD_16	SD_14	1200	Manhole	Adoptable	SD_16	1200	Manhole	Adoptable
SD_15-SD_16	SD_15	1200	Manhole	Adoptable	SD_16	1200	Manhole	Adoptable
SD_16-SD_17	SD_16	1200	Manhole	Adoptable	SD_17	1200	Manhole	Adoptable
SD_17-SD_18	SD_17	1200	Manhole	Adoptable	SD_18	1200	Manhole	Adoptable
SD_18-SD_19	SD_18	1200	Manhole	Adoptable	SD_19	1200	Manhole	Adoptable
SD_19-SD_20	SD_19	1200	Manhole	Adoptable	SD_20	1200	Manhole	Adoptable
SD_20-SD_21	SD_20	1200	Manhole	Adoptable	SD_21	1200	Manhole	Adoptable
SD_21-SD_22	SD_21	1200	Manhole	Adoptable	SD_22	1200	Manhole	Adoptable
SD_Out	SD_22	1200	Manhole	Adoptable	Headwall 5		Junction	
BS_1-BS_2	BS_1		Junction		BS_2		Junction	
Basin 2 Outfall	BS_3		Junction		BS_4		Junction	
ED_1 Outfall	ED_1	1200	Manhole	Adoptable	Headwall 3		Junction	

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)
SD_8-SD_9	70.605	73.2	225	Pipe	129.416	127.965	1.226	129.300	127.000	2.075
SD_9-SD_10	7.000	46.7	225	Pipe	129.300	127.000	2.075	129.300	126.850	2.225
SD_10-SD_11	29.206	73.0	300	Pipe	129.300	126.850	2.150	129.282	126.450	2.532
SD_11-SD_18	43.600	96.9	300	Pipe	129.282	126.450	2.532	129.078	126.000	2.778
SD_1-SD_2	8.630	132.8	225	Pipe	129.415	127.965	1.225	129.416	127.900	1.291
SD_2-SD_3	6.965	69.7	225	Pipe	129.416	127.900	1.291	129.347	127.800	1.322
SD_4a-SD_5	34.606	98.9	225	Pipe	129.320	127.500	1.595	129.299	127.150	1.924
SD_5-SD_6	17.088	113.9	225	Pipe	129.299	127.150	1.924	129.274	127.000	2.049
SD_6-SD_7	22.754	103.4	225	Pipe	129.274	127.000	2.049	129.225	126.780	2.220
SD_7-SD_11	33.484	101.5	300	Pipe	129.225	126.780	2.145	129.282	126.450	2.532
CD_1-CD_2	5.831	91.1	225	Pipe	129.414	127.964	1.225	129.414	127.900	1.289
CD_2-CD_3	10.050	91.4	225	Pipe	129.414	127.900	1.289	129.331	127.790	1.316
CD_3-CD_5	20.616	93.7	225	Pipe	129.331	127.790	1.316	129.320	127.570	1.525
CD_5-CD_6	40.608	126.9	225	Pipe	129.320	127.570	1.525	129.299	127.250	1.824
CD_4-CD_5	6.708	33.5	225	Pipe	129.320	128.000	1.095	129.320	127.800	1.295

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
SD_8-SD_9	SD_8	1200	Manhole	Adoptable	SD_9	1200	Manhole	Adoptable
SD_9-SD_10	SD_9	1200	Manhole	Adoptable	SD_10	1200	Manhole	Adoptable
SD_10-SD_11	SD_10	1200	Manhole	Adoptable	SD_11	1200	Manhole	Adoptable
SD_11-SD_18	SD_11	1200	Manhole	Adoptable	SD_18	1200	Manhole	Adoptable
SD_1-SD_2	SD_1	1200	Manhole	Adoptable	SD_2	1200	Manhole	Adoptable
SD_2-SD_3	SD_2	1200	Manhole	Adoptable	SD_3	1200	Manhole	Adoptable
SD_4a-SD_5	SD_4a	1200	Manhole	Adoptable	SD_5	1200	Manhole	Adoptable
SD_5-SD_6	SD_5	1200	Manhole	Adoptable	SD_6	1200	Manhole	Adoptable
SD_6-SD_7	SD_6	1200	Manhole	Adoptable	SD_7	1200	Manhole	Adoptable
SD_7-SD_11	SD_7	1200	Manhole	Adoptable	SD_11	1200	Manhole	Adoptable
CD_1-CD_2	CD_1	1200	Manhole	Adoptable	CD_2	1200	Manhole	Adoptable
CD_2-CD_3	CD_2	1200	Manhole	Adoptable	CD_3	1200	Manhole	Adoptable
CD_3-CD_5	CD_3	1200	Manhole	Adoptable	CD_5	1200	Manhole	Adoptable
CD_5-CD_6	CD_5	1200	Manhole	Adoptable	CD_6	1200	Manhole	Adoptable
CD_4-CD_5	CD_4	1200	Manhole	Adoptable	CD_5	1200	Manhole	Adoptable

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)
CD_6-CD_6a	5.831	116.6	225	Pipe	129.299	127.250	1.824	129.295	127.200	1.870
CD_6a-CD_7	33.422	123.8	225	Pipe	129.295	127.200	1.870	129.276	126.930	2.121
CD_7-CD_11	41.340	108.8	300	Pipe	129.276	126.930	2.046	129.289	126.550	2.439
CD_11-CD_15	32.202	92.0	300	Pipe	129.289	126.550	2.439	127.585	126.200	1.085
CD_Out	10.770	4.4	375	Pipe	127.585	126.200	1.010	124.250	123.750	0.125
E_SW2-E_SW3	18.896	10.8	750	Swale 1	126.850	125.850	0.000	125.100	124.100	0.000
E_SW3-SW4	66.687	222.3	750	Swale 3	125.100	124.100	0.625	124.350	123.800	0.175
SW4-Headwall 2	6.403	128.1	750	Swale 3	124.350	123.800	0.175	124.250	123.750	0.125
Headwall 2-SW5	22.472	449.4	750	Swale 3	124.250	123.750	0.125	124.200	123.700	0.125
SW5-SW6	35.735	714.7	750	Swale 3	124.200	123.700	0.125	124.150	123.650	0.125
SW6-SW7	22.204	444.1	750	Swale 3	124.150	123.650	0.125	124.750	123.600	0.775
SW7-SW8	5.907	39.4	750	Swale 3	124.750	123.600	0.775	124.250	123.450	0.425
SW8-SW9	15.556	77.8	1500	Swale 3	124.250	123.450	0.425	123.836	123.250	0.211
SW9-SW10	7.616	38.1	2000	Swale 3	123.836	123.250	0.211	123.500	123.050	0.075
Headwall 1-E_SW2	8.579	9.4	750	Swale 1	127.767	126.767	0.000	126.850	125.850	0.000

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
CD_6-CD_6a	CD_6	1200	Manhole	Adoptable	CD_6a	1200	Manhole	Adoptable
CD_6a-CD_7	CD_6a	1200	Manhole	Adoptable	CD_7	1200	Manhole	Adoptable
CD_7-CD_11	CD_7	1200	Manhole	Adoptable	CD_11	1200	Manhole	Adoptable
CD_11-CD_15	CD_11	1200	Manhole	Adoptable	CD_15	1200	Manhole	Adoptable
CD_Out	CD_15	1200	Manhole	Adoptable	Headwall 2		Junction	
E_SW2-E_SW3	E_SW2		Junction		E_SW3		Junction	
E_SW3-SW4	E_SW3		Junction		SW4		Junction	
SW4-Headwall 2	SW4		Junction		Headwall 2		Junction	
Headwall 2-SW5	Headwall 2		Junction		SW5		Junction	
SW5-SW6	SW5		Junction		SW6		Junction	
SW6-SW7	SW6		Junction		SW7		Junction	
SW7-SW8	SW7		Junction		SW8		Junction	
SW8-SW9	SW8		Junction		SW9		Junction	
SW9-SW10	SW9		Junction		SW10		Junction	
Headwall 1-E_SW2	Headwall 1		Junction		E_SW2		Junction	

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)
ND_Out	6.325	4.8	300	Pipe	129.376	128.076	1.000	127.767	126.770	0.697
CD_8-CD_9	71.610	70.8	225	Pipe	129.412	127.962	1.225	129.330	126.950	2.155
CD_9-CD_10	7.071	70.7	225	Pipe	129.330	126.950	2.155	129.297	126.850	2.222
CD_10-CD_11	27.203	90.7	225	Pipe	129.297	126.850	2.222	129.289	126.550	2.514
CD_12-CD_13	11.045	110.5	300	Pipe	129.410	127.960	1.150	129.294	127.860	1.134
CD_13-CD_14	60.539	108.1	375	Pipe	129.294	127.860	1.059	128.758	127.300	1.083
CD_14-CD_15	36.878	33.5	375	Pipe	128.758	127.300	1.083	127.585	126.200	1.010
SD_3-SD_4a	26.197	87.3	225	Pipe	129.347	127.800	1.322	129.320	127.500	1.595
SD_4-SD_4a	7.460	42.6	225	Pipe	129.320	127.895	1.200	129.320	127.720	1.375
Slab:CD_12-Con_SW7	10.000	2500.0	100	Con_Slab Channel	129.410	129.157	0.003	129.404	129.153	0.001
12.001	20.100	6.1	2000	Swale 2	129.404	129.153	0.001	126.850	125.850	0.750
E_SW1-Headwall 1	42.190	34.2	750	Swale 1	129.000	128.000	0.000	127.767	126.767	0.000
Slab:SD_8-SD_12	26.464	13232.0	100	Con_Slab Channel	129.416	129.164	0.002	129.414	129.162	0.002
Slab:SD_1-SD_8	40.820	20410.0	100	Con_Slab Channel	129.415	129.166	-0.001	129.416	129.164	0.002

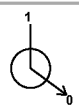
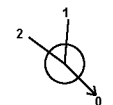
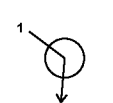
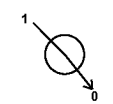
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
ND_Out	ND_1	1200	Manhole	Adoptable	Headwall 1		Junction	
CD_8-CD_9	CD_8	1200	Manhole	Adoptable	CD_9	1200	Manhole	Adoptable
CD_9-CD_10	CD_9	1200	Manhole	Adoptable	CD_10	1200	Manhole	Adoptable
CD_10-CD_11	CD_10	1200	Manhole	Adoptable	CD_11	1200	Manhole	Adoptable
CD_12-CD_13	CD_12	1200	Manhole	Adoptable	CD_13	1200	Manhole	Adoptable
CD_13-CD_14	CD_13	1200	Manhole	Adoptable	CD_14	1200	Manhole	Adoptable
CD_14-CD_15	CD_14	1200	Manhole	Adoptable	CD_15	1200	Manhole	Adoptable
SD_3-SD_4a	SD_3	1200	Manhole	Adoptable	SD_4a	1200	Manhole	Adoptable
SD_4-SD_4a	SD_4	1200	Manhole	Adoptable	SD_4a	1200	Manhole	Adoptable
Slab:CD_12-Con_SW7	CD_12	1200	Manhole	Adoptable	Con_SW7		Junction	
12.001	Con_SW7		Junction		E_SW2		Junction	
E_SW1-Headwall 1	E_SW1		Junction		Headwall 1		Junction	
Slab:SD_8-SD_12	SD_8	1200	Manhole	Adoptable	SD_12	1200	Manhole	Adoptable
Slab:SD_1-SD_8	SD_1	1200	Manhole	Adoptable	SD_8	1200	Manhole	Adoptable

Pipeline Schedule

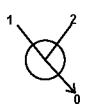
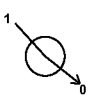
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
Slab: SD_1-CD_1	15.000	5000.0	100	Con_Slab Channel	129.415	129.166	-0.001	129.414	129.163	0.001
Slab:CD_1-CD_8	43.600	14533.3	100	Con_Slab Channel	129.414	129.163	0.001	129.412	129.160	0.002
Slab:CD_8-CD_12	33.015	11005.0	100	Con_Slab Channel	129.412	129.160	0.002	129.410	129.157	0.003
Headwall 3-SW11	19.239	8.9	2000	Swale 2	125.912	125.412	0.250	123.500	123.250	0.000

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
Slab: SD_1-CD_1	SD_1	1200	Manhole	Adoptable	CD_1	1200	Manhole	Adoptable
Slab:CD_1-CD_8	CD_1	1200	Manhole	Adoptable	CD_8	1200	Manhole	Adoptable
Slab:CD_8-CD_12	CD_8	1200	Manhole	Adoptable	CD_12	1200	Manhole	Adoptable
Headwall 3-SW11	Headwall 3		Junction		SW11		Junction	

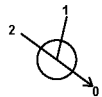
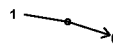
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SD_15	443226.000	302377.000	129.257	1.797	1200	 1	SD_12-SD_15	127.760	300
SD_16	443280.000	302337.080	129.148	2.348	1200	 1	SD_15-SD_16	127.760	375
SD_14	443281.000	302349.000	129.253	2.053	1200	 1	SD_14-SD_16	127.350	300
SD_17	443294.000	302323.000	129.111	2.511	1200	 1	SD_15-SD_16	127.100	375
							SD_16-SD_17	127.100	450
							SD_13-SD_14	127.500	300
							SD_14-SD_16	127.500	300
							SD_16-SD_17	126.900	450
							SD_17-SD_18	126.900	450

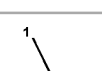
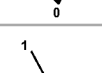
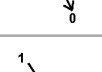
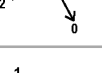
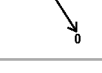
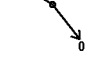
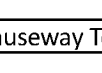
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SD_18	443302.000	302313.000	129.078	3.378	1200		1 SD_17-SD_18	126.465	450
							2 SD_11-SD_18	126.000	300
							0 SD_18-SD_19	126.000	450
SD_19	443322.000	302291.000	128.861	3.481	1200		1 SD_18-SD_19	125.680	450
							0 SD_19-SD_20	125.680	450
SD_20	443360.000	302261.000	128.265	3.345	1200		1 SD_19-SD_20	125.220	450
							0 SD_20-SD_21	125.220	450
SD_21	443370.000	302261.000	128.220	3.400	1200		1 SD_20-SD_21	125.120	450
							0 SD_21-SD_22	125.120	450
SD_22	443399.000	302276.080	128.290	4.020	1200		1 SD_21-SD_22	124.570	450
							0 SD_Out	124.650	450
Headwall 5	443411.000	302265.000	123.473	2.423			1 SD_Out	121.050	450
BS_2	443461.761	302267.833	123.500	2.360			1 BS_1-BS_2	122.700	150
SD_4	443288.863	302421.827	129.320	1.425	1200				
							0 SD_4-SD_4a	127.895	225

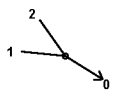
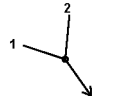
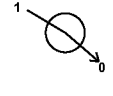
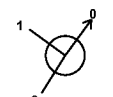
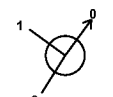
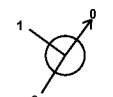
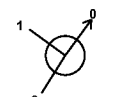
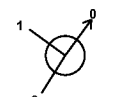
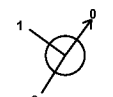
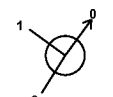
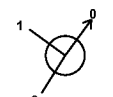
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
BS_1	443462.787	302274.264	123.500	0.730					
BS_4	443488.041	302169.000	123.250	3.150			BS_1-BS_2 Basin 2 Outfall	122.770 120.100	150 300
SD_4a	443287.166	302414.563	129.320	1.820	1200		SD_4-SD_4a SD_3-SD_4a SD_4a-SD_5	127.720 127.500 127.500	225 225 225
BS_3	443492.000	302179.000	123.250	2.200			Basin 2 Outfall	121.050	300
ED_1	443423.000	302360.000	128.676	1.500	1200		ED_1 Outfall	127.476	375
Headwall 3	443435.000	302358.000	125.912	0.500			ED_1 Outfall	125.412	375
SW11	443453.341	302352.190	123.500	0.597			Headwall 3-SW11 Headwall 3-SW11	125.412 123.250	2000 2000
SW10	443458.100	302359.842	123.500	0.597			SW9-SW10	123.050	2000

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW9	443451.000	302363.000	123.836	0.586			SW8-SW9	123.250	1500
SW8	443440.000	302374.000	124.250	0.800			SW9-SW10	123.250	2000
SW7	443436.855	302379.000	124.750	1.150			SW7-SW8	123.450	750
SW6	443433.854	302401.000	124.150	0.500			SW8-SW9	123.450	1500
SW5	443418.400	302432.500	124.200	0.500			SW6-SW7	123.600	750
Headwall 2	443407.366	302452.799	124.250	0.500			SW5-SW6	123.650	750
SW4	443399.654	302464.800	124.350	0.550			Headwall 2-SW5	123.700	750
E_SW3	443364.033	302510.000	125.100	1.000			SW4-Headwall 2	123.750	750
							CD_Out	123.750	375
							Headwall 2-SW5	123.750	750
							E_SW3-SW4	123.800	750
							SW4-Headwall 2	123.800	750
							E_SW2-E_SW3	124.100	750
							E_SW3-SW4	124.100	750

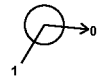
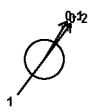
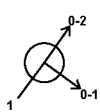
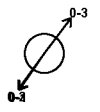
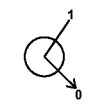
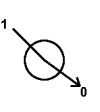
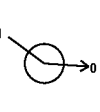
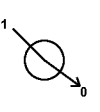
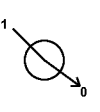
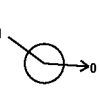
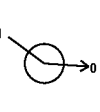
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
E_SW2	443348.000	302520.000	126.850	1.000			12.001 Headwall 1-E_SW2	125.850 125.850	2000 750
Headwall 1	443343.041	302527.000	127.767	1.000			E_SW2-E_SW3 ND_Out E_SW1-Headwall 1	125.850 126.770 126.767	750 300 750
ND_1	443337.000	302529.000	129.376	1.300	1200		ND_Out	128.076	300
CD_12	443320.000	302516.000	129.410	1.450	1200		Slab:CD_8-CD_12	129.157	100
CD_13	443321.000	302505.000	129.294	1.434	1200		CD_12-CD_13	127.960	300
CD_14	443373.000	302474.000	128.758	1.458	1200		Slab:CD_12-Con_SW7	129.157	100
CD_15	443401.000	302450.000	127.585	1.385	1200		CD_12-CD_13	127.860	300
CD_11	443382.000	302424.000	129.289	2.739	1200		CD_13-CD_14	127.860	375
							CD_14-CD_15	127.300	375
							CD_14-CD_15	126.200	375
							CD_11-CD_15	126.200	300
							CD_Out	126.200	375
							CD_10-CD_11	126.550	225
							CD_7-CD_11	126.550	300
							CD_11-CD_15	126.550	300

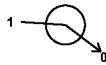
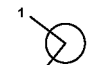
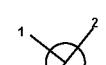
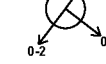
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
CD_7	443360.000	302389.000	129.276	2.346	1200	 1	CD_6a-CD_7	126.930	225
						0	CD_7-CD_11	126.930	300
CD_6a	443339.000	302415.000	129.295	2.095	1200	 1	CD_6-CD_6a	127.200	225
						0	CD_6a-CD_7	127.200	225
CD_6	443335.841	302420.000	129.299	2.049	1200	 1	CD_5-CD_6	127.250	225
						0	CD_6-CD_6a	127.250	225
CD_10	443360.000	302440.000	129.297	2.447	1200	 1	CD_9-CD_10	126.850	225
						0	CD_10-CD_11	126.850	225
CD_9	443359.000	302447.000	129.330	2.380	1200	 1	CD_8-CD_9	126.950	225
						0	CD_9-CD_10	126.950	225
CD_5	443304.000	302445.000	129.320	1.750	1200	 2	CD_4-CD_5	127.800	225
						2	CD_3-CD_5	127.570	225
						0	CD_5-CD_6	127.570	225
CD_4	443301.000	302439.000	129.320	1.320	1200	 0	CD_4-CD_5	128.000	225
CD_3	443288.000	302458.000	129.331	1.541	1200	 1	CD_2-CD_3	127.790	225
						0	CD_3-CD_5	127.790	225

Manhole Schedule

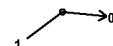
Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
CD_2	443278.000	302459.000	129.414	1.514	1200	 1	CD_1-CD_2	127.900	225
CD_1	443275.000	302454.000	129.414	1.450	1200	 1	CD_2-CD_3 Slab: SD_1-CD_1	127.900 129.163	225 100
CD_8	443301.000	302489.000	129.412	1.450	1200	 1	CD_1-CD_2 Slab:CD_1-CD_8	127.964 129.163	225 100
E_SW1	443347.000	302569.000	129.000	1.000		 0	Slab:CD_1-CD_8 CD_8-CD_9 Slab:CD_8-CD_12	129.160 127.962 129.160	100 225 100
SD_1	443265.916	302442.000	129.415	1.750	1200	 0	E_SW1-Headwall 1	128.000	750
SD_2	443261.068	302434.918	129.416	1.816	1200	 0	SD_1-SD_2 Slab:SD_1-SD_8 Slab: SD_1-CD_1	127.965 129.166 129.166	225 100 100
SD_3	443266.000	302430.000	129.347	1.847	1200	 0	SD_1-SD_2	127.900	225
SD_5	443315.000	302394.000	129.299	2.449	1200	 0	SD_2-SD_3	127.900	225
						 0	SD_2-SD_3	127.800	225
						 0	SD_3-SD_4a	127.800	225
						 0	SD_4a-SD_5	127.150	225
						 0	SD_5-SD_6	127.150	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SD_6	443323.406	302393.424	129.274	2.574	1200	 1	SD_5-SD_6	127.000	225
SD_7	443349.000	302374.080	129.225	2.745	1200	 1	SD_6-SD_7	127.000	225
SD_11	443328.000	302348.000	129.282	3.132	1200	 1	SD_6-SD_7	126.780	225
SD_10	443305.000	302366.000	129.300	2.750	1200	 1	SD_7-SD_11	126.780	300
SD_9	443298.000	302366.000	129.300	2.600	1200	 1	SD_10-SD_11	126.450	300
SD_8	443241.973	302409.000	129.416	1.751	1200	 1	SD_7-SD_11	126.450	300
SD_13	443233.000	302385.000	129.313	1.513	1200	 1	SD_11-SD_18	126.450	300
SD_12	443226.000	302387.920	129.414	1.750	1200	 1	SD_9-SD_10	126.850	225
						 1	SD_10-SD_11	126.850	300
						 1	SD_8-SD_9	127.000	225
						 1	SD_9-SD_10	127.000	225
						 1	Slab:SD_1-SD_8	129.164	100
						 1	SD_8-SD_9	127.965	225
						 1	Slab:SD_8-SD_12	129.164	100
						 1	SD_13-SD_14	128.100	300
						 1	Slab:SD_8-SD_12	129.162	100
						 1	SD_12-SD_15	127.964	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Con_SW7	443328.000	302522.000	129.404	0.251		1	Slab:CD_12-Con_SW7	129.153	100
						0	12.001	129.153	2000



Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	19.8	100 year 360 minute (m³)
Summer CV	0.950	Drain Down Time (mins)	240	30 year (l/s)	45.5	
Winter CV	0.950	Additional Storage (m³/ha)	20.0	100 year (l/s)	57.8	
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	✓	

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	0	0	0
30	0	0	0	100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Soil Index	4	Growth Factor 30 year	1.95	Q 1 year (l/s)	19.8
Greenfield Method	IH124	SPR	0.47	Growth Factor 100 year	2.48	Q 30 year (l/s)	45.5
Positively Drained Area (ha)	5.350	Region	4	Betterment (%)	0	Q 100 year (l/s)	57.8
SAAR (mm)	641	Growth Factor 1 year	0.85	QBar	23.3		

Pre-development Discharge Volume

Site Makeup	Greenfield	Soil Index	4	Return Period (years)	100	Betterment (%)	0
Greenfield Method	FSR/FEH	SPR	0.47	Climate Change (%)	0	PR	
Positively Drained Area (ha)	5.350	CWI		Storm Duration (mins)	360	Runoff Volume (m³)	

Node BS 3 Online Orifice Control

Flap Valve	x	Invert Level (m)	121.050	Design Flow (l/s)	23.3	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	0.800	Diameter (m)	0.113		

Node SW10 Online Weir Control

Flap Valve	x	Invert Level (m)	123.050	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	4.000		

Node BS 2 Online Weir Control

Flap Valve	x	Invert Level (m)	122.700	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.650		

Node BS 1 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	80.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	122.770	Main Channel Slope (1:X)	600.0
Safety Factor	1.0	Time to half empty (mins)	0	Main Channel n	0.350

Inlets

SW10 | SW11

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	900.0	0.0	0.180	1950.0	0.0	0.300	3500.0	0.0	0.730	4170.0	0.0

Node BS 3 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	90.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	121.050	Main Channel Slope (1:X)	999.0
Safety Factor	1.0	Time to half empty (mins)	0	Main Channel n	0.350

Inlets

Headwall 5 | BS_2

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	5880.0	0.0	1.200	6420.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SD_15	10	127.849	0.089	26.0	0.1674	0.0000	OK
15 minute summer	SD_16	11	127.231	0.131	52.7	0.2501	0.0000	OK
15 minute summer	SD_14	11	127.572	0.072	14.2	0.1139	0.0000	OK
15 minute summer	SD_17	11	127.004	0.104	59.9	0.1570	0.0000	OK
15 minute summer	SD_18	11	126.256	0.256	179.2	0.4027	0.0000	OK
15 minute summer	SD_19	11	125.945	0.264	188.7	0.4073	0.0000	OK
15 minute summer	SD_20	12	125.520	0.300	199.4	0.4876	0.0000	OK
15 minute summer	SD_21	12	125.362	0.242	208.7	0.3655	0.0000	OK
15 minute summer	SD_22	11	124.813	0.243	397.6	1.7954	0.0000	OK
960 minute winter	Headwall 5	960	121.374	0.324	33.4	0.0000	0.0000	OK
180 minute summer	BS_2	124	122.810	1.670	110.3	0.0000	0.0000	OK
15 minute summer	SD_4	1	127.895	0.000	0.0	0.0000	0.0000	OK
180 minute summer	BS_1	124	122.948	0.178	136.3	0.0000	0.0000	OK
15 minute summer	BS_4	1	120.100	0.000	5.1	0.0000	0.0000	OK
15 minute summer	SD_4a	11	127.563	0.063	9.0	0.0766	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SD_15	SD_15-SD_16	SD_16	25.4	0.951	0.128	1.8277	
15 minute summer	SD_16	SD_16-SD_17	SD_17	53.0	1.606	0.163	0.6575	
15 minute summer	SD_14	SD_14-SD_16	SD_16	14.0	1.136	0.113	0.1478	
15 minute summer	SD_17	SD_17-SD_18	SD_18	60.0	2.303	0.100	0.3338	
15 minute summer	SD_18	SD_18-SD_19	SD_19	177.8	1.881	0.530	2.8238	
15 minute summer	SD_19	SD_19-SD_20	SD_20	189.1	1.806	0.600	5.0658	
15 minute summer	SD_20	SD_20-SD_21	SD_21	200.7	2.010	0.621	0.9969	
15 minute summer	SD_21	SD_21-SD_22	SD_22	209.3	2.499	0.498	2.8203	
15 minute summer	SD_22	SD_Out	Headwall 5	397.3	7.334	0.260	0.8851	
240 minute summer	Headwall 5	Flow through pond	BS_3	173.1	0.024	0.010	1024.2727	
240 minute summer	BS_2	Flow through pond	BS_3	173.1	0.024	0.010	1024.2727	
15 minute summer	SD_4	SD_4-SD_4a	SD_4a	0.0	0.000	0.000	0.0000	
180 minute summer	BS_1	BS_1-BS_2	BS_2	110.3	1.882	0.050	0.3817	
15 minute summer	SD_4a	SD_4a-SD_5	SD_5	9.0	0.618	0.172	0.5071	

Results for 2 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	BS_3	720	121.300	0.250	92.4	0.0000	0.0000	OK
15 minute summer	ED_1	10	127.554	0.078	54.4	0.4939	0.0000	OK
15 minute summer	Headwall 3	10	125.427	0.015	54.2	0.0000	0.0000	OK
120 minute summer	SW11	74	123.159	0.256	27.0	0.0000	0.0000	OK
15 minute summer	SW10	12	123.181	0.277	347.8	0.0000	0.0000	OK
15 minute summer	SW9	12	123.318	0.068	347.4	0.0000	0.0000	OK
15 minute summer	SW8	12	123.550	0.100	348.8	0.0000	0.0000	OK
15 minute summer	SW7	12	123.714	0.114	346.2	0.0000	0.0000	OK
15 minute summer	SW6	12	123.863	0.213	355.3	0.0000	0.0000	OK
15 minute summer	SW5	12	123.935	0.235	387.2	0.0000	0.0000	OK
15 minute summer	Headwall 2	11	123.992	0.242	377.6	0.0000	0.0000	OK
15 minute summer	SW4	12	123.971	0.171	131.7	0.0000	0.0000	OK
15 minute summer	E_SW3	11	124.208	0.108	132.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	BS_3	Orifice	BS_4	11.7				412.6
15 minute summer	ED_1	ED_1 Outfall	Headwall 3	54.2	6.940	0.065	0.1094	
15 minute summer	Headwall 3	Headwall 3-SW11	SW11	53.9	1.796	0.008	0.5772	
120 minute summer	SW11	Flow through pond	BS_1	146.8	0.042	0.109	306.1453	
120 minute summer	SW10	Flow through pond	BS_1	146.8	0.042	0.109	306.1453	
15 minute summer	SW9	SW9-SW10	SW10	347.8	1.523	0.052	1.7617	
15 minute summer	SW8	SW8-SW9	SW9	347.4	2.353	0.092	2.3084	
15 minute summer	SW7	SW7-SW8	SW8	348.8	3.037	0.099	0.6794	
15 minute summer	SW6	SW6-SW7	SW7	346.2	1.703	0.333	4.6762	
15 minute summer	SW5	SW5-SW6	SW6	355.3	1.115	0.434	11.4048	
15 minute summer	Headwall 2	Headwall 2-SW5	SW5	387.2	1.134	0.374	7.6737	
30 minute summer	SW4	SW4-Headwall 2	Headwall 2	164.0	0.671	0.084	1.5830	
15 minute summer	E_SW3	E_SW3-SW4	SW4	131.7	0.853	0.089	10.8310	

Results for 2 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	E_SW2	10	125.897	0.046	133.7	0.0000	0.0000	OK
15 minute summer	Headwall 1	10	126.799	0.032	75.5	0.0000	0.0000	OK
15 minute summer	ND_1	10	128.156	0.079	68.9	0.5721	0.0000	OK
15 minute summer	CD_12	10	128.112	0.152	45.0	0.7091	0.0000	OK
15 minute summer	CD_13	10	128.000	0.139	52.2	0.2439	0.0000	OK
15 minute summer	CD_14	11	127.405	0.105	59.2	0.1819	0.0000	OK
15 minute summer	CD_15	11	126.321	0.121	223.7	0.6062	0.0000	OK
15 minute summer	CD_11	13	127.011	0.461	128.8	0.5889	0.0000	SURCHARGED
15 minute summer	CD_7	13	127.079	0.149	51.0	0.1858	0.0000	OK
15 minute summer	CD_6a	12	127.452	0.252	50.3	0.3357	0.0000	SURCHARGED
15 minute summer	CD_6	12	127.532	0.282	49.2	0.5594	0.0000	SURCHARGED
15 minute summer	CD_10	12	127.692	0.842	76.8	1.1901	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	E_SW2	E_SW2-E_SW3	E_SW3	132.8	1.778	0.002	1.4795	
15 minute summer	Headwall 1	Headwall 1-E_SW2	E_SW2	75.1	2.204	0.001	0.2936	
15 minute summer	ND_1	ND_Out	Headwall 1	68.6	4.848	0.135	0.0895	
15 minute summer	CD_12	CD_12-CD_13	CD_13	44.5	1.315	0.422	0.3743	
15 minute summer	CD_12	Slab:CD_12-Con_SW7	Con_SW7	-0.1	-0.065	0.000	0.0192	
15 minute summer	CD_13	CD_13-CD_14	CD_14	51.7	1.668	0.269	1.8820	
15 minute summer	CD_14	CD_14-CD_15	CD_15	59.6	2.137	0.172	1.0301	
15 minute summer	CD_15	CD_Out	Headwall 2	223.1	4.715	0.232	0.5692	
15 minute summer	CD_11	CD_11-CD_15	CD_15	125.4	2.419	1.082	1.5613	
15 minute summer	CD_7	CD_7-CD_11	CD_11	50.9	0.877	0.478	2.1764	
15 minute summer	CD_6a	CD_6a-CD_7	CD_7	49.1	1.467	1.052	1.1152	
15 minute summer	CD_6	CD_6-CD_6a	CD_6a	46.8	1.176	0.973	0.2319	
15 minute summer	CD_10	CD_10-CD_11	CD_11	75.3	1.895	1.380	1.0819	

Results for 2 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	CD_9	12	127.916	0.966	80.4	2.3563	0.0000	SURCHARGED
15 minute summer	CD_5	11	127.714	0.144	34.5	0.1754	0.0000	OK
15 minute summer	CD_4	1	128.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	CD_3	10	127.927	0.136	33.4	0.2308	0.0000	OK
15 minute summer	CD_2	10	128.025	0.125	26.1	0.1410	0.0000	OK
15 minute summer	CD_1	10	128.094	0.130	26.4	0.4169	0.0000	OK
15 minute summer	CD_8	12	128.719	0.757	76.9	5.4526	0.0000	SURCHARGED
15 minute summer	E_SW1	10	128.012	0.011	7.0	0.0091	0.0000	OK
15 minute summer	SD_1	1	127.965	0.000	0.0	0.0000	0.0000	OK
15 minute summer	SD_2	1	127.900	0.000	0.0	0.0000	0.0000	OK
15 minute summer	SD_3	10	127.857	0.057	7.7	0.0963	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	CD_9	CD_9-CD_10	CD_10	71.7	1.804	1.159	0.2812	
15 minute summer	CD_5	CD_5-CD_6	CD_6	34.7	0.960	0.752	1.3522	
15 minute summer	CD_4	CD_4-CD_5	CD_5	0.0	0.000	0.000	0.0000	
15 minute summer	CD_3	CD_3-CD_5	CD_5	33.2	1.292	0.618	0.5351	
15 minute summer	CD_2	CD_2-CD_3	CD_3	25.9	1.086	0.477	0.2400	
15 minute summer	CD_1	CD_1-CD_2	CD_2	26.1	1.130	0.480	0.1349	
15 minute summer	CD_1	Slab:CD_1-CD_8	CD_8	0.0	0.000	0.000	0.0001	
15 minute winter	CD_8	CD_8-CD_9	CD_9	55.9	1.419	0.903	2.8480	
15 minute summer	CD_8	Slab:CD_8-CD_12	CD_12	0.0	0.000	0.000	0.0001	
15 minute summer	E_SW1	E_SW1-Headwall 1	Headwall 1	6.9	0.387	0.000	0.7615	
15 minute summer	SD_1	SD_1-SD_2	SD_2	0.0	0.000	0.000	0.0000	
15 minute summer	SD_1	Slab:SD_1-SD_8	SD_8	0.0	0.000	0.000	0.0001	
15 minute summer	SD_1	Slab: SD_1-CD_1	CD_1	0.0	0.000	0.000	0.0000	
15 minute summer	SD_2	SD_2-SD_3	SD_3	0.0	0.000	0.000	0.0272	
15 minute summer	SD_3	SD_3-SD_4a	SD_4a	7.6	0.917	0.137	0.2181	

Results for 2 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SD_5	11	127.265	0.115	22.7	0.2149	0.0000	OK
15 minute summer	SD_6	11	127.121	0.121	26.3	0.1601	0.0000	OK
15 minute summer	SD_7	11	126.885	0.104	29.4	0.1337	0.0000	OK
15 minute summer	SD_11	12	126.707	0.257	111.3	0.3270	0.0000	OK
15 minute summer	SD_10	11	127.029	0.179	78.8	0.2436	0.0000	OK
15 minute summer	SD_9	11	127.279	0.279	75.9	0.6964	0.0000	SURCHARGED
15 minute summer	SD_8	10	128.115	0.150	49.7	0.7581	0.0000	OK
15 minute summer	SD_13	11	128.152	0.052	7.5	0.0945	0.0000	OK
15 minute summer	SD_12	10	128.027	0.063	16.4	0.1528	0.0000	OK
15 minute summer	Con_SW7	10	129.167	0.014	59.0	0.3694	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SD_5	SD_5-SD_6	SD_6	22.6	1.074	0.464	0.3590	
15 minute summer	SD_6	SD_6-SD_7	SD_7	26.4	1.326	0.516	0.4523	
15 minute summer	SD_7	SD_7-SD_11	SD_11	29.3	0.676	0.265	1.4359	
15 minute summer	SD_11	SD_11-SD_18	SD_18	109.7	1.728	0.971	2.7903	
15 minute summer	SD_10	SD_10-SD_11	SD_11	78.7	1.500	0.604	1.5751	
15 minute summer	SD_9	SD_9-SD_10	SD_10	74.2	1.903	0.972	0.2579	
15 minute summer	SD_8	SD_8-SD_9	SD_9	48.4	1.371	0.796	2.3976	
15 minute summer	SD_8	Slab:SD_8-SD_12	SD_12	0.0	0.000	0.000	0.0001	
15 minute summer	SD_13	SD_13-SD_14	SD_14	7.2	0.705	0.065	0.6276	
15 minute summer	SD_12	SD_12-SD_15	SD_15	16.3	1.168	0.089	0.1074	
15 minute summer	Con_SW7	12.001	E_SW2	58.6	0.931	0.007	1.2812	

Results for 30 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SD_15	12	127.919	0.159	76.7	0.2977	0.0000	OK
15 minute summer	SD_16	11	127.327	0.227	141.1	0.4322	0.0000	OK
15 minute summer	SD_14	11	127.618	0.118	35.3	0.1877	0.0000	OK
15 minute summer	SD_17	10	127.070	0.169	155.7	0.2547	0.0000	OK
15 minute summer	SD_18	12	126.964	0.964	337.6	1.5167	0.0000	SURCHARGED
15 minute summer	SD_19	12	126.541	0.861	351.3	1.3257	0.0000	SURCHARGED
15 minute summer	SD_20	12	125.832	0.612	377.6	0.9925	0.0000	SURCHARGED
15 minute summer	SD_21	12	125.534	0.414	397.9	0.6254	0.0000	OK
15 minute summer	SD_22	11	124.914	0.344	871.3	2.5429	0.0000	OK
480 minute summer	Headwall 5	480	121.507	0.457	169.2	0.0000	0.0000	OK
120 minute summer	BS_2	88	122.895	1.755	263.1	0.0000	0.0000	OK
15 minute summer	SD_4	14	128.912	1.017	9.1	1.1498	0.0000	SURCHARGED
120 minute summer	BS_1	88	123.039	0.269	338.9	0.0000	0.0000	OK
15 minute summer	BS_4	1	120.100	0.000	9.8	0.0000	0.0000	OK
15 minute summer	SD_4a	14	128.911	1.411	50.4	1.7241	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SD_15	SD_15-SD_16	SD_16	76.5	1.350	0.386	3.8043	
15 minute summer	SD_16	SD_16-SD_17	SD_17	138.8	2.195	0.428	1.2984	
15 minute summer	SD_14	SD_14-SD_16	SD_16	34.8	1.438	0.279	0.2894	
15 minute summer	SD_17	SD_17-SD_18	SD_18	168.3	2.720	0.282	1.3396	
15 minute summer	SD_18	SD_18-SD_19	SD_19	329.4	2.080	0.982	4.7108	
15 minute summer	SD_19	SD_19-SD_20	SD_20	352.4	2.225	1.119	7.6710	
15 minute summer	SD_20	SD_20-SD_21	SD_21	378.2	2.387	1.170	1.5556	
15 minute summer	SD_21	SD_21-SD_22	SD_22	400.6	3.005	0.954	4.5930	
15 minute summer	SD_22	SD_Out	Headwall 5	872.5	8.889	0.572	1.6475	
120 minute summer	Headwall 5	Flow through pond	BS_3	406.9	0.037	0.024	1788.8677	
120 minute summer	BS_2	Flow through pond	BS_3	406.9	0.037	0.024	1788.8677	
15 minute summer	SD_4	SD_4-SD_4a	SD_4a	-9.1	-0.345	-0.113	0.2967	
120 minute summer	BS_1	BS_1-BS_2	BS_2	263.1	2.335	0.119	0.7337	
15 minute summer	SD_4a	SD_4a-SD_5	SD_5	52.1	1.311	0.997	1.3763	

Results for 30 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	BS_3	720	121.500	0.450	88.7	0.0000	0.0000	SURCHARGED
15 minute summer	ED_1	10	127.599	0.123	133.8	0.7783	0.0000	OK
15 minute summer	Headwall 3	10	125.437	0.025	133.4	0.0000	0.0000	OK
60 minute summer	SW11	40	123.301	0.397	88.2	0.0000	0.0000	OK
30 minute summer	SW10	21	123.314	0.410	726.6	0.0000	0.0000	OK
15 minute summer	SW9	13	123.376	0.126	784.5	0.0000	0.0000	OK
15 minute summer	SW8	12	123.606	0.156	783.9	0.0000	0.0000	OK
15 minute summer	SW7	12	123.775	0.175	783.7	0.0000	0.0000	OK
15 minute summer	SW6	12	123.967	0.317	786.5	0.0000	0.0000	OK
15 minute summer	SW5	12	124.042	0.342	806.6	0.0000	0.0000	OK
15 minute summer	Headwall 2	10	124.098	0.348	870.6	0.0000	0.0000	OK
15 minute summer	SW4	11	124.082	0.282	323.7	0.0000	0.0000	OK
15 minute summer	E_SW3	11	124.273	0.173	328.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	BS_3	Orifice	BS_4	16.7				620.4
15 minute summer	ED_1	ED_1 Outfall	Headwall 3	133.4	8.664	0.161	0.2105	
15 minute summer	Headwall 3	Headwall 3-SW11	SW11	132.9	2.545	0.020	1.0047	
60 minute summer	SW11	Flow through pond	BS_1	371.1	0.055	0.275	594.0923	
60 minute summer	SW10	Flow through pond	BS_1	371.1	0.055	0.275	594.0923	
15 minute summer	SW9	SW9-SW10	SW10	788.7	1.716	0.119	3.8138	
15 minute summer	SW8	SW8-SW9	SW9	784.5	2.903	0.208	4.2159	
15 minute summer	SW7	SW7-SW8	SW8	783.9	3.800	0.223	1.2202	
15 minute summer	SW6	SW6-SW7	SW7	783.7	2.141	0.753	8.4681	
15 minute summer	SW5	SW5-SW6	SW6	786.5	1.404	0.960	20.4780	
15 minute summer	Headwall 2	Headwall 2-SW5	SW5	806.6	1.395	0.779	13.0018	
15 minute winter	SW4	SW4-Headwall 2	Headwall 2	409.6	0.841	0.210	3.1332	
15 minute summer	E_SW3	E_SW3-SW4	SW4	323.7	1.085	0.219	22.3510	

Results for 30 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	E_SW2	10	125.928	0.078	329.6	0.0000	0.0000	OK
15 minute summer	Headwall 1	10	126.821	0.054	186.0	0.0000	0.0000	OK
15 minute summer	ND_1	10	128.209	0.133	169.7	0.9594	0.0000	OK
15 minute summer	CD_12	12	128.546	0.586	168.2	2.7396	0.0000	SURCHARGED
15 minute summer	CD_13	12	128.169	0.309	178.5	0.5397	0.0000	OK
15 minute summer	CD_14	12	127.518	0.218	196.0	0.3779	0.0000	OK
15 minute summer	CD_15	11	126.393	0.193	469.7	0.9664	0.0000	OK
15 minute summer	CD_11	12	127.570	1.020	182.2	1.3026	0.0000	SURCHARGED
15 minute summer	CD_7	12	127.812	0.882	78.0	1.1007	0.0000	SURCHARGED
15 minute summer	CD_6a	12	128.600	1.400	75.5	1.8642	0.0000	SURCHARGED
15 minute summer	CD_6	12	128.778	1.528	77.4	3.0292	0.0000	SURCHARGED
15 minute summer	CD_10	11	128.747	1.897	106.4	2.6802	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	E_SW2	E_SW2-E_SW3	E_SW3	328.1	2.336	0.005	2.7835	
15 minute summer	Headwall 1	Headwall 1-E_SW2	E_SW2	185.4	2.976	0.003	0.5380	
15 minute summer	ND_1	ND_Out	Headwall 1	169.1	6.061	0.333	0.1766	
15 minute summer	CD_12	CD_12-CD_13	CD_13	163.6	2.323	1.548	0.7778	
15 minute summer	CD_12	Slab:CD_12-Con_SW7	Con_SW7	-0.5	-0.115	-0.002	0.0493	
15 minute summer	CD_13	CD_13-CD_14	CD_14	181.2	2.191	0.942	4.9504	
15 minute summer	CD_14	CD_14-CD_15	CD_15	196.2	3.197	0.566	2.2633	
15 minute summer	CD_15	CD_Out	Headwall 2	467.4	5.809	0.487	0.8520	
15 minute summer	CD_11	CD_11-CD_15	CD_15	181.1	2.811	1.562	1.9035	
15 minute summer	CD_7	CD_7-CD_11	CD_11	77.7	1.104	0.730	2.9111	
15 minute summer	CD_6a	CD_6a-CD_7	CD_7	73.4	1.845	1.573	1.3292	
15 minute summer	CD_6	CD_6-CD_6a	CD_6a	67.8	1.706	1.411	0.2319	
15 minute summer	CD_10	CD_10-CD_11	CD_11	101.1	2.543	1.852	1.0819	

Results for 30 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	CD_9	11	129.090	2.140	111.9	5.2187	0.0000	FLOOD RISK
15 minute summer	CD_5	12	129.064	1.494	53.8	1.8194	0.0000	FLOOD RISK
15 minute summer	CD_4	12	129.065	1.065	8.7	1.2040	0.0000	FLOOD RISK
15 minute summer	CD_3	12	129.219	1.428	65.5	2.4156	0.0000	FLOOD RISK
15 minute summer	CD_2	12	129.258	1.358	58.1	1.5354	0.0000	FLOOD RISK
15 minute summer	CD_1	13	129.289	1.325	113.4	4.2590	0.0000	FLOOD RISK
15 minute summer	CD_8	12	129.303	1.341	189.4	9.6579	0.0000	FLOOD RISK
15 minute summer	E_SW1	10	128.020	0.020	17.1	0.0156	0.0000	OK
15 minute summer	SD_1	14	129.263	1.298	77.1	1.4684	0.0000	FLOOD RISK
15 minute summer	SD_2	14	129.194	1.294	52.7	1.4634	0.0000	FLOOD RISK
15 minute summer	SD_3	14	129.133	1.333	53.4	2.2707	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	CD_9	CD_9-CD_10	CD_10	91.6	2.304	1.480	0.2812	
15 minute winter	CD_5	CD_5-CD_6	CD_6	54.1	1.362	1.175	1.6150	
15 minute summer	CD_4	CD_4-CD_5	CD_5	-8.7	0.352	-0.097	0.2668	
30 minute summer	CD_3	CD_3-CD_5	CD_5	53.1	1.336	0.989	0.8199	
30 minute summer	CD_2	CD_2-CD_3	CD_3	50.1	1.261	0.922	0.3997	
15 minute summer	CD_1	CD_1-CD_2	CD_2	58.1	1.460	1.066	0.2319	
15 minute summer	CD_1	Slab:CD_1-CD_8	CD_8	-58.4	-0.362	-0.527	8.2380	
120 minute summer	CD_8	CD_8-CD_9	CD_9	59.4	1.495	0.961	2.8480	
15 minute summer	CD_8	Slab:CD_8-CD_12	CD_12	71.2	0.465	0.555	5.2312	
15 minute summer	E_SW1	E_SW1-Headwall 1	Headwall 1	16.9	0.535	0.000	1.3719	
15 minute winter	SD_1	SD_1-SD_2	SD_2	54.6	1.372	1.211	0.3432	
15 minute summer	SD_1	Slab:SD_1-SD_8	SD_8	-19.2	-0.287	-0.207	3.2397	
15 minute summer	SD_1	Slab: SD_1-CD_1	CD_1	-57.8	-0.465	-0.299	1.9193	
30 minute summer	SD_2	SD_2-SD_3	SD_3	47.0	1.181	0.753	0.2770	
15 minute summer	SD_3	SD_3-SD_4a	SD_4a	48.7	1.225	0.875	1.0419	

Results for 30 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SD_5	14	128.603	1.453	57.5	2.7253	0.0000	SURCHARGED
15 minute summer	SD_6	13	128.342	1.342	64.0	1.7762	0.0000	SURCHARGED
15 minute summer	SD_7	13	128.047	1.267	69.0	1.6214	0.0000	SURCHARGED
15 minute summer	SD_11	12	127.931	1.480	169.6	1.8861	0.0000	SURCHARGED
15 minute summer	SD_10	12	128.271	1.421	118.8	1.9305	0.0000	SURCHARGED
15 minute summer	SD_9	12	128.688	1.688	123.8	4.2146	0.0000	SURCHARGED
15 minute summer	SD_8	12	129.262	1.297	122.3	6.5501	0.0000	FLOOD RISK
15 minute summer	SD_13	10	128.181	0.081	18.4	0.1484	0.0000	OK
15 minute summer	SD_12	12	128.098	0.134	56.6	0.3256	0.0000	OK
15 minute summer	Con_SW7	10	129.177	0.024	145.3	0.6325	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SD_5	SD_5-SD_6	SD_6	62.5	1.572	1.285	0.6796	
15 minute summer	SD_6	SD_6-SD_7	SD_7	67.5	1.696	1.320	0.9050	
15 minute summer	SD_7	SD_7-SD_11	SD_11	72.7	1.057	0.659	2.3579	
15 minute summer	SD_11	SD_11-SD_18	SD_18	175.1	2.487	1.551	3.0703	
15 minute summer	SD_10	SD_10-SD_11	SD_11	112.7	1.601	0.866	2.0567	
15 minute winter	SD_9	SD_9-SD_10	SD_10	107.8	2.710	1.412	0.2784	
60 minute summer	SD_8	SD_8-SD_9	SD_9	64.6	1.625	1.062	2.8080	
15 minute summer	SD_8	Slab:SD_8-SD_12	SD_12	24.9	0.350	0.213	1.9684	
15 minute summer	SD_13	SD_13-SD_14	SD_14	18.0	0.886	0.162	1.2276	
15 minute summer	SD_12	SD_12-SD_15	SD_15	56.8	1.661	0.311	0.2595	
15 minute summer	Con_SW7	12.001	E_SW2	144.2	1.326	0.018	2.2294	

Results for 100 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SD_15	13	127.993	0.233	139.9	0.4356	0.0000	OK
15 minute summer	SD_16	13	127.700	0.600	204.2	1.1430	0.0000	SURCHARGED
15 minute summer	SD_14	13	127.698	0.198	44.2	0.3140	0.0000	OK
15 minute summer	SD_17	12	127.615	0.715	206.1	1.0748	0.0000	SURCHARGED
15 minute summer	SD_18	12	127.542	1.542	373.6	2.4256	0.0000	SURCHARGED
15 minute summer	SD_19	12	127.019	1.339	392.7	2.0619	0.0000	SURCHARGED
15 minute summer	SD_20	12	126.139	0.919	422.0	1.4911	0.0000	SURCHARGED
15 minute summer	SD_21	12	125.786	0.666	445.3	1.0046	0.0000	SURCHARGED
15 minute summer	SD_22	10	124.953	0.383	1045.4	2.8358	0.0000	OK
960 minute summer	Headwall 5	975	121.619	0.569	116.9	0.0000	0.0000	OK
120 minute summer	BS_2	86	122.934	1.794	344.5	0.0000	0.0000	OK
15 minute summer	SD_4	13	129.296	1.401	16.8	1.5845	0.0000	FLOOD RISK
120 minute summer	BS_1	86	123.074	0.304	444.5	0.0000	0.0000	OK
15 minute summer	BS_4	1	120.100	0.000	11.0	0.0000	0.0000	OK
15 minute summer	SD_4a	13	129.295	1.795	48.7	2.1931	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SD_15	SD_15-SD_16	SD_16	140.5	1.397	0.708	6.1165	
15 minute summer	SD_16	SD_16-SD_17	SD_17	199.4	1.964	0.614	3.1461	
15 minute summer	SD_14	SD_14-SD_16	SD_16	43.5	1.519	0.349	0.7156	
15 minute summer	SD_17	SD_17-SD_18	SD_18	208.9	2.606	0.350	2.0290	
15 minute summer	SD_18	SD_18-SD_19	SD_19	376.7	2.378	1.123	4.7108	
15 minute summer	SD_19	SD_19-SD_20	SD_20	393.5	2.484	1.249	7.6710	
15 minute summer	SD_20	SD_20-SD_21	SD_21	420.7	2.655	1.301	1.5844	
15 minute summer	SD_21	SD_21-SD_22	SD_22	443.6	3.215	1.056	4.9395	
15 minute summer	SD_22	SD_Out	Headwall 5	1040.8	9.218	0.682	1.9052	
120 minute summer	Headwall 5	Flow through pond	BS_3	547.4	0.043	0.032	2265.0906	
120 minute summer	BS_2	Flow through pond	BS_3	547.4	0.043	0.032	2265.0906	
15 minute summer	SD_4	SD_4-SD_4a	SD_4a	-16.8	-0.580	-0.210	0.2967	
120 minute summer	BS_1	BS_1-BS_2	BS_2	344.5	2.496	0.156	0.8991	
15 minute winter	SD_4a	SD_4a-SD_5	SD_5	51.5	1.295	0.985	1.3763	

Results for 100 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	BS_3	720	121.602	0.552	107.9	0.0000	0.0000	SURCHARGED
15 minute summer	ED_1	10	127.615	0.139	167.7	0.8765	0.0000	OK
15 minute summer	Headwall 3	10	125.441	0.029	167.2	0.0000	0.0000	OK
30 minute summer	SW11	25	123.354	0.451	151.3	0.0000	0.0000	OK
30 minute summer	SW10	22	123.365	0.462	899.2	0.0000	0.0000	OK
30 minute summer	SW9	20	123.404	0.154	898.6	0.0000	0.0000	OK
15 minute summer	SW8	12	123.625	0.175	959.3	0.0000	0.0000	OK
15 minute summer	SW7	12	123.794	0.194	957.4	0.0000	0.0000	OK
15 minute summer	SW6	12	123.999	0.349	961.6	0.0000	0.0000	OK
15 minute summer	SW5	12	124.071	0.371	1028.5	0.0000	0.0000	OK
30 minute summer	Headwall 2	18	124.130	0.380	1016.5	0.0000	0.0000	FLOOD RISK
15 minute summer	SW4	11	124.118	0.318	405.3	0.0000	0.0000	OK
15 minute summer	E_SW3	11	124.294	0.194	411.3	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	BS_3	Orifice	BS_4	18.8				706.6
15 minute summer	ED_1	ED_1 Outfall	Headwall 3	167.2	9.128	0.202	0.2487	
15 minute summer	Headwall 3	Headwall 3-SW11	SW11	166.6	2.774	0.025	1.5962	
60 minute summer	SW11	Flow through pond	BS_1	513.0	0.061	0.380	711.0225	
60 minute summer	SW10	Flow through pond	BS_1	513.0	0.061	0.380	711.0225	
15 minute summer	SW9	SW9-SW10	SW10	964.6	1.755	0.145	4.7320	
15 minute summer	SW8	SW8-SW9	SW9	961.1	3.011	0.255	5.0484	
15 minute summer	SW7	SW7-SW8	SW8	959.3	3.998	0.273	1.4191	
15 minute summer	SW6	SW6-SW7	SW7	957.4	2.259	0.919	9.8110	
15 minute summer	SW5	SW5-SW6	SW6	961.6	1.478	1.174	23.5285	
15 minute summer	Headwall 2	Headwall 2-SW5	SW5	1028.5	1.526	0.994	15.1499	
15 minute summer	SW4	SW4-Headwall 2	Headwall 2	522.2	0.893	0.268	3.7733	
15 minute summer	E_SW3	E_SW3-SW4	SW4	405.3	1.130	0.275	26.7108	

Results for 100 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	E_SW2	10	125.938	0.088	413.0	0.0000	0.0000	OK
15 minute summer	Headwall 1	10	126.828	0.061	233.2	0.0000	0.0000	OK
15 minute summer	ND_1	10	128.230	0.154	212.5	1.1062	0.0000	OK
15 minute summer	CD_12	12	129.216	1.256	241.7	5.8721	0.0000	FLOOD RISK
15 minute summer	CD_13	12	128.568	0.708	235.1	1.2386	0.0000	SURCHARGED
15 minute summer	CD_14	12	127.559	0.259	249.7	0.4490	0.0000	OK
15 minute summer	CD_15	11	126.418	0.218	558.4	1.0946	0.0000	OK
15 minute summer	CD_11	12	127.713	1.163	195.6	1.4849	0.0000	SURCHARGED
15 minute summer	CD_7	12	128.002	1.072	84.3	1.3373	0.0000	SURCHARGED
15 minute summer	CD_6a	12	128.900	1.700	81.5	2.2645	0.0000	SURCHARGED
15 minute summer	CD_6	12	129.084	1.834	85.0	3.6365	0.0000	FLOOD RISK
15 minute summer	CD_10	11	129.001	2.151	113.6	3.0398	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	E_SW2	E_SW2-E_SW3	E_SW3	411.3	2.494	0.007	3.2752	
15 minute summer	Headwall 1	Headwall 1-E_SW2	E_SW2	232.4	3.198	0.004	0.6280	
15 minute summer	ND_1	ND_Out	Headwall 1	211.9	6.372	0.417	0.2104	
15 minute summer	CD_12	CD_12-CD_13	CD_13	212.3	3.015	2.009	0.7778	
15 minute summer	CD_12	Slab:CD_12-Con_SW7	Con_SW7	18.8	0.855	0.068	0.2488	
15 minute summer	CD_13	CD_13-CD_14	CD_14	231.2	2.219	1.202	5.7988	
15 minute summer	CD_14	CD_14-CD_15	CD_15	248.5	3.444	0.717	2.7148	
15 minute summer	CD_15	CD_Out	Headwall 2	555.9	6.262	0.579	0.9405	
15 minute summer	CD_11	CD_11-CD_15	CD_15	194.4	2.886	1.677	2.0179	
15 minute summer	CD_7	CD_7-CD_11	CD_11	84.8	1.204	0.796	2.9111	
15 minute summer	CD_6a	CD_6a-CD_7	CD_7	78.5	1.975	1.683	1.3292	
15 minute summer	CD_6	CD_6-CD_6a	CD_6a	70.7	1.779	1.471	0.2319	
15 minute summer	CD_10	CD_10-CD_11	CD_11	106.0	2.666	1.942	1.0819	

Results for 100 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	CD_9	11	129.327	2.377	119.8	5.7965	0.0000	FLOOD RISK
15 minute summer	CD_5	12	129.251	1.681	55.9	2.0474	0.0000	FLOOD RISK
15 minute summer	CD_4	12	129.251	1.251	10.2	1.4154	0.0000	FLOOD RISK
15 minute summer	CD_3	12	129.321	1.531	68.6	2.5882	0.0000	FLOOD RISK
15 minute summer	CD_2	12	129.326	1.426	59.2	1.6132	0.0000	FLOOD RISK
15 minute summer	CD_1	13	129.340	1.376	164.7	4.4225	0.0000	FLOOD RISK
15 minute summer	CD_8	12	129.328	1.366	237.2	9.8399	0.0000	FLOOD RISK
15 minute summer	E_SW1	10	128.022	0.022	21.5	0.0179	0.0000	OK
15 minute summer	SD_1	12	129.339	1.374	127.4	1.5545	0.0000	FLOOD RISK
15 minute summer	SD_2	12	129.335	1.435	64.6	1.6230	0.0000	FLOOD RISK
30 minute summer	SD_3	20	129.332	1.532	55.5	2.6110	0.0000	FLOOD RISK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	CD_9	CD_9-CD_10	CD_10	95.9	2.412	1.550	0.2812	
15 minute winter	CD_5	CD_5-CD_6	CD_6	55.2	1.388	1.198	1.6150	
15 minute summer	CD_4	CD_4-CD_5	CD_5	-10.2	0.351	-0.113	0.2668	
30 minute summer	CD_3	CD_3-CD_5	CD_5	55.1	1.385	1.025	0.8199	
60 minute summer	CD_2	CD_2-CD_3	CD_3	49.7	1.250	0.914	0.3997	
15 minute summer	CD_1	CD_1-CD_2	CD_2	59.2	1.489	1.087	0.2319	
15 minute summer	CD_1	Slab:CD_1-CD_8	CD_8	-87.1	-0.378	-0.785	13.2213	
15 minute summer	CD_8	CD_8-CD_9	CD_9	60.5	1.522	0.978	2.8480	
15 minute summer	CD_8	Slab:CD_8-CD_12	CD_12	116.1	0.536	0.905	7.3533	
15 minute summer	E_SW1	E_SW1-Headwall 1	Headwall 1	21.3	0.580	0.001	1.5954	
15 minute winter	SD_1	SD_1-SD_2	SD_2	72.5	1.824	1.611	0.3432	
15 minute summer	SD_1	Slab:SD_1-SD_8	SD_8	77.6	-0.359	0.837	11.4005	
30 minute summer	SD_1	Slab:SD_1-CD_1	CD_1	-103.4	-0.496	-0.535	4.4201	
60 minute summer	SD_2	SD_2-SD_3	SD_3	52.1	1.310	0.835	0.2770	
60 minute summer	SD_3	SD_3-SD_4a	SD_4a	49.6	1.247	0.891	1.0419	

Results for 100 year Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SD_5	13	129.213	2.063	60.3	3.8704	0.0000	FLOOD RISK
15 minute summer	SD_6	13	129.027	2.027	62.3	2.6838	0.0000	FLOOD RISK
15 minute summer	SD_7	13	128.700	1.920	68.9	2.4581	0.0000	SURCHARGED
15 minute summer	SD_11	13	128.567	2.117	169.1	2.6971	0.0000	SURCHARGED
15 minute summer	SD_10	12	128.832	1.982	124.2	2.6931	0.0000	SURCHARGED
15 minute summer	SD_9	12	129.158	2.158	137.8	5.3894	0.0000	FLOOD RISK
15 minute summer	SD_8	13	129.323	1.358	153.2	6.8572	0.0000	FLOOD RISK
15 minute summer	SD_13	10	128.191	0.091	23.0	0.1667	0.0000	OK
15 minute summer	SD_12	13	128.205	0.241	127.4	0.5856	0.0000	OK
15 minute summer	Con_SW7	10	129.180	0.027	182.0	0.7232	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	SD_5	SD_5-SD_6	SD_6	62.4	1.569	1.282	0.6796	
30 minute summer	SD_6	SD_6-SD_7	SD_7	67.9	1.708	1.330	0.9050	
15 minute summer	SD_7	SD_7-SD_11	SD_11	75.3	1.122	0.682	2.3579	
60 minute summer	SD_11	SD_11-SD_18	SD_18	175.4	2.492	1.554	3.0703	
15 minute summer	SD_10	SD_10-SD_11	SD_11	115.2	1.636	0.885	2.0567	
15 minute summer	SD_9	SD_9-SD_10	SD_10	109.9	2.764	1.440	0.2784	
60 minute winter	SD_8	SD_8-SD_9	SD_9	63.1	1.588	1.038	2.8080	
15 minute summer	SD_8	Slab:SD_8-SD_12	SD_12	102.8	0.529	0.882	5.3225	
15 minute summer	SD_13	SD_13-SD_14	SD_14	22.6	0.935	0.203	1.8562	
15 minute summer	SD_12	SD_12-SD_15	SD_15	125.4	2.100	0.686	0.4528	
15 minute summer	Con_SW7	12.001	E_SW2	180.6	1.449	0.023	2.5615	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SD_15	12	129.242	1.482	185.9	2.7734	0.0000	FLOOD RISK
15 minute summer	SD_16	12	128.856	1.756	257.6	3.3476	0.0000	FLOOD RISK
15 minute summer	SD_14	12	128.920	1.420	83.8	2.2565	0.0000	SURCHARGED
15 minute summer	SD_17	12	128.669	1.769	273.7	2.6591	0.0000	SURCHARGED
15 minute summer	SD_18	12	128.503	2.503	426.3	3.9370	0.0000	SURCHARGED
15 minute summer	SD_19	12	127.806	2.126	457.5	3.2740	0.0000	SURCHARGED
15 minute summer	SD_20	12	126.620	1.400	495.5	2.2727	0.0000	SURCHARGED
15 minute summer	SD_21	11	126.153	1.033	528.2	1.5585	0.0000	SURCHARGED
15 minute summer	SD_22	10	125.041	0.471	1363.2	3.4886	0.0000	OK
960 minute summer	Headwall 5	975	121.836	0.786	164.1	0.0000	0.0000	OK
60 minute summer	BS_2	51	123.012	1.872	530.2	0.0000	0.0000	OK
30 minute summer	SD_4	18	129.320	1.425	17.6	1.6117	0.9383	FLOOD
60 minute summer	BS_1	51	123.139	0.369	820.4	0.0000	0.0000	OK
15 minute summer	BS_4	1	120.100	0.000	13.1	0.0000	0.0000	OK
30 minute winter	SD_4a	18	129.320	1.820	52.6	2.2240	1.4381	FLOOD

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	SD_15	SD_15-SD_16	SD_16	193.1	1.750	0.973	7.4069	
15 minute summer	SD_16	SD_16-SD_17	SD_17	249.4	1.927	0.769	3.1461	
30 minute winter	SD_14	SD_14-SD_16	SD_16	62.6	1.516	0.503	0.8424	
30 minute summer	SD_17	SD_17-SD_18	SD_18	267.6	2.802	0.448	2.0290	
30 minute summer	SD_18	SD_18-SD_19	SD_19	422.9	2.669	1.260	4.7108	
30 minute summer	SD_19	SD_19-SD_20	SD_20	454.7	2.870	1.443	7.6710	
15 minute summer	SD_20	SD_20-SD_21	SD_21	493.6	3.116	1.527	1.5844	
15 minute summer	SD_21	SD_21-SD_22	SD_22	527.4	3.329	1.256	5.1789	
15 minute summer	SD_22	SD_Out	Headwall 5	1359.1	9.601	0.891	2.3997	
120 minute summer	Headwall 5	Flow through pond	BS_3	842.8	0.051	0.049	3204.5491	
120 minute summer	BS_2	Flow through pond	BS_3	842.8	0.051	0.049	3204.5491	
15 minute summer	SD_4	SD_4-SD_4a	SD_4a	-24.6	-0.796	-0.308	0.2967	
60 minute summer	BS_1	BS_1-BS_2	BS_2	530.2	2.775	0.240	1.2444	
60 minute winter	SD_4a	SD_4a-SD_5	SD_5	47.8	1.202	0.915	1.3763	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	BS_3	960	121.818	0.768	119.7	0.0000	0.0000	SURCHARGED
15 minute summer	ED_1	10	127.643	0.167	234.8	1.0535	0.0000	OK
15 minute summer	Headwall 3	10	125.447	0.035	234.2	0.0000	0.0000	OK
30 minute summer	SW11	23	123.443	0.539	211.8	0.0000	0.0000	OK
30 minute summer	SW10	22	123.457	0.553	1291.2	0.0000	0.0000	OK
30 minute summer	SW9	19	123.466	0.216	1311.2	0.0000	0.0000	OK
15 minute summer	SW8	12	123.663	0.213	1373.9	0.0000	0.0000	OK
15 minute summer	SW7	12	123.832	0.232	1383.8	0.0000	0.0000	OK
15 minute summer	SW6	12	124.063	0.413	1428.5	0.0000	0.0000	FLOOD RISK
15 minute summer	SW5	12	124.140	0.440	1354.8	0.0000	0.0000	FLOOD RISK
15 minute summer	Headwall 2	11	124.201	0.451	1514.5	0.0000	0.0000	FLOOD RISK
15 minute summer	SW4	11	124.170	0.370	717.3	0.0000	0.0000	OK
15 minute summer	E_SW3	11	124.360	0.260	725.3	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	BS_3	Orifice	BS_4	22.5				1064.8
15 minute summer	ED_1	ED_1 Outfall	Headwall 3	234.2	9.812	0.283	0.3195	
15 minute summer	Headwall 3	Headwall 3-SW11	SW11	233.5	3.151	0.036	3.8992	
60 minute summer	SW11	Flow through pond	BS_1	820.4	0.074	0.607	940.4731	
60 minute summer	SW10	Flow through pond	BS_1	820.4	0.074	0.607	940.4731	
15 minute summer	SW9	SW9-SW10	SW10	1334.5	1.767	0.201	6.8299	
15 minute summer	SW8	SW8-SW9	SW9	1358.0	3.069	0.360	7.0246	
15 minute summer	SW7	SW7-SW8	SW8	1373.9	4.363	0.391	1.8620	
15 minute summer	SW6	SW6-SW7	SW7	1383.8	2.497	1.329	12.8564	
15 minute summer	SW5	SW5-SW6	SW6	1428.5	1.648	1.744	30.9994	
30 minute summer	Headwall 2	Headwall 2-SW5	SW5	1374.0	1.600	1.327	19.5729	
15 minute summer	SW4	SW4-Headwall 2	Headwall 2	842.6	1.037	0.433	5.2358	
15 minute summer	E_SW3	E_SW3-SW4	SW4	717.3	1.344	0.486	36.1884	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	E_SW2	11	125.970	0.120	717.9	0.0000	0.0000	OK
15 minute summer	Headwall 1	10	126.841	0.074	326.4	0.0000	0.0000	OK
15 minute summer	ND_1	10	128.270	0.194	297.6	1.3953	0.0000	OK
15 minute summer	CD_12	12	129.315	1.355	392.6	6.3351	0.0000	FLOOD RISK
15 minute summer	CD_13	11	128.664	0.804	244.2	1.4056	0.0000	SURCHARGED
15 minute summer	CD_14	11	127.576	0.276	274.2	0.4781	0.0000	OK
15 minute summer	CD_15	11	126.455	0.255	673.8	1.2799	0.0000	OK
15 minute summer	CD_11	11	127.846	1.296	206.2	1.6551	0.0000	SURCHARGED
15 minute summer	CD_7	11	128.177	1.246	92.6	1.5556	0.0000	SURCHARGED
15 minute summer	CD_6a	11	129.131	1.931	87.4	2.5725	0.0000	FLOOD RISK
15 minute summer	CD_6	10	129.299	2.049	95.7	4.0632	1.2761	FLOOD
15 minute summer	CD_10	11	129.080	2.230	119.0	3.1505	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	E_SW2	E_SW2-E_SW3	E_SW3	725.3	2.922	0.012	5.0166	
15 minute summer	Headwall 1	Headwall 1-E_SW2	E_SW2	325.5	3.486	0.005	0.8708	
15 minute summer	ND_1	ND_Out	Headwall 1	296.6	6.812	0.584	0.2751	
30 minute summer	CD_12	CD_12-CD_13	CD_13	219.4	3.117	2.076	0.7778	
15 minute summer	CD_12	Slab:CD_12-Con_SW7	Con_SW7	205.0	1.886	0.742	1.4345	
15 minute summer	CD_13	CD_13-CD_14	CD_14	242.7	2.289	1.261	5.9708	
15 minute summer	CD_14	CD_14-CD_15	CD_15	274.2	3.500	0.791	3.0759	
15 minute summer	CD_15	CD_Out	Headwall 2	671.9	6.479	0.700	1.0240	
15 minute summer	CD_11	CD_11-CD_15	CD_15	205.9	2.949	1.777	2.1620	
15 minute summer	CD_7	CD_7-CD_11	CD_11	90.8	1.289	0.852	2.9111	
15 minute summer	CD_6a	CD_6a-CD_7	CD_7	82.3	2.070	1.764	1.3292	
30 minute summer	CD_6	CD_6-CD_6a	CD_6a	73.5	1.848	1.528	0.2319	
15 minute summer	CD_10	CD_10-CD_11	CD_11	108.2	2.722	1.982	1.0819	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	CD_9	9	129.330	2.380	128.9	5.8048	9.1020	FLOOD
15 minute summer	CD_5	10	129.320	1.750	57.8	2.1315	0.4111	FLOOD
15 minute summer	CD_4	10	129.320	1.320	14.4	1.4929	0.4026	FLOOD
30 minute summer	CD_3	17	129.331	1.541	67.2	2.6058	7.1574	FLOOD
30 minute summer	CD_2	21	129.367	1.466	58.9	1.6586	0.0000	FLOOD RISK
30 minute summer	CD_1	21	129.391	1.427	208.2	4.5870	0.0000	FLOOD RISK
15 minute summer	CD_8	12	129.378	1.416	332.2	10.2021	0.0000	FLOOD RISK
15 minute summer	E_SW1	10	128.027	0.027	30.1	0.0218	0.0000	OK
15 minute summer	SD_1	13	129.396	1.431	215.4	1.6184	0.0000	FLOOD RISK
15 minute summer	SD_2	13	129.370	1.470	46.3	1.6621	0.0000	FLOOD RISK
30 minute summer	SD_3	18	129.347	1.547	71.1	2.6361	7.0437	FLOOD

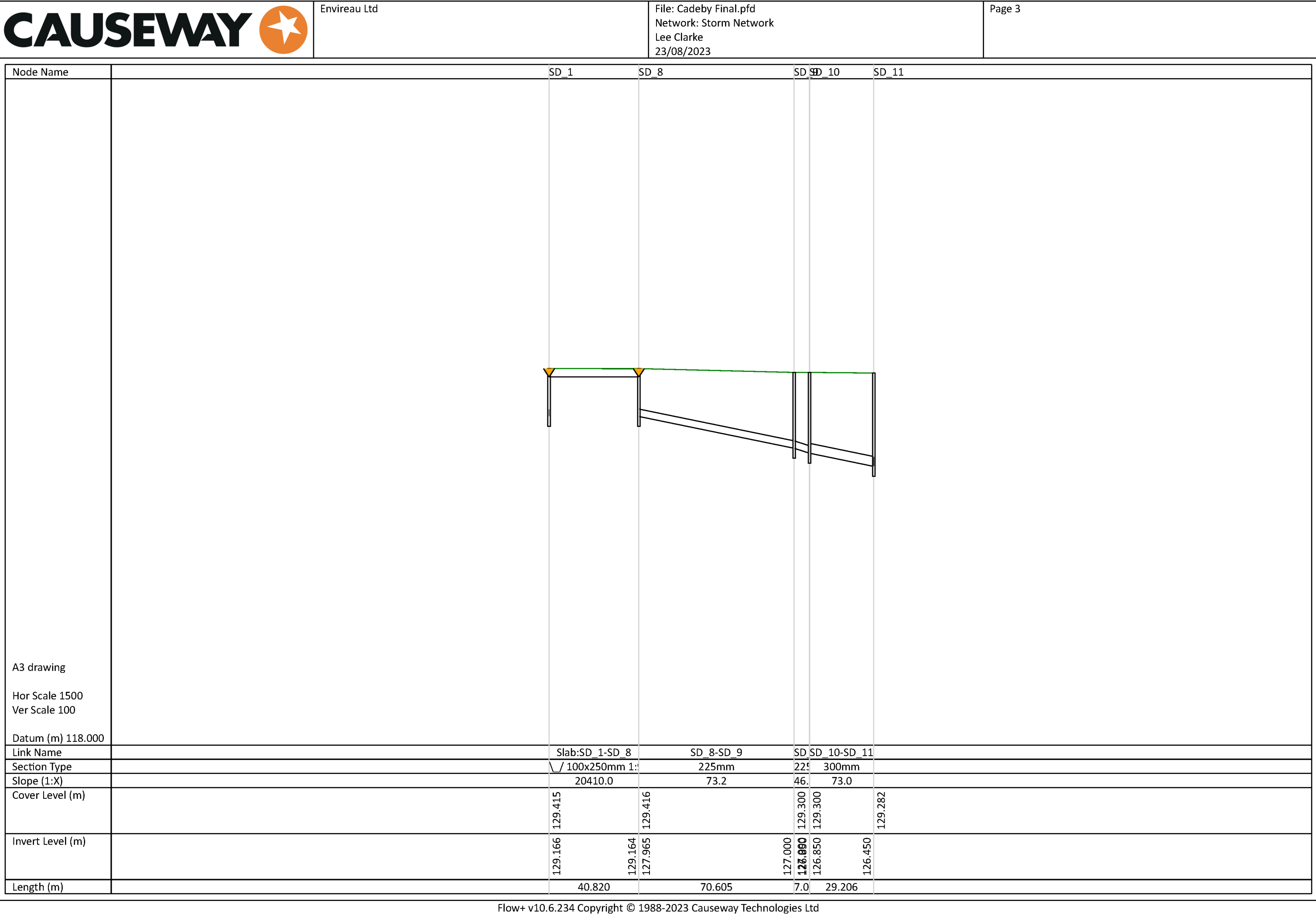
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	CD_9	CD_9-CD_10	CD_10	98.6	2.480	1.593	0.2812	
15 minute winter	CD_5	CD_5-CD_6	CD_6	56.4	1.419	1.225	1.6150	
15 minute summer	CD_4	CD_4-CD_5	CD_5	-14.4	-0.363	-0.160	0.2668	
30 minute winter	CD_3	CD_3-CD_5	CD_5	54.7	1.377	1.019	0.8199	
15 minute winter	CD_2	CD_2-CD_3	CD_3	49.3	1.241	0.907	0.3997	
15 minute winter	CD_1	CD_1-CD_2	CD_2	62.4	1.570	1.146	0.2319	
15 minute summer	CD_1	Slab:CD_1-CD_8	CD_8	143.8	-0.394	1.296	21.7643	
15 minute winter	CD_8	CD_8-CD_9	CD_9	61.8	1.553	0.998	2.8480	
15 minute summer	CD_8	Slab:CD_8-CD_12	CD_12	240.9	0.654	1.877	12.5670	
15 minute summer	E_SW1	E_SW1-Headwall 1	Headwall 1	29.8	0.652	0.001	2.0005	
60 minute winter	SD_1	SD_1-SD_2	SD_2	63.0	1.583	1.398	0.3432	
15 minute summer	SD_1	Slab:SD_1-SD_8	SD_8	-100.4	-0.326	-1.081	23.0996	
15 minute summer	SD_1	Slab: SD_1-CD_1	CD_1	-143.3	-0.531	-0.741	8.0962	
120 minute summer	SD_2	SD_2-SD_3	SD_3	49.4	1.242	0.792	0.2770	
60 minute summer	SD_3	SD_3-SD_4a	SD_4a	50.9	1.281	0.915	1.0419	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	SD_5	18	129.299	2.149	69.7	4.0315	6.3537	FLOOD
15 minute summer	SD_6	11	129.259	2.259	59.1	2.9906	0.0000	FLOOD RISK
15 minute summer	SD_7	12	129.134	2.353	67.2	3.0124	0.0000	FLOOD RISK
15 minute summer	SD_11	12	129.078	2.628	168.4	3.3478	0.0000	FLOOD RISK
15 minute summer	SD_10	12	129.196	2.346	134.5	3.1880	0.0000	FLOOD RISK
15 minute summer	SD_9	10	129.300	2.300	151.7	5.7431	11.3139	FLOOD
15 minute summer	SD_8	12	129.403	1.438	298.5	7.2618	0.0000	FLOOD RISK
15 minute summer	SD_13	12	128.975	0.875	44.7	1.6051	0.0000	SURCHARGED
30 minute summer	SD_12	20	129.404	1.440	170.9	3.4939	0.0000	FLOOD RISK
15 minute summer	Con_SW7	11	129.196	0.043	404.7	1.1546	0.0000	OK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	SD_5	SD_5-SD_6	SD_6	62.1	1.562	1.276	0.6796	
30 minute winter	SD_6	SD_6-SD_7	SD_7	68.1	1.711	1.332	0.9050	
15 minute winter	SD_7	SD_7-SD_11	SD_11	76.4	1.130	0.693	2.3579	
15 minute summer	SD_11	SD_11-SD_18	SD_18	177.7	2.523	1.574	3.0703	
15 minute winter	SD_10	SD_10-SD_11	SD_11	119.3	1.695	0.917	2.0567	
15 minute summer	SD_9	SD_9-SD_10	SD_10	114.4	2.876	1.499	0.2784	
180 minute summer	SD_8	SD_8-SD_9	SD_9	62.5	1.572	1.027	2.8080	
30 minute winter	SD_8	Slab:SD_8-SD_12	SD_12	171.4	0.607	1.471	10.7577	
30 minute summer	SD_13	SD_13-SD_14	SD_14	-42.5	0.983	-0.383	4.2252	
15 minute summer	SD_12	SD_12-SD_15	SD_15	176.6	2.508	0.966	0.5341	
15 minute summer	Con_SW7	12.001	E_SW2	403.1	2.245	0.051	3.7517	

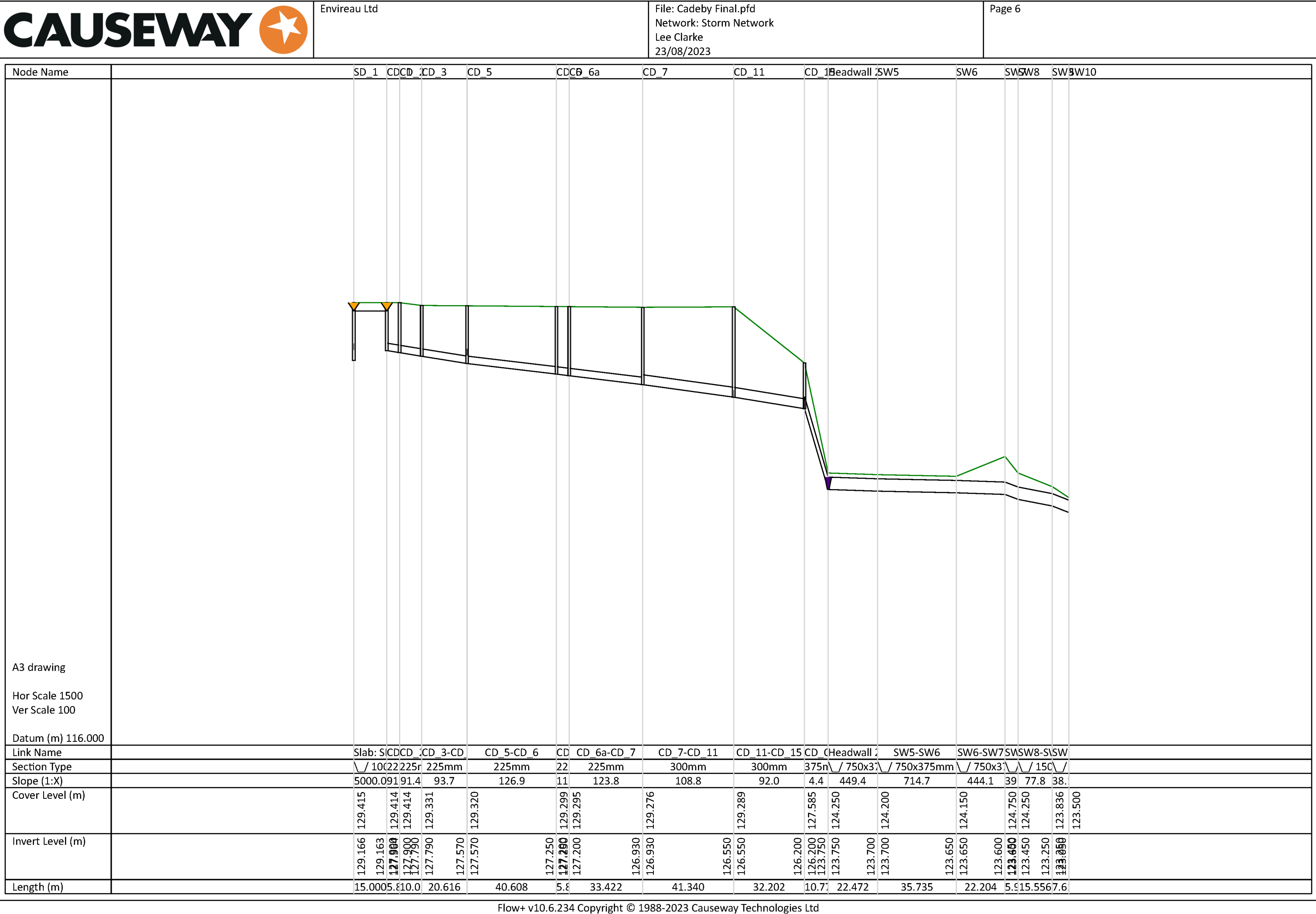
Node Name	SD_1	SD_2	SD_3	SD_4a	SD_5	SD_6	SD_7	SD_11	SD_18	SD_19	SD_20	SD_21	SD_22	Headwall 5
A3 drawing Hor Scale 1500 Ver Scale 100 Datum (m) 115.000														
	Link Name													
	Section Type													
	Slope (1:X)													
	Cover Level (m)													
Invert Level (m)														
Length (m)														

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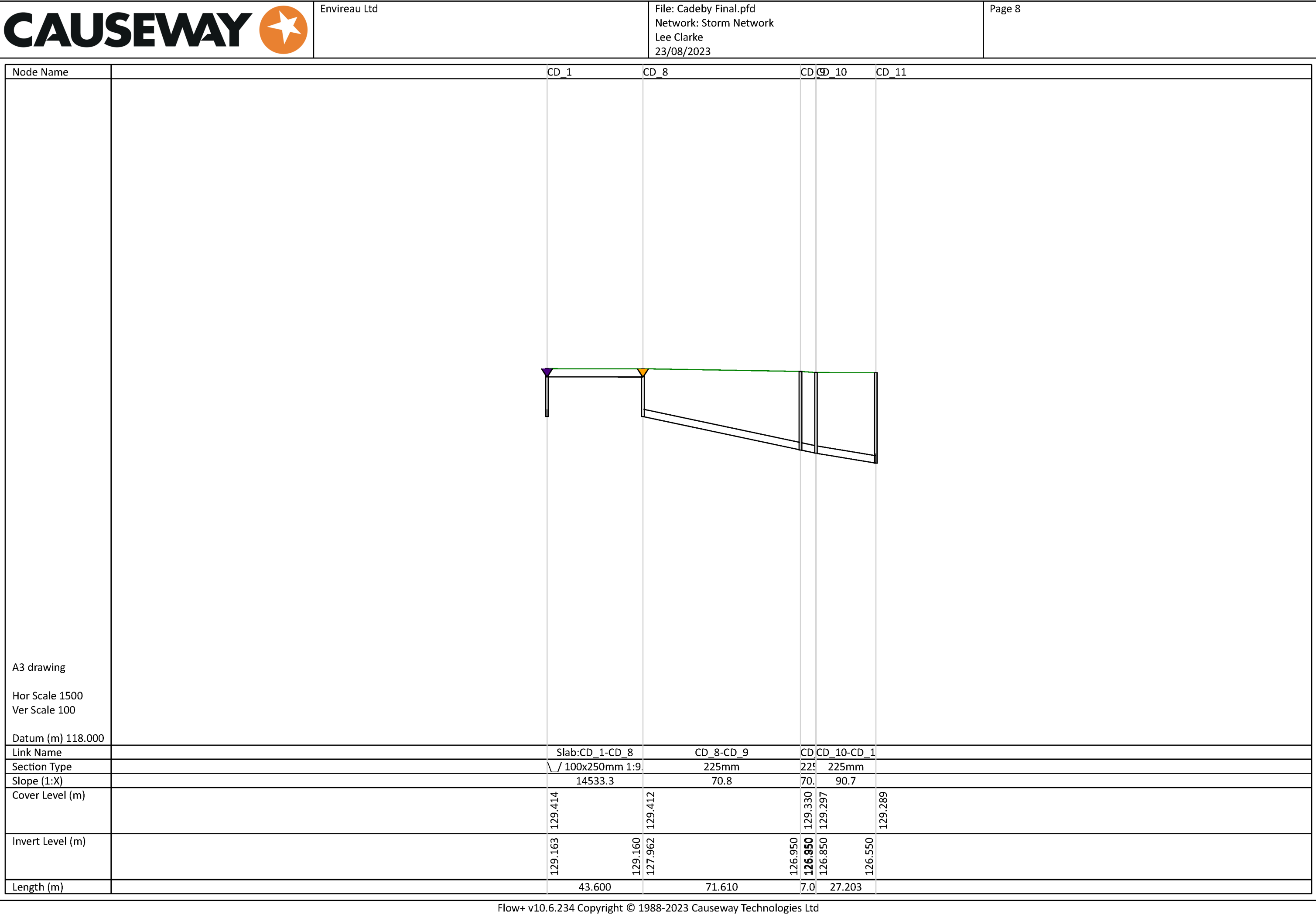


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Node Name		E_SW1	Headwall 1	E_SW2	E_SW3	SW4	Headwall 2
A3 drawing Hor Scale 1500 Ver Scale 100 Datum (m) 116.000							
Link Name		E_SW1-Headwall 1	Headwall 1-E_SW2	E_SW2-E_SW3	E_SW3-SW4	SW4-Headwall 2	
Section Type		\ / 750x1000mm 1:3.0	\ / 750x1000mm 1:3.0	\ / 750x1000mm 1:3.0	\ / 750x375mm 1:3.0	\ / 750x375mm 1:3.0	
Slope (1:X)		34.2	9.4	10.8	222.3	128.0	
Cover Level (m)		129.000	127.767	126.850	125.100	124.350	124.250
Invert Level (m)		128.000	126.767	125.850	124.100	123.800	123.800
Length (m)		42.190	8.57	18.896	66.687	6.4	

CAUSEWAY



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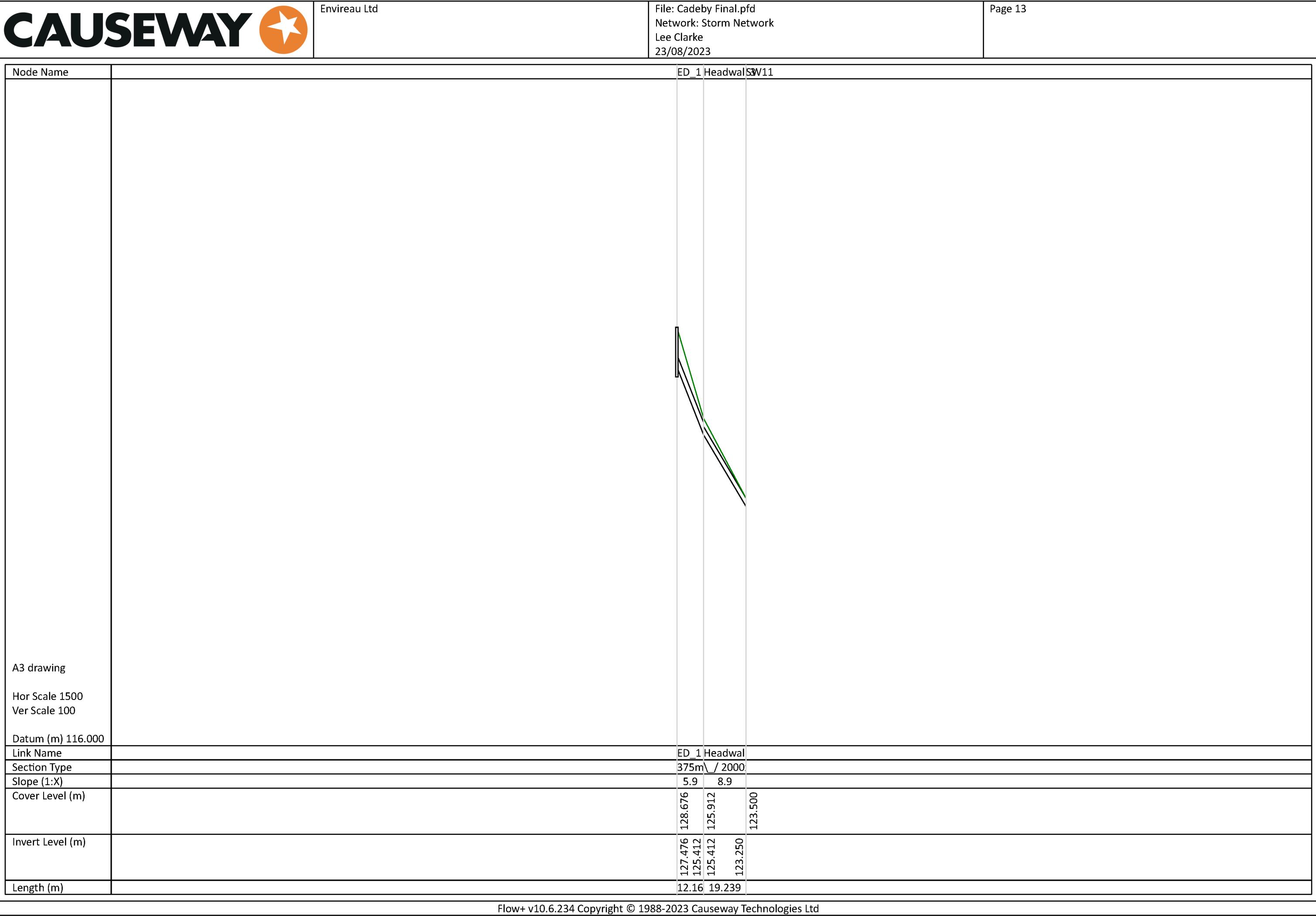
File: Cadeby Final.pfd
Network: Storm Network
Lee Clarke
23/08/2023

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Node Name	NDHeadwall 1	
A3 drawing Hor Scale 1500 Ver Scale 100 Datum (m) 118.000 		
Link Name	ND	
Section Type	300	
Slope (1:X)	4.8	
Cover Level (m)	129.376	127.767
Invert Level (m)	128.078	
Length (m)	6.3	

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CAUSEWAY		Envireau Ltd		File: Cadeby Final.pfd Network: Storm Network Lee Clarke 23/08/2023		Page 14	
Node Name						BS_3BS_4	
A3 drawing Hor Scale 1500 Ver Scale 100 Datum (m) 112.000							
Link Name						Basin	
Section Type						300mm	
Slope (1:X)						11.3	
Cover Level (m)						123.250123.250	
Invert Level (m)						121.050120.100	
Length (m)						10.75	
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Appendix E Flood Exceedance Routes



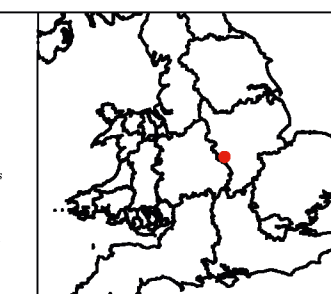
FP McCann Drainage Overview



-  New Eastern Kerb Line
-  Finished Contour (1m intervals)
-  Acoustic Bund
-  New Hardstanding
-  Platform
-  Building Footprint
-  Concrete Formed, Low Angle Drainage Channel
(Arrow denotes normal flow direction)
-  Swale
(Arrow denotes normal flow direction)
-  Basin Connection Channel
(Arrow denotes normal flow direction)
-  Pipe Connections
-  Exceedance Flood Flow Route

FP McCann Product Storage Area

Notes:



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0	7.5	15	22.5	30 Meter
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17 August 2023

Scale: 1:750 at A
Project No. 3490645

Project No. 3490643
Client: EP McCann

Client: FF McCall
Drawn by: LC

Drawn by: LC
Ref: DB Flood Exceedance

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WATER