

should be installed with stable outfalls before opening major areas up for development. Any additional facilities needed for runoff control should be installed as earthworks/groundworks take place.

The main runoff conveyance system with inlet and outlet protection measures is often installed early and used to convey surface water runoff through the development site without creating gullies or channels. Inlet protection for surface water drains should be installed as soon as the drain is functional, to trap sediment on site in shallow pools and to allow flood flows to safely enter the surface water drainage system. Outlet protection should be installed at the same time as the conveyance system to prevent damage to the receiving water body.

Clearing and earthworks/groundworks should only be started when adequate erosion and sediment control measures are in place. Once a development area is cleared, earthworks should follow immediately, so that protective ground cover can be re-established quickly. Areas should not be left bare and exposed for extended periods. Adjoining areas planned for development or those that are to be used for borrowing and disposal should be left undisturbed as long as possible, to serve as natural buffer zones. Runoff control is essential during the earthworks/groundwork's periods. Temporary diversions, slope drains, and inlet and outlet protection installed in a timely manner can be very effective in controlling erosion during this critical period of development.

Surface stabilisation measures should be applied to completed areas, channels, ditches and other disturbed areas after the land is cleared and profiled. Any disturbed area where active construction will not take place for more than 60 working days should be stabilised by temporary seeding and/or mulching or by other suitable means. Permanent stabilisation measures should be installed as soon as possible after final profiling. Temporary seeding and/or mulching may be necessary during extreme weather conditions, with permanent vegetation measures delayed until a more suitable installation time.

Sediment Control

Principles of sediment control

During a rainfall event, runoff normally builds up rapidly to a peak and then diminishes. Because the amount of sediment conveyed in runoff is dependent upon the velocity and volume of that runoff, sediment tends to be deposited as runoff rates decrease. The deposited sediments may be re-suspended with subsequent runoff – in this way, sediments are moved progressively downstream.

Sediment control techniques

Sediment controls used during construction include straw bale barriers, geotextile silt fences and sediment basins. All runoff leaving a disturbed area should pass through a sediment control system before it exists the site and is conveyed downstream.

Straw bales can be placed at the base of a slope to act as a sediment barrier. Straw bales are temporary in nature and may only perform for a period of weeks or months. Proper installation and maintenance is necessary to ensure their performance.

Pollution Control

Pollution prevention

The main requirements are to control pollution loads from surface water runoff and pumped water from construction sites to ensure that risks to the environment are minimised. The safe storage of materials and fuels is also important so that if spills occur, they are contained (using berms, check ditches or other containment techniques) and do not cause mix with runoff and thus increase pollution risks.

Before mobilisation, the construction site layout should be planned to fully consider issues such as the location of stockpiles, fuel stores, storage areas, waste disposal, refuelling points and wash down areas. These should be in areas where they are least likely to affect receiving water bodies (including groundwater). Planning should also address subjects such as the diversion of watercourses, prevention of upstream runoff entering the site and the design of haul roads, including the use of road bridges over watercourses to stop vehicles fording streams and rivers.

An environmental pollution protection plan should also be put in place. The plan should include:

Location of foul drainage disposal routes

Location of surface water systems that discharge into watercourses.

Requirements for discharge and abstraction licences

Location of spillage kits

An action plan in the event of an environmental incident (including a list of relevant telephone contact numbers)

Construction pollution sources and controls

Sediment

Sediment is one of the major sources of construction site pollution. The following list indicates several sources and the measures that can be taken to help prevent pollution:

Excavated ground and exposed ground – The effect of having no vegetation and being recently disturbed allows for relatively low velocity runoff to erode the surface. To help prevent the pollution from entering a watercourse, silt fences, hay bales or stilling ponds should be placed downstream. To limit the volume of runoff reaching the exposed ground, runoff diversion or interception devices should be placed upstream.

Stockpiles – The effects of erosion on a stockpile will depend on the type of material being stored. Fine sand and topsoil stockpiles will be eroded far more readily than heavy granular materials. Stockpiles should be located away from a watercourse on site drainage system. Protective coverings will help prevent runoff stripping the stockpile.

Plant and wheel washing – Plant and wheel washing should take place in designated locations. The area should be tanked and should not be allowed to discharge into a watercourse or infiltrate groundwater, as the wastewater from these devices is highly contaminated with silts, sands and hydrocarbons. Some proprietary vehicle washing systems offer a recycling facility, which filters and settles solids, with the effluent being pumped back into the system. The solid waste materials from this process needs to be treated as contaminated waste due to the high hydrocarbon content.

Haul roads – the runoff from haul roads can contain many suspended solids as well as hydrocarbons. Haul roads should be designed so that the length is kept to a minimum, while still serving its purpose. The gradient should be shallow to prevent increasing runoff velocity and, if possible, bunds and/or discrete ditches should be constructed to intercept the runoff. Haul roads should be sprayed regularly to keep down dust. If any section of a haul road is hard surfaced, then it should be swept on a regular basis to prevent the accumulation of dust and mud.

Disturbance of riverbeds or banks – Excavation of riverbanks or beds can generate silty water, as the excavated and exposed material is washed downstream. The amount of such excavation needs to be limited and, if undertaken, the water area downstream needs to be protected by booms.

De-watering operations – Groundwater discharge due to excavation activity is likely to be heavily polluted with suspended solids and should not be discharged directly into a watercourse. To help reduce the number of suspended solids within the runoff several techniques can be adopted:

Passing the discharge water over a grass area, but the discharge velocity must be monitored and kept sufficiently low to promote settlement.

Passing the discharge water through a temporary gravel strip.

Controlled use of skips and/or tanks to act as stilling basins.

Controlled use of stilling ponds.

Oils and hydrocarbons

The use of oils and hydrocarbons on construction sites creates an inherent risk of leakages and spillages, which could potentially lead to pollution incidents.

Simple measures can be taken to prevent oil and hydrocarbons becoming entrained in surface runoff, such as:

Appropriate maintenance of machinery and plant.

Drip trays.

Regular checking of machinery and plant for oil leaks.

Correct storage facilities.

Checking for signs of wear and tear on tanks.

Care with specific procedures when refuelling.

Designated areas for refuelling.

Emergency spill kit located near refuelling area.

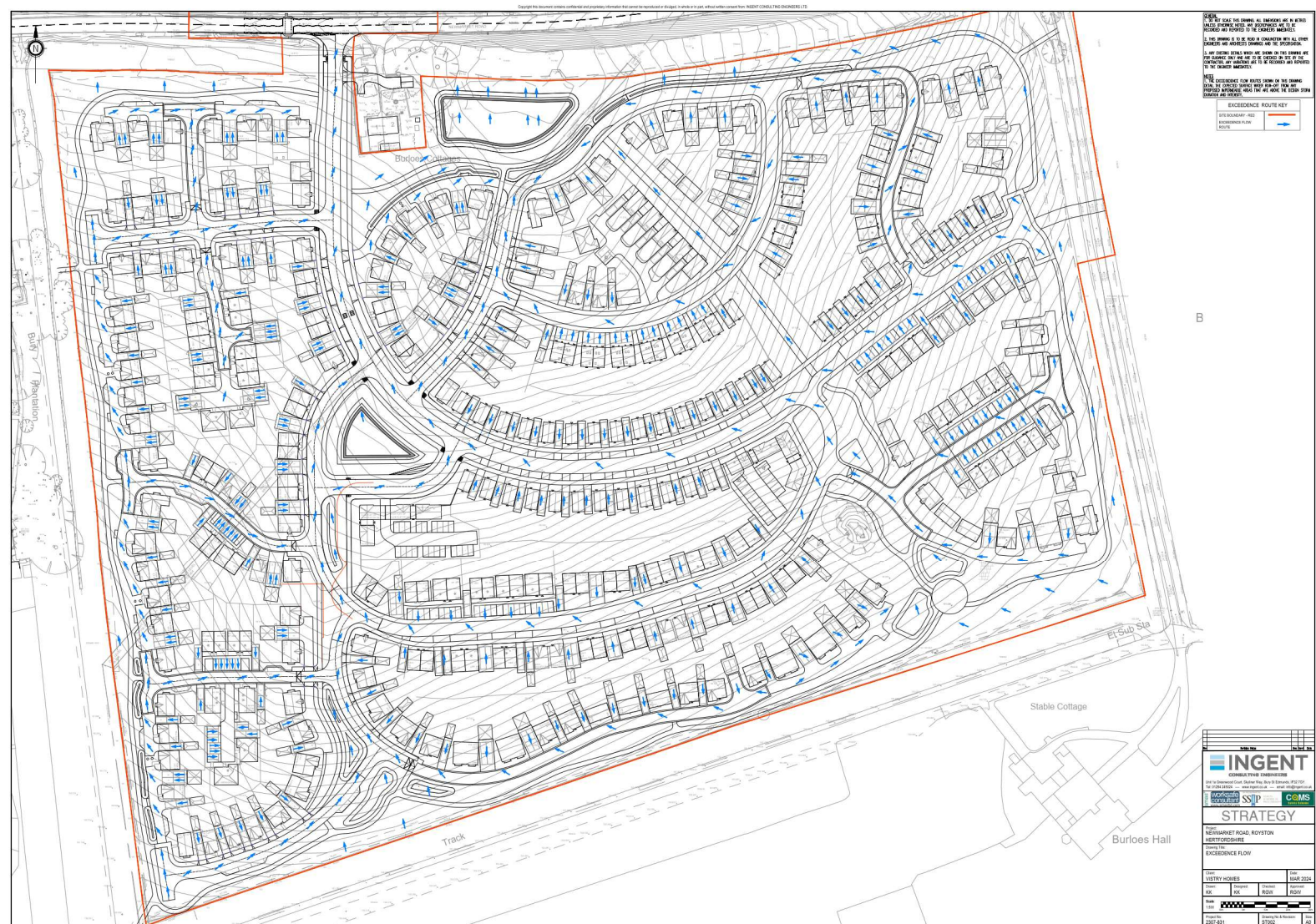
Regular emptying of bunds.

Tanks located in secure areas to stop vandalism.

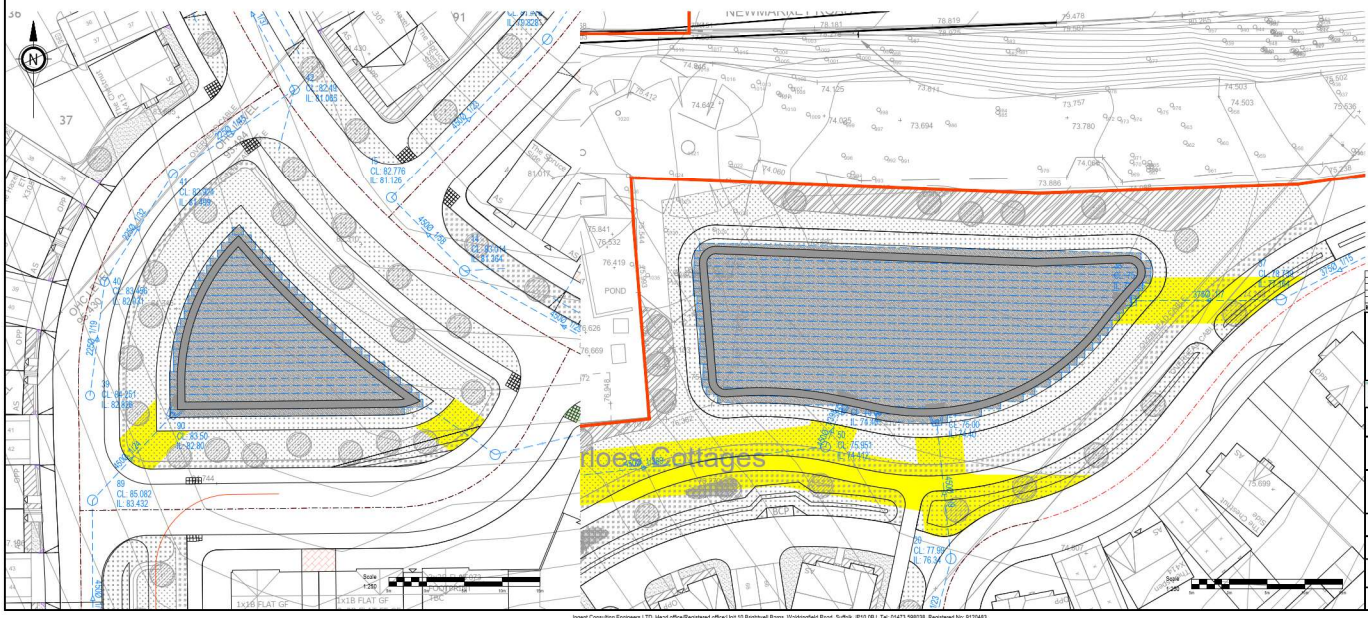
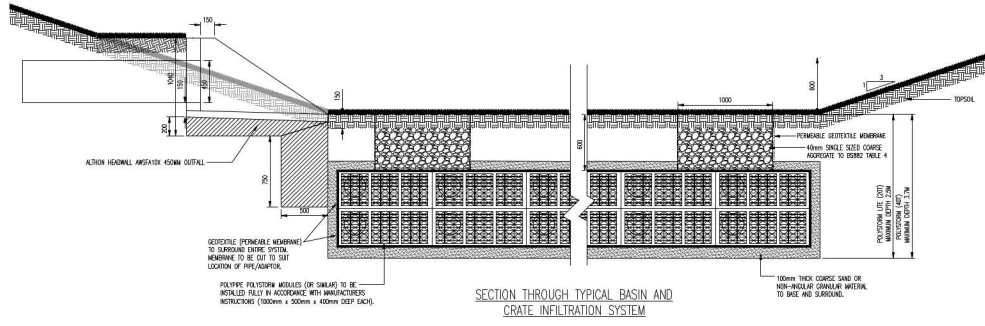
Booms installed on watercourses.

7. APPENDIX A – DRAINAGE STRATEGY DRAWINGS – OUTLINE PERMISSION

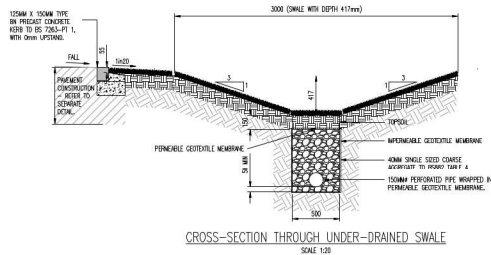
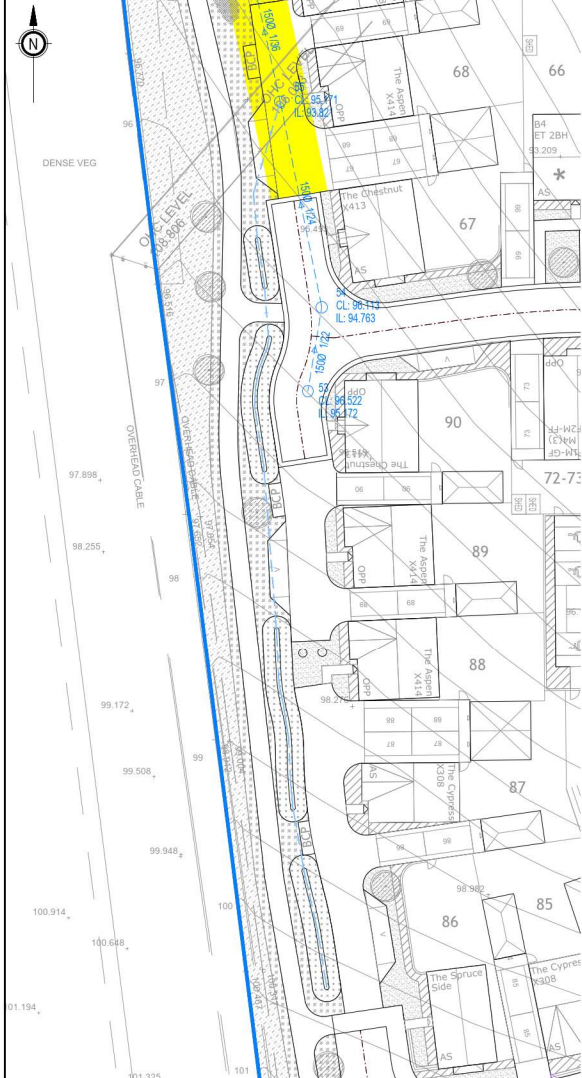




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Scale: 1:250	
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Tel: 01284 855555 Email: info@ingent.co.uk	
WOKSLEY CONSULTANTS SSIIP CEMS	
STRATEGY	
NEWMARKET ROAD, ROYSTON	
Drawing Title: SUSDS CONSTRUCTION DETAIL SHEET 1 OF 2 BASINS	
Client: VISTRY	
Date: MAR 2024	
Drawn: KM	Designed: KM
Checked: KM	Approved: KM
Scale: 1:250	
Project No: 2307-831	Drawing No & Revision: ST003
Size: A1	



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Revision Table		Rev	By	Date
		1		
		2		
		3		

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STRATEGY
NEWMARKET ROAD, ROYSTON

Drawing Title:
SWALE CONSTRUCTION DETAIL
SHEET 1 OF 2
SWALE

Client:
VISTRY

Date:
MAR 2024

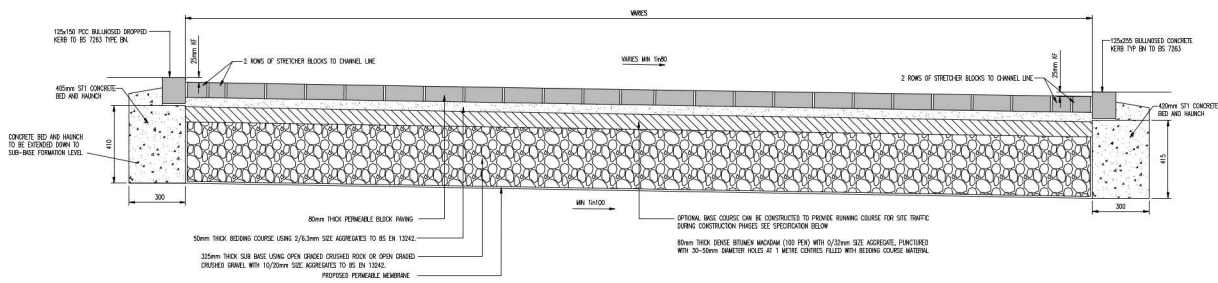
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1:20

Project No:
2307-831

Drawing No & Revision:
ST004

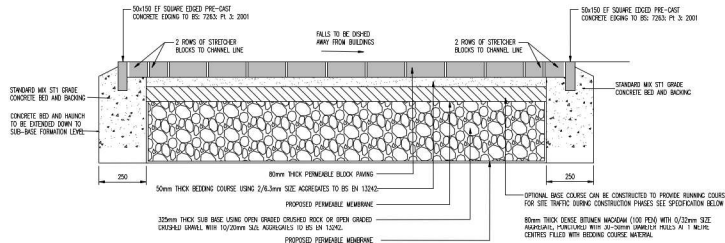
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PERMEABLE PAVING PRIVATE SHARED DRIVE/CARPAKING CONSTRUCTION DETAIL

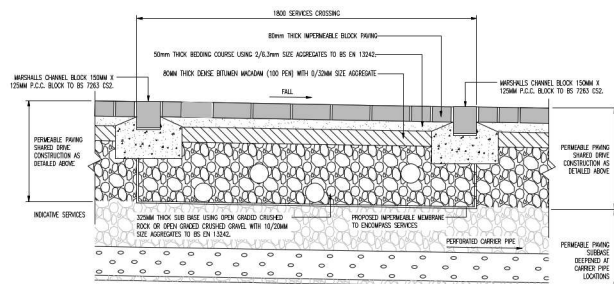
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NOTE:
SUB-BASE FORMATION LEVEL OF PERMEABLE PAVING TO HAVE
NOMINAL FALL (1in100)



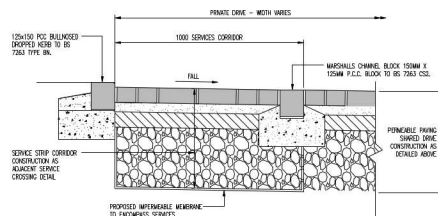
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SCALE 1:10



TYPICAL SECTION THROUGH SERVICES CROSSING

SCALE 1:10



TYPICAL SECTION THROUGH SERVICES CORRIDOR

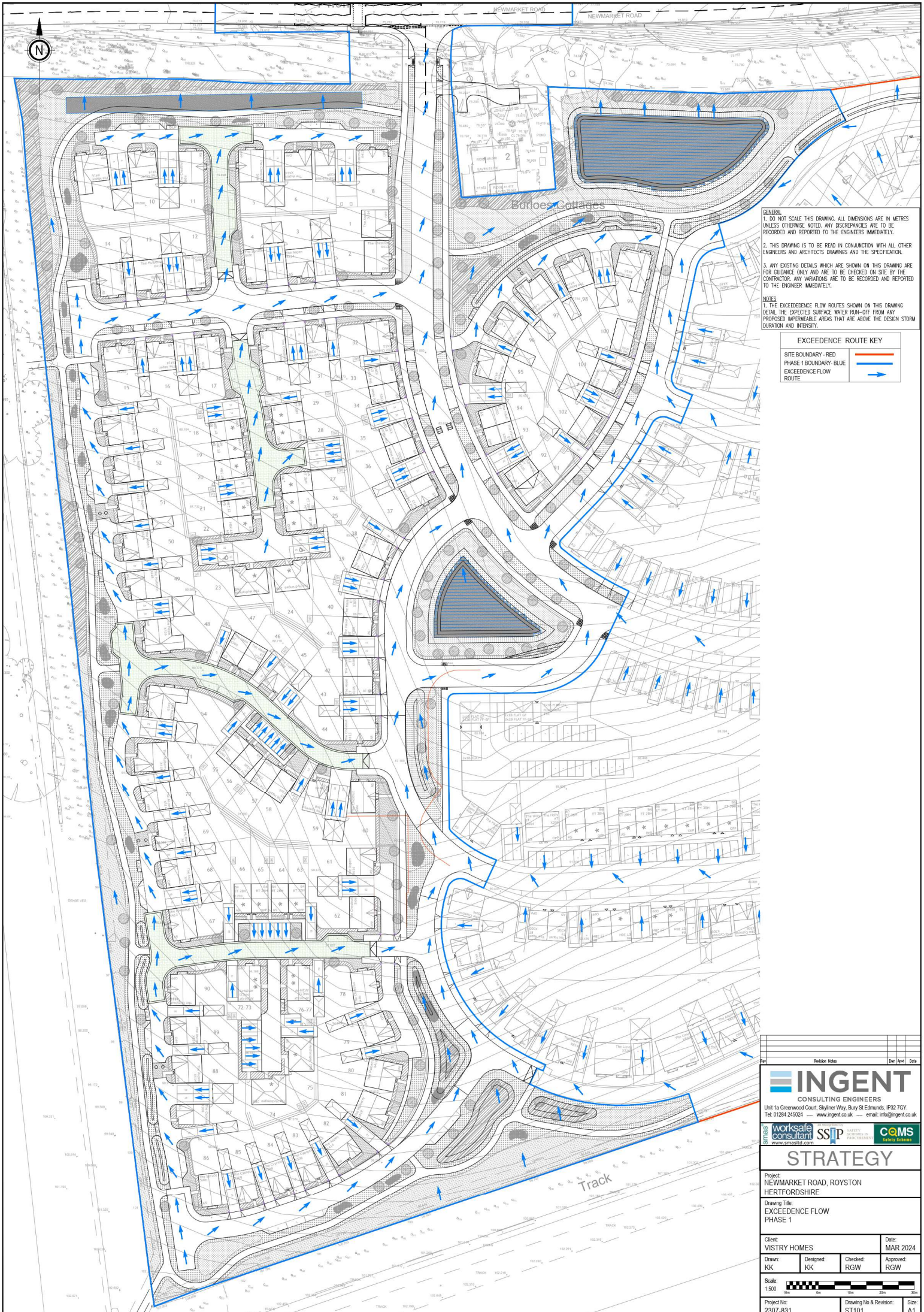
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10. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE KEPT OPEN AND KEPT CLEAR OF OBSTRUCTIONS. THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.
11. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAIN SERVICES INCLUDING DRAINAGE PRIOR TO THE STARTING OF THE ROAD BASE COURSE.
12. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH THE TRAFFIC SIGN REGULATIONS AND DIRECTION 2016.

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Tel: 01294 248224 - www.ingent.co.uk - email: info@ingent.co.uk			
STRATEGY			
Project: NEWMARKET ROAD, ROYSTON, HERTFORDSHIRE			
Drawing Title: PRIVATE ROAD CONSTRUCTION DETAILS PERMEABLE PAVING INFILTRATION			
Client: VISTRY HOMES	Drawn: RGW	Checked: RGW	Approved: RGW
Scale: As Shown			
Project No: 2307-431	Drawing No & Revision: 01/005	Date: MAR 2024	

8. APPENDIX A1 – DRAINAGE STRATEGY DRAWINGS – PHASE 1 RESERVED MATTERS



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NOTES

1. THE EXCESS FLOW ROUTES SHOWN ON THIS DRAWING DETAIL THE EXPECTED SURFACE WATER RUN-OFF FROM ANY PROPOSED IMPERMEABLE AREAS THAT ARE ABOVE THE DESIGN STORM DURATION AND INTENSITY.

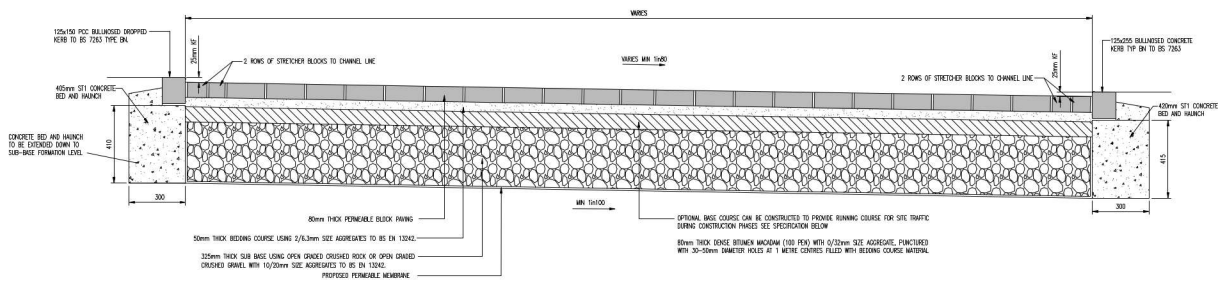
EXCESS FLOW ROUTE KEY	
SITE BOUNDARY - RED	
PHASE 1 BOUNDARY - BLUE	
EXCESS FLOW ROUTE	

Revision Notes		Drawn	Designed	Checked	Date
Unit 1a Greenwood Court, Skyliner Way, Bury St Edmunds, IP32 7GY. Tel: 01284 245024 — www.ingent.co.uk — email: info@ingent.co.uk					
STRATEGY					
Project: NEWMARKET ROAD, ROYSTON, HERTFORDSHIRE					
Drawing Title: EXCESS FLOW ROUTE PHASE 1					
Client: VISTRY HOMES		Date: MAR 2024			
Drawn: KK	Designed: KK	Checked: RGW	Approved: RGW		
Scale: 1:500					
Project No: 2307-831		Drawing No & Revision: ST101		Size: A1	

SECTION THROUGH TYPICAL BASIN AND CRATE INFILTRATION SYSTEM

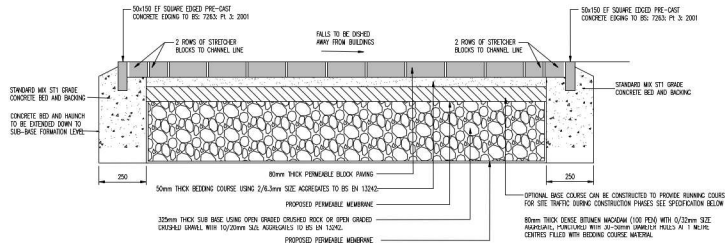


		Section Title	Date	Page	
 INGENT					
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 GWS Groundwater Specialists	 SSIP Specialist Safety Induction Programme	 CEMS Construction Environmental Monitoring System			
STRATEGY					
Project: NEWMARKET ROAD, ROYSTON					
Drawing Title: SWALE CONSTRUCTION DETAIL SHEET 1 OF 2 SWALE					
Client:	URSTRY		Drawn:	MAR 2014	
Checked:	Designed:	KM	Checked:	KK	Approved:
					KK
Scale:					
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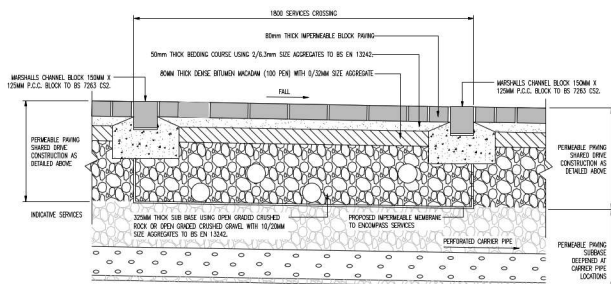
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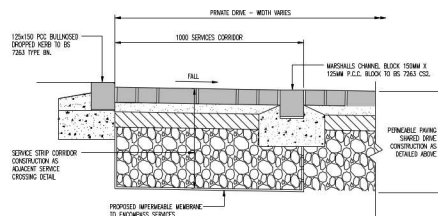
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SCALE 1:10



TYPICAL SECTION THROUGH SERVICES CROSSING

SCALE 1:10



TYPICAL SECTION THROUGH SERVICES CORRIDOR

SCALE 1:10

NOTE:
SUB-BASE FORMATION LEVEL OF PERMEABLE PAVING TO HAVE
NOMINAL FALL (1in100)

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 11. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAIN SERVICES INCLUDING DRAINAGE PRIOR TO THE LAYING OF THE ROAD BASE COURSE.
 12. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH THE TRAFFIC SIGN REGULATIONS AND DIRECTION 2016.
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STRATEGY			
Project: NEWMARKET ROAD, ROYSTON, HERTFORDSHIRE			
Drawing Title: PRIVATE ROAD CONSTRUCTION DETAILS PERMEABLE PAVING INFILTRATION			
Client: VISTRY HOMES	Drawn: RGW	Checked: RGW	Approved: RGW
Scale: As Shown			
Project No: 2307-431	Drawing No: 23105	Rev: 1	Rev: 1

Figure B 5
Typical manhole detail – Type A1

Depth from cover level to soffit of pipe 3 m to 6 m with ladder and reducing slab
Rigid material construction with concrete surround

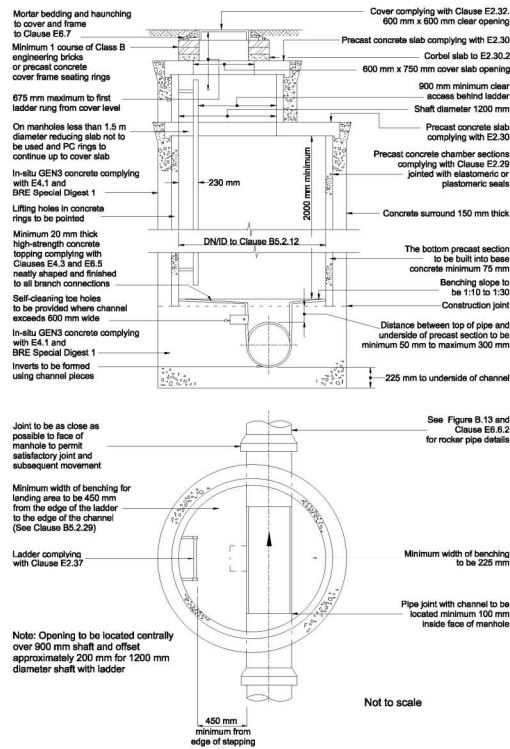
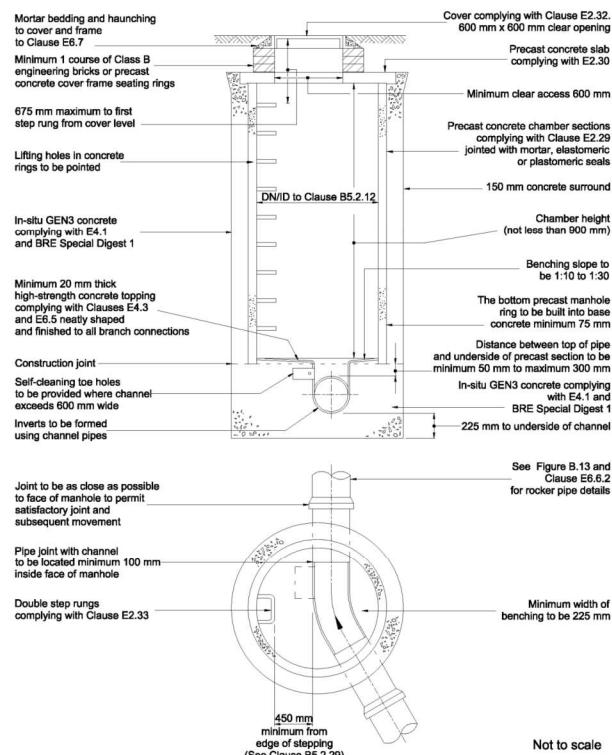


Figure B 10
Typical manhole detail – Type B

Depth from cover level to soffit of pipe 1.5 m to 3 m
Alternative rigid material construction with concrete surround



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 - ALL SERVICES ARE TO BE LOCATED AND PROTECTED AS NECESSARY BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORKS.
 - ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.
- NOTES**
- ALL SEWER WORKS FOR THE WATER AUTHORITY ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 23TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.
 - ALL PRIVATE CONNECTIONS TO ADAPTABLE SEWERS SHOULD BE A MINIMUM OF 100MM DIAMETER (FOLL) & 150MM DIAMETER (SURFACED) MADE IN VITRIFIED CLAY, CONNECTING SOFFIT TO SOFFIT.
 - NO TREES ARE TO BE PLANTED WITHIN 3M OF ANY ADAPTABLE SEWER AND TREE PITS/ROOT BARRIER ARE TO BE USED WHERE TREES ARE WITHIN 3-6M AS SPECIFIED BY THE WATER AUTHORITY.

Figure B 15
Typical manhole detail – Type C

Depth from cover level to soffit of pipe less than 1.5 m
Maximum pipe size 450 mm diameter
Rigid material construction

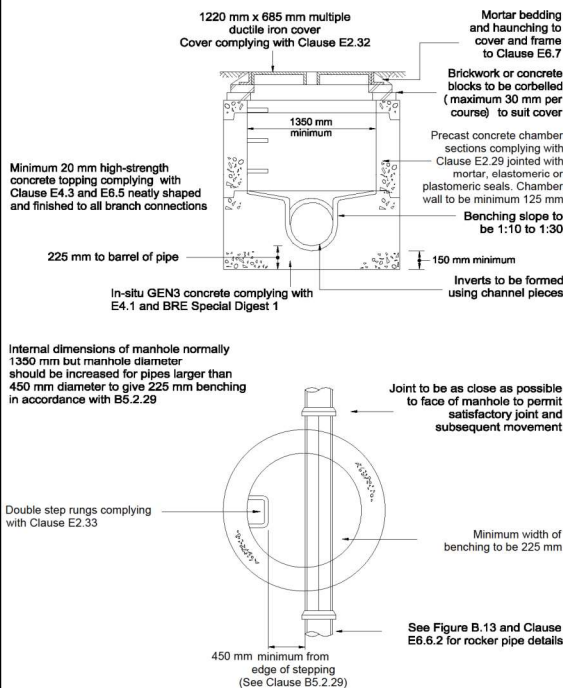
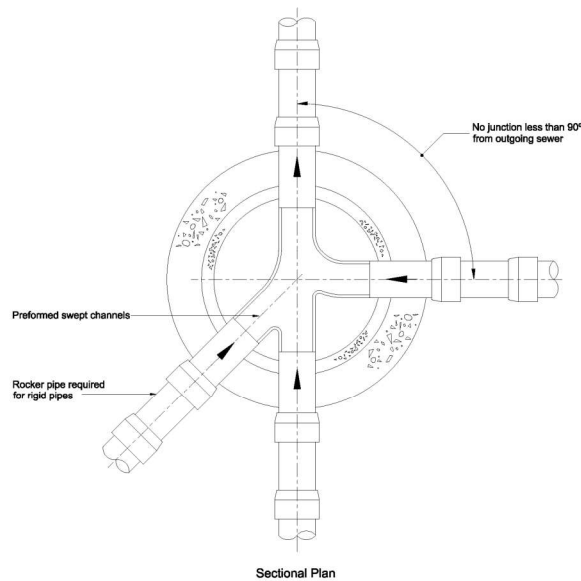


Figure B 13
Typical arrangement of pipe junctions within manholes



Rigid pipes built into manhole should have a flexible joint as close as feasible to the external face of the structure and the length of the next rocker pipe should be as shown.

Nominal diameter (mm)	Maximum effective length (m)
150 - 600	0.6
601 - 750	1.00
over 750	1.25

All pipes entering the bottom of the manhole to have soffits level.

Figure B 27
Protection of pipes laid at shallow depths

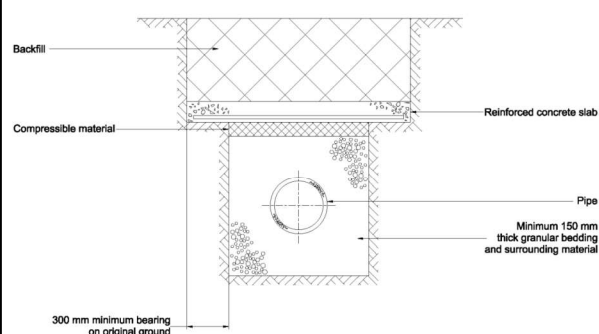
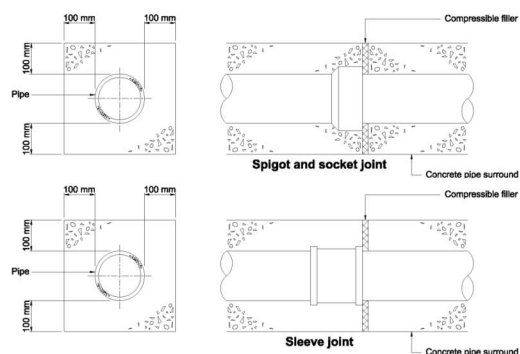


Figure B 28
Joints for encased pipes



NOTE
ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS700: 1997 BS EN 124 AND CDS54. FRAMES SHOULD BE 150MM DEEP.

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worksafe consultant **SSIP** **COMS** **SAFETY** **EXCELLENCE** **PROVIDED**

STRATEGY

Project:
NEWMARKET ROAD, ROYSTON
HERTFORDSHIRE

Drawing Title:
S104 WORKS
STANDARD DRAWINGS

Client:
VISTRY HOMES

Date:
MAR 2024

Drawn:
KK

Designed:
KK

Checked:
RGW

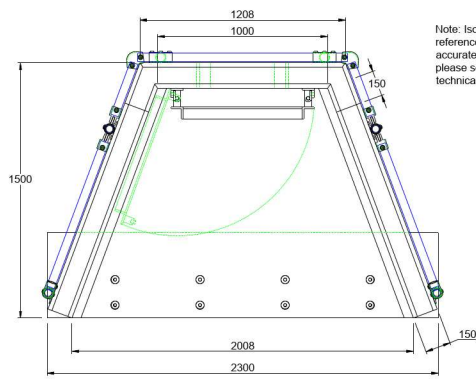
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RGW

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Not to Scale

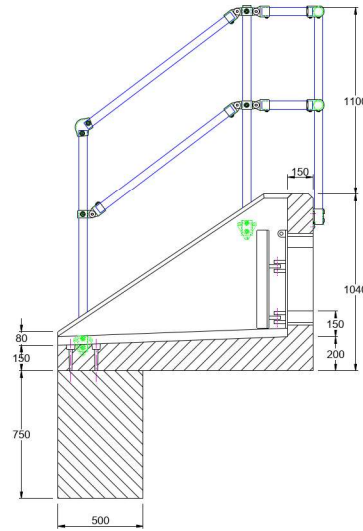
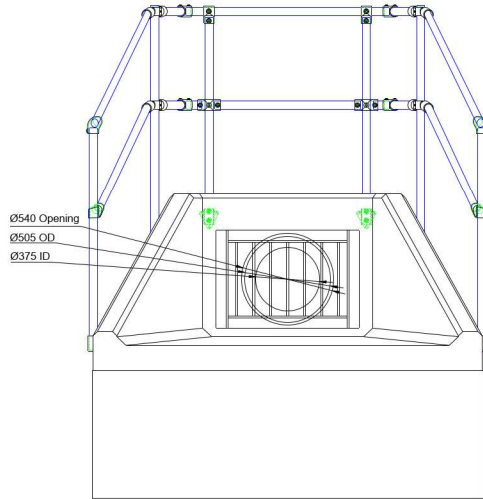
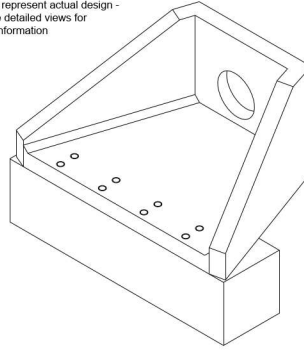
Project No:
2307-831

Drawing No & Revision:
ST106

Size:
A1



Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



- Sewers for Adoption / Sewers for Scotland Outfall Safety Grille - SFA1375
- In accordance with Figure C.6 Typical Outfall Safety Grille - for outfalls of 250mm diameter or greater - Sewers for Adoption 7th Edition
 - Material Grade is to be BS EN 10025 S275
 - All mild steel to be hot dipped galvanized after fabrication
 - Galvanizing to BS EN: 1461
 - Welding to BS EN 1011-2:2001
 - Welded on one side with padlock facility
 - Weight Approx: 50kg

DO NOT SCALE DRAWING

NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.
*Manual of contract documents for Highway Works: Volume (MCH91) specification for Highway Works, Series 600 (Rev.09).
Set the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Handling

- Weight of concrete is based on 2.4 tonnes/m³ is recommended for sizing lifting equipment
- All lifting points shall be used as specified below
- Unit to be lifted as per lifting diagram

Concrete

- Mix self-compacting C40/50 Mix
- Lifting strength based on 2 cubes = 20N/mm²
- Characteristic 28 day cube strength = 50N/mm²
- Concrete provides Design Chemical Class 4 (C4) to special Digest 1, Table F2.

Reinforcement

- Reinforcement to BS EN 13369
- Scheduling, dimensioning, bending & cutting to BS8666
- Cage to be machine tied with steel wire

Manufacture

- Manufacture to BS EN 15236:2008 precast concrete products - Retaining wall elements, Factory Production Control certificate number: 0086-CPD-650468 & BS EN 13369

Finishing

- Marking: Units shall be visually marked to show:
- Design reference code
- On-mould date
- Job reference number & unique product number
- Unit weight (kg)

Design

- Concrete design to EC2
- Althon have designed the concrete units only, the site conditions should be assessed for suitability by the scheme designer
- Units are designed to withstand a vertical live load surcharge of 10kN/m²
- Weight of soil = 19kN/m³
- Angle of internal friction = 30 Deg.
- Design Life: >120 years

Min. Layer	Exposure	Min. Layer	Max. Layer	Min. Layer	Max. Layer
BS EN 12618	BS EN 12618	BS EN 12618	BS EN 12618	BS EN 12618	BS EN 12618
BS EN 12618	BS EN 12618	BS EN 12618	BS EN 12618	BS EN 12618	BS EN 12618

Fabrication Specification

- Manufacture IAW EN 1090-2 EXC CLASS 1
- Material grade is to be BS EN 10025 S275
- Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
- All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
- Ensure vertical faces are fully welded both sides where possible.
- All sharp edges and burrs are to be removed.
- Remove all weld splatter.
- Holes by punching are permitted with reaming.
- Galvanizing is carried out after fabrication to BS EN1550 1461

Handrail Specification

- See Kitemark Galvanised Size 8 Fittings
- Size 8 48.3mm OD 3.2mm Wall Thickness Galvanised Medium Duty Tube to BS EN 10255
- 3600mm Design Load as stated in BS 8118, BS 6180, BS 6399 & BS 7918, Civil Engineering Specification for the Water Industry (CESWI) 7th Edition Clause 5.80 Handrails & Balustrades & The Engineering Equipment and Materials Users' Association (EEMUA) Publication 105 7th Edition Factory Stairways, Ladders and Handrails
- Other design loads available on request

REV NO	DATE	DESCRIPTION
1	18-09-19	Initial Issue

Althon

ADDRESS: ALTHON LIMITED, 100 CROFT ROAD, ALTON, HAMPSHIRE, RG22 7AT
TEL: 01256 345678, FAX: 01256 345679, EMAIL: sales@althon.co.uk, WEBSITE: www.althon.co.uk

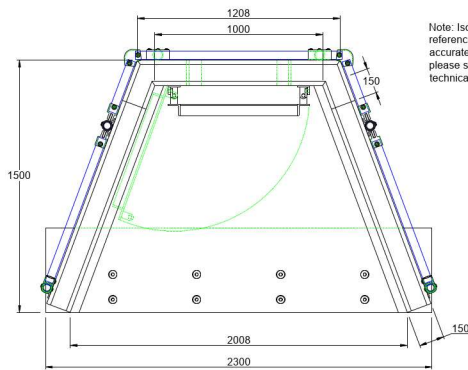
ENGINEER: CARLA & GENEVIEVA

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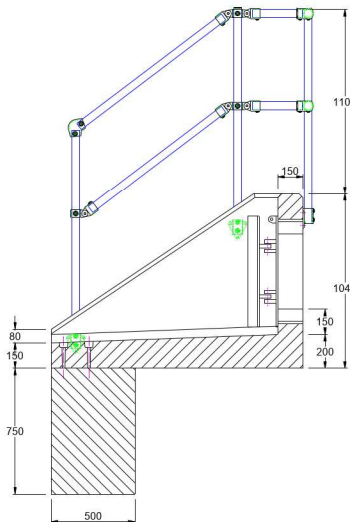
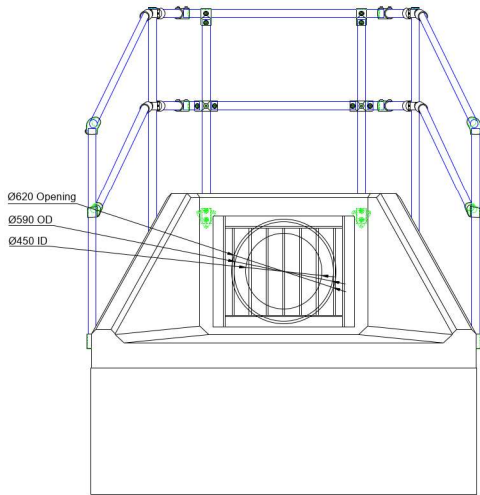
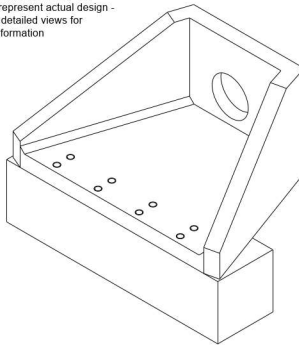
DRAWING TITLE / PROJECT:

CLIENT:		Anglian Water					
SCALE:	NTS	PAPER:	A3	SHEET NO:	01 OF 01	DATE:	18 - 09 - 19
HEADWALL WEIGHT:		2000kg		TGE WEIGHT:		2070kg	
PRODUCT NAME:		SFA10X					
DRAWING No:		ALT-AW-110X-375-750-01					





Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



- Sewers for Adoption / Sewers for Scotland Outfall Safety Grille - SFA1450
1. In accordance with Figure C.6 Typical Outfall Safety Grille - for outfalls of 250mm diameter or greater - Sewers for Adoption 7th Edition
 2. Material Grade is to be BS EN 10025 S275
 3. All mild steel to be hot dipped galvanized after fabrication
 4. Galvanizing to BS EN: 1461
 5. Welding to BS EN 1011-2:2001
 6. Ripped on one side with padlock facility
 7. Weight Approx: 50kg

DO NOT SCALE DRAWING

NOTES:

- All dimensions in mm
 - All measurements ± 1 mm
- Specification Information**
- Opening in back wall cast to suit outside diameter of the pipework
 - Invert level of pipe can be set to your specification

Headwall Installation
Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.
*Manual of contract documents for Highway Works: Volume (MCHW1) specification for Highway Works, Series 600 (Rev.09).
Sit the headwall level or with a slight fall 1.50 from pipe to spill mouth.

Lifting
A. Weight of concrete is based on 2.4 tonnes/m³ is recommended for sizing lifting equipment.
B. All lifting points shall be used as specified below
C. Unit to be lifted as per lifting diagram

Concrete
A. Mix self-compacting C40/50 Mlx
B. Lifting strength based on 2 cubes = 20N/mm²
C. Characteristic 28 day cube strength = 50N/mm²
D. Concrete provides Design Chemical Class 4 (CC4) to special Digest 1, Table F2.

Reinforcement
A. Reinforcement to BS EN 13369
B. Scheduling, dimensioning, bending & cutting to BS8666
C. Cages to be machine tied with steel wire

Manufacture
A. Manufacture to BS EN 12628:2008 precast concrete products - Retaining wall elements, Factory Production Control certificate number: 0086-CPD-650468 & BS EN 13369

Finishing
A. Tolerances to BS EN 13369 clause 4.3.1.1

Marking
Units shall be indelibly marked to show:
• Mould reference code
• On-mould date
• Job reference number & unique product number
• Unit weight (kg)

Design
A. Concrete design to EC2
B. Althon have designed the concrete units only, the site conditions should be assessed for suitability by the scheme designer
C. Units are designed to withstand a vertical live load surcharge of 10kN/m²
D. Weight of soil = 19kN/m³
E. Angle of internal friction = 30 Deg.
F. Design Life: >120 years

Min. Cover	Exposure	Min. Cover	Max. Cover	Min. Cover	Max. Cover
25	Exposure	25	25	25	25
25	Exposure	25	25	25	25

Fabrication Specification
A. Manufacture IAW EN 1090-2 EXC CLASS 1
B. Material grade is to be BS EN 10025 S275
C. Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
D. All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
E. Ensure vertical faces are fully welded both sides where possible.
F. All sharp edges and burrs are to be removed.
G. Remove all weld splatter.
H. Holes by punching are permitted with reaming.
I. Galvanizing is carried out after reaming to BS EN 15014-1

Handrail Specification
A. Kee Klamp® Galvanized Size 8 Fittings
B. Size 8 48.3mm OD 3.2mm Wall Thickness Galvanized Medium Duty Tube to BS EN 10255
C. 3600mm Design Load as stated in BS 8118, BS 6180, BS 6399 & BS 7918, Civil Engineering Specification for the Water Industry (CESWI) 7th Edition Clause 5.80 Handrails & Balustrades & The Engineering Equipment and Materials Users' Association (EEMUA) Publication 105 7th Edition Factory Stairways, Ladders and Handrails
D. Other design loads available on request

REV NO	DATE	DESCRIPTION

Althon

ADDRESS: ALTHON LIMITED, 100 ALTON ROAD, ALTON, HANTS, RG22 7PP
TEL: 01256 440000, FAX: 01256 440001, EMAIL: sales@althon.co.uk, WEBSITE: www.althon.co.uk

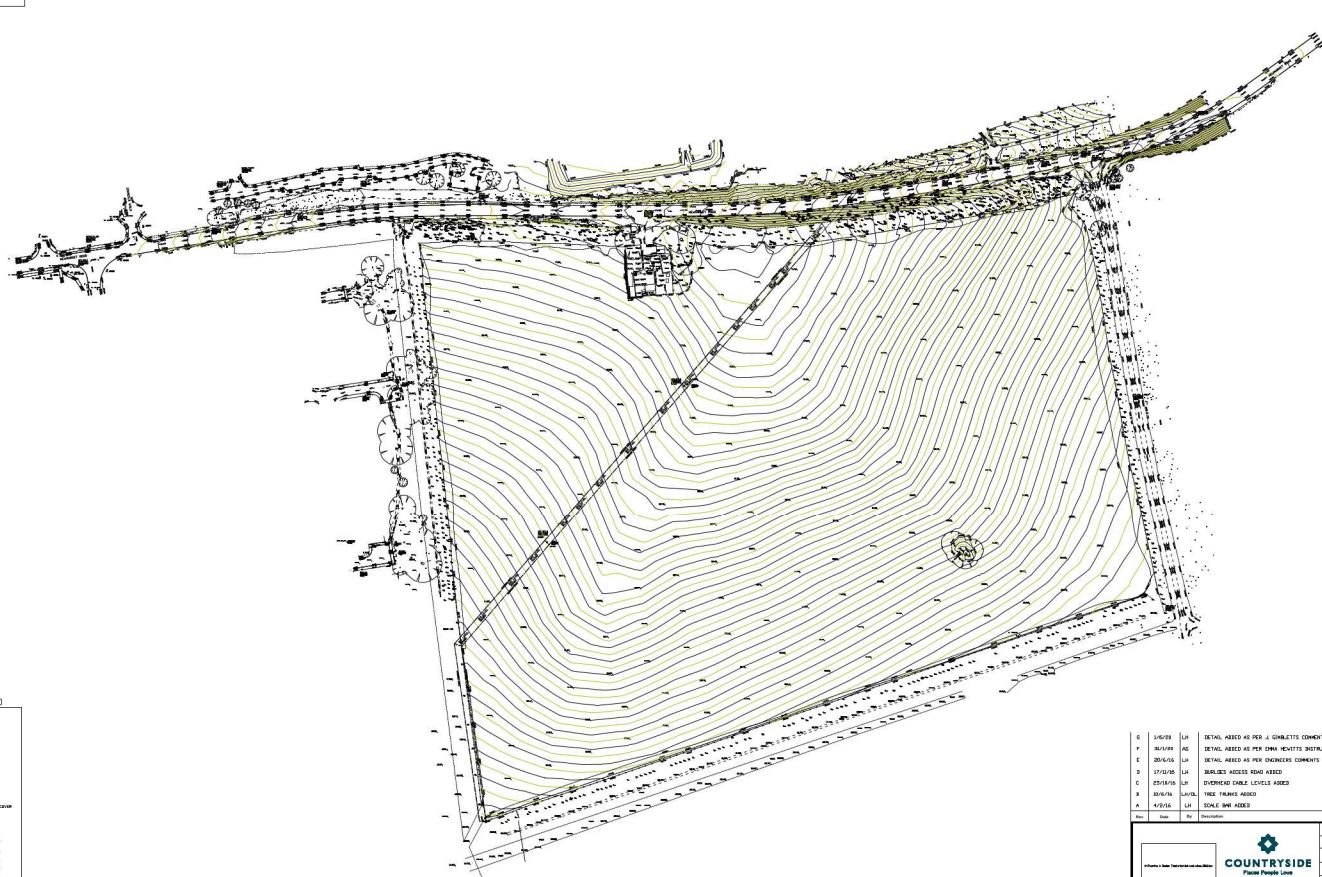
ENGINEER: CARLA & GENEVIEVA

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DRAWING TITLE / PROJECT:				
CLIENT: Anglian Water				
SCALE: NTS	PAPER: A3	SHEET NO: 01 OF 01	DATE: 18-09-19	
HEADWALL WEIGHT: 2000kg		TGE WEIGHT: 2070kg		
PRODUCT NAME: SFA10X				
DRAWING NO: ALT-AW-110X-450-750-01				



9. APPENDIX B – TOPOGRAPHICAL SURVEY



LEGEND

- ☐ SURVEY STARTER
- ☒ WAREFORMED CONVO
- ☒ DAILY
- ☐ VARI OUT
- ☐ CON PEST
- ☐ CAMP GROUND
- ☐ STOP GAGE
- ☐ FIRE ALARM
- ☐ TREE
- ☐ UNIDENTIFIED BIRD CONVO
- ☐ ...

NOTE BACK
BACK OF FOOTPRINT
SHOOPING GARD
WILL
POST & WORK FORCE
SAFE
VENTILATION CODE
TOP OF SHOE
BOTT OF SHOE



1:1250 @ A1

NOTE:
SURVEY CONTROL DERIVED FROM GPS WITH A SCALE FACTOR OF 1

G	1/6/98	LH	DETAIL ASSESSED PER J. GIBNETTS COMMENTS
F	16/5/99	AD	DETAIL ASSESSED PER DINA HEWITT'S INSTRUCTIONS
E	20/6/06	LH	DETAIL ASSESSED AS PER ENGINEERS COMMENTS
D	17/11/05	LH	BUILDING ACCESS ROAD ASSESSED
C	23/18/06	LH	OVERHEAD CABLE LENGTH ASSESSED
B	33/6/06	LH/GBL	TREE TRUNKS ASSESSED
A	4/2/06	LH	SCALE BARI ASSESSED

Page	Date	By	Revised	Drawn	Scale
 COUNTRYSIDE Flatten People Live 10000 Highway 101 Suite 100 Dallas, Texas 75243 countrysidepeople.com				Date: 25/02/15 Issue: 041 / 1/250 Drawn By: LHM Checked: Information ☒ Planning ☒ Model ☒ Construction ☒ Survey	
1 of 1 sheets. This sheet contains the details. DL-000000-0000-0000 DL-0000-000-0000-0000 countrysidepeople.com				Project: NEWMARKET ROYSTON Sheet: TOPOGRAPHICAL SURVEY Drawing no: SURV1943 Sheet no: 1 of 1	

10. APPENDIX C – HYDRALIC CALCULATIONS

Rainfall Methodology	FEH-22	Time of Entry (mins)	5.00	Connection Type	Level Soffits	Enforce best practice design rules	x
Return Period (years)	2	Maximum Time of Concentration (mins)	30.00	Minimum Backdrop Height (m)	9.999		
Additional Flow (%)	0	Maximum Rainfall (mm/hr)	150.0	Preferred Cover Depth (m)	1.200		
CV	0.750	Minimum Velocity (m/s)	1.00	Include Intermediate Ground	✓		

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.028	5.00	94.978	1200	537060.531	240617.488	1.425
2	0.036	5.00	93.654	1200	537049.587	240623.753	1.425
3	0.020	5.00	92.175	1200	537034.639	240630.196	1.425
4	0.023	5.00	91.617	1200	537036.621	240639.157	1.425
5	0.034	5.00	90.971	1200	537033.747	240649.050	1.425
6	0.041	5.00	92.631	1200	537057.281	240690.741	1.425
7	0.053	5.00	91.482	1200	537042.757	240679.018	1.425
8	0.058	5.00	90.291	1200	537025.608	240662.264	1.500
9	0.051	5.00	89.494	1200	537002.982	240649.119	1.500
10	0.070	5.00	88.809	1350	536982.438	240638.264	1.575
11	0.083	5.00	87.754	1350	536951.539	240629.995	1.575
12	0.070	5.00	85.914	1350	536913.972	240627.506	1.575
13	0.066	5.00	84.050	1350	536882.965	240634.212	1.650
14	0.030	5.00	83.014	1350	536856.747	240648.829	1.650
15	0.065	5.00	82.776	1350	536847.080	240658.529	1.650
16	0.040	5.00	81.478	1350	536867.719	240679.583	1.650
17	0.032	5.00	80.651	1350	536878.216	240694.885	1.650
18	0.066	5.00	80.002	1350	536884.846	240707.631	1.650
19	0.033	5.00	78.660	1350	536892.028	240736.530	1.650
20	0.059	5.00	77.990	1350	536895.725	240751.234	1.650
21	0.031	5.00	75.000	1350	536893.893	240768.797	1.650
22	0.023	5.00	96.946	1200	537118.929	240744.369	1.425
23	0.043	5.00	97.465	1200	537122.640	240734.510	2.007
24	0.069	5.00	96.311	1200	537105.018	240726.180	1.425
25	0.049	5.00	94.362	1200	537079.548	240707.764	1.425
26	0.034	5.00	92.844	1200	537066.487	240725.670	1.425
27	0.030	5.00	91.805	1200	537062.719	240740.516	1.500
28	0.077	5.00	90.861	1200	537064.730	240754.143	1.500
29	0.022	5.00	88.530	1200	537075.147	240787.553	1.500
30	0.016	5.00	87.898	1200	537073.845	240797.495	1.500
31	0.017	5.00	87.468	1350	537068.908	240802.603	1.575
32	0.048	5.00	87.000	1350	537061.469	240804.180	1.575
33	0.072	5.00	85.560	1350	537039.837	240801.986	1.575
34	0.078	5.00	83.381	1350	537007.510	240798.078	1.575
35	0.038	5.00	81.009	1350	536972.098	240795.210	1.575
36	0.038	5.00	79.859	1350	536954.782	240793.203	1.575
37	0.037	5.00	78.739	1350	536939.447	240785.396	1.575
38	0.038	5.00	75.000	1350	536920.228	240785.296	0.675
39	0.033	5.00	84.251	1200	536807.184	240632.358	1.425
40	0.037	5.00	83.456	1200	536809.120	240647.367	1.425
41	0.043	5.00	82.924	1200	536818.158	240661.676	1.425
42	0.051	5.00	82.490	1200	536834.242	240672.920	1.425
43	0.054	5.00	81.869	1200	536823.053	240693.039	1.500
44	0.048	5.00	80.709	1200	536816.705	240716.655	1.500
45	0.050	5.00	79.610	1200	536815.468	240738.388	

Nodes							
Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
46	0.030	5.00	76.263	1200	5368116.649	240806.310	1.352
47	0.030	5.00	78.034	1200	5368115.377	240769.842	3.273
48	0.034	5.00	78.476	1350	5368115.569	240760.945	3.902
49	0.106	5.00	79.924	1350	5368310.080	240761.375	5.388
50	0.061	5.00	75.951	1350	5368199.080	240766.009	1.539
51	BASIN 1 52_OUT	0.040	75.000	1200	536880.937	240770.403	0.600
52			75.000		536889.803	240791.374	2.400
53			75.000		536890.965	240797.263	2.400
54			66.522		536763.147	240523.032	1.350
55			96.113		536732.945	240531.918	1.350
56			95.171		536728.540	240553.723	1.350
57			94.744		536725.248	240568.563	1.350
58			94.146		536719.628	240590.193	1.350
59			93.046		536723.303	240607.054	1.350
60			91.363		536722.337	240632.509	1.350
61	0.060	5.00	90.464	1200	536715.768	240647.560	1.350
62			86.852	536709.768	240695.838	1.425	
63			85.396	536709.217	240718.849	1.425	
64			81.853	536705.290	240755.707	1.425	
65			80.537	536701.708	240772.585	1.425	
66			79.500	536701.708	240798.489	1.425	
67			83.863	536727.661	240731.756	1.425	
68			81.632	536772.766	240736.341	1.425	
69			82.524	536754.699	240734.554	2.896	
70			81.855	536752.644	240752.523	2.251	
71	0.100	5.00	80.348	1350	536751.667	240787.860	2.858
72			78.500	536751.762	240797.787	1.650	
73			78.500	536782.506	240798.399	1.726	
74			100.936	536740.107	240444.404	1.425	
75			99.222	536764.798	240447.960	1.425	
76			96.830	536795.789	240460.453	1.425	
77			94.856	536817.567	240478.287	1.500	
78			93.722	536844.328	240496.032	1.425	
79			92.969	536835.121	240502.013	1.500	
80			91.954	536824.411	240512.479	1.500	
81	0.030	5.00	91.162	1350	536803.562	240533.239	1.425
82			90.390	536817.023	240533.737	1.575	
83			89.685	536816.407	240545.868	1.575	
84			89.160	536820.161	240555.284	1.575	
85			88.863	536838.757	240555.173	1.425	
86			88.991	536825.207	240562.491	1.575	
87			88.140	536815.828	240570.675	1.575	
88			87.160	536808.730	240584.835	1.575	
89			86.057	5.00	86.652	1350	536807.607
90	0.140	5.00	85.082	1350	536807.491	240618.535	1.650
91			83.500	536817.784	240629.503	0.700	
BASIN 2			83.500		536834.494	240641.278	2.100
BASIN 3	0.060		92.000		536818.093	240509.174	0.600
BASIN 4	0.104		92.000		536836.536	240484.789	0.600
BASIN 5	0.048		92.000		537082.348	240585.547	0.600
BASIN 6	0.064		92.000		537077.102	240566.757	0.600

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	4.264	169.6	4.0	1.200	1.200	0.028	0.0	23	1.774
1.001	3.966	157.7	9.1	1.200	1.200	0.064	0.36	26	2.181
1.002	3.342	128.9	11.8	1.200	1.200	0.084	0.46	20.50	
1.003	3.293	130.9	15.0	1.200	1.200	0.107	0.0	51	2.216
1.004	2.790	109.3	19.7	1.200	1.200	0.141	0.0	65	2.102
2.000	3.262	129.7	5.8	1.200	1.200	0.041	0.0	32	1.658
2.001	2.929	116.5	13.2	1.200	1.200	0.094	0.0	51	1.952
1.005	2.753	194.6	40.4	1.200	1.200	0.293	0.92	92	2.187
1.006	2.708	191.4	46.9	1.200	1.200	0.344	0.0	100	2.249
1.007	3.301	364.5	55.8	1.200	1.200	0.414	0.0	99	2.415
1.008	4.021	444.1	66.2	1.200	1.200	0.497	0.0	97	2.918
1.009	4.410	487.0	74.8	1.200	1.200	0.567	0.0	99	3.227
1.010	3.788	602.4	82.7	1.200	1.200	0.633	0.0	111	2.684
1.011	2.684	426.8	86.1	1.200	1.200	0.663	0.0	136	2.116
1.012	4.279	680.6	93.7	1.200	1.200	0.728	0.0	112	3.046
1.013	4.335	689.4	98.3	1.200	1.200	0.768	0.0	114	3.112
1.014	4.295	683.1	101.9	1.200	1.200	0.800	0.0	116	3.123
1.015	3.390	688.6	109.4	1.200	1.200	0.866	0.0	120	3.199
1.016	4.287	681.9	113.0	1.200	1.200	0.899	0.0	123	3.205
1.017	6.768	1076.4	120.0	1.200	0.150	0.958	0.0	101	4.541
1.018	5.717	909.2	123.3	0.150	1.950	0.989	0.0	111	4.054
3.000	1.008	40.1	3.2	1.200	1.782	0.023	0.0	44	0.613
3.001	2.248	89.4	9.2	1.782	1.200	0.066	0.0	49	1.467
3.002	3.274	130.2	18.6	1.200	1.200	0.135	0.0	58	2.349

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	DS (m)	DS Depth (m)	Δ Area (ha)	Δ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.003	3.442	136.8	25.1	1.200	1.200	0.184	0.0	65	2.631
3.004	3.425	136.2	29.6	1.200	1.200	0.218	0.0	71	2.748
3.005	4.136	292.4	33.6	1.200	1.200	0.248	0.0	68	2.788
3.006	4.077	288.2	43.5	1.200	1.200	0.325	0.0	78	2.954
3.007	3.866	280.3	46.3	1.200	1.200	0.347	0.0	82	2.954
3.008	3.966	274.7	48.3	1.200	1.200	0.363	0.0	85	2.951
3.009	4.513	498.5	50.5	1.200	1.200	0.380	0.0	79	2.990
3.010	4.682	517.2	56.5	1.200	1.200	0.428	0.0	83	3.119
3.011	4.707	519.9	65.5	1.200	1.200	0.500	0.0	89	3.257
3.012	4.701	519.3	75.0	1.200	1.200	0.578	0.0	96	3.384
3.013	4.673	516.2	79.5	1.200	1.200	0.616	0.0	99	3.420
3.014	4.642	512.7	84.0	1.200	1.200	0.654	0.0	102	3.465
3.015	6.906	762.8	93.2	1.200	0.225	0.728	0.0	88	4.737
3.016	4.811	661.75	97.3	0.225	1.950	0.766	0.0	108	3.351
4.000	3.013	119.8	4.7	1.200	1.200	0.033	0.0	30	1.478
4.001	2.327	92.5	9.8	1.200	1.200	0.070	0.0	50	1.534
4.002	1.950	77.5	15.7	1.200	1.200	0.113	0.0	68	1.532
4.003	2.155	85.7	22.5	1.200	1.200	0.164	0.0	79	1.826
4.004	3.439	243.1	29.6	1.200	1.200	0.218	0.0	70	2.351
4.005	3.548	250.8	35.8	1.200	1.200	0.266	0.0	76	2.537
4.006	6.128	433.1	42.4	1.200	3.452	0.316	0.0	63	3.947
5.000	1.003	70.9	4.1	1.052	2.973	0.030	0.0	48	0.549
5.001	1.009	71.3	8.1	2.973	3.452	0.060	0.0	68	0.674
4.007	1.002	159.4	53.9	3.452	4.938	0.410	0.0	180	0.908