CONSULTING ENGINEERS LTD

2a Front Street,
Acomb,
York
YO24 3BJ

DRAINAGE VERIFICATION REPORT

Project no.	0009
Project	Proposed Care Home at 106 - 108 Warren Road, Worthing, BN14 9QX
Client	Lawrence Baker

Comments

The drainage system has been installed in line with the drainage layout and details as shown in the As Built drawings in Appendix A. The installed drainage network has been CCTV surveyed and checked against the As Built drawings to ensure correct. This check was undertaken by AFA Consulting Engineers to verify the installed works are in line with the planning approved WARD Associates (Consulting Engineers) Ltd design.

A review of the design has been undertaken by AFA Consulting Engineers to confirm the WARD Associates design is in line with guidance from the SuDS Manual. A design check has been undertaken on the drainage system to confirm the designed solution is suitable to accommodate rainfall events up to 1 in 100 years over a range of storm durations with a 40% allowance for climate change and 10% allowance for urban creep. The design check confirmed the WARD Associates design was suitable.

The drainage installed is the same as the WARD Associates (Consulting Engineers) Ltd drainage solution detailed in the approved planning stage drainage strategy report. The only changes between the planning stage WARD Associates design and the as built design was with regards foul drainage. These changes are summarised below:

- Additional inspection chamber added for bedroom 2 to aid installation
- Additional inspection chamber added for bedroom 4 to aid installation
- Additional inspection chamber added for bedroom 6/7 to aid installation
- Inspection chamber to bedroom 10 and 11 updated to avoid clash with surface water drain
- Additional inspection chambers added to serve Dayspace, hair and beauty and Bedroom15 to reduce length of drains below building
- Layout of surface water drainage around connection to attenuation chamber updated see notes below.

As WARD Associates went into Liquidation in December 2023 AFA Consulting Engineers have produce the As Built drawing records.

The installed drainage was managed by the contractor with quality control check sheets used to record installation and ensure correct installation. A copy of the Quality control check sheets is contained within Appendix B for reference along with photo evidence of their installation.

Building control inspections were undertaken throughout the project and inspection reports issued identifying any defects. These inspections also included inspection of drainage. Any defects identified during inspections were recorded and remedial works undertaken as required.

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Inspection on drainage were also undertaken by the Project Engineer, Bank Funders and Clerk of works. Any defects were recorded and closed out prior to completion of the works.

Details of the Separator are contained within Appendix C.

A CCTV survey of the system is contained within Appendix D.

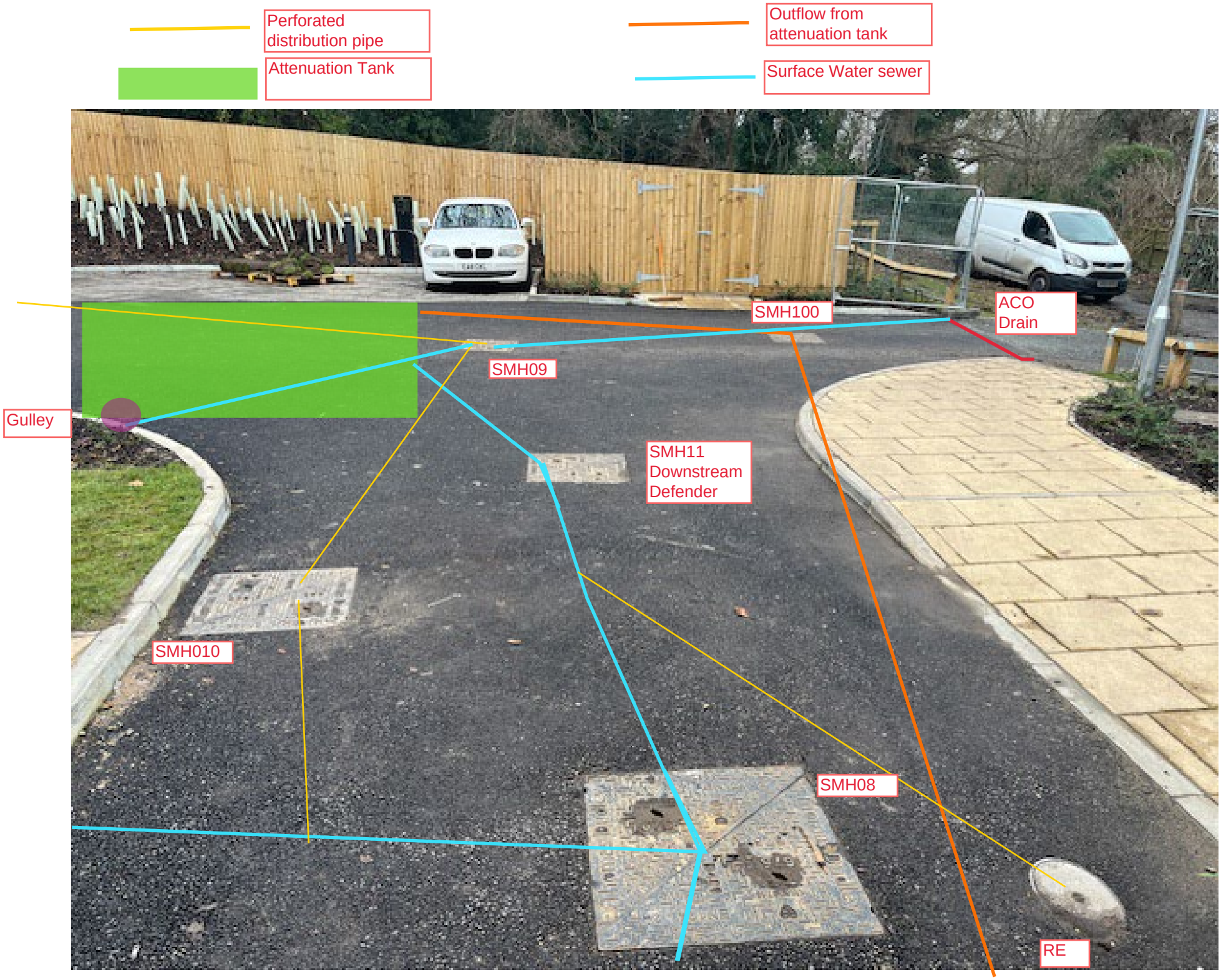
Photos showing the installation of various drainage elements are contained within the following pages.

A copy of the Vortex flow control data sheet is contained within Appendix E.

A copy of the permeable tarmac data sheet and the permeable paving data sheet is contained within Appendix F.

The layout arrangement of SMH100, SMH08, SMH09, SMH10 and SMH11 has been updated since the planning stage drainage design. The changes were to provide more space for installation of the downstream defender. The changes will not impact the capacity of the installed drainage network to accommodate rainfall events as previously designed. The As Recorded drawing in Appendix A has been updated to reflect the installed layout. The photos below show the as installed manhole positions and photos inside each of these manholes.

Prepared by
Graeme Beaven
AFA Consulting Engineers Ltd


Perforated distribution pipe
Attenuation Tank
Outflow from attenuation tank
Surface Water sewer
SMH100
ACO Drain
SMH09
Gulley
SMH11 Downstream Defender
SMH010
SMH08
RE

CHAMBER VERIFICATION

Friday 24 January 2025

10 Issues Identified



SMH100
HYDROBRAKE CHAMBER



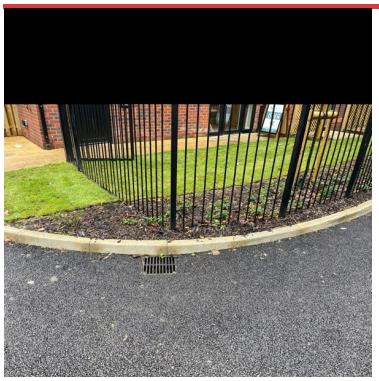
SMH100



SMH09



SMH09



GULLY



SMH11 - DOWNSTREAM
DEFENDER



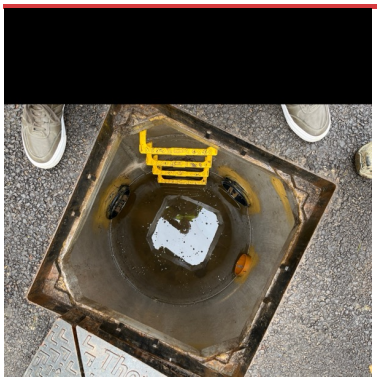
SMH10



SMH10



SMH08



SMH08 -
CATCH PIT

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Photo 1 – Attenuation tank installation



Photo 2 – Attenuation tank Wrapping

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Photo 3 – Attenuation tank wrapping



Photo 4 – Example manholes

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Photo 5 – Separator installation



Photo 6 – Hydrobrake Manhole



Photo 7 – Aco Drain



Photo 8 – Suds Planter



Photo 9 – Permeable Tarmac installation



Photo 10 – Permeable Tarmac Area

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Photo 11 – Permeable Paving Area

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Appendix A

Final Drainage Layout and Details

Notes

- Contractor to undertake CCTV of existing connection prior to commencing works on site and verify invert level.
- Surface water discharge to be agreed with local authority prior to connection.
- Surface water invert at connection to be verified prior to commencing works.
- Catch pits to be installed to all chambers/manholes prior to discharge to attenuation chamber.
- Any drainage run through RPA to be agreed with tree officer prior to commencing installation.
- Manhole and interception cover level to be confirmed.
- For Aco drain to entrance/door threshold use Aco RainDrain Brickslot B 125 or similar approved with heel protector.
- For the gully to bin store use 150x150 square gully with metal cover.

Key

- Foul water pipe showing flow direction
- FMH00 — Foul water manhole & number
- FIC00 — Foul water inspection chamber & number
- Surface water pipe showing flow direction
- SMH00 — Surface water manhole & number
- SIC00 — Surface water inspection chamber & number
- Gulley
- Existing Foul water sewer
- Existing Surface water sewer
- 29.570 — Proposed site level
- 28.270 — Existing site level

Continuation of site pan

See continuation of site plan opposite

DO NOT SCALE FROM THIS DRAWING

GENERAL

1. These notes are intended to augment drawings and specifications. Where conflict of requirements exists the order of precedence shall be as shown in the specifications. Otherwise the strictest provision shall govern.
2. This drawing is to be read in conjunction with all other relevant Engineers and Architects drawings,
3. Drawings not to be scaled. All dimensions to be checked on site by the Contractor prior to the commencement of any work or shop drawing. Any discrepancies to be notified to the Architect & Engineer and further instructions obtained before work is commenced.

DRAINAGE NOTES

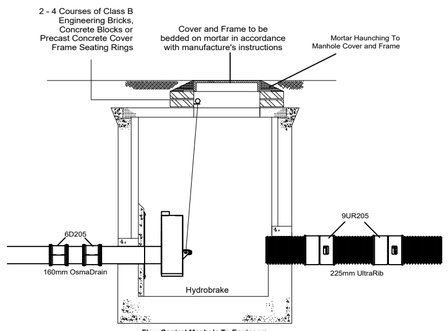
1. Invert of foul and surface water inspection chambers to be min 600mm below FFL
2. Covers HD in road, MD in paths and landscaped areas.
3. All branches from stacks 100mm Ø.
4. All inspection chambers 450mm Ø with 450mm covers.
5. Manholes generally to be 1200x750 or 1050 Ø with 600x600 or 600 Ø covers except manholes between 1.5 & 2.7m deep which are to be minimum 1200mm Ø.
6. Ground floor ensuite shower and bath connections made below floor into nearest run min. 2000mm downstream using 135 branch pipe. Trap to be demountable for rodding.
7. RWP to discharge into roddable access gullies compatible
8. Gullies in hardstanding to be Hepworth semi-universal-square top (200m² capacity).
9. Ensure trap is fitted on laundry installation (separate connection).
10. Drain runs in the car park area to be surrounded in minimum 150mm pea gravel giving class s bedding factor 2.5.
11. All soil stacks to be vented - those marked SVP are taken through the roof and vented to air , all other to be fitted with Agrement Certified Air Admittance Valves.
12. Invert levels, pipe diameters, gradients, and connection points associated with petrol interceptors, storage and infiltration areas to be specified by Subcontractor.
13. Rocker pipes are to be fitted at each side of any pipes penetrating walls or relieving lintels are to be provided.
14. See project specification for further information.
15. 150Ø drains assume 1:150 unless stated
16. 100Ø drains assume 1:80 unless stated
17. Kitchen wastes connected to above floor grease trap and then into soil stack.
18. Where manhole/inspection chamber covers are located in paved or block paved areas, then covers need to be recessed to accept paving type.

DRAWING REVISIONS

REV	DESCRIPTION	DATE	BY	CHK
A	As recorded.	30/09/2024	PO	GB
B	As recorded.	06/10/2024	PO	GB
C	As recorded.	08/10/2024	PO	GB
D	Updated to reflect installed manhole positions around attenuation tank.	28/01/2025	PO	GB

This 'As Recorded' drawing is based on information provided by the main contractor. AFA Consulting Engineers design to meet all current regulations and standards as far as practicable. AFA Consulting Engineers accept no responsibility for non-regulation compliant designs, where the contractor has deviated from original AFA design proposals.

TYPICAL FLOW CONTROL MANHOLE



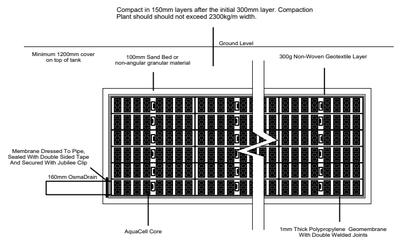
Flow Control Manhole To Engineers Specification And Dimensions

TANK LONG SECTION (Typical Installation)

Backfill to be compacted granular material Type 1(or Type 2). Tracked excavators (not exceeding 21 tonnes weight) should be used to placed fill over the AquaCell units

At least 300mm of fill should be placed before Construction Traffic delivering the backfill are allowed to traffic over the units.

Compact in 150mm layers after the initial 300mm layer. Compaction Plant should should not exceed 2300kg/m width.

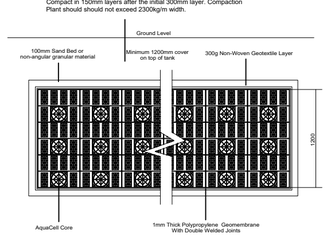


TANK CROSS SECTION (Typical Installation)

Backfill to be compacted granular material Type 1(or Type 2). Tracked excavators (not exceeding 21 tonnes weight) should be used to placed fill over the AquaCell units

At least 300mm of fill should be placed before Construction Traffic delivering the backfill are allowed to traffic over the units.

Compact in 150mm layers after the initial 300mm layer. Compaction Plant should should not exceed 2300kg/m width.



INSTALLATION METHOD

1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the Soakaway/Attenuation tank – minimum 300mm to allow for compaction.
2. Lay 100mm bed of coarse sand/gravel, level and compact. Alternatively 75mm of Type 1 (Type 3 if for infiltration) and a 25mm sand blinding layer would also be suitable.
3. Lay the geotextile over the base and up the sides of the trench.
4. Lay the geomembrane on top of the geotextile over the base and up the sides of the trench (If being used for Attenuation).
5. Lay the AquaCell units parallel with each other. In multiple layer applications, wherever possible, continuous vertical joints should be avoided. AquaCell units can be laid in a 'brick bonded' formation (i.e. to overlap the joints below). For single layer applications use the AquaCell Clips and for multi layers use the AquaCell Clips and the AquaCell Shear Connectors (vertical rods).
6. Place the flange adaptors/ socket adaptors into position and fix using self-tapping screws.
7. Wrap the geomembrane around the AquaCell structure and seal to manufacturers recommendations. Cut appropriate holes for flange/pipe connections.
8. Wrap and overlap the geotextile covering the entire AquaCell structure, to protect the geomembrane.
9. Lay 100mm of coarse sand between the trench walls and the AquaCell Core/ Plus units and compact.
10.Lay 100mm bed of coarse sand over the geotextile and hand compact. Backfill with suitable backfill material.

NB: A storage tank must be vented, and it is recommended that one vent pipe, 110mm in diameter is provided per 7,500 square metres of impermeable catchment area on a site.

See Drainage Layout for Site Specific Connections

GEOMEMBRANE/GEOTEXTILE SPEC

Geomebrane:

- 1mm thick Polypropylene or 0.75mm LLDPE geomembrane is recommended and joints should be sealed using proprietary welding techniques.

Geotextile:

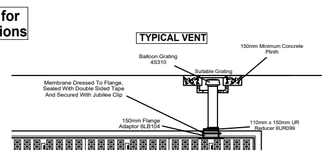
- 300g Non-woven with sewn or glued joints.

It is crucial that the specified material will:

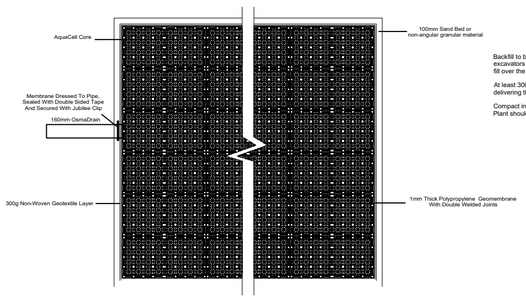
- Withstand the rigours of installation
- Resist puncture
- Resist multi-axial elongation stress and strains associated with settlement
- Resist environmental stress cracking
- Resist damage from in ground contaminants
- Remain intact for the full design life of the AquaCell installation

Geomembranes with a thickness less than 1mm thick Polypropylene or 0.75mm LLDPE are unlikely to meet these criteria and are therefore not recommended for use with the AquaCell system in this application

TYPICAL VENT



TYPICAL PLAN



BACKFILL SPECIFICATION

Backfill to be compacted granular material Type 1(or Type 2). Tracked excavators (not exceeding 21 tonnes weight) should be used to placed fill over the AquaCell units

At least 300mm of fill should be placed before Construction Traffic delivering the backfill are allowed to traffic over the units.

Compact in 150mm layers after the initial 300mm layer. Compaction Plant should should not exceed 2300kg/m width.

Technical Specification

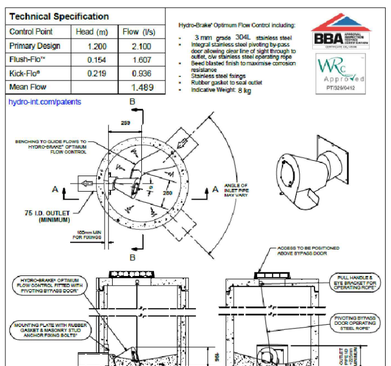
Control Point	Head (m)	Flow (l/s)
Primary Design	1.200	2.100
Flush-Flo™	0.154	1.607
Kick-Flo®	0.219	0.936
Mean Flow		1.489

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel jointing flange
- Seal to suit outlet pipe of right through to outlet. Low stainless steel jointing ridge
- Seal/ Gasket finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 8 kg

PTS/95/43

hydro-int.com/patents



IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
* NOT SUPPLIED BY HYDRO INTERNATIONAL OR ITS AGENTS
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE	The hydraflow characteristics of this CHE-0063-2100-1200-2100 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.
DATE	07/03/2023 14:21
SITE	Worthing
DESIGNER	Graeme Beaven
REF	Worthing

Hydro International

CHE-0063-2100-1200-2100
Hydro-Brake® Optimum

g.beaven@wa-eng.co.uk

Worthing - Maintenance Schedule

Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Responsibility	Comments
Surface Water Drainage System (pipework, chambers etc.)	1 years	10 years	10 years	Building Owner	Cleansing to be carried as necessary
Gullies / Channels / Rainwater Stacks	Monthly	1 years	N/A	Building Owner	Cleansing to be carried as necessary
Catch Pit / Petrol / Silt Interceptor	Monthly	1 years	N/A	Building Owner	Maintenance in accordance with manufacturer's instructions
Attenuation Crates / inlet and outlet headwalls	Monthly	As required	N/A	Building Owner	Clear inlet and outlet grates as required. Desludge as requied
Foul Drainage System (pipework, chambers etc.)	1 year	10 years	10 years	Building Owner	Cleansing to be carried as necessary
Downstream Defender	Monthly	1 years	N/A	Building Owner	Maintenance in accordance with manufacturer's instructions

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admin@afa-eng.co.uk

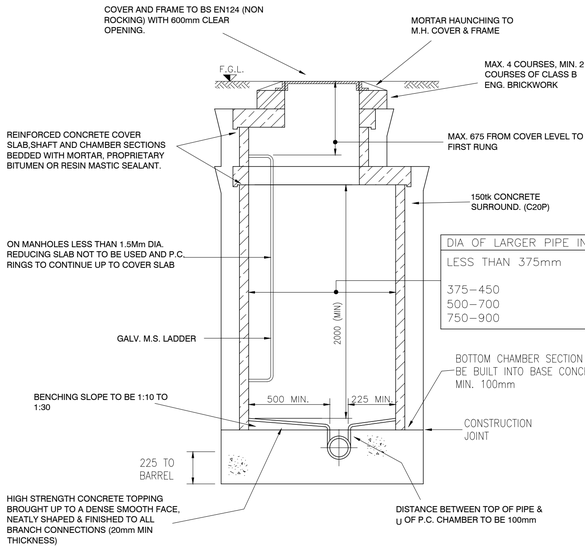
CLIENT
Lawrence Baker

PROJECT
Care Home Development at
106-108 Warren Road, Worthing BN14 9QX

DRAWING TITLE
Drainage Layout

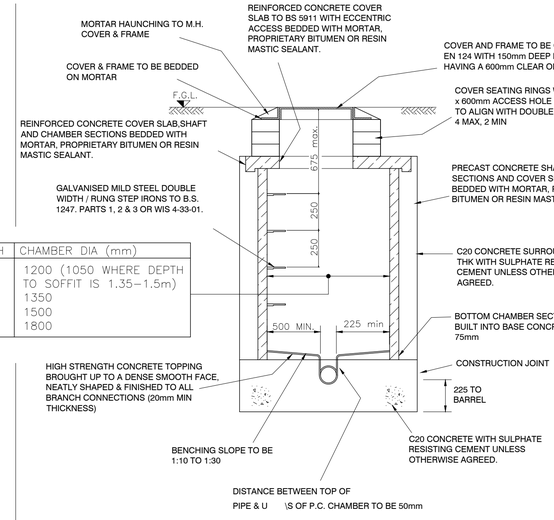
DRAWING STATUS
AS RECORDED

SCALE	DATE
1:200 @ A1	Sep 2024
DRAWN BY	CHECKED BY
GB	SS
JOB NO.	DWG NO. / REV
0009	SL(5)500 / D



DIA OF LARGER PIPE IN MH	CHAMBER DIA (mm)
LESS THAN 375mm	1200 (1050 WHERE DEPTH TO SOFFIT IS 1.35–1.5m)
375–450	1350
500–700	1500
750–900	1800

Type 'A' Manhole Detail
Depth From Ground Level To Soffit Of Pipe 3m to 6m



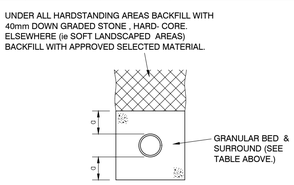
Type 'B' Manhole Detail
Max Depth From Ground Level To Soffit Of Pipe 3m

PIPE DIA.	ROCKER PIPE LENGTH
150-600	0.6
675-750	1.0
>750	1.25

Plan
Manhole Type 'A'

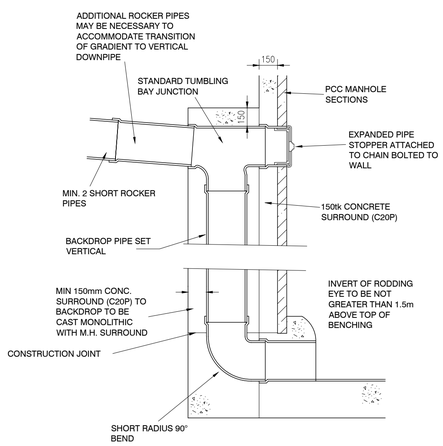
PLAN
MANHOLE TYPE 'B'
Table A

TABLE 1			
PIPE NOMINAL BORE (DN)	MAX. PARTICLE SIZE (mm)	CLASS OF BEDDING	SUITABLE IMPORTED GRANULAR MATERIALS
OVER 100 TO 150 dia	15	S	10mm OR 14mm NOMINAL SINGLE-SIZED OR 14mm TO 5mm GRADED.
OVER 150 TO 500dia	20	S	10,14 0R 20mm NOMINAL SINGLE -SIZED OR 14mm TO 5mm GRADED 0R 20mm TO 5mm GRADED.
OVER 500	40	S	10,14,20 OR 40mm NOMINAL SINGLE-SIZED CRUSHED ROCK OR 14mm TO 5mm GRADED OR 20mm TO 5mm GRADED OR 40mm TO 5mm GRADED.

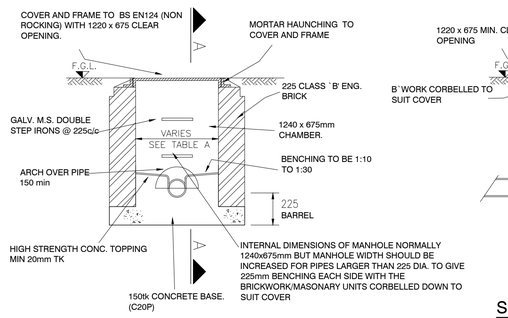


DIMENSION a :-
IN ROCK OR MATERIAL CONTAINING HARD SPOTS
SLEEVED JOINTED PIPES - 150mm MIN.
SOCKETED PIPES - 200mm MIN.
ELSEWHERE
SLEEVED JOINTED PIPES - 100mm MIN
SOCKETED PIPES - 100mm MIN.

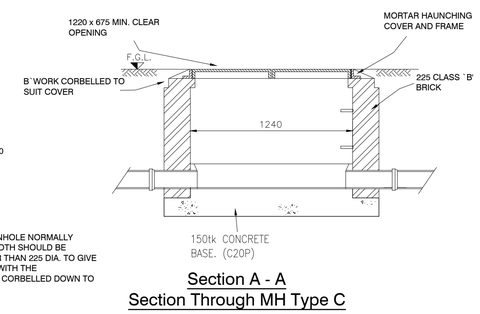
Class 'S' Pipe Bedding Detail



Vertical Backdrop Detail



Type 'C' Manhole Detail
Max Depth From Ground Level To Soffit Of Pipe 1.45m



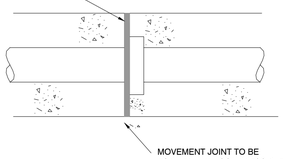
Section A - A
Section Through MH Type C

PIPE DIA.	INTERNAL MANHOLE SIZE	CORBELL DETAILS
UPTO 225	1240x675	NOT REQUIRED
300	1240x750	2 BRICK CORBELL
375	1240x825	3 BRICK CORBELL
450	1240x900	3 BRICK CORBELL
MAX. BRICK CORBELL PER COURSE TO BE 38mm		

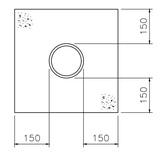
Table A

COMPRESSIBLE FILLER TO CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS 1142: PART 3 OR OTHER EQUALLY COMPRESSIBLE MATERIAL. (FOR THICKNESS OF COMPRESSIBLE FILLER SEE TABLE ABOVE.)

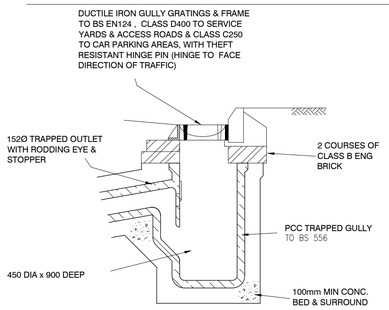
NOMINAL DIA OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450	18
450-1200	36
EXCEEDING 1200	54



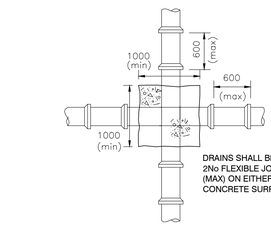
MOVEMENT JOINT TO CONCRETE PIPE SURROUND
Table A



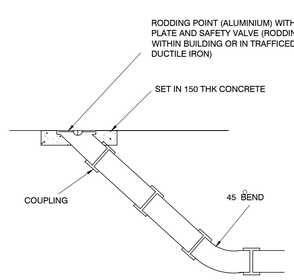
TYPICAL CONCRETE PIPE SURROUND DETAIL
Table A



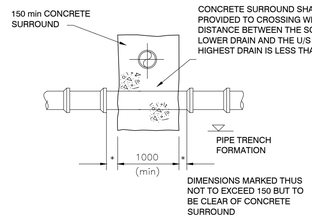
Typical Road Gully Detail



Plan On Pipe Crossover



Rodding Eye Detail
(NOT TO SCALE)



Section

DO NOT SCALE FROM THIS DRAWING

GENERAL

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9. Ensure trap is fitted on laundry installation (separate connection).
10. Drain runs in the car park area to be surrounded in minimum 150mm pea gravel giving class s bedding factor 2.5.
11. All soil stacks to be vented - those marked SVP are taken through the roof and vented to air , all other to be fitted with Agrement Certified Air Admittance Valves.
12. Invert levels, pipe diameters, gradients, and connection points associated with petrol interceptors, storage and infiltration areas to be specified by Subcontractor.
13. Rocker pipes are to be fitted at each side of any pipes penetrating walls or relieving lintels are to be provided.
14. See project specification for further information.
15. 150Ø drains assume 1:150 unless stated
16. 100Ø drains assume 1:80 unless stated
17. Kitchen wastes connected to above floor grease trap and then into soil stack.
18. Where manhole/inspection chamber covers are located in paved or block paved areas, then covers need to be recessed to accept paving type.

DRAWING REVISIONS

REV	DESCRIPTION	DATE	BY	CHK
A	As recorded.	30/09/2024	PO	GB

This 'As Recorded' drawing is based on information provided by the main contractor. AFA Consulting Engineers design to meet all current regulations and standards as far as practicable. AFA Consulting Engineers accept no responsibility for non-regulation compliant designs, where the contractor has deviated from original AFA design proposals.

AFA CONSULTING ENGINEERS LTD
AFA Consulting Engineers Ltd
2a Acomb Court,
Front St,
Acomb,
York
YO24 3BJ
admin@afa-eng.co.uk

CLIENT
Lawrence Baker

PROJECT
Care Home Development at
106-108 Warren Road, Worthing BN14 9QX

DRAWING TITLE
Drainage Details

DRAWING STATUS
AS RECORDED

SCALE	DATE
1:50 @ A1	Sep 2024
DRAWN BY	CHECKED BY
GB	SS
JOB NO.	DWG NO. / REV
0009	SL(5)501 / A

2a Front Street,
Acomb,
York,
YO24 3BJ

Appendix B
Inspection Checklist

LAWRENCE BAKER

Finished Works checklist
Worthing – Warren Road

Subcontractor & Work:
Hopkins – External SW & Foul Drainage installation

Comments

	OK
All excavations been taken to the correct levels and excavated material carted away from site	√
Required backfill to the specified material	√
All bedding and surround compacted to the required specification	√
Are all drainage pipes to the required dimensions and have same been laid to the correct lines and levels	√
Have drainage lines been rodded and jetted	√
Has CCTV survey been carried out (if required)	√
Are all pop-ups located in the specified positions and laid at the correct levels?	√
Maholes:	
All manholes and/or chambers in the correct positions, and constructed to the required specification and dimensions	√
All channels cut and slippers running with flow	√
All manholes neatly benched allowing water to pass freely across a smoth transition	√
Ensure that there is no loose blockwork / brickwork and all block work rubbed up.	√
Check that all loose mortar and debris has been removed	√
Ensure that all ladder rungs have been aligned correctly, both vertically and horizontally.	√
All manhole and/or chamber lids/covers to the correct specification, in the correct positions, and laid at the correct levels	√

Inspected by: Nick Kidsley
(Lawrence Baker Employee Name)

Signed: N Kidsley

Date: 18th July 2024

2a Front Street,
Acomb,
York,
YO24 3BJ

Appendix C

Storm Shark Separator

PURCHASE ORDER

WOR-82

Supplier :-

George Lines
Howards Estate
Handcross Road
Horsham
RH13 6NX

Tel	01753 685354
Fax	
Mobile	07749 497833
Email	graham.burton@georgelines.co.uk
Contact	Graham Burton
Date	03/07/2024

Deliver To :-

Lawrence Baker Ltd
106 Warren Road
Worthing
BN14 9QX

Tel	01865 733780
Fax	
Mobile	07375 400723
email	ken.mckinney@lbl.co.uk
Contact	Ken McKinney
Ref	

Cost Code	Description	Qty	Unit	Rate	Total
	You are to supply and deliver the following all as your email quotation dated 03/07/2024				
	Storm Shark				
50310	1000 Series Advanced Hydrodynamic Vortex Separator ø1050mm Chamber ø225mm Twinwall Outlet at 0° and Inlet at 180° 1550mm Inlet Invert 3000mm Depth Access Cover Optional Extra	1.00	nr	£9,200.00	£9,200.00
	See attached data sheet				
	Please deliver to site urgently				

Delivery
LB Site Management to call off Orders
No deliveries before 8am
Site unsuitable for arctic deliveries

Authorised by

Order Total £9,200.00

GEORGE LINES
CIVILS & LANDSCAPE MERCHANTS

Head Office
George Lines
Howards Estate
Handcross Road
Horsham, RH13 6NX

T 01403 379111
W georgelines.co.uk

QUICK QUOTE

Document No. 16H03661
A/C No. LAW013
Date 4Jul24
Page 1

To:

Lawrence Baker Limited
4 Elm Place
Eynsham
Oxfordshire
OX29 4BD

Deliver To:

NEW CARE HOME
106 WARREN ROAD
WORTHING
BN14 9QX

gb03 10:59 Order ref NEW CARE HOME 106 WARREN ROAD WORTHING

QTY	DESCRIPTION	PRICE AND TERMS	VALUE (EXC. VAT)	VAT RATE
1	STORM SHARK 1000 SERIES ADVANCED HYDRODYNAMIC VORTEX SEPARATOR Ä1050MM CHAMBER Ä225MM TWINWALL OUTLET AT 0¯ AND INLET AT 180¯ 1550MM INLET INVERT 3000MM DEPTH ACCESS COVER OPTIONAL EXTRA 16009035 DELIVERY 10 TO 15 WORKING DAYS XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	9200.00	9200.00	20.00%

NOT A TAX DOCUMENT

GOODS	9200.00
VAT	1840.00
TOTAL	11040.00

All prices are subject to manufacturers increases at the time of purchase
No weight (1 special)

The Title of these Goods shall not pass to the Purchaser until payment has been received in full.
All Goods supplied are subject to our standard conditions of trading. A copy is available on request.



STORM SHARK

ADVANCED HYDRODYNAMIC VORTEX SEPARATOR

MODEL : **SSK1000M**



OVERVIEW

The STORMSHARK 1000 MAX is an Advanced Hydrodynamic Separator with a unique patented design with a proven and tested performance. Designed for use in SUDS treatment trains, providing certainty of water quality treatment, enabling enhanced amenity and bio-diversity downstream. Protecting and defending downstream controlled waters from sediment bound pollutants.

The STORMSHARK Range has been designed and manufactured in Germany and all the units in the range meet and exceed all German Stormwater Treatment standards, under DWA M153 D24 and D25. The Stormshark has also been tested in the USA to NJDEP (New Jersey Department of Environmental Protection). It can be used on-line or off-line and with or without an external by-pass unit, where multi treatment water purification processes are involved.

DESIGN CERTIFICATION & TESTING

- NJDEP 2021
- NRW Trennerlass (Independent German Lab & field test)
- DIBt

PERFORMANCE

The Stormshark removes sediment bound contaminants. Available in differing sizes to suit site flows and conditions. The Stormshark removes over 50% of fine TSS (0–200 microns, median size 75 microns) at design flows and up to 99% of TDS 0.1 to 0.4mm (coarse).

MITIGATION INDICES	TSS	Total Metals	Total Hydrocarbons
NJDEP*	0.5	—	—
STORMSHARK	0.5	0.4	0.45
British Water Code of Practice^	0.5	0.38	0.53

* NJDEP protocol, + "best advice" (in part as NJDEP only covers TSS), ^ The British Water Code of Practice (Assessment of Manufactured Treatment Devices Designed to Treat Surface Water Runoff).

PLASTICS

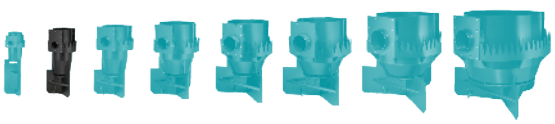
NRW tested	Polyethylene	Polystyrene
% Retained	62.24	75.41

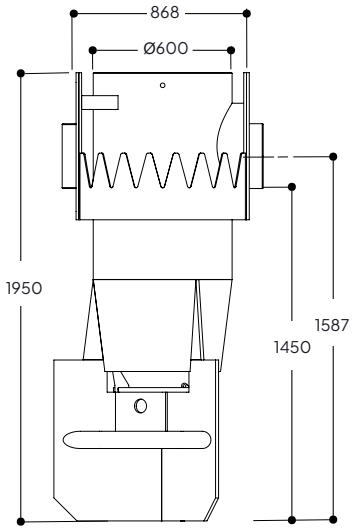
FEATURES & BENEFITS

- Supplied as a single piece unit with SHARK unit pre fitted into a robust PE twinwall chamber with pipework connection pre installed
- Can be installed into Concrete Chambers as well as Polyethylene (As shown above)
- Tested patented design
- No head loss, level inverts
- Cannot air lock
- Inlet deflector plate induces vortex
- Floatable materials & liquids are retained
- Settled solids are prevented from remobilisation
- Distributed upward flow ensures a uniformity of flow
  pathway, even at high design flows.
- Toothed weir ensures balanced optimised flow pathways
- Simple maintenance
- 15 year Warranty
- Built in the UK

CHAMBER OPTIONS

We recommend Stormshark SSK750M and SSK1000M units are pre-installed into polyethylene twinwall chambers (As illustrated). Models : SSK1200M, SSK1500M, SSK1800M, SSK2000M, SSK2500M and SSK3000M, we suggest are installed into a PCC chambers on site. The Stormshark MAX series hydraulic flow rates have larger pipe connection sizes, ideal for sites where higher peak flows are anticipated or required. The MAX series also afford ease of connection to the structural wall drainage pipes commonly used in the UK storm water drainage market.





TECHNICAL DATA

Overall Height :	**1950mm**
Minimum Chamber Ø :	**1000mm**
Height to Invert:	**1450mm**
Height to Inlet centre :	**1587mm**
Max Inlet/Outlet ID :	**250mm**
Sediment Storage Capacity :	**0.42m3**
Oil/Debris Storage Capacity:	**200 litres**
Product Weight :	**70Kg**
(Chamber not included)	

Please Note:
Pipe Connection Plates (Outlet vertically adjustable by 50mm)

Adjustable feet not shown. These are for models to be fitted into PCC chambers

INSTALLATION: The installation design should consider traffic loadings, ground conditions and variable ground water elevations. If in any doubt consult your schemes' Designer/Engineer. A suitably qualified professional is required to sign off the installation. Installation Instructions are available separately.

turtle
email: sales@turtleenviro.co.uk | sales & technical support: tel. 0191 3036315 | **www.turtleenviro.co.uk**

2a Front Street,
Acomb,
York,
YO24 3BJ

Appendix D

CCTV Report

Happy Drains

Lees@happydrains.co.uk

2024-09-12

C1006197/004

Commercial (MSCC5)

106 Warren Road, Worthing, West Sussex, BN14 9QX, United Kingdom

Supplier

Orgination **Happy Drains**
Engineer **Ross Perry**
Surveyor certification number

Client

Name **Lawrence Baker Ltd**
Contact Phone Number **07946541880**
Address **106 Warren Road, Worthing, West Sussex, BN14 9QX, United Kingdom**
Job Reference

Click below for the interactive

FULL REPORT & PLAN

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Section scores

Grade 1 & 2
Best practice suggests that the pipework is in a sound structural condition.

Grade 3
Best practice suggests that consideration should be given to recommendations made.

Grade 4 & 5
Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.
consideration should be given to repairs to avoid total failure.

Lateral 21	SERVICE 1	STRUCTURAL 1
Lateral 34	SERVICE 1	STRUCTURAL 1
Lateral 35	SERVICE 1	STRUCTURAL 1
Lateral 47	SERVICE 1	STRUCTURAL 1
Lateral 52	SERVICE 1	STRUCTURAL 1

Lateral 53	SERVICE 1	STRUCTURAL 1
Lateral 54	SERVICE 1	STRUCTURAL 1
Lateral 55	SERVICE 1	STRUCTURAL 1
Lateral 56	SERVICE 1	STRUCTURAL 1
Lateral 57	SERVICE 1	STRUCTURAL 1
Lateral 58	SERVICE 1	STRUCTURAL 1
Lateral 59	SERVICE 1	STRUCTURAL 1
Lateral 60	SERVICE 1	STRUCTURAL 1
Lateral 61	SERVICE 1	STRUCTURAL 1

Survey measurements

Number of sections
59

Total length of sewer network
508.97m

Total length of inspections
151.39m

Total abandoned inspections
X 0

Number of section inspection photos
39

Number of section inspection videos
14

Lateral 21

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
17.59m	150mm	Foul	Polyvinyl Chlori	Circular	Lateral



Depth

1.1m



Depth

1.3m

Lateral 21

Observations

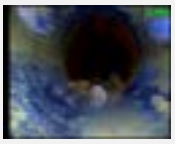
REM (Remark)



Distance: 3.34m
Remarks: patch repair

STRUCTURAL 1 SERVICE 1

Finish



Distance: 17.59m

STRUCTURAL 1 SERVICE 1

Lateral 34

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
18.85m	150mm	Foul	Polyvinyl Chlori	Circular	Lateral





Lateral 34

Observations

Start



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

REM (Remark)



Distance: 6.46m
Remarks: patch repair

STRUCTURAL 1 SERVICE 1

Finish



Distance: 18.85m

STRUCTURAL 1 SERVICE 1

Lateral 35

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
6m	150mm	Foul	Polyvinyl Chlori	Circular	Lateral





Lateral 35

Observations

Start



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

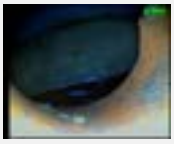
REM (Remark)



Distance: 0.61m
Remarks: patch repair

STRUCTURAL 1 SERVICE 1

Finish



Distance: 6m

STRUCTURAL 1 SERVICE 1

Lateral 47

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
15m	150mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

0.81m



Lateral 47

Observations

Start



Distance: 0m
Amount: 0%

STRUCTURAL 1 SERVICE 1

REM (Remark)



Distance: 4.56m
Remarks: patch repair

STRUCTURAL 1 SERVICE 1

Finish



Distance: 15m

STRUCTURAL 1 SERVICE 1

Lateral 52

At a glance

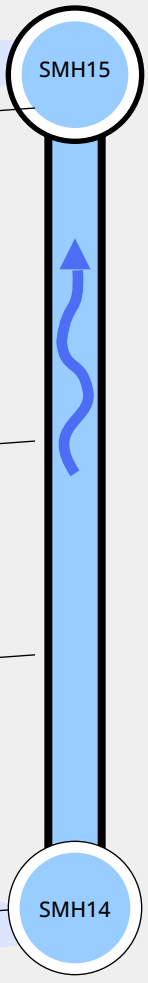
Length	Diameter	Use	Material	Shape	Pipe type
7.11m	150mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

0.77m

NO IMAGE AVAILABLE



SERVICE 1

STRUCTURAL 1

Lateral 52

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

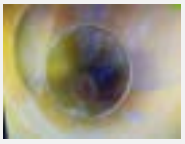
JN (Junction)



Distance: 2.96m
Junction at: 9
Diameter: 100mm

STRUCTURAL 1 SERVICE 1

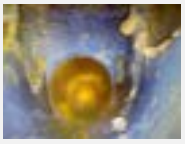
JN (Junction)



Distance: 4.86m
Junction at: 10
Diameter: 100mm

STRUCTURAL 1 SERVICE 1

Finish



Distance: 7.11m

STRUCTURAL 1 SERVICE 1

Lateral 53

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
15.05m	150mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

0.77m



Depth

0.9m

Lateral 53

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

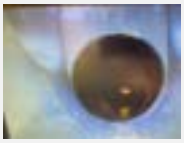
JN (Junction)



Distance: 6.19m
Junction at: 9
Diameter: 100mm

STRUCTURAL 1 SERVICE 1

Finish



Distance: 15.05m

STRUCTURAL 1 SERVICE 1

Lateral 54

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
3.5m	100mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

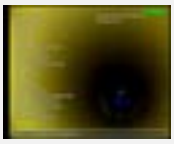
0.77m



Lateral 54

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

WLC (Water Level Clear)



Distance: 0.49m
Amount: 5%
Continuous: false

STRUCTURAL 1 SERVICE 1

CX (Defective Connection)



Distance: 0.49m
Clock reference: 12
Cross sectional loss: 25%
Diameter: 100mm
Remarks: Intruding

STRUCTURAL 1 SERVICE 1

Finish



Distance: 3.5m

STRUCTURAL 1 SERVICE 1

Lateral 55

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
0.15m	100mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

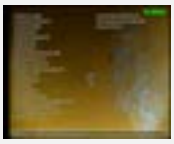
0.77m



Lateral 55

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

Finish



Distance: 0.15m

STRUCTURAL 1 SERVICE 1

Lateral 56

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
0.87m	100mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

0.9m



Lateral 56

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

Finish



Distance: 0.87m

STRUCTURAL 1 SERVICE 1

Lateral 57

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
15.28m	225mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

0.9m



Depth

1.2m

Lateral 57

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

JN (Junction)



Distance: 0.91m
Junction at: 12
Diameter: 100mm

STRUCTURAL 1 SERVICE 1

JN (Junction)



Distance: 3.53m
Junction at: 12
Diameter: 100mm

STRUCTURAL 1 SERVICE 1

JN (Junction)



Distance: 11.48m
Junction at: 12
Diameter: 100mm

STRUCTURAL 1 SERVICE 1

Finish



Distance: 15.28m

STRUCTURAL 1 SERVICE 1

Lateral 58

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
1.03m	150mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

2.4m



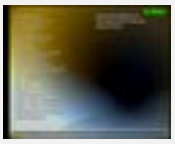
SERVICE 1

STRUCTURAL 1

Lateral 58

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

Finish



Distance: 1.03m

STRUCTURAL 1 SERVICE 1

Lateral 59

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
30.7m	150mm	Surface Water	Polyvinyl Chlori	Circular	Lateral



Depth

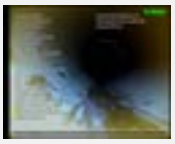
2.4m



Lateral 59

Observations

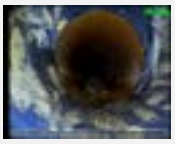
WL (Water Level)



Distance: 0m
Amount: 0%

STRUCTURAL 1 SERVICE 1

Finish



Distance: 30.7m

STRUCTURAL 1 SERVICE 1

Lateral 60

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
17.18m	150mm	Surface Water	Polyvinyl Chlori	Circular	Lateral

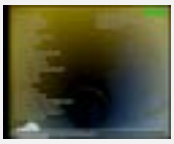




Lateral 60

Observations

WL (Water Level)



Distance: 0m
Amount: 5%

STRUCTURAL 1 SERVICE 1

Finish



Distance: 17.18m

STRUCTURAL 1 SERVICE 1

Lateral 61

At a glance

Length	Diameter	Use	Material	Shape	Pipe type
3.08m	150mm	Surface Water	Polyvinyl Chlori	Circular	Lateral

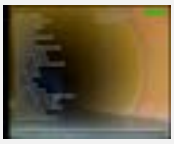




Lateral 61

Observations

WL (Water Level)



Distance: 0m
Amount: 0%

STRUCTURAL 1 SERVICE 1

Finish



Distance: 3.08m

STRUCTURAL 1 SERVICE 1

Node summary

FIC02



Depth	Remarks	Code	Material	Shape	Wall condition
0		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32522599859195145	50.78933892753964

SP-1



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3269676096745022	50.79287223818925

Node summary 2

SP-2

NO IMAGE AVAILABLE

Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3225325757055675	50.79416515800535

JN-1



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32646132729324373	50.788007465755854

Node summary 3

FIC04



Depth	Remarks	Code	Material	Shape	Wall condition
0		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3050911476708107	50.78540844648836

SP-3



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31165256764108307	50.789402939160574

Node summary 4

JN-2



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.30434185036456896	50.784832289517894

FIC0A



Depth	Remarks	Code	Material	Shape	Wall condition
0		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3122398555123773	50.78332144379645

Node summary 5

SP-4

NO IMAGE AVAILABLE

Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3126246304311442	50.78904447305197

FIC04A



Depth	Remarks	Code	Material	Shape	Wall condition
0		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31228035748485317	50.78332144379645

Node summary 6

JN-3



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31248287043736056	50.78261721954615

FIC08



Depth	Remarks	Code	Material	Shape	Wall condition
0.73		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3097848608931031	50.80396790423687

Node summary 7

SP-5



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3154611297019483	50.80874344664411

FIC08A



Depth	Remarks	Code	Material	Shape	Wall condition
0		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31013581232863574	50.8036328023796

Node summary 8

SP-6



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31767746897853444	50.80962328906942

SP-7



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3202409458833033	50.8044452394482

Node summary 9

FIC06



Depth	Remarks	Code	Material	Shape	Wall condition
0		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31624695871161235	50.79938957790556

SP-8



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.322091073417059	50.79818404707544

Node summary 10

SP-9



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3298883144385645	50.80305420365093

SP-10



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.33213135634693636	50.80410531951091

Node summary 11

JN-4



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31496140301165987	50.7995462961999

FIC06A



Depth	Remarks	Code	Material	Shape	Wall condition
0.84		IC			

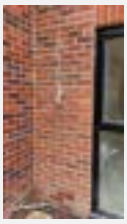
Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3158845613373429	50.79961862612933

Node summary 12

SP-11



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32516190450779137	50.805452931006954

IC00



Depth	Remarks	Code	Material	Shape	Wall condition
0		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3155374236676134	50.800062251597865

Node summary 13

BR-1



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32403656894259836	50.8029264287255

BR-2



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3233499234630033	50.803235016523246

Node summary 14

BR-3



Depth	Remarks	Code	Material	Shape	Wall condition
0		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3154000943388646	50.800023675477384

FMH06



Depth	Remarks	Code	Material	Shape	Wall condition
1.68		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.2979554849256272	50.791567536289314

Node summary 15

FMH07



Depth	Remarks	Code	Material	Shape	Wall condition
0		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.30838868151843	50.78080164802694

FMH03



Depth	Remarks	Code	Material	Shape	Wall condition
1.1		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.321100935804699	50.815145639342695

Node summary 16

FMH02



Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32780323932485755	50.81029311948388

FMH04



Depth	Remarks	Code	Material	Shape	Wall condition
1.3		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3060101694695727	50.80859092620787

Node summary 17

FI03



Depth	Remarks	Code	Material	Shape	Wall condition
1		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31336255702241633	50.811661504397165

FI03A



Depth	Remarks	Code	Material	Shape	Wall condition
1		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3120526493676312	50.81104740511019

Node summary 18

SP-13



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3155598227641909	50.81198190165063

JN-5



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3127287304258686	50.81192850165753

Node summary 19

SP-14



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.314883741525418	50.81062020111701

SP-15



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3183909151399633	50.81112750632194

Node summary 20

JN-6



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31099627170672495	50.81096730478513

FMH05



Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3097286169017188	50.79924444727979

Node summary 21

EXFMH



Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32866124208805525	50.77217722227058

FMH09



Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3331564143447996	50.76789165671846

Node summary 22

JN-7



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon

JN-8



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.308397243708427	50.8031145336545

Node summary 23

FI05



Depth	Remarks	Code	Material	Shape	Wall condition
		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3113514891911717	50.797882375325926

SP-16



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3144903374014407	50.79550428396613

Node summary 24

SP-12

NO IMAGE AVAILABLE

Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.2985428407042612	50.802963045384644

JN-10



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.2991324017318786	50.8011200173416

Node summary 25

IC-1



Depth	Remarks	Code	Material	Shape	Wall condition
		IC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.33527671263186454	50.790575649690766

SMH06



Depth	Remarks	Code	Material	Shape	Wall condition
0.79		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32759560133377663	50.787107033810116

Node summary 26

CAPP



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3446657523748642	50.794111819145975

SMH07



Depth	Remarks	Code	Material	Shape	Wall condition
1.17		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3090700496809218	50.78203207143566

Node summary 27

SMH08



Depth	Remarks	Code	Material	Shape	Wall condition
		CP			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.2949399436358924	50.79207114354692

SMH-11



Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.294749466255364	50.792709288924385

Node summary 28

SMH11A



Depth	Remarks	Code	Material	Shape	Wall condition
0.81		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.29524418091807947	50.793540224579935

CAP2



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon

Node summary 29

GY-1



Depth	Remarks	Code	Material	Shape	Wall condition
		GY			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.29632591061125924	50.79296328223039

RE-1



Depth	Remarks	Code	Material	Shape	Wall condition
		RE			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.30267070947819663	50.799167268442766

Node summary 30

ACO-1



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.2850956157681517	50.79363855213287

JN-11



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.29545745932989087	50.79231296186938

Node summary 31

SMH-17



Depth	Remarks	Code	Material	Shape	Wall condition
1.2		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3091560861963538	50.79823350529666

ACCESS1



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3857333049713496	50.836801433512385

Node summary 32

SA/1

NO IMAGE AVAILABLE

Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.38575907944544463	50.83680753757263

SMH15



Depth	Remarks	Code	Material	Shape	Wall condition
0.77		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31977172628478767	50.81496633208674

Node summary 33

SMH14

NO IMAGE AVAILABLE

Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.32840605081506213	50.81582667410888

SMH16



Depth	Remarks	Code	Material	Shape	Wall condition
0.9		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.30479318340351114	50.80847415229633

Node summary 34

BR-4



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3232378344621023	50.81688252556921

BR-5



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3208548830993485	50.81467303014079

Node summary 35

BR-6



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3068047645268446	50.80831770248434

SMH100



Depth	Remarks	Code	Material	Shape	Wall condition
2.4		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.2909940392871846	50.79404473114635

Node summary 36

ATT TANK



Depth	Remarks	Code	Material	Shape	Wall condition
		OC			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.29175125058820583	50.79459174623366

SMH101



Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.31380165595013443	50.77804384881284

Node summary 37

SMH-102



Depth	Remarks	Code	Material	Shape	Wall condition
		MH			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.3300580405500697	50.77254368351894

BR-79



Depth	Remarks	Code	Material	Shape	Wall condition
		BR			

Lateral connections	Surface type	Cover frame condition

Breadth	Width	Diameter	Benching condition

Lat	Lon
-0.33257644463574154	50.770151455053366

Lateral 21 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	ETS	17.59	PVC	Lateral	C	F

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format
	C	

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage
		13:56:20.117+01:00	2024-09-17	

Client defined one	Client defined two	Client defined three	Client defined four

Client defined five	Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.321100935804699,50.815145639342695	-0.3060101694695727,50.80859092620787

Lateral 34 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	ETS	18.85	PVC	Lateral	C	F

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format
	C	

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage
		14:01:40.323+01:00	2024-09-17	

Client defined one	Client defined two	Client defined three	Client defined four

Client defined five	Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.30838868151843,50.78080164802694	-0.32866124208805525,50.77217722227058

Lateral 35 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	ETS	6	PVC	Lateral	C	F

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format
	C	

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage
		14:04:35.831+01:00	2024-09-17	

Client defined one	Client defined two	Client defined three	Client defined four

Client defined five	Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.32866124208805525,50.77217722227058	-0.3331564143447996,50.76789165671846

Lateral 47 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	STE	15	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format
	C	

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage
		14:07:33.220+01:00	2024-09-17	

Client defined one	Client defined two	Client defined three	Client defined four

Client defined five	Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.29524418091807947,50.793540224579935	-0.30267070947819663,50.799167268442766

Lateral 52 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	STE	7.11	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.31977172628478767,50.81496633208674	-0.32840605081506213,50.81582667410888

Lateral 53 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	ETS	15.05	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.31977172628478767,50.81496633208674	-0.30479318340351114,50.80847415229633

Lateral 54 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	100mm	STE	3.5	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.31977172628478767,50.81496633208674	-0.3232378344621023,50.81688252556921

Lateral 55 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	100mm	STE	0.15	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.31977172628478767,50.81496633208674	-0.3208548830993485,50.81467303014079

Lateral 56 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	100mm	STE	0.87	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.30479318340351114,50.80847415229633	-0.3068047645268446,50.80831770248434

Lateral 57 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	225mm	ETS	15.28	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.30479318340351114,50.80847415229633	-0.3091560861963538,50.79823350529666

Lateral 58 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	STE	1.03	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.2909940392871846,50.79404473114635	-0.29175125058820583,50.79459174623366

Lateral 59 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	ETS	30.7	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.2909940392871846,50.79404473114635	-0.31380165595013443,50.77804384881284

Lateral 60 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	ETS	17.18	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.3138016559501344 3,50.77804384881284	-0.3300580405500697,50.77254368351894

Lateral 61 header sheet

Alternate ID	Division or District	Drainage Area	Joint length	Section Ownership
				PR

Land Ownership	Legal Status	Lining Type	PLR Suffix	Year Constructed	Height	Width
			X			

Node 1 Coordinate	Node 1 Ref	Node 2 Node Coordinate	Node 2 Reference	Node 3 Coordinate

Node 3 Reference	Pipe length Reference	Loc type code	Type of Drain Sewer	Pipe unit length

Expected length	diameter	flow	length	material	pipeType	shape	use
	150mm	ETS	3.08	PVC	Lateral	C	S

Circumferential location of start point	Criticality grade	Flow control measures

Longitudinal location of start point	Method of inspection	Photograph image storage format

Photograph volume reference	Pre-cleaned	Purpose of inspection	Temperature

Video image file name	Video image format	Video image loc system	Video image storage media

Video volume reference	Weather	Time	Date	Inspection stage	Client defined one

Client defined two	Client defined three	Client defined four	Client defined five

Client defined six	Client job ref

Start Node Coordinate	End Node Coordinate
-0.3300580405500697,50.77254368351894	-0.33257644463574154,50.770151455053366

Disclaimer

The results in this report are considered the views of the suitably qualified engineer(s) you have employed to undertake the investigation. These findings are of on the day and time of the work.

This software has to be used by a qualified operative following the formal drainage standards of that specific geo-locations.

Visual investigations are an inspection of inside a drain/pie/sewer or conduit. CCTV drainage engineers are generally not qualified to comment other than pipe condition. They can only suggest required remedial actions appropriate for the pipes surveyed and not the structural integrity of a building.

A CCTV drainage survey is only part of a greater investigation of ground movement. Subsidence, for example, is a structural building issue which can have multiple causes

Pressure testing may be appropriate in certain cases, and you should be guided by a qualified professional, such as a structural engineer of the equivalent in your area.

If you have a specific requirement, please specify the data to capture any tolerances, and if possible, we will meet those requirements.

Where coordinates form part of this report, they may be of limited accuracy. A qualified technician can achieve pinpoint accuracy using 'Sonde and Trace' precision spotting techniques for record purposes or before excavations and installations.

Infographics

Observations in survey

JN



Junction

Lateral pipe was installed at construction. Described by clock reference position and diameter

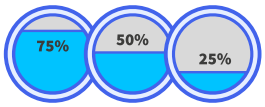
REM



Remark

General remark. Used for additional information.

WL



Water level

Changes in water level. Shown at the beginning of every survey, if dry noted as 00. Described by percentage of height or diameter. Recorded in 5%

Appendix

Backup url for interactive report:

https://app.drainify.io/report?token=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJzdWIiOiIyOTNjNzcwZS04MTRkLTQwMTItYjZjMS00MDQwYWViNjlmYmQiLCJpYXQiOjE3MjcyNjgwNzF9.z091tzTv0TCLC2v08c4haCPXnJNLET5ZnL4O2Vrrwqs

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CONSULTING ENGINEERS LTD

2a Front Street,
Acomb,
York,
YO24 3BJ

Appendix E

Vortex Flow Control Specification

Crown Water Ltd
Vortex Flow Control

Data Sheet

50 mm VC3 Conical Type
Crown Water Vortex Flow Control Unit

Project Details

Client : Merkko
Site Name : Worthing

Project Reference 11221024
Date 22/10/2024

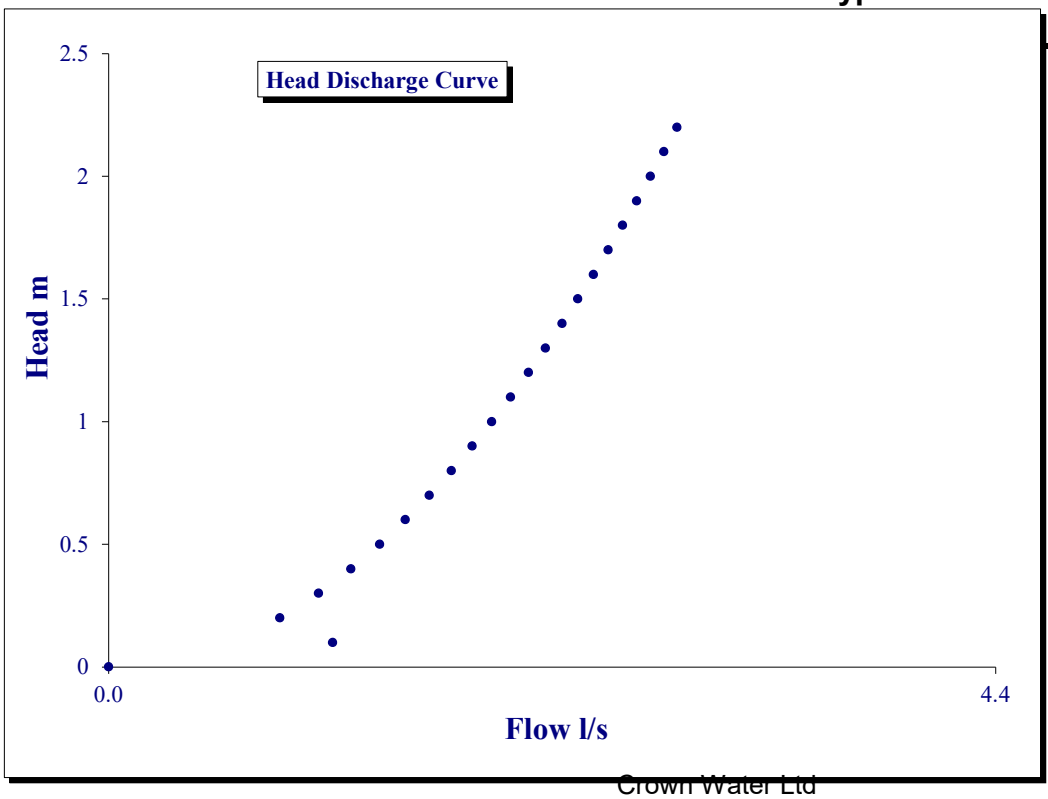
Design Criteria

Design Flow	2.100	l/s	Flush Flow	1.14	l/s
Design Head	1.200	m	Kickback Flow	1.00	l/s

Installation Details

Outlet Diameter	50	mm
Min. outlet Pipe	150	mm minimum
Min Sump Depth	N/A	mm minimum

Unit: 1 No 50 mm VC3 Conical Type



Head m	flow l/s
0.1	1.121
0.2	0.857
0.3	1.050
0.4	1.212
0.5	1.356
0.6	1.485
0.7	1.604
0.8	1.715
0.9	1.819
1.0	1.917
1.1	2.011
1.2	2.100
1.3	2.186
1.4	2.268
1.5	2.348
1.6	2.425
1.7	2.499
1.8	2.572
1.9	2.642
2.0	2.711
2.1	2.778

Crown Water Ltd
Index House, Ascot, SL5 7ET
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2a Front Street,
Acomb,
York,
YO24 3BJ

Appendix F

Permeable Tarmac and Permeable Paving datasheets

Aggregate Industries Technical Department
Asphalt Specification Datasheet

Material: AC 20 Open Bin 100/150 NS WMA
Specification: BS EN 13108-1:2016
Product Code: 2611S
Supply Plant: Crawley

GRADING AND BINDER CONTENT

SIEVE SIZE	TARGET GRADING	TOLERANCE
31.5mm	100	98 – 100
20mm	99	90 – 100
14mm	60	51 – 69
6,3mm	25	16 – 34
2mm	14	7 – 21
0,063mm	4,5	1,5 – 7,5
Binder Content	3,7	3,1 – 4,3

MATERIAL PROPERTIES

Polished Stone Value	Non-Specific
Binder Type	100/150 Penetration Bitumen
Added Filler Type	Reclaimed Filler
Recycled Asphalt Planings	Contains Recycled Asphalt
Mix Temperature	140°C - 160°C

Issued by: Chloe Gullock
Issue Date: 4th December 2024
Valid to: 4th December 2025
Issued to: Centar

It is the sole responsibility of the certificate holder to ensure the validity and current status of all information herein

Aggregate Industries Technical Department
Asphalt Specification Datasheet

Material: AC 10 Open Surf 100/150 NS (WMA)
Specification: BS EN 13108-1:2016
Product Code: 2721, 2721S
Supply Plant: Crawley

GRADING AND BINDER CONTENT

SIEVE SIZE	TARGET GRADING	TOLERANCE
14mm	100	98 – 100
10mm	93	85 – 98
6,3mm	48	41 – 55
2mm	16	10 – 22
0,063mm	5,0	3,0 – 7,0
Binder Content	5,0	4,5 – 5,5

MATERIAL PROPERTIES

Polished Stone Value	Non-specific (NS)
Binder Type	100/150 Penetration Grade Bitumen
Added Filler Type	Limestone Added Filler
Recycled Asphalt Planings	Contains Recycled Asphalt
Hot Mix Temperature	140°C - 170°C
Warm Mix Temperature	140°C - 160°C
Additives	Warm Mix Technology

Issued by: Chloe Gullock
Issue Date: 4th December 2024
Valid to: 4th December 2025
Issued to: Centar

It is the sole responsibility of the certificate holder to ensure the validity and current status of all information herein

Tobermore

Tegula

25 Year Guarantee

SCAN HERE

The tumbled effect of Tegula gives an antique appearance, similar to weathered stone. Use contrasting colours to create boundaries.



Tegula Trio Heather & Kerbsett Heather



Bracken



Brindle



Golden



Heather



Cedar



Charcoal



Natural



Slate

Also available as
Hydropave

Hydropave is a permeable paving system that reduces the risk of flooding and pollution. Available in the Tegula range.

SCAN HERE

Product	Size (mm)	Colours Available	In Stock	m² per pack	m² per slice	No. per m²	No. per pack	Weight per pack (kg)
Tegula 50mm	175 x 140 x 50	Bracken, Charcoal, Heather, Slate	YES	13.37	1.91	40.82	546	1503
	140 x 140 x 50	Bracken, Charcoal, Heather, Slate	YES	13.77	1.53	51	702	1550
Tegula Trio 50mm (All three sizes in one pack)	197 x 173 x 50 173 x 173 x 50 130 x 173 x 50	Bracken, Brindle, Cedar, Charcoal, Golden, Heather, Slate	YES	13.65	1.05	33.3	182 182 91	1530
Tegula 60mm	208 x 173 x 60	Bracken, Cedar, Charcoal, Heather, Natural, Slate	YES	12.95	2.16	27.79	360	1810
	173 x 173 x 60	Bracken, Cedar, Charcoal, Heather, Slate	YES	12.56	1.79	33.41	420	1743
Hydropave Tegula Duo (Both sizes in one pack)	208 x 173 x 60 173 x 173 x 60	Bracken, Cedar, Charcoal, Heather, Slate	YES	12.87	0.99	30	195 195	1721

Sizes: Other sizes available on request **Instructions & Warnings:** See tobermore.co.uk