Queensberry
DESIGN LIMITED
RESIDENTIAL AND COMMERCIAL DESIGN CONSULTANTS

Strata and Thirteen Group

Main Avenue, Cowersley, Huddersfield

DRAINAGE MAINTENANCE PLAN REV 01

November 2024

Regional Office: Brookfield Court, Selby Road, Leeds, LS25 1NB
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ISSUE SHEET

Prepared	Date		Checked	Date
ND	04.11.2024		RPB	20.11.2024
P01	Initial Issue			14.11.2024
P02	Table headings amended – current site layout and drainage design added			11.12.2024

This document has been prepared solely as a Drainage Maintenance Plan for Strata and Thirteen Group, Queensberry Design Ltd accepts no responsibility or liability for any use that is made of this document other than by the Client for which it was originally commissioned and prepared.

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APPENDICES

1. Introduction

1.1 Queensberry Design Ltd has been commissioned by Strata and Thirteen Group to prepare a Drainage Maintenance Plan in connection with a proposed residential development at Main Avenue, Huddersfield.

1.2 This Drainage Maintenance Plan has been produced to demonstrate how the proposed drainage features will be managed and maintained to satisfy the requirements set out in CIRIA C753 SuDS Manual and the requirements of Sewerage Sector Guidance and Kirklees Council.

2. Site Description

2.1 It is proposed to construct 57 dwellings on a single portion of land currently comprising open scrubland.

2.2 The application boundary is 2.12 ha with a developed area of 1.55 ha and is located 2km west of Huddersfield town centre, within the Cowlersley area at a national grid reference of SE 110151.

2.3 Boundary features around the site are residential dwellings to the east, west and part of the northern boundary, the southern boundary is open undeveloped land, Woodside Green Primary School forms the majority of the northern boundary.

3. Management of Surface Water

3.1 Surface water flows are being attenuated by underground attenuation to a rate of 3.5 litres/second before discharge into the existing combined sewer network.

3.2 The attenuation is designed to accommodate flows up to and including the 1 in 100-year event plus 30% climate change.

3.3 As the ground conditions are unsuitable for infiltration and no permeable surfaces are proposed.

3.4 The Engineering Layouts can be viewed in Appendix 1.

3.5 All new adoptable standard surface water drainage is designed in accordance with ‘The Design and Construction Guidance Document (DCG).

4. Management and Maintenance Responsibilities

Section 104 Drainage

4.1 The Section 104 drainage will be adopted by Yorkshire Water. Upon adoption, Yorkshire Water will be responsible for future maintenance of this system. Once a suitable number of dwellings are connected to the Section 104 drainage system (51% of the total) the system will be subject to a 12 month maintenance period where defects encountered will be rectified before the adoption is complete. During the construction and maintenance periods, the maintenance of the system will be the responsibility of Strata and Thirteen Group. The sewers will be inspected by site management frequently and after rainfall events to ensure effective operation.

Section 104 Drainage (before adoption)

4.2 If in the unlikely event that Yorkshire Water does not commence the vesting process of the drainage system and the system remains unadopted for a period of time, the responsibility of the management and maintenance of the prospective adoptable drainage system will remain with Thirteen Group as the landowner.

4.3 Management and maintenance of the system shall be carried out in accordance with this document.

Private Drainage System

4.4 The private plot drainage system will be maintained by Strata and Thirteen during the construction phase. Following the completion of the development, the maintenance of the private drainage system will become the responsibility of Thirteen Group.

4.5 If a property is sold by Thirteen to a current occupier, the responsibility of the drainage system within the conveyance redline will cease to be Thirteen and become the homeowner.

Contact Details

4.6 The developer/main contractor is to ensure that a Site Waste Management Plan, Health and Safety Plan, Construction Management Plan and Surface Water Management plan are prepared and implemented; and that works are carried out in accordance with Ciria Guidance.

Company Name	**Strata**
Company Address	Quay Point, Lakeside Boulevard, Doncaster, DN4 5PL
Email Address	
Telephone Number	01302 308 508
Emergency 24hr callout/out of hours number	

Details of who is responsible for the final management and maintenance

4.7 The attenuation and adoptable drainage will be managed and maintained in accordance with the guidance outlined in this document and Sewerage Sector Guidance by Yorkshire Water:

Company Name	**Yorkshire Water Ltd.**
Company Address	Western House, Western Way Bradford, BD6 2SZ
Email Address	
Telephone Number	0345 124 2424
Emergency 24hr callout/out of hours number	

4.8 The below ground drainage within the dwelling curtilage (private drainage) will be managed and maintained in accordance with the guidance outlined in this document by Thirteen Group:

Company Name	**Thirteen Group**
Company Address	2 Hudson Quay, Windward Way, Middlesbrough, TS2 1QG
Email Address	
Telephone Number	03000 111 1000
Emergency 24hr callout/out of hours number	

Expected Handover

4.9 The expected handover date is to be confirmed. However, it is normally on completion of plot connections to the main drainage and handover to the dwellings from the main contractor.

Funding Arrangements

4.10 The installation and initial management of the drainage infrastructure will be funded by Strata and Thirteen until final inspection and handover to a Yorkshire Water

5. Maintenance Activities

5.1 The scheme has proposed stormwater systems consisting of:

- Below-ground drainage – main drainage (adopted under Section 104)
- Below-ground drainage – house drainage (within plot curtilage)
- Attenuation tank and flow control device
- Surface water flow routes

5.2 There are three categories of maintenance activities referred to in this report:

Regular Maintenance (including inspections and monitoring)

5.3 Consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.

Occasional Maintenance

5.4 Comprises tasks that are likely to be required periodically but on a much less frequent and predictable basis than routine tasks (sediment removal is an example).

Remedial Maintenance

5.5 Comprises intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design.

6. Attenuation Tank and Flow Control

6.1 The scheme proposes 1No attenuation tank to assist with the controlled release of surface water to the existing public sewer network.

6.2 The details of the tank layout can be found in Appendix 1.

Tank Internal Height: 2.0m Volume: 780m3 Flow Control Manhole: S13 Flow Control: Storm Brake Discharge Rate: 3.5 l/s Outfall: Combined sewerage Accessed from: Public Road/footpath	

6.3 The primary function of the attenuation tank is to provide flow control through attenuation of stormwater runoff. The required maintenance activities can be seen in Table 1.

6.4 The vortex flow control device located downstream from the tank will regulate the flow before discharge to the existing network, the maintenance requirements of the flow control can be viewed in Table 2.

TABLE 1 - Operation and Maintenance Requirements for Attenuation Tank		
Schedule	**Required Action**	**Frequency**
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required take remedial action	3 monthly – *during construction* Annually – *after construction*
	Remove debris from catchment surface (where it may cause risks to performance)	Monthly – *during construction*
Occasional Maintenance	Repair of inlets and outlines	As required
Remedial Maintenance	Inspect/check all inlets, and outlets to ensure that they are in good condition and operating as designed	After a large storm event - *during construction* Annually – *after construction*
	Survey the inside of the tank for sediment build-up and remove if necessary	Every 5 years or as required

TABLE 2 - Operation and Maintenance Requirements for Vortex Flow Control		
Schedule	**Required Action**	**Frequency**
Regular Maintenance	Inspection and removal of litter/debris	3 monthly – *during construction* Annually – *after construction*
Occasional Maintenance	For blockages resulting in flooded manhole chambers, drain down manhole chamber via penstock and unlock	As required
Remedial Maintenance	Inspect unit and hose down as required	After a large storm event - *during construction* Annually – *after construction*

7. Main Drainage (Adopted under Section 104)

7.1 The main drainage system to be offered for adoption under a Section 104 agreement will be managed by Strata and Thirteen until the system is vested and adopted by Yorkshire Water, the management and maintenance of the system shall be carried out in accordance with Table 3

TABLE 3 - Operation and Maintenance Requirements for Main Drainage (Adopted under Section 104)		
Schedule	**Required Action**	**Frequency**
Regular Maintenance	Removal of debris (which could be leaves, rubbish, branches) from areas served by the drainage (where it causes a risk to performance)	3 monthly – *during construction* Annually – *after construction*
	Inspections to include gratings and coves, locking bolts, exposed concrete and flushing with high-pressure jetting as required	3 monthly – *during construction* Annually – *after construction*
Occasional Maintenance	For blockages resulting in flooded manhole chambers, drain down manhole chamber and unblock For pipework blockages, rod or jet clean between access points to unblock	As required
Remedial Maintenance	Lift covers and inspect chambers for damage and incorrect operation	After a large storm event - *during construction* Annually – *after construction*

8. House drainage

8.1 The house drainage system i.e. private drainage not included in the Section 104 agreement will remain the responsibility of the land/property owner Thirteen Group.

8.2 The maintenance schedule is outlined in Table 4 responsibilities.

TABLE 4 - Operation and Maintenance Requirements for House Drainage		
Schedule	**Required Action**	**Frequency**
Regular Maintenance	Removal of debris (which could be leaves, rubbish, branches) from areas served by the drainage (where it causes a risk to performance)	3 monthly – *during construction* Annually – *after construction*
	Inspections to include gratings and coves, locking bolts, exposed concrete and flushing with high-pressure jetting as required.	3 monthly – *during construction* Annually – *after construction*
	Inspection of gullies and drainage channels and flushing with high-pressure jetting	6 monthly – *during construction* As required – *after construction*

Occasional Maintenance	For blockages resulting in flooded manhole chambers, drain down manhole chamber and unblock For pipework blockages, rod or jet clean between access points to unblock	As required
Remedial Maintenance	Lift covers and inspect chambers for damage and incorrect operation	After a large storm event - *during construction* Annually – *after construction*

9. Gullies

9.1 Trapped road gullies provide a degree of pollution control in preventing silt and debris from passing from the site into the main sewer network. Road gullies are provided throughout the adoptable road network.

9.2 The highway gullies will be adopted by Kirklees Council under a Section 38 agreement.

9.3 The maintenance schedule is outlined in Table 5 responsibilities.

TABLE 5 - Operation and Maintenance Requirements for Trapped Road Gullies		
Schedule	**Required Action**	**Frequency**
Regular Maintenance	Clean and empty gullies	Quarterly

10. Exceedance routes

10.1 Existing overland flow routes enter the development which are directed to the original flow destination point via the public road network and shared drives.

10.2 The shared drives will remain under the ownership and management of Thirteen Group and must allow for the routing of surface water run-off as the exceedance drawing in appendix 1.

10.3 The road and drive network channelling the flow route shall be managed in accordance with Table 6.

TABLE 6 - Operation and Maintenance Requirements for Exceedance Routes		
Schedule	**Required Action**	**Frequency**
Regular Maintenance	Inspection and removal of excess litter/debris	Quarterly – during construction
Occasional Maintenance	Check route is not blocked by new fences, walls, stored materials, soil or other rubbish and remove as necessary	Monthly – *during construction* Annually – *after construction*
Remedial Maintenance	Repair (as a result of damage or vandalism)	As required

11. Important Information

11.1 The asset owners or management company is to familiarisers themselves with the site constraints plan detailing existing utility locations across the scheme notably the presence of underground HV, watermain and foul sewerage.

11.2 The LLFA will be notified once the maintenance and management have been handed over to the responsible company. If a new management company is ever appointed details will be provided to the Lead Local Flood Authority.

Appendix 1 – Engineering Design


DESIGN / CHECK CERTIFICATES WITH KIRKLEES COUNCIL IN ACCORDANCE WITH CG300
ESTIMATED SITE STORAGE 780m³ DESIGN WILL NEED TO CONSIDER EXCAVATION NEAR BOUNDARY AND ENSURING TANK IS OUTSIDE THE ZONE OF CARRIAGEWAY INFLUENCE
SEWER ABANDONMENT SUBJECT TO CCTV SURVEY AND CONFIRMATION OF NO CONNECTIONS
EXISTING LEVELS AROUND BAK TO BE REGRADED TO SUIT PROPOSED LEVELS
STEP DESIGN IN REAR GARDEN TBC
FFL'S WILL NEED TO BE SET HIGHER THAN CARRIAGEWAY DUE TO SURFACE WATER FLOOD ROUTE
EXISTING COMBINE SEWER TO BE DIVERTED VIA A S185 APPLICATION
EXISTING SURFACE WATER FLOW ROUTE TO BE COLLECTED BY NEW ROAD LAYOUT - SUBJECT TO DETAILED DESIGN AND MODELLING
EXISTING GULLIES TO COMBINED
EX_101
CL 162.236
IL 160.276
RUN OFF DIVERTED DOWN STEPS TOWARDS ROAD 3
PLOTS 33-44 TO HAVE STEPPED GARDENS TO REDUCED HEIGHT OF RETAINING WALL AT BOUNDARY. TYPE OF WALLS TO BE DISCUSSED AND AGREED WITH THE CLIENT
RETAINING WALLS TO REAR GARDENS TO HAVE A 450mm PARAPET TO CATCH EXISTING SURFACE WATER RUN OFF
Road 2
Road 3
Road 4
Road 5
Road 6
Road 7
FFL 161.325
FFL 160.725
EX_105
CL 143.819
IL 140.869
EX_105A
CL 144.170
UTR
ASSUMED CULVERT ROUTE
BURIED MH WITH PIPE EXITING
EX_01
CL 144.121
IL 143.751
EX GULLIES
CAPPED
EX BURIED
INFLOW OF WATER RECORDED BUT NO CONNECTION
GROUND LEVEL OVER TANK TO BE 145.8m. GROUND TO BE GRADED AT 1:3 FROM SITE BOUNDARY TO ACHIEVE THIS
EX_104
CL 145.336
IL 143.412
RETAINING WALL SUPPORTING CARRIAGEWAY REQUIRES AIP AND DESIGN / CHECK CERTIFICATES WITH KIRKLEES COUNCIL IN ACCORDANCE WITH CG300

Only PDF/ DWF Issues of this drawing are controlled. All other formats (eg. DWG AutoCAD FILES) are UN-controlled and are used at your own risk.

GENERAL NOTES:-

1. DO NOT USE THIS DRAWING IN ISOLATION. THIS DRAWING HAS BEEN PREPARED AS PART OF A SET, AND MUST THEREFORE BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORKS.
2. THIRD PARTY INFORMATION IS USED TO PREPARE THE ENGINEERING DESIGN (INCLUDING, ARCHITECTURAL LAYOUT, GROUND INVESTIGATION, EXISTING UTILITIES RECORDS, AND SPECIALIST DESIGN ITEMS). THE ENGINEERING DESIGN MUST THEREFORE BE READ IN CONJUNCTION WITH ALL THIRD PARTY INFORMATION PRIOR TO COMMENCING WORK. QUEENSBERRY DESIGN LTD ARE NOT RESPONSIBLE FOR ANY THIRD PARTY INFORMATION OR DETAILS.
3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPOINTED WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
6. THE CONTRACTOR IS EXPECTED TO CROSS CHECK ALL DRAINAGE INVERTS PRIOR TO COMMENCING WORK, THIS MAY INVOLVE COMPLETION OF TRIAL HOLES IF INVERT LEVELS HAVE BEEN INTERPOLATED. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR MUST MONITOR THE "AS BUILT" PROGRESS OF EACH CONSTRUCTION STAGE (ROADS/SEWERS/PLOT WORKS ETC), TO ENABLE THE NEXT STAGES OF CONSTRUCTION TO BE CHECKED BEFORE INSTALLATION.
8. ALL WORKS TO BE UNDERTAKEN IN COMPLIANCE WITH BS 800 WORKMANSHIP ON BUILDING SITES

HIGHWAYS

1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADOPTABLE DRAINAGE

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE DESIGN AND CONSTRUCTION GUIDANCE [CODE FOR ADOPTION]. THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/LOCAL PRACTICE FOR THE ADOPTION OF SMALL SUBMERSIBLE FOUL AND SURFACE WATER PUMPING STATIONS AND KITEMARKED.
2. MANHOLE COVERS SHALL / MUST HAVE A CLEAR OPENING OF 600MM AND SHALL BE CLASS D400 TO BS EN 124 WITH 150MM DEEP FRAMES IN HIGHWAYS.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATERS BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAIN / LAND DRAINAGE RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR IN DIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIASE WITH THE LOCAL AUTHORITY, LAND DRAINAGE SECTION WITH REGARDS TO THE DISPOSAL OF THE FILTER DRAIN / LAND DRAINAGE RUNOFF.
5. COVER SLABS MUST CARRY THE BSI KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOADING BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600X600MM FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEASE REFER TO CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA) 'TECHNICAL BULLETIN' ISSUED AUTUMN 2004 FOR KITEMARKED COVER SLAB OPENING SIZES.
6. 600 X 600MM ACCESS COVER SLABS ARE NOW AVAILABLE WHICH MUST BE KITEMARKED FOR USE ON YORKSIHRE WATERS NETWORK.
7. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
8. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
9. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES, REFER TO SFA FIGURE 2.3 FOR FURTHER RESTRICTIONS ON TREE PLANTING ADJACENT TO SEWERS.
10. SEWERS LAID IN CLASS "S" BEDDING (150MM GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF SEWER IS LESS THAN 1.2M IN HIGHWAY AND VERGES (OR LESS THAN 900MM IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND.
11. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
12. ALL ADOPTABLE SEWERS TO BE BSI KITEMARK (CERTIFIED TO WIS 4-3501).
13. ADOPTABLE SEWER PIPES TO BE LAID IN MAXIMUM 3M LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. 12. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
14. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
15. THE CHAMBER SIZE OF MANHOLES WITH MORE THAT ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
16. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE "C" BRICK MANHOLES AND 1050MM Ø MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200MM Ø OR 1500MM Ø RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE IS 1 - 1.5M
17. CONCRETE PIPES SHOULD BE CLASS 120 TO EN 1916 / BS 5911-1 : 2002
18. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
19. THE CONNECTION OF FOUL AND SURFACE WATER DRAINAGE TO THE EXISTING PUBLIC SEWER SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE LOCAL SEWERAGE UNDERTAKER. THE CONTRACTOR IS EXPECTED TO APPLY FOR RELEVANT PERMITS PRIOR TO COMMENCING THE WORK.
20. 1350Ø CHAMBER RINGS ARE ALLOWED ON THE ADOPTABLE NETWORK AND ARE TO BE KITEMARKED.
21. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS
22. ADOPTABLE PLASTIC SEWER PIPES TO BE BSI KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS/EN13476).ADOPTABLE PLASTIC SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
23. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED, THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.
24. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
25. THE CONNECTION OF FOUL AND SURFACE WATER DRAINAGE TO THE EXISTING PUBLIC SEWER SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE LOCAL SEWERAGE UNDERTAKER. THE CONTRACTOR IS EXPECTED TO APPLY FOR RELEVANT PERMITS PRIOR TO COMMENCING THE WORK.
26. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVERS TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX. 300MM : IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY BE INCREASED".
27. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS : 100MM DIA. 40KN/M, 150MM DIA. 40KN/M, 225MM DIA. 45KN/M AND 300MM DIA. 72KN/M. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS 120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476.

EXISTING SERVICES

PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFERED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.

ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG IN CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT :-

1. POSITION/CO-ORDINATES OF ALL ADOPTABLE MANHOLES.
2. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

HEALTH & SAFETY RISKS

IN ADDITION TO THE STANDARD HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING. PLEASE NOTE THE FOLLOWING RESIDUAL HEALTH AND SAFETY RISKS THESE RISKS ARE APPLICABLE TO THE SET OF DRAWINGS FORMING THE DESIGN

CONSTRUCTION RISKS

C1	BURIED SERVICES - OBTAIN ACCURATE LOCATIONS OF UNDERGROUND SERVICES PRIOR TO EXCAVATION.
C2	CONFINED SPACE WORKS - ENSURE STAFF ARE SUITABLY TRAINED.
C3	CONSTRUCTION ADJACENT LIVE TRAFFIC - ENSURE SAFE METHOD OF WORKING
C4	DEEP EXCAVATIONS - RISK OF LAND SLIPS AND LARGE FALLS CONNECTION TO EXISTING LIVE SEWERS - RISK OF DROWNING
C5	CONSTRUCTION ADJACENT LIVE TRAFFIC - ENSURE SAFE METHOD OF WORKING
C6	CONTAMINATED GROUND - SITE ASSESSMENT MUST BE CARRIED OUT TO DETERMINE RISK IF CONTAMINATED GROUND IS UNCOVERED.
C7	UNFORESEEN GROUND CONDITIONS - CONTRACTOR SHOULD CARRY OUT APPROPRIATE SURVEYS TO MINIMISE RISK OF ENCOUNTERING UNKNOWN STRUCTURES
C8	STEEP SIDED STRUCTURES/RETAINING WALLS - COULD RESULT IN FALLS FROM HEIGHT ENSURE FALL PROTECTION PRIOR TO PERMANENT FENCING BEING ERECTED.
C9	SOFT GROUND, MADE GROUND AND PEAT POSSIBLE WITHIN ALL EXCAVATIONS
C10	SHALLOW GROUND WATER WILL BE ENCOUNTERED <1m BGL

OPERATION & MAINTENANCE RISKS

OM 1	UNTREATED/POLLUTED WATER CAN CAUSE ILL HEALTH FOR OPERATIVES
OM 2	WORKING ON OR NEAR SEWERS STEEP SIDED STRUCTURES/RETAINING WALLS COULD RESULT IN FALLS FROM HEIGHT.
OM 3	ENSURE BARRIERS ARE PLACED AROUND TOPS OF RETAINING WALLS AND EXCAVATIONS PRIOR TO PERMANENT FENCING BEING ERECTED. CONFINED SPACE WORKS - ENSURE STAFF ARE SUITABLY TRAINED.

ALL WORKS MUST BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING IN ACCORDANCE WITH THE REQUIREMENTS DEFINED IN THE CDM REGULATIONS AND BS 8000
THE RISK LISTED ARE NOT EXHAUSTIVE REFER TO DESIGNERS RISK ASSESSMENT FOR FULL DETAILS

LEGEND

ADOPTABLE DRAINAGE

- PROPOSED ADOPTABLE COMBINED MANHOLE — F1
- PROPOSED ADOPTABLE STORM MANHOLE — S1
- EXISTING ADOPTED STORM MANHOLE — ex.mh
- EXISTING ADOPTED COMBINED MANHOLE — ex.mh

Rev.	Date	Revision Details	Drawn	Checked
P05	11.12.24	LAYOUT REVISION P6 ADDED	ND	ND
P04	14.11.24	APARTMENTS AMENDED AS LAYOUT REVISION P4	JR	ND
P03	15.10.24	APARTMENTS AMENDED AS LAYOUT REVISION P2	ND	ND
P02	08.10.24	APARTMENTS AMENDED - ISSUED FOR PLANNING	JR	ND
P01	24.09.24	FIRST ISSUE	JR	ND

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Client: STRATA/THIRTEEN

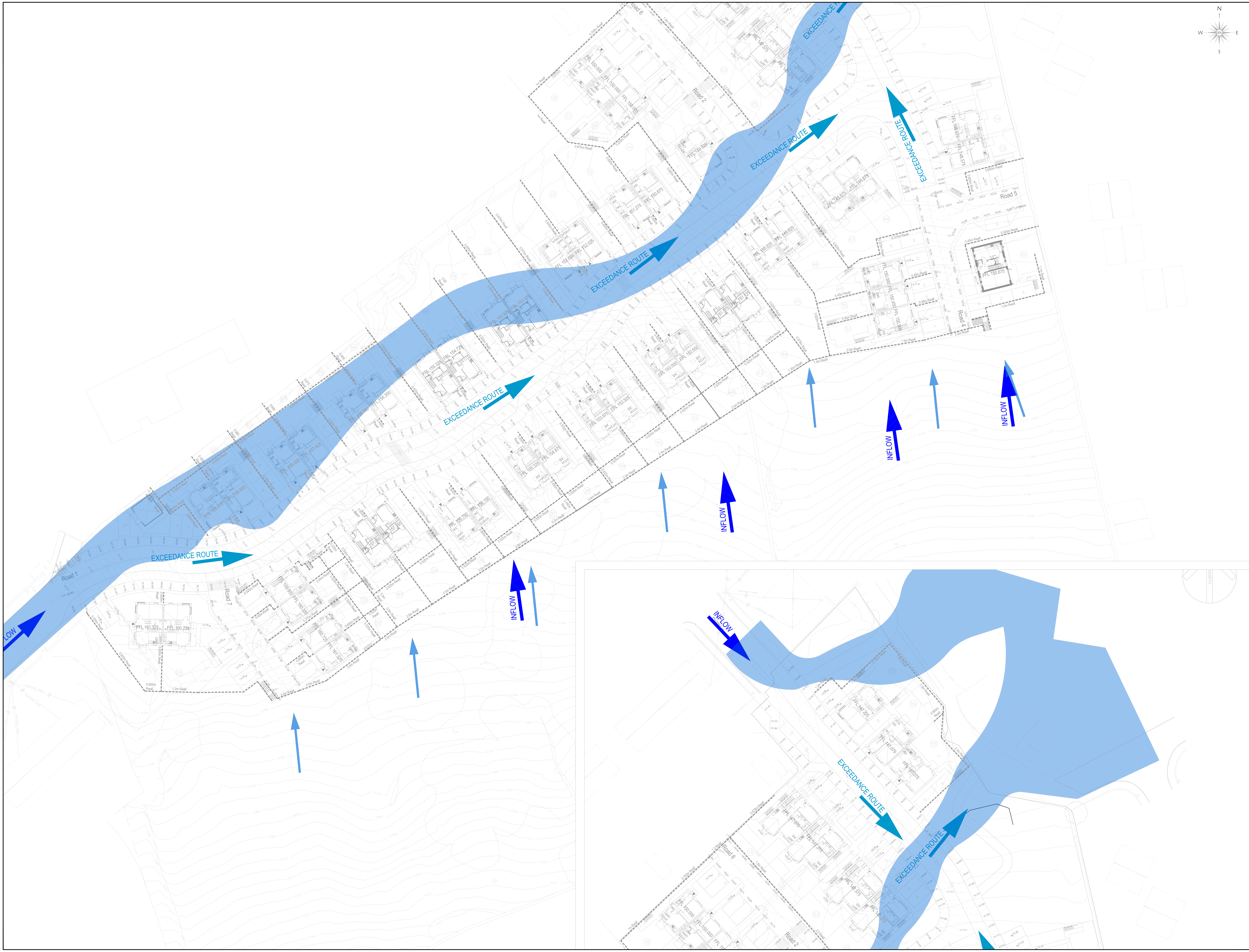
Project: MAIN AVENUE COWERSLEY

Title: DRAINAGE STRATEGY

Drawn	Checked	Date
JR	ND	24.09.2024

Drawing Number: 2153-QD-XX-HD-DR-C-00-01

Drawing Status	Scale	Rev.
FEASIBILITY	1:250 - A0	P05



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3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPOINTED WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
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8. ALL WORKS TO BE UNDERTAKEN IN COMPLIANCE WITH BS 800 WORKMANSHIP ON BUILDING SITES

HIGHWAYS

1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

EXISTING SERVICES

PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFERED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.

ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG IN CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT :-

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2. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

SURFACE WATER FLOODING
SURFACE WATER FLOW ROUTES

Rev.	Date	Revision Details	Drawn	Checked
P03	11.12.24	LAYOUT REVISION P6 ADDED	ND	ND
P02	15.10.24	APARTMENTS AMENDED AS LAYOUT REVISION P2	ND	ND
P01	24.09.24	FIRST ISSUE	JR	ND

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Client: STRATA/THIRTEEN

Project: MAIN AVENUE COWERSLEY

Title: EXCEEDENCE ROUTE

Drawn	Checked	Date
JR	ND	24.09.2024

Drawing Number: 2153-QD-XX-HD-DR-C-00-10

Drawing Status	Scale	Rev.
FEASIBILITY	1:250 - A0	P03

StormBrake™
Performance Report

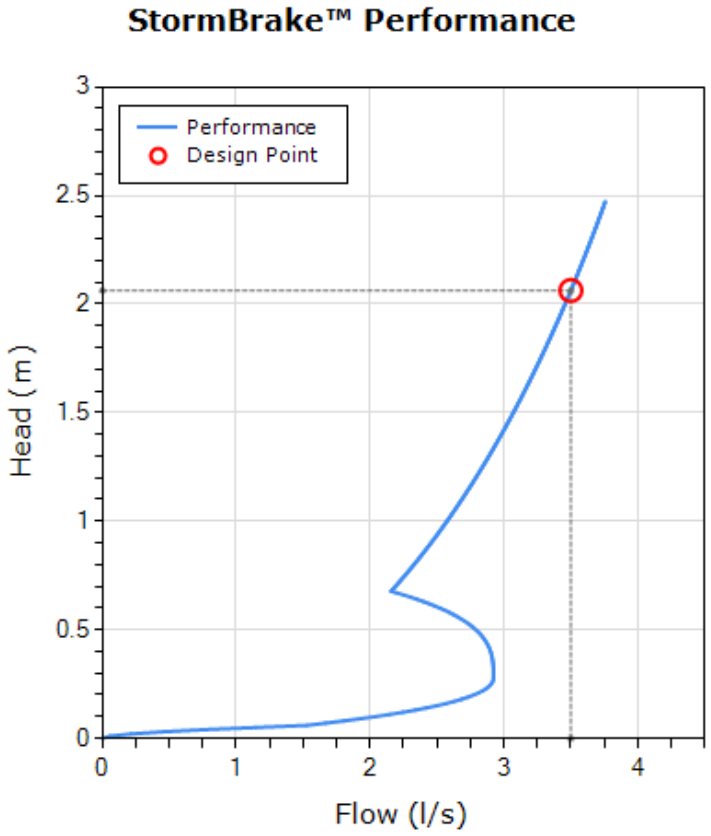
fpmccann

wrc approved™
PT/398/0217

StormBrake™ Performance Report

wrc approved PT/398/0217

Contractor:	Queensberry Design	Head(m):	2.063
Site:	Main Ave	Flow(l/s):	3.5
Date:	11/12/2024	Chamber Ref:	
Created By:	Nick Dunwoodie	Mounting Style:	LUGS (Default)
Device Ref:	FPM-SB1-02063-00350-0100		



	Head (m)	Flow (l/s)
Design Point	2.06	3.50
Flush Flow	0.28	2.92
Kick Back	0.68	2.16

	Dims (mm)
Min. Chamber Diameter	1200
Min. Outlet Pipe Diameter	150
Min. Sump Depth	240

Head (m)	Flow (l/s)
0	0.00
0.09	1.87
0.17	2.63
0.26	2.91
0.34	2.92
0.43	2.88
0.51	2.77
0.6	2.53
0.68	2.16
0.77	2.28
0.85	2.40
0.94	2.50
1.02	2.60
1.11	2.69
1.19	2.78
1.28	2.87
1.36	2.95
1.45	3.03
1.53	3.10
1.62	3.17
1.71	3.24
1.79	3.31
1.88	3.37
1.96	3.43
2.05	3.49
2.13	3.55
2.22	3.60
2.3	3.66
2.39	3.71
2.47	3.76

The unique performance characteristics of this StormBrake™ are derived from extensive dynamic modelling using parametric experimental testing and computational fluid dynamics.

Knockloughrim Precast Office:
T. 028 79549026

Ellistown Precast Office:
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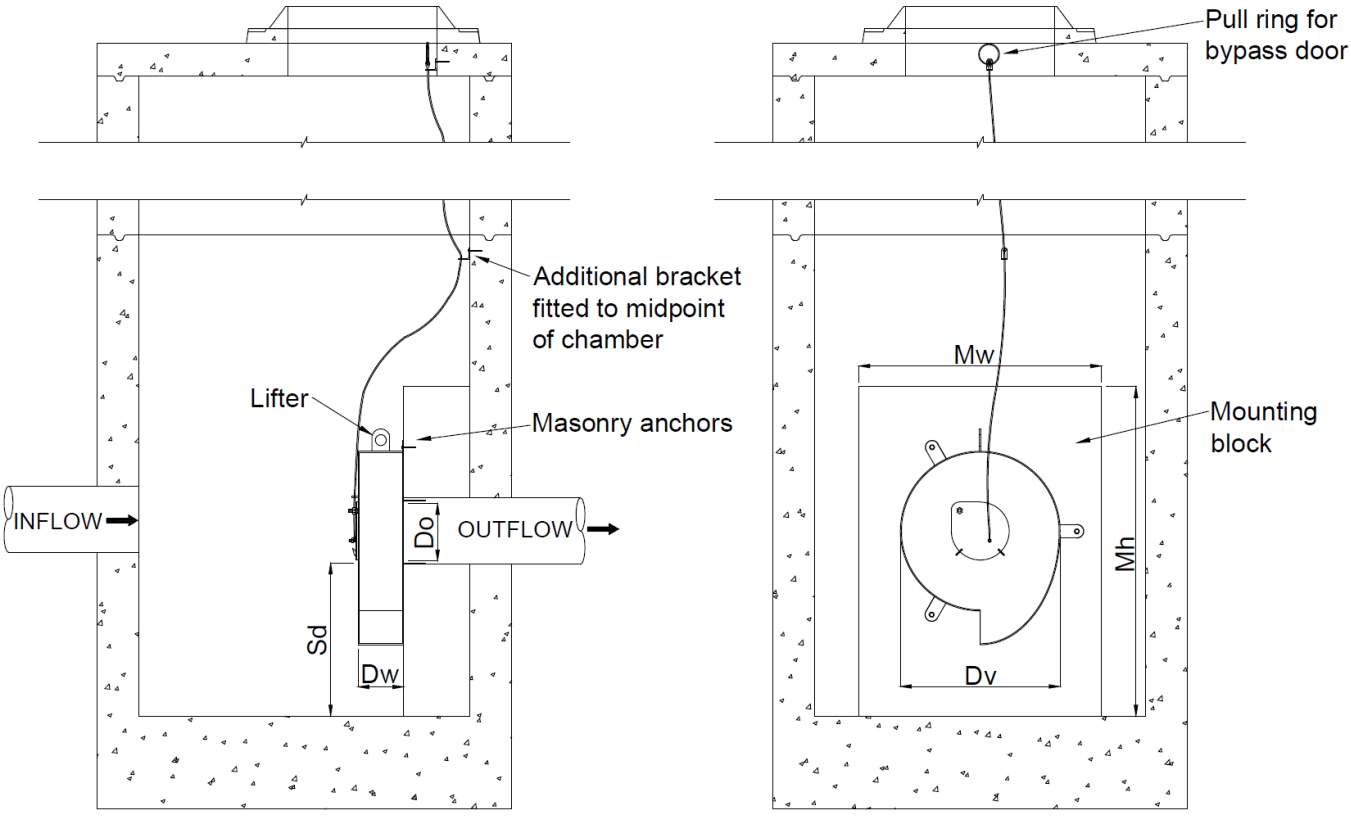
Web: www.fpmccann.co.uk

StormBrake™ Performance Report

wrc approved PT/398/0217

INSTALLATION INSTRUCTIONS

1. Position the StormBrake™ so that the inlet is at the bottom and the device outlet is in line with the chamber outlet pipe.
2. Mark the locations of the mounting points on the chamber/mounting wall.
3. Using the marked locations, drill holes to the required thickness and depth for the supplied masonry anchors (M10 throughbolts require 11 mm holes). Fit the bolts to the holes.
4. Attach the StormBrake™ to the anchor points, ensuring the neoprene gasket is flush with the chamber wall, and fasten the device by tightening the bolts. This will compress the neoprene gasket to provide a watertight seal between the StormBrake™ and the wall.
5. Fix the stainless steel wire cable from the front bypass door to the underside of the manhole cover, vertically above the device. A secondary bracket is supplied and should be fitted halfway up the chamber to guide the bypass door cable to the top.
6. Adjust the length of the bypass door cable accordingly, so that it reaches the ground level whilst ensuring the bypass door can open if required. Ensure the bypass door is closed for normal operating conditions.



Geometry	Annotation	(mm)
Device Vortex Diameter	Dv	392
Device Width	Dw	86
Device Orifice	Do	78
Sump Depth (outlet Ø150mm)	Sd	240
Mounting Block Width	Mw	630
Mounting Block Height	Mh	680

Dimensions quoted are minimum values based on the geometry of this unique StormBrake™ unit. These ensure the device can be fitted to the flow control chamber without restriction and meet the performance specification.

Appendix 2 – Drainage Maintenance Responsibilities

Only PDF/ DWF Issues of this drawing are controlled. All other formats (eg. DWG AutoCAD FILES) are UN-controlled and are used at your own risk.

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2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADOPTABLE DRAINAGE

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE DESIGN AND CONSTRUCTION GUIDANCE [CODE FOR ADOPTION]. THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/LOCAL PRACTICE FOR THE ADOPTION OF SMALL SUBMERSIBLE FOUL AND SURFACE WATER PUMPING STATIONS AND KITEMARKED.
2. MANHOLE COVERS SHALL / MUST HAVE A CLEAR OPENING OF 600MM AND SHALL BE CLASS D400 TO BS EN 124 WITH 150MM DEEP FRAMES IN HIGHWAYS.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATERS BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAIN / LAND DRAINAGE RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR IN DIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIASE WITH THE LOCAL AUTHORITY, LAND DRAINAGE SECTION WITH REGARDS TO THE DISPOSAL OF THE FILTER DRAIN / LAND DRAINAGE RUNOFF.
5. COVER SLABS MUST CARRY THE BSI KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOADING BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600X600MM FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEASE REFER TO CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA) 'TECHNICAL BULLETIN' ISSUED AUTUMN 2004 FOR KITEMARKED COVER SLAB OPENING SIZES.
6. 600 X 600MM ACCESS COVER SLABS ARE NOW AVAILABLE WHICH MUST BE KITEMARKED FOR USE ON YORKSIHRE WATERS NETWORK.
7. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
8. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
9. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES, REFER TO SFA FIGURE 2.3 FOR FURTHER RESTRICTIONS ON TREE PLANTING ADJACENT TO SEWERS.
10. SEWERS LAID IN CLASS "S" BEDDING (150MM GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF SEWER IS LESS THAN 1.2M IN HIGHWAY AND VERGES (OR LESS THAN 900MM IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND.
11. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
12. ALL ADOPTABLE SEWERS TO BE BSI KITEMARK (CERTIFIED TO WIS 4-3501).
13. ADOPTABLE SEWER PIPES TO BE LAID IN MAXIMUM 3M LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. 12. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
14. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
15. THE CHAMBER SIZE OF MANHOLES WITH MORE THAT ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
16. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE "C" BRICK MANHOLES AND 1050MM Ø MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200MM Ø OR 1500MM Ø RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE IS 1 - 1.5M
17. CONCRETE PIPES SHOULD BE CLASS 120 TO EN 1916 / BS 5911-1 : 2002
18. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
19. THE CONNECTION OF FOUL AND SURFACE WATER DRAINAGE TO THE EXISTING PUBLIC SEWER SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE LOCAL SEWERAGE UNDERTAKER. THE CONTRACTOR IS EXPECTED TO APPLY FOR RELEVANT PERMITS PRIOR TO COMMENCING THE WORK.
20. 1350Ø CHAMBER RINGS ARE ALLOWED ON THE ADOPTABLE NETWORK AND ARE TO BE KITEMARKED.
21. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS
22. ADOPTABLE PLASTIC SEWER PIPES TO BE BSI KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS/EN13476).ADOPTABLE PLASTIC SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
23. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED, THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.
24. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
25. THE CONNECTION OF FOUL AND SURFACE WATER DRAINAGE TO THE EXISTING PUBLIC SEWER SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE LOCAL SEWERAGE UNDERTAKER. THE CONTRACTOR IS EXPECTED TO APPLY FOR RELEVANT PERMITS PRIOR TO COMMENCING THE WORK.
26. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVERS TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX. 300MM : IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY BE INCREASED".
27. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS : 100MM DIA. 40KN/M, 150MM DIA. 40KN/M, 225MM DIA. 45KN/M AND 300MM DIA. 72KN/M. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS 120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476.

EXISTING SERVICES

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2. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

HEALTH & SAFETY RISKS

IN ADDITION TO THE STANDARD HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING. PLEASE NOTE THE FOLLOWING RESIDUAL HEALTH AND SAFETY RISKS THESE RISKS ARE APPLICABLE TO THE SET OF DRAWINGS FORMING THE DESIGN

CONSTRUCTION RISKS

C1	BURIED SERVICES - OBTAIN ACCURATE LOCATIONS OF UNDERGROUND SERVICES PRIOR TO EXCAVATION.
C2	CONFINED SPACE WORKS - ENSURE STAFF ARE SUITABLY TRAINED.
C3	CONSTRUCTION ADJACENT LIVE TRAFFIC - ENSURE SAFE METHOD OF WORKING
C4	DEEP EXCAVATIONS - RISK OF LAND SLIPS AND LARGE FALLS CONNECTION TO EXISTING LIVE SEWERS - RISK OF DROWNING
C5	CONSTRUCTION ADJACENT LIVE TRAFFIC - ENSURE SAFE METHOD OF WORKING
C6	CONTAMINATED GROUND - SITE ASSESSMENT MUST BE CARRIED OUT TO DETERMINE RISK IF CONTAMINATED GROUND IS UNCOVERED.
C7	UNFORESEEN GROUND CONDITIONS - CONTRACTOR SHOULD CARRY OUT APPROPRIATE SURVEYS TO MINIMISE RISK OF ENCOUNTERING UNKNOWN STRUCTURES
C8	STEEP SIDED STRUCTURES/RETAINING WALLS - COULD RESULT IN FALLS FROM HEIGHT ENSURE FALL PROTECTION PRIOR TO PERMANENT FENCING BEING ERECTED.
C9	SOFT GROUND, MADE GROUND AND PEAT POSSIBLE WITHIN ALL EXCAVATIONS
C10	SHALLOW GROUND WATER WILL BE ENCOUNTERED <1m BGL

OPERATION & MAINTENANCE RISKS

OM 1	UNTREATED/POLLUTED WATER CAN CAUSE ILL HEALTH FOR OPERATIVES
OM 2	WORKING ON OR NEAR SEWERS STEEP SIDED STRUCTURES/RETAINING WALLS COULD RESULT IN FALLS FROM HEIGHT.
OM 3	ENSURE BARRIERS ARE PLACED AROUND TOPS OF RETAINING WALLS AND EXCAVATIONS PRIOR TO PERMANENT FENCING BEING ERECTED. CONFINED SPACE WORKS - ENSURE STAFF ARE SUITABLY TRAINED.

ALL WORKS MUST BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING IN ACCORDANCE WITH THE REQUIREMENTS DEFINED IN THE CDM REGULATIONS AND BS 8000
THE RISK LISTED ARE NOT EXHAUSTIVE REFER TO DESIGNERS RISK ASSESSMENT FOR FULL DETAILS

LEGEND

ADOPTABLE DRAINAGE

- PROPOSED ADOPTABLE COMBINED MANHOLE — F1
- PROPOSED ADOPTABLE STORM MANHOLE — S1
- EXISTING ADOPTED STORM MANHOLE — ex.mh
- EXISTING ADOPTED COMBINED MANHOLE — ex.mh
- PROPOSED DRAINAGE EASEMENT

Rev.	Date	Revision Details	Drawn	Checked
P02	11.12.24	LAYOUT REVISION P6 ADDED	ND	ND
P01	05.11.24	FIRST ISSUE	JR	ND

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www.queensberrydesign.co.uk

Client: STRATA/THIRTEEN

Project: MAIN AVENUE COWERSLEY

Title: SECTION 104 LAYOUT

Drawn	Checked	Date
JR	ND	24.09.2024

Drawing Number: 2153-QD-XX-HD-DR-C-17-01

Drawing Status	Scale	Rev.
FEASIBILITY	1:250 - A0	P02

Appendix 3 – Maintenance Logs

Table B.25 SuDS maintenance inspection checklist			
General information			
Site ID			
Site location and co-ordinates (GIS if appropriate)			
Elements forming the SuDS scheme		Approved drawing reference(s)	
Inspection frequency		Approved specification reference	
Type of development		Specific purpose of any parts of the scheme (eg biodiversity, wildlife and visual aspects)	

Inspection date								
	Details	**Y/N**	**Action required**	**Date completed**	**Details**	**Y/N**	**Action required**	**Date Completed**
General inspection items								
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?								
Is there any evidence of accidental spillages, oils, poor water quality, odours or nuisance insects?								
Have any health and safety risks been identified to either the public or maintenance operatives?								
Is there any deterioration in the surface of permeable or porous surfaces (eg rutting, spreading of blocks or signs of ponding water)?								

Silt/sediment accumulation								
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of filter drains or infiltration basins and within proprietary devices)? If yes, state depth (mm) and extent. Is removal required? If yes, state waste disposal requirements and confirm that all waste management requirements have been complied with (consult environmental regulator)								
Is surface clogging visible (potentially problematic where water has to soak into the underlying construction or ground (eg underdrained swale or infiltration basin)?								
Does permeable or porous surfacing require sweeping to remove silt?								
System blockages and litter build-up								
Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?								
Is there any evidence of any other clogging or blockage of outlets or drainage paths?								
Vegetation								
Is the vegetation condition satisfactory (density, weed growth, coverage etc)? (Check against approved planting regime.)								
Does any part of the system require weeding, pruning or mowing? (Check against maintenance frequency stated in approved design.)								
Is there any evidence of invasive species becoming established? If yes, state action required								
Infrastructure								
Are any check dams or weirs in good condition?								
Is there evidence of any accidental damage to the system (eg wheel ruts?)								

Is there any evidence of cross connections or other unauthorised inflows?								
Is there any evidence of tampering with the flow controls?								
Are there any other matters that could affect the performance of the system in relation to the design objectives for hydraulic, water quality, biodiversity and visual aspects? (Specify.)								
Other observations								
Information appended (eg photos)								
Suitability of current maintenance regime								
Continue as current Increase maintenance Decrease maintenance								
Next inspection								
Proposed date for next inspection								