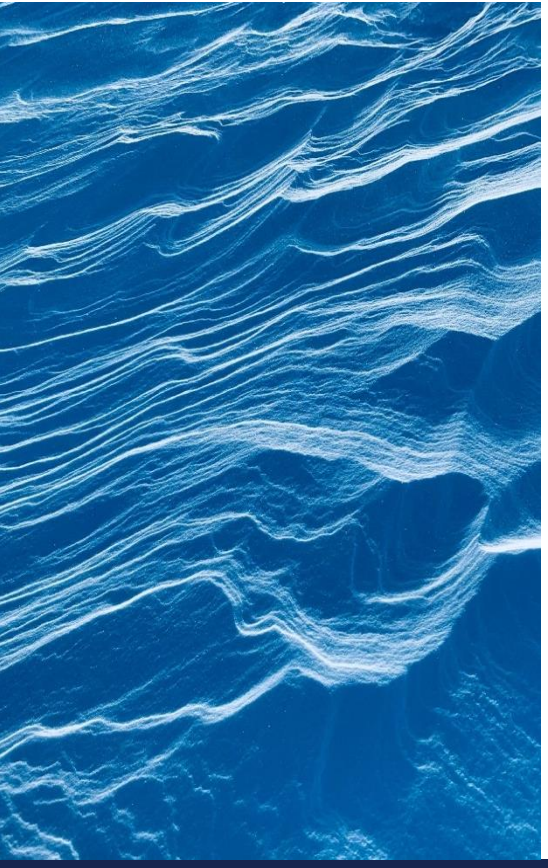


SuDS Management and Maintenance Plan 5802_TW10_London_06.1

Site Address: 28 Friars Stile Road
London
TW10 6NE

aegaea
water, civils and environment

UK Experts in Flood Modelling, Flood Risk Assessments, and Surface Water Drainage Strategies

aegaea
water, civils and environment

Document Issue Record

Project: SuDS Maintenance Plan

Prepared for: Irina Hemmers & Darren Quigg

Reference: 5802_SW13_London_06.1

Site Location: 28 Friars Stile Road, London, TW10 6NE

Issue	Date	Author	Check	Auth.	Comments
1	13/09/2024	Ceri Metcalfe	VW	JM	First issue – Draft for comment
2	16/09/24	Ceri Metcalfe	VW	JM	Final Issue

Please Note:

Table of Contents

1. Introduction

1.1. Aegaea Civil Engineering Ltd. were commissioned by the client to undertake the Surface Water Drainage Strategy and Maintenance Plan for the proposed development, supporting planning reference 24-0982-HOT.

Site Overview

1.2. The site of the proposed development is 28 Friars Stile Road, London, TW10 6NE (Figure 1). It is understood that the proposed development is for the erection of a new rear extension at ground floor level and creation of a full basement with front lightwell and sunken terrace to rear at the above address. The proposed layout can be found within Appendix A of this document.

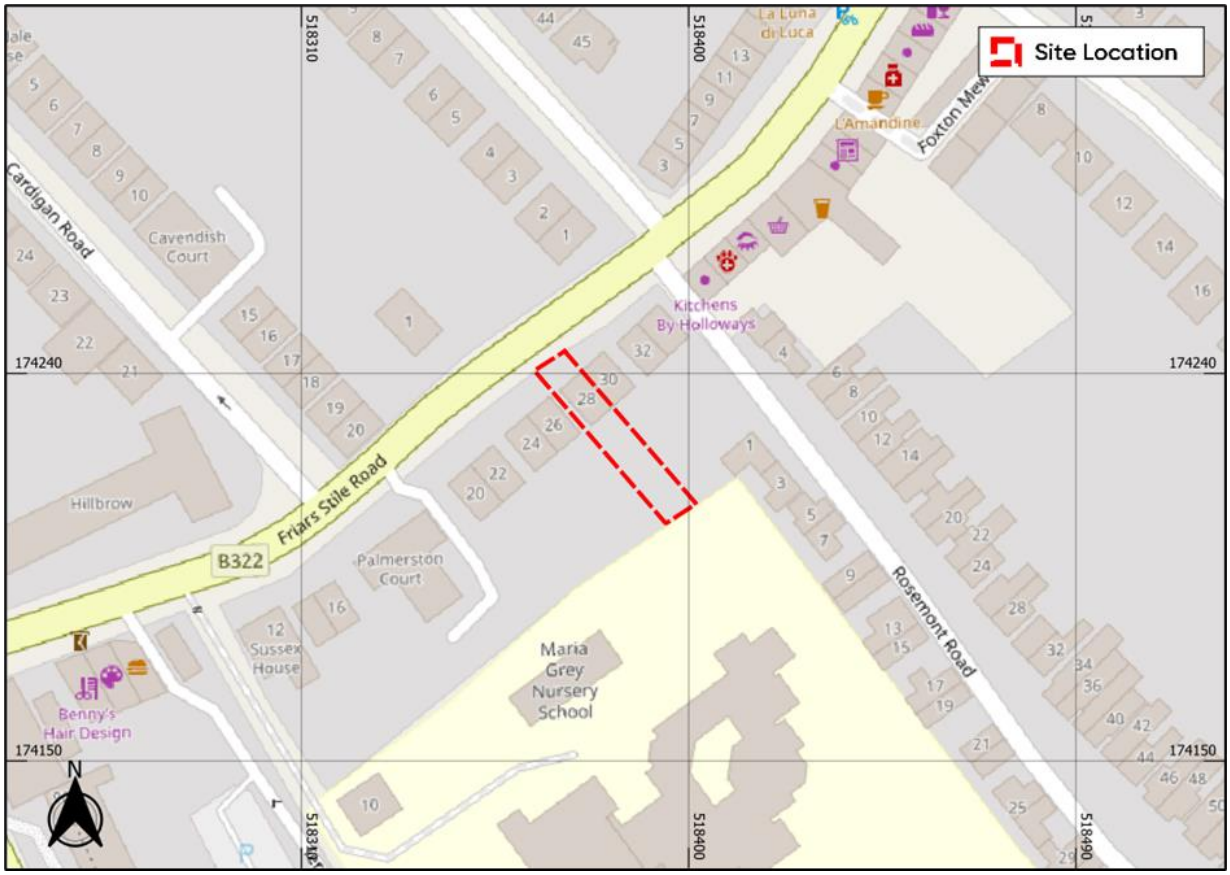


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors

1.3. The topographical survey shows that the site is relatively flat but tends to fall from the rear of the property to the front. Ground elevation of the site vary between 39.79 metres above Ordnance Datum (m AOD) to the rear garden and 39.31m AOD at the front of the property. The topographical survey is contained within Appendix B.

1.4. Richmond Council is the Local Planning Authority (LPA) for the site, and also the designated Lead Local Flood Authority (LLFA).

2. Surface Water Drainage

Proposed Surface Water System

2.1. The surface water drainage strategy comprises of the use of permeable paving and a sedum roofs to treat and attenuate flows prior to discharging to the existing Thames Water combined sewer at a controlled rate.

2.2. It is proposed that a non-return valve is to be fitted to the surface water system prior to entering the combined sewer.

2.3. The drainage strategy proposed to discharge at a controlled rate of 1l/s utilising the existing connection to the Thames Water Combined sewer within Friars Street. Thames Water asset mapping is contained within Appendix C and a CCTV is contained within Appendix D.

Future Maintenance

2.4. The proposed drainage system contains a number of measures to control the discharge and surface water on site, it is important that the property owner/occupier understands and maintains the drainage system to ensure the drainage system operates effectively for the lifetime of the development.

2.5. The property owner/occupier will be required to take responsibility for the maintenance and any repairs necessary to the onsite surface water drainage network.

2.6. This document should be read in conjunction with the drainage design drawings contained within Appendix E.

SuDS Features

2.7. The SuDS system aims to manage rainfall by collecting surface water for treatment and attenuation prior to discharging at a controlled rate into the combined sewer network.

2.8. During rainfall events, surface water runoff will enter the below ground drainage system via rainwater downpipes and permeable paving. Storage is provided within the permeable paving sub-base and sedum roofs designed for a 1 in 100-year storm and 40% climate change.

SuDS Checklist

2.9. The following lists the SuDS components and extra features which are found on site:

- **Permeable surfaces as permeable block paving, porous Asphalt, gravel or free draining soils** allow rain to percolate through the surface into underlying drainage layers. They must be protected from silt, sand, compost, mulch, etc.
- **Green Roofs** are planted with sedum or other plant material. They clean and absorb water allowing it to evaporate. Excess water is drained from the roof to other SuDS features.
- **Manholes and inspection chambers and rodding eyes** are provided on pipe bends or junctions and will allow access and cleaning of the system as necessary.
- **Below ground drainage** pipes convey water and should be free from obstruction at all times to allow free flow.
- **Inlet structures** such as gullies, rainwater downpipes and drainage channels should be free from obstruction at all times.
- **ACO Channel (or similar)** collect surface water runoff and direct flows to the below ground surface water drainage network.
- **Orifice Plate (Flow Control)** is a surface water regulator. It is entirely self-activating and requires no manual intervention
- **ACO Channel** collect surface water runoff and direct flows to the below ground surface water drainage network.

General Requirements

2.10. The surface water drainage network will be managed throughout the lifetime of the development by Site Owner.

2.11. Manufacters maintenance specifications should take precedence over thee below.

2.12. All drainage, whether piped or SuDS require regular maintenance. the tables below provide an overview of general maintenance tasks and frequency of which they need to be undertaken.

General maintenance for Surface Water Drainage Systems as per CIRIA C753.

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Inspect for sediment and debris in catchpit manholes and gullies. Clean out as required	Twice Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional Maintenance	Remove sediment and debris in catchpits, gullies, attenuation devices and inside concrete manhole rings.	As required, based on inspections.
Remedial actions	Reconstruct and/or replace components, if performance deteriorates or failure/blockage occurs.	As required
	Replacement of clogged components (flow restriction)	As required
Monitoring	Inspect silt traps/gullies/catchpits and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check attenuation devices	Annually

2.13. The required maintenance for each component making up the drainage system is scheduled in the tables below, based on CIRIA report C753 – The SuDS manual.

Permeable Paving

General maintenance for permeable paving as per CIRIA C753.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements
Remedial Maintenance	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
	Remediate work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is

Maintenance Schedule	Required Action	Typical Frequency
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action.	Three-monthly, 48 hr after large storms in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Many of the specific maintenance activities for pervious pavements can be undertaken as part of a general site cleaning contract (many car parks or roads as swept to remove litter and for visual reasons to keep them tidy) and therefore, if litter management is already required at site, this should have marginal cost implications.

Green Roof

Maintenance Schedule	Required Action	Typical frequency
Regular inspections	Inspect all components including soil substate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability.	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms

	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required
	During establishment (i.e. year one), replace dead plants as required	Six monthly and annually or as required
	Post establishment, replace dead plants as required (where>5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required- Clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial Maintenance	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required

Orifice Plate (Flow Control)

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove sediment and debris from flow control chambers and upstream manholes. Check for signs of damage, wear and tear. Check any visible fixing bolts.	Monthly (for the first 12 months, then 6 monthly).
Remedial Actions	Clean or replace orifice plate if defects are located or, if performance deteriorates or failure occurs. In the event of the blockage, the blockage/foreign material should be manually removed	As necessary.
Monitoring	Check flow control to ensure emptying is occurring.	Quarterly and post high intensity storm event.

ACO Channel (or similar)

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove sediment and debris from gullies and channel drain	Quarterly

Appendix A - Development Proposals

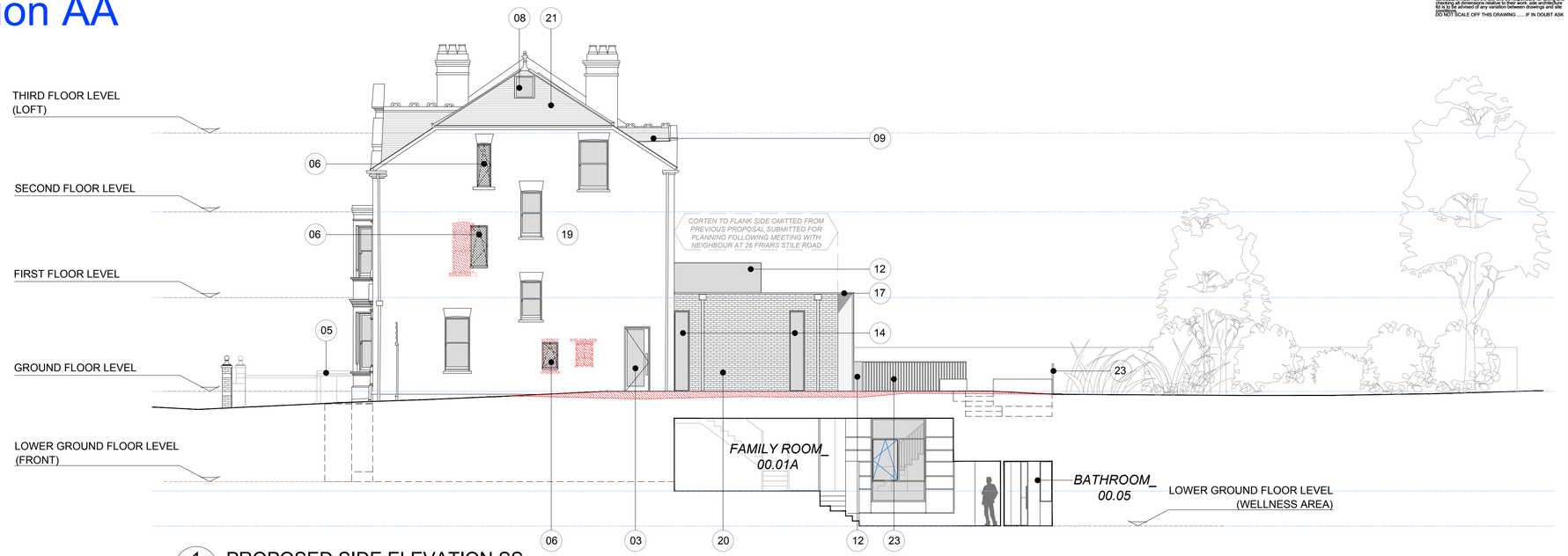
Proposed Side Elevation & Section AA

PLANNING

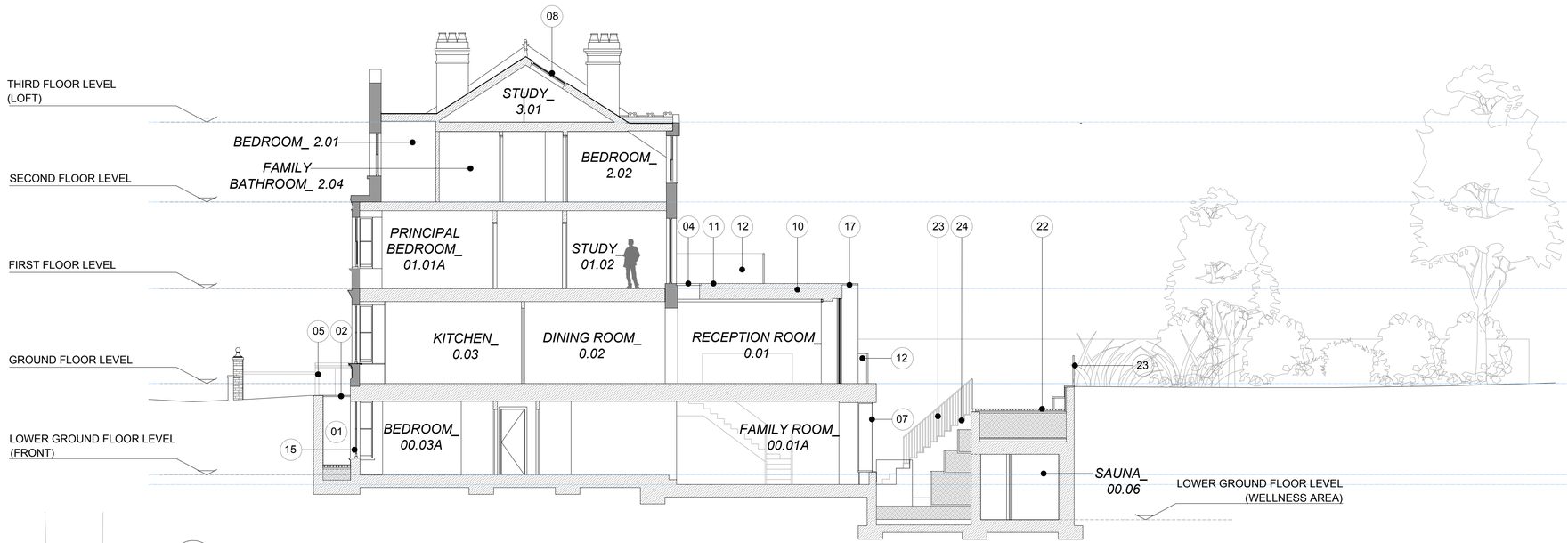
COMPONENT KEY:

01 PROPOSED FRONT LIGHT WELL
02 FLUSH METAL GRILLE TO LIGHT WELL
03 PROPOSED OPENING TO ALLOW SIDE ENTRANCE TO BOOT ROOM
04 PROPOSED WALK-ON GLASS
05 PROPOSED TIMBER-CLAD BINS STORAGE WITH SEDUM ROOF
06 OBSCURED WINDOW, MINIMAL FRAME
07 PROPOSED FIXED GLAZING MINIMAL FRAME
08 PROPOSED FLUSH ROOFLIGHT
09 PROPOSED DORMER TO MATCH EXISTING ADJACENT
10 PROPOSED FLAT ROOF
11 PROPOSED FIRST FLOOR TERRACE
12 PROPOSED TOUGHENED GLASS GUARDRAIL
13 PROPOSED DOOR TO ACCESS FIRST-FLOOR TERRACE
14 PROPOSED SLOT WINDOW, MINIMAL FRAME
15 PROPOSED WINDOW OPENING
16 REAR MID-LEVEL TERRACE
17 CORTEN STEEL PORCH
18 CORTEN STEEL CLADDING
19 EXISTING LONDON STOCK BRICK
20 PROPOSED LONDON STOCK BRICK TO MATCH EXISTING
21 PROPOSED SLATE ROOF TO MATCH EXISTING
22 PERVIOUS PAVING TO AMENITY ON 1M SOIL + DRAINAGE LAYER
23 CORTEN GUARDRAIL
24 PERFORATED CORTEN STAIRCASE

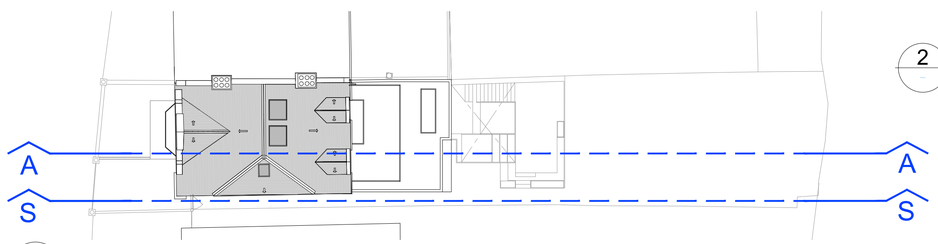
DENOTES EXISTING WINDOW TO BE REMOVED.
WALL INFILL AS REQUIRED TO MATCH ADJACENT EXISTING
DENOTES INFILL



1 PROPOSED SIDE ELEVATION SS
SCALE: 1:100(A1) / 1:200(A3)



2 PROPOSED SECTION AA
SCALE: 1:100(A1) / 1:200(A3)



3 KEY PLAN
SCALE: 1:200(A1) / 1:400(A3)

1:200 scale bar @ A3
1:100 scale bar @ A1
0 5 10 15

REV:	DATE:	DETAILS:	INITIALS:	REV:	DATE:	DETAILS:	INITIALS:	REV:	DATE:	DETAILS:	NORTH POINT:	KEY PLAN:

ade architecture
RIBA Chartered Architects & Designers
3 College Mews, St Ann's Hill, SW18 2SJ
T 020 7993 8542 E hello@ade-architecture.com
www.ade-architecture.com

Project:	28 FRIARS STILE ROAD, TW10 6NE	Project No: 23982	Date: 04.04.24
Client:	IRINA & DARREN QUIGG	Drawing No: A10E03	Revision:
Title:	PROPOSED SIDE ELEVATION & SECTION AA	Drawn By: LB	Scale at A1: 1:100
Issue Type:	PLANNING	Checked By: DTA	Scale at A3: 1:200

Proposed Plans

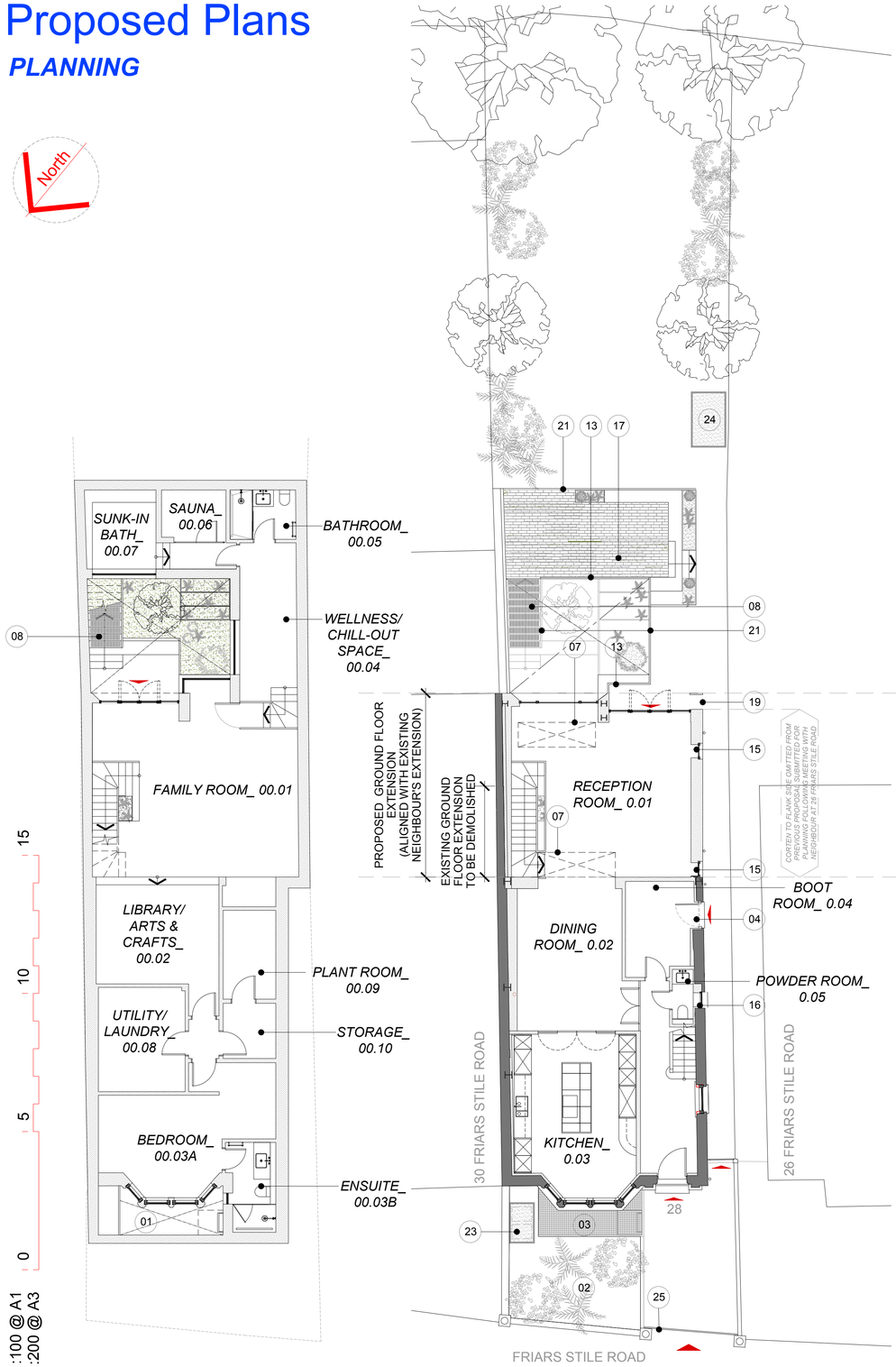
PLANNING

COMPONENT KEY:

01 PROPOSED FRONT LIGHT WELL
02 FRONT GARDEN
03 FLUSH METAL GRILLE TO LIGHT WELL
04 PROPOSED SIDE ENTRANCE TO BOOT ROOM
05 PROPOSED WALK-ON GLAZING
06 PROPOSED ROOFLIGHT
07 ROOFLIGHT ABOVE
08 PROPOSED PERFORATED CORTEN STEEL STAIRCASE
09 PROPOSED FLUSH ROOFLIGHT
10 DORMER TO MATCH EXISTING ADJACENT
11 PROPOSED FLAT ROOF
12 PROPOSED FIRST-FLOOR DECKED TERRACE
13 PROPOSED TOUGHENED GLASS GUARDRAIL
14 PROPOSED DOOR TO FIRST-FLOOR TERRACE
15 PROPOSED MIN. FRAME WINDOW
16 PROPOSED WINDOW OPENING
17 GARDEN AMENITY
18 CORTEN STEEL PORCH
19 PORCH ABOVE
20 PROPOSED SLATE ROOF TO MATCH EXISTING
21 PROPOSED CORTEN STEEL GUARDRAIL
22 WALL INFILL TO MATCH EXISTING ADJACENT
23 TIMBER CLAD BIN STORAGE WITH SEDUM ROOF
24 TIMBER CLAD BIKE STORAGE (5NO. BIKES) WITH SEDUM ROOF
25 AUTOMATED ELECTRIC GATE

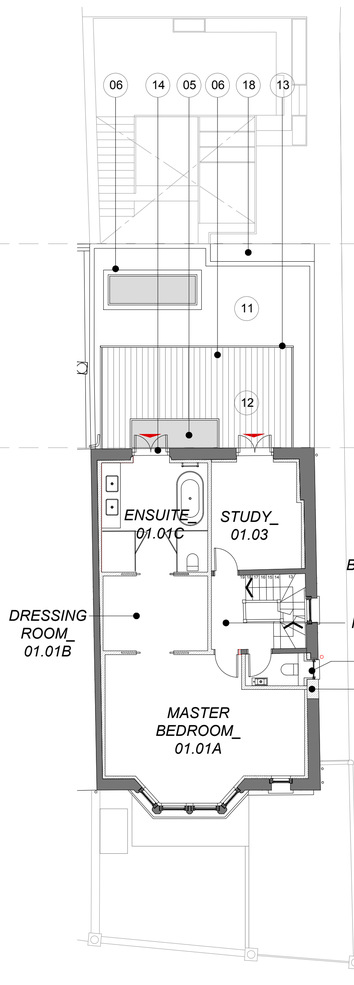
LEGEND:

EXISTING WALL
PROPOSED WALL

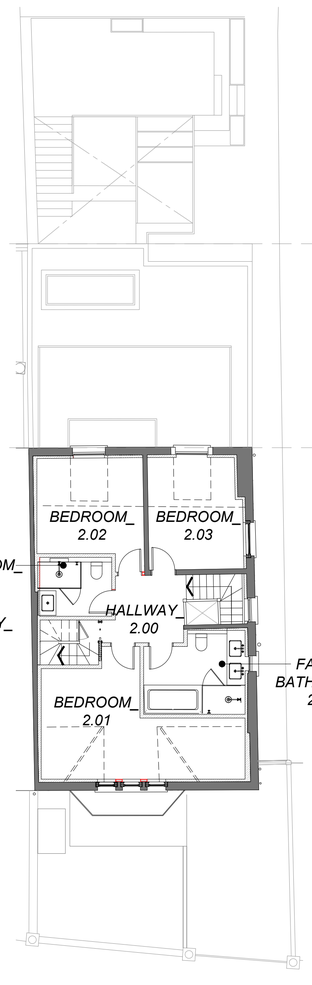


1 PROPOSED LOWER GROUND FLOOR
SCALE: 1:100(A1) / 1:200(A3)

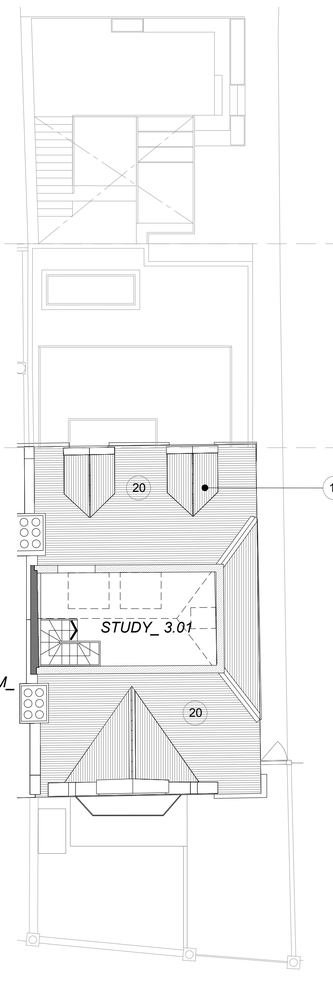
2 PROPOSED GROUND FLOOR
SCALE: 1:100(A1) / 1:200(A3)



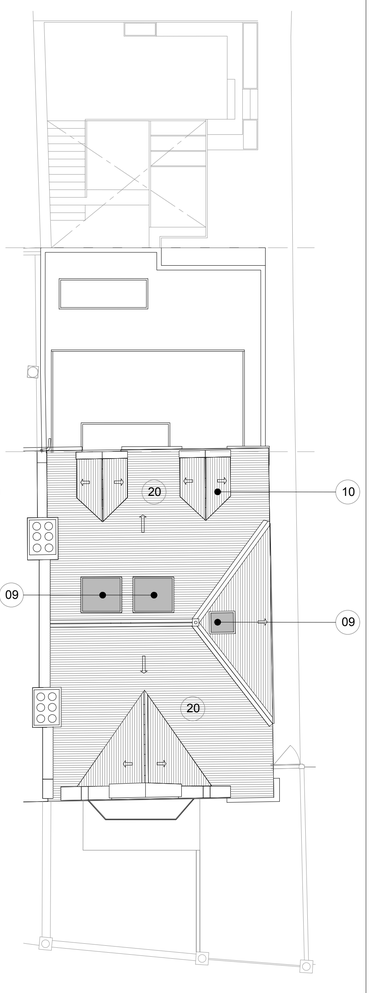
3 PROPOSED FIRST FLOOR
SCALE: 1:100(A1) / 1:200(A3)



4 PROPOSED SECOND FLOOR
SCALE: 1:100(A1) / 1:200(A3)



5 PROPOSED THIRD FLOOR
SCALE: 1:100(A1) / 1:200(A3)



6 PROPOSED ROOF PLAN
SCALE: 1:100(A1) / 1:200(A3)

REV:	DATE:	DETAILS:	INITIALS:	REV:	DATE:	DETAILS:	INITIALS:	REV:	DATE:	DETAILS:

NORTH POINT:

KEY PLAN:

ade architecture
RIBA Chartered Architects & Designers
3 College Mews, St Ann's Hill, SW18 2SJ
T 020 7993 8542 E hello@ade-architecture.com
www.ade-architecture.com

Project: 28 FRIARS STILE ROAD, TW10 6NE		Project No: 23982	Date: 03.04.24
Client: IRINA & DARREN QUIGG		Drawing No: A10P02	Revision:
Title: PROPOSED GA PLANS		Drawn By: LB	Scale at A1: 1:100
Issue Type: PLANNING		Checked By: DTA	Scale at A3: 1:200

Appendix B - Topographical Survey

518360 E

518380 E

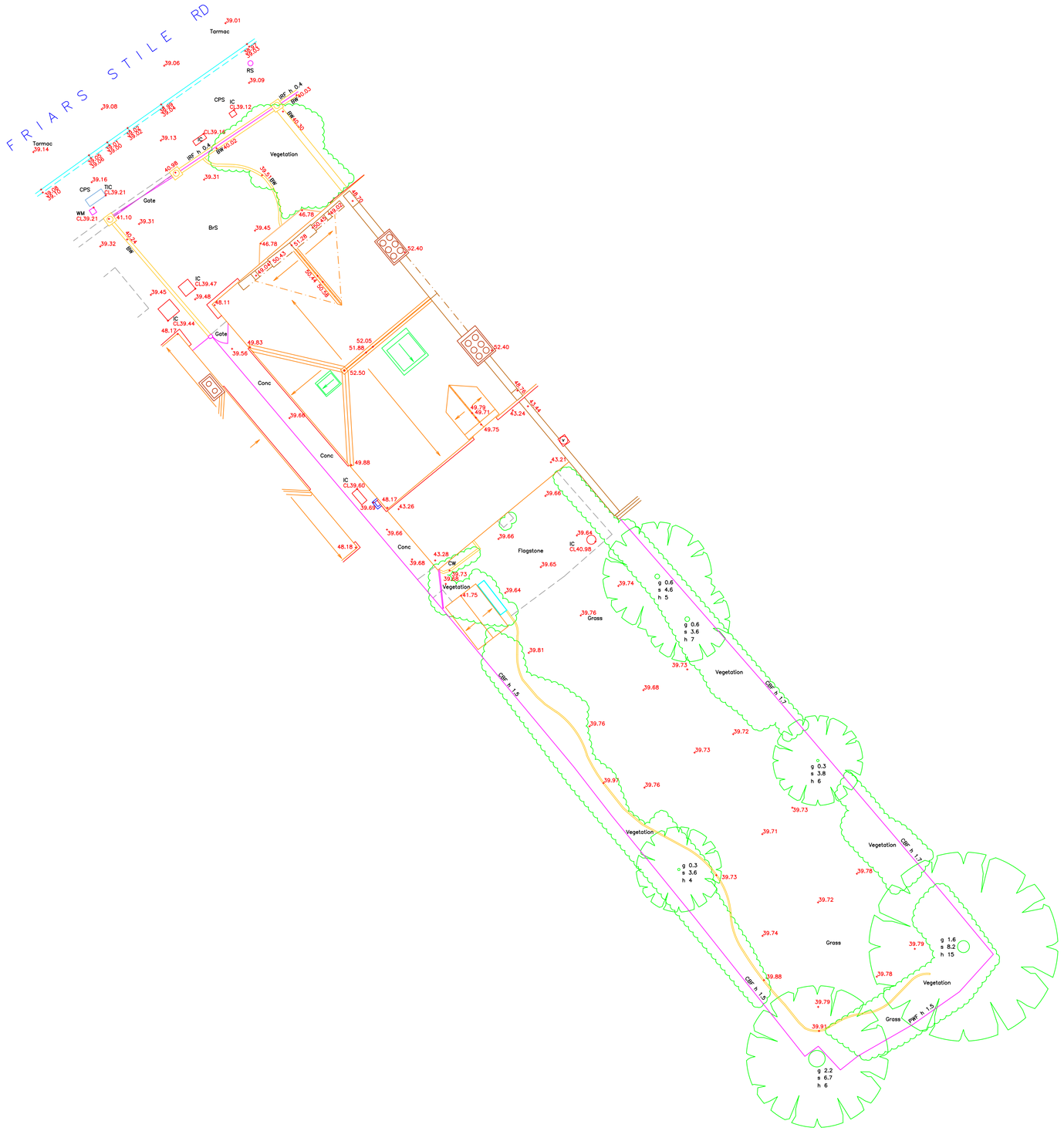
518400 E

518420 E

N

174240 N

174220 N



Scale 1:100

0m 1m 2m 3m 4m 5m 10m

518360 E

518380 E

518400 E

518420 E

ABBREVIATIONS

A/C	Air Conditioner	Mb	Multibole
ATM	Automated Telling Machine	Mh	Manhole
B	Bollard	Min	Minimum
BB	Bellaha Beacon	Mkr	Marker
Bh	Borehole	NB	Notice Board
Br	Brick	NP	Name Plate
BrS	Brick Setts	OBF	Open Boarded Fence
BRW	Brick Retaining Wall	O/H	Overhead
Bus	Bus Stop	OSGM	Ordnance Survey
BSh	Bus Shelter	P	Post
BW	Brick Wall	PB	Pillar Box
BWF	Barbed Wire Fence	PGM	Permanent Ground Mark
CATV	Cable TV Inspection Cover	PLI	Pavement Light
CBF	Close Boarded Fence	PPM	Parking Payment Machine
CCP	Car Charging Point	PPS	Permeable Paving Surface
CCTV	Closed Circuit Television	PRF	Post and Rail Fence
CIF	Corrugated Iron Fence	PS	Paving Stones
CL	Cover Level	PVCF	PVC Fence
CLF	Chain Link Fence	PWF	Post and Wire Fence
Col	Column	PD	Parking Display
Conc	Concrete	RE	Rodding Eye
CPS	Concrete Paving Slabs	RS	Road Sign
CRW	Concrete Retaining Wall	RSS	Rubberised Safety Surface
CW	Concrete Wall	RWP	Rain Water Pipe
d	depth	s	spread
DP	Down Pipe	SB	Sign Board
DrC	Drainage Channel	SBM	Site Bench Mark
EIC	Electrical Inspection Cover	SF	Security Fence
EJB	Electrical Junction Box	SHB	Shrub Bed
EP	Electricity Pole	SL	Sump Level
ER	Earthing Rod	SO	Smoke Outlet
ESG	Electrical Switchgear	SP	Sign Post
FB	Flower Bed	SV	Stop Valve
FH	Fire Hydrant	SRW	Stone Retaining Wall
FL	Floor Level	SW	Stone Wall
FR	Floodlight	Tac	Tactile Paving
g	girth	TBM	Temporary Bench Mark
G	Gully	TCB	Telephone Call Box
GM	Gas Meter	TCP	Traffic Control Post
GP	Gate Post	TIC	Telecom Inspection Cover
GV	Gas Valve	TJB	Telephone Junction Box
h	height	TL	Traffic Light
HR	Handrail	TLC	Traffic Light Control
IB	Illuminated Bollard	TM	Ticket Machine
IC	Inspection Cover	TMCB	Traffic Management Control Box
IL	Invert Level	TMIC	Traffic Management Inspection Cover
Int	Intercom	TP	Telephone Pole
IRF	Iron Railing Fence	Typ	Typical
IRS	Illuminated Road Sign	UTS	Unable to Survey
JB	Junction Box	V	Vent
KO	Kerb Outlet	VP	Vent Pipe
L	Light	W	Window
LP	Lamp Post	WM	Water Meter
Max	Maximum	WV	Water Valve

NOTES

The survey is commensurate with band E accuracy, as specified in the RICS survey detail accuracy banding table.
All levels are above OS Newlyn Datum and the survey grid is positioned on OS National Grid.
Coordinates obtained by multiple network RTK GPS observations.
Drawing units are metres.
All quoted dimensions and levels are in metres.

CO-ORDINATE SYSTEM

GRID

- ☐ Arbitrary – related to building line
- ☐ Arbitrary – approx. related to North
- ☒ Ordnance Survey National Grid

LEVELS

- ☐ Arbitrary – related to a temporary bench mark
- ☐ Ordnance Survey Bench Mark
- ☒ Ordnance Survey National GPS Network

Rev	Date	By	Details

TOPOGRAPHICAL SURVEY SYMBOLS

+ 50.00 Spot Level — h 0.90 Feature Height

Stair/Step Up — Stair Cutline

Bank Slope — Position Assumed

RED LASER SCANNING

www.redlaserscanning.co.uk

enquiry@redlaserscanning.co.uk

London Head Office
23 Sussex Street
SW1V 4RR

0207 477 2175

Project
28 Friars Stile Road
Richmond
TW10 6NE

Description
2D Topographical Survey

Survey Date	Drawing Date
14/04/2023	03/05/2023
Sheet: A1	Scale: 1:100
Drawn: AH	Checked: RN

Project No.	Drawing No.	Preliminary	Revision
2231	01		A

Appendix C - Thames Water Asset Map

Asset location search

Property Searches

Aegaea
66 Swaledale Road
WARMINSTER
BA12 8FJ

Search address supplied 28
Friars Stile Road
Richmond
TW10 6NE

Your reference 3734

Our reference ALS/ALS Standard/2023_4921659

Search date 7 December 2023

Notification of Price Changes

From 1st April 2023 Thames water Property Searches will be increasing the prices of its CON29DW, CommercialDW Drainage & Water Enquiries and Asset Location Searches. Historically costs would rise in line with RPI but as this currently sits at 14.2%, we are capping it at 10%.

Customers will be emailed with the new prices by January 1st 2023.

Any orders received with a higher payment prior to the 1st April 2023 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Asset location search

Property Searches

Search address supplied: 28, Friars Stile Road, Richmond, TW10 6NE

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Asset location search

Thames Water Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

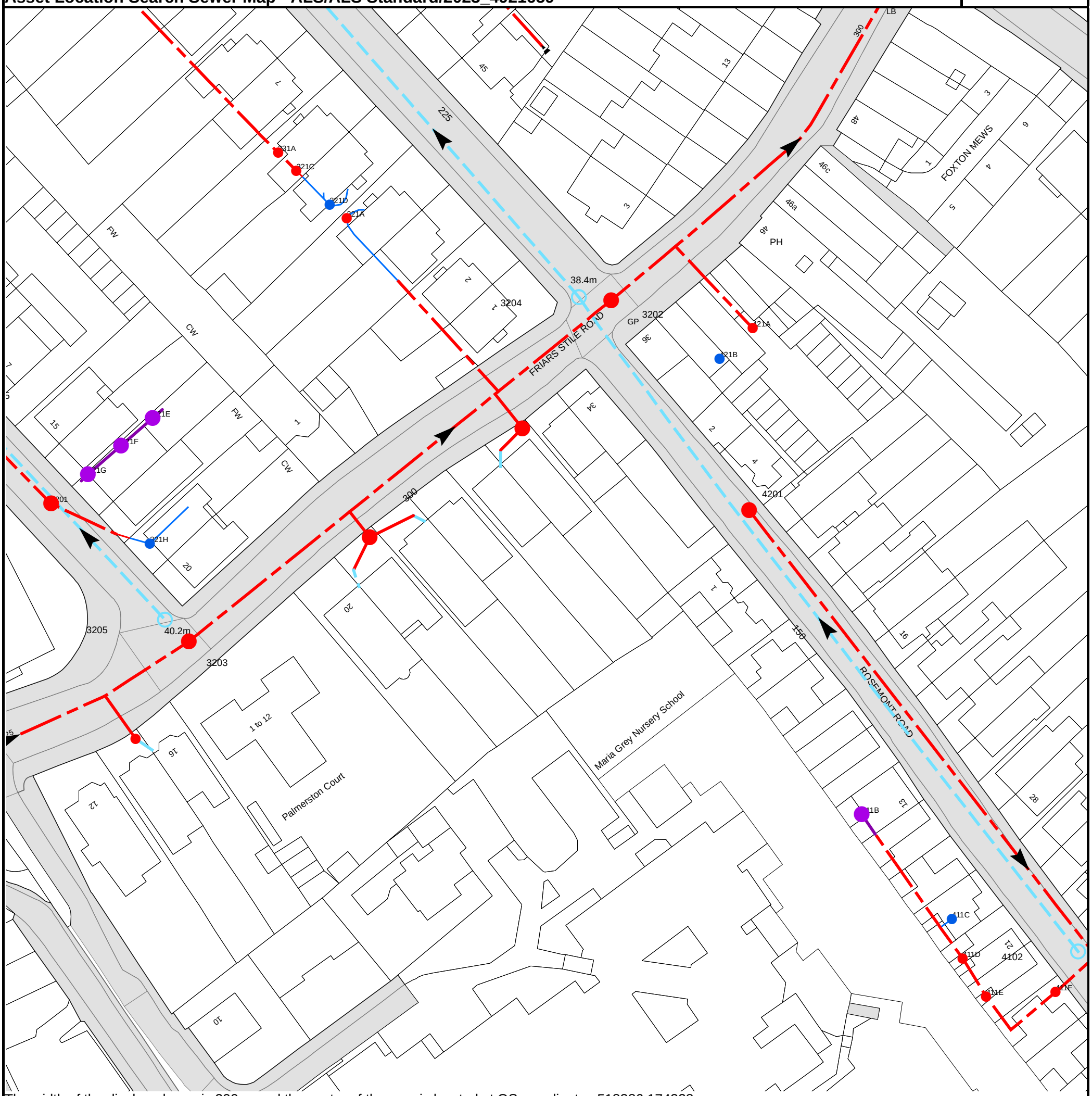
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2023_4921659



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 518386,174228

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
411E	n/a	n/a
411F	n/a	n/a
411D	n/a	n/a
4102	38.91	37.72
411C	n/a	n/a
411B	n/a	n/a
331A	n/a	n/a
321C	n/a	n/a
321D	n/a	n/a
321A	n/a	n/a
3204	38.47	36.98
321F	n/a	n/a
31ZW	n/a	n/a
321H	n/a	n/a
321E	n/a	n/a
3205	n/a	n/a
3203	40.03	36.47
32ZP	n/a	n/a
32YT	n/a	n/a
3202	38.53	34.46
421B	n/a	n/a
4201	38.96	36.98
421A	n/a	n/a
2201	n/a	n/a
321G	n/a	n/a

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Inlet
- Outfall
- Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement

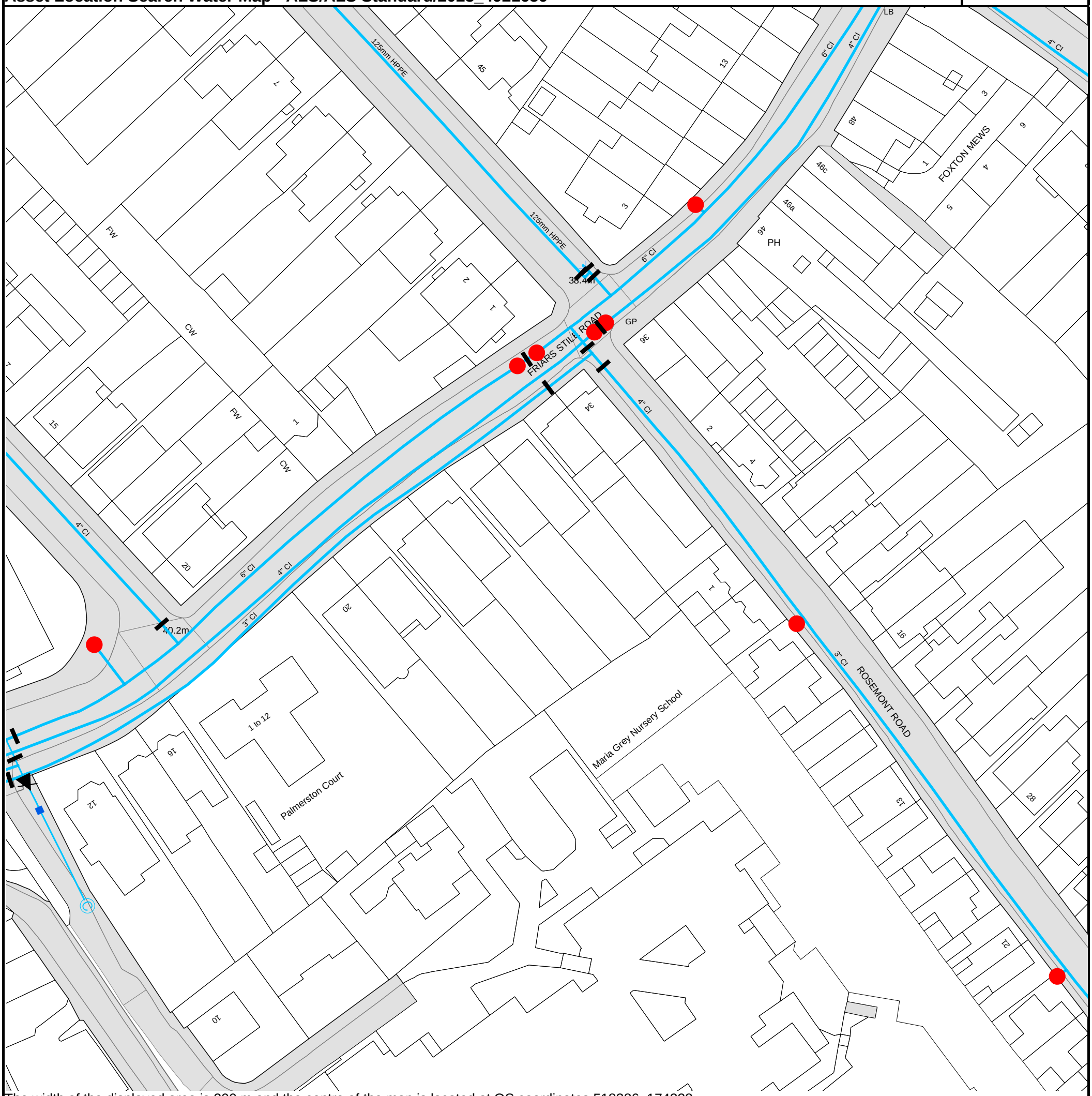
Ducts may contain high voltage cables. Please check with Thames Water.

- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2023_4921659



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 518386, 174228.

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

Casement: Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Payment Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment within 14 days of the date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service or will be held to be invalid.
4. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800.

If you are unhappy with our service, you can speak to your original goods or customer service provider. If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**
Please Call **0800 009 4540** quoting your invoice number starting CBA or ADS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number

Appendix D - CCTV Survey

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Project

Project Name:	28 Friars Stile Road
Project Description:	CCTV Survey, trace & plot
Project Status:	Complete
Project Date:	15/09/2023
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

EYES ON DRAINAGE

CCTV-Trace-Plot-Map-Repair

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Table of Contents

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Project Information

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

Client

Company: ade architecture ltd
Street: 3B College Mews, St. Ann's Hill
Town or City: Wandsworth
County: London
Post Code: SW18 2SJ

Site

Street: 28 Friars Stile Road
Town or City: Richmond
County: London
Post Code: TW10 8NE

Contractor

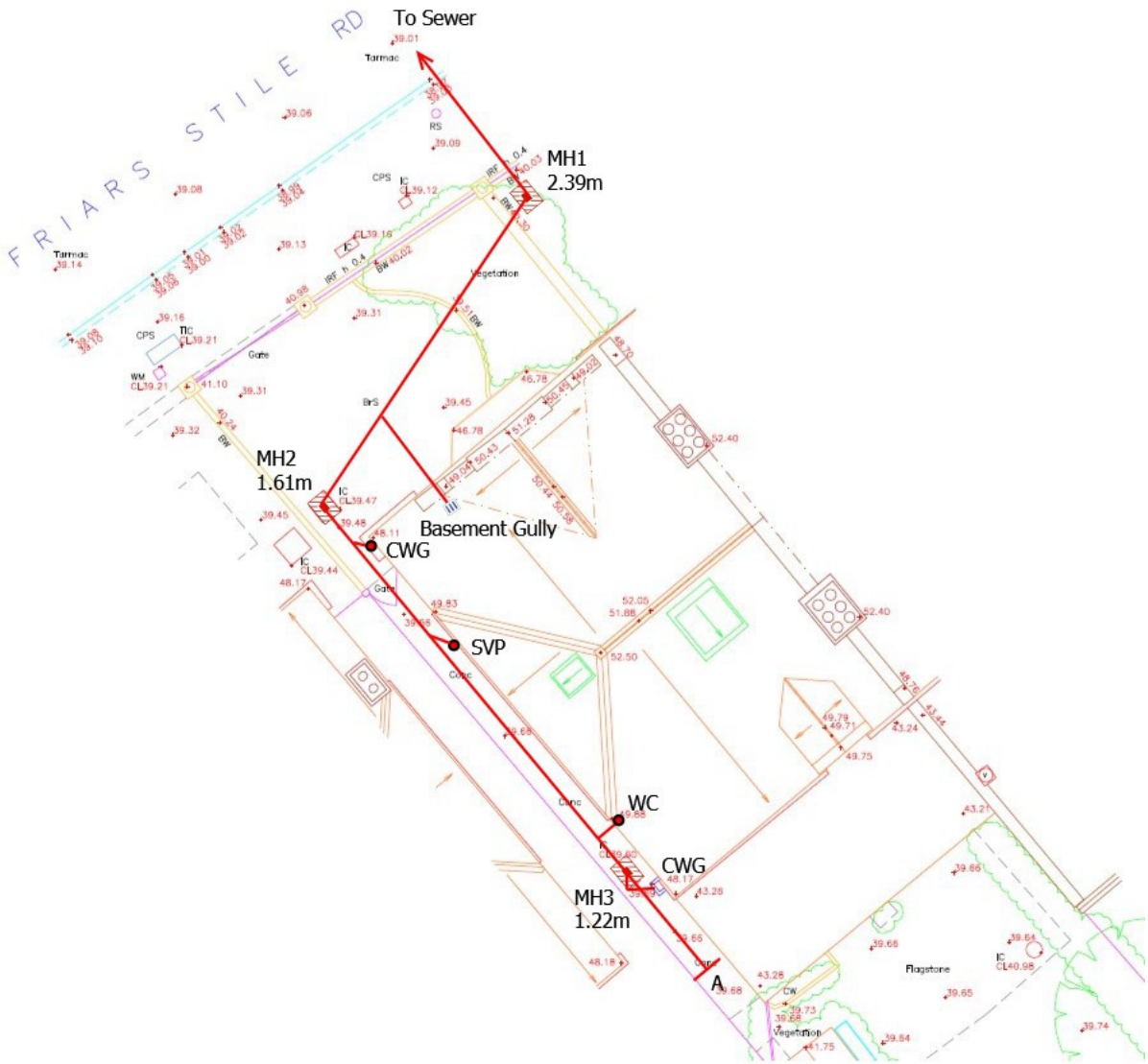
Company: Eyes On Drainage Services Ltd
Contact: Jay Young
Department: Merrion House
Street: Bines Green
Town or City: Horsham
County: West Sussex
Post Code: RH13 8EH
Phone: 01403 710971
Mobile: 077111 84951
Email: info@eyesondrainage.co.uk

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Project Information

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

Project Drawing, Page '28 Friars Stile Road'



Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Scoring Summary

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 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.

Section	PLR	Grade	Description
1	AX	3	Fracture, circumferential at joint from 9 o'clock to 5 o'clock
4	MH2X	3	Fracture, circumferential at joint from 8 o'clock to 4 o'clock
5	MH1X	3	Multiple defects

Service / Operational Condition

Grade 3: Best practice suggests consideration should be given to maintenance activities in the medium term.

Grade 4: Best practice suggests consideration should be given to maintenance activity to avoid potential blockages.

Grade 5: Best practice suggests that this pipe is at a high risk of backing up or causing flooding.

Section	PLR	Grade	Description
1	AX	4	Settled deposits, coarse, 70% cross-sectional area loss, finish
3	MH3X	4	Attached deposits, encrustation at joint from 4 o'clock to 8 o'clock, 30% cross-sectional area loss
4	MH2X	3	Multiple defects
5	MH1X	3	Attached deposits, encrustation at joint from 4 o'clock to 7 o'clock, 5% cross-sectional area loss

Abandoned Surveys

Section	PLR	Description
1	AX	Survey abandoned

Information

These scoring summaries are based on the SRM grading from the WRc.

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Project Pictures

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

MH1

MH2

MH3

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Profile

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

Circular, 100 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
2	CWG	MH3	13/09/2023	Friars Stile Road	Vitrified clay	1.40 m	1.40 m
3	MH3	MH2	13/09/2023	Friars Stile Road	Vitrified clay	11.60 m	11.60 m

Total: 2 Inspections x Circular 100 mm, 0 mm = 13.00 m Total Length and 13.00 m Inspected Length

Circular, 150 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
4	MH2	MH1	13/09/2023	Friars Stile Road	Vitrified clay	7.90 m	7.90 m
5	MH1	Sewer	13/09/2023	Friars Stile Road	Vitrified clay	8.80 m	8.80 m

Total: 2 Inspections x Circular 150 mm, 0 mm = 16.70 m Total Length and 16.70 m Inspected Length

Total: 4 Inspections = 29.70 m Total Length and 29.70 m Inspected Length

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Summary

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

Number of sections	5
Total length of sections	32.82 m
Total length of inspected sections	32.82 m
Total length of not inspected sections	0.00 m
Number of abandoned inspections	1
Number of section inspection photos	34
Number of section inspection videos	5
Number of section inspection scans	0
Number of section inclination measurements	0

PLR:	AX	**Upstream Node:**	A
Inspection Direction:	Upstream	**Downstream Node:**	MH3
Inspected Length:	3.12 m	**Dia/Height:**	100 mm
Total Length:	3.12 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH3
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.10	DER	Settled deposits, coarse, 20% cross-sectional area loss, start
4	0.70	DER	Settled deposits, coarse, 10% cross-sectional area loss, change
5	1.70	FCJ	Fracture, circumferential at joint from 9 o'clock to 5 o'clock
6	2.40	DER	Settled deposits, coarse, 40% cross-sectional area loss, change
7	3.00	DER	Settled deposits, coarse, 70% cross-sectional area loss, change
8	3.10	DER	Settled deposits, coarse, 70% cross-sectional area loss, finish
9	3.12	SA	Survey abandoned

PLR:	CWGX	**Upstream Node:**	CWG
Inspection Direction:	Upstream	**Downstream Node:**	MH3
Inspected Length:	1.40 m	**Dia/Height:**	100 mm
Total Length:	1.40 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH3
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.20	LU	Line deviates up
4	1.40	GYF	Finish node, gully, reference: CWG

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Summary

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

PLR:	MH3X	**Upstream Node:**	MH3
Inspection Direction:	Downstream	**Downstream Node:**	MH2
Inspected Length:	11.60 m	**Dia/Height:**	100 mm
Total Length:	11.60 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH3
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.30	DEEJ	Attached deposits, encrustation at joint from 4 o'clock to 8 o'clock, 15% cross-sectional area loss
4	2.10	JN	Junction at 12 o'clock, 100mm dia
5	4.90	SC	Pipe size changes, new size(s), 150mm high
6	5.10	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 20% cross-sectional area loss
7	5.70	JN	Junction at 2 o'clock, 100mm dia
8	6.10	DEEJ	Attached deposits, encrustation at joint from 4 o'clock to 8 o'clock, 30% cross-sectional area loss
9	10.50	JN	Junction at 2 o'clock, 100mm dia
10	11.60	MHF	Finish node, manhole, reference: MH2

PLR:	MH2X	**Upstream Node:**	MH2
Inspection Direction:	Downstream	**Downstream Node:**	MH1
Inspected Length:	7.90 m	**Dia/Height:**	150 mm
Total Length:	7.90 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH2
2	0.00	WL	Water level, 0% of the vertical dimension
3	1.40	FCJ	Fracture, circumferential at joint from 8 o'clock to 4 o'clock
4	2.40	JN	Junction at 3 o'clock, 100mm dia
5	2.50	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, start
6	5.60	WL	Water level, 10% of the vertical dimension
7	5.80	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 15% cross-sectional area loss, change
8	6.00	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 15% cross-sectional area loss, finish
9	6.90	DEE	Attached deposits, encrustation from 3 o'clock to 6 o'clock, 10% cross-sectional area loss
10	7.60	WL	Water level, 5% of the vertical dimension
11	7.90	MHF	Finish node, manhole, reference: MH1

PLR:	MH1X	**Upstream Node:**	MH1
Inspection Direction:	Downstream	**Downstream Node:**	Sewer
Inspected Length:	8.80 m	**Dia/Height:**	150 mm
Total Length:	8.80 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH1
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.30	REM	General remark
4	5.50	FCJ	Fracture, circumferential at joint from 7 o'clock to 3 o'clock
5	5.50	DEEJ	Attached deposits, encrustation at joint from 4 o'clock to 7 o'clock, 5% cross-sectional area loss
6	6.10	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
7	6.70	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
8	6.70	RFJ	Roots, fine at joint

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Summary

Project Name	Project Number	Project Date
28 Friars Stile Road		15/09/2023

No.	m+	Code	Observation
9	7.90	RFJ	Roots, fine at joint
10	8.20	LR	Line deviates right
11	8.80	BRF	Finish node, major connection without manhole, reference: Sewer

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Inspection - 13/09/2023 - AX

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	13/09/23	10:30	Not Specified	No Rain Or Snow	No	AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
G G	EJ70 SOC	P540	Not Specified	Private Drain	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	Upstream	**Upstream Node:**	A
Road:	Friars Stile Road	**Inspected Length:**	3.12 m	**Upstream Pipe Depth:**	
Location:	Gardens (private)	**Total Length:**	3.12 m	**Downstream Node:**	MH3
Surface Type:	Asphalt Footway	**Joint Length:**		**Downstream Pipe Depth:**	1.220 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50

Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH3	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:01:12		
0.10	S01	DER	Settled deposits, coarse, 20% cross-sectional area loss, start	00:01:12	1	
0.70	C01	DER	Settled deposits, coarse, 10% cross-sectional area loss, change	00:01:01	2	
1.70		FCJ	Fracture, circumferential at joint from 9 o'clock to 5 o'clock	00:00:52	3	3 / 2
2.40	C01	DER	Settled deposits, coarse, 40% cross-sectional area loss, change	00:00:40	4	
3.00	C01	DER	Settled deposits, coarse, 70% cross-sectional area loss, change	00:00:27	5	
3.10	F01	DER	Settled deposits, coarse, 70% cross-sectional area loss, finish	00:00:21		4
3.12		SA	Survey abandoned: Unable to proceed, assumed redundant.	00:00:21	6	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	40.0	12.8	40.0	3.0	2	6.0	5.1	16.0	5.0

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream	AX		

1, 00:01:12, 0.10 m
Settled deposits, coarse, 20% cross-sectional area loss, start

2, 00:01:01, 0.70 m
Settled deposits, coarse, 10% cross-sectional area loss, change

3, 00:00:52, 1.70 m
Fracture, circumferential at joint from 9 o'clock to 5 o'clock

4, 00:00:40, 2.40 m
Settled deposits, coarse, 40% cross-sectional area loss, change

5, 00:00:27, 3.00 m
Settled deposits, coarse, 70% cross-sectional area loss, change

6, 00:00:21, 3.12 m
Survey abandoned, Unable to proceed, assumed redundant.

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Inspection - 13/09/2023 - CWGX

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	13/09/23	10:31	Not Specified	No Rain Or Snow	No	CWGX

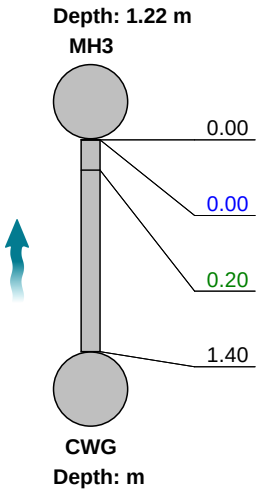
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
G G	EJ70 SOC	P540	Not Specified	Private Drain	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	Upstream	**Upstream Node:**	CWG
Road:	Friars Stile Road	**Inspected Length:**	1.40 m	**Upstream Pipe Depth:**	
Location:	Gardens (private)	**Total Length:**	1.40 m	**Downstream Node:**	MH3
Surface Type:	Asphalt Footway	**Joint Length:**		**Downstream Pipe Depth:**	1.220 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:17	1	
0.20	LU	Line deviates up	00:00:28	2	
1.40	GYF	Finish node, gully, reference: CWG	00:00:51	3	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

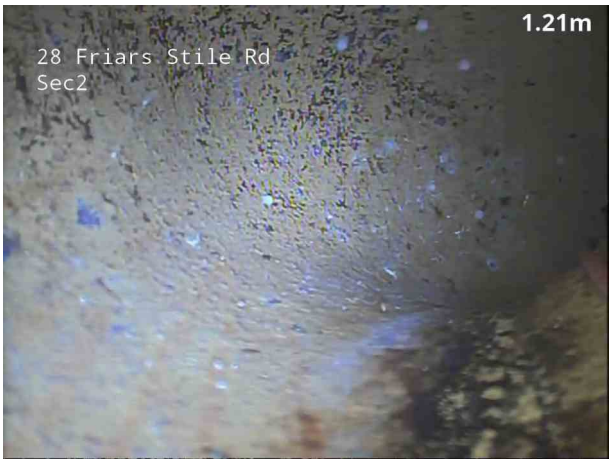
Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - CWGX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Upstream	CWGX		

1, 00:00:17, 0.00 m
Water level, 0% of the vertical dimension

2, 00:00:28, 0.20 m
Line deviates up



3, 00:00:51, 1.40 m
Finish node, gully, reference: CWG

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Inspection - 13/09/2023 - MH3X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	13/09/23	10:41	Not Specified	No Rain Or Snow	No	MH3X

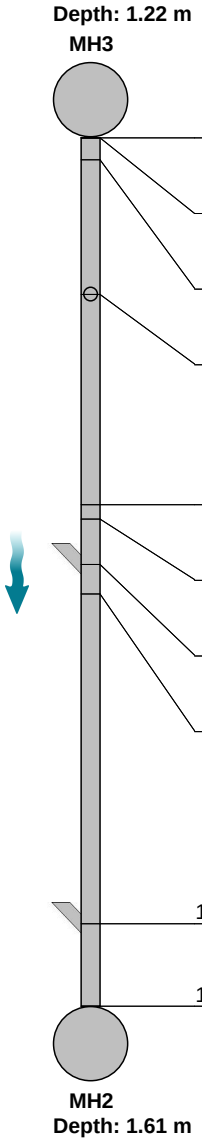
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
G G	EJ70 SOC	P540	Not Specified	Private Drain	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	Downstream	**Upstream Node:**	MH3
Road:	Friars Stile Road	**Inspected Length:**	11.60 m	**Upstream Pipe Depth:**	1.220 m
Location:	Gardens (private)	**Total Length:**	11.60 m	**Downstream Node:**	MH2
Surface Type:	Asphalt Footway	**Joint Length:**		**Downstream Pipe Depth:**	1.610 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:101



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:01:37	1	
0.30	DEEJ	Attached deposits, encrustation at joint from 4 o'clock to 8 o'clock, 15% cross-sectional area loss	00:01:30	2	3
2.10	JN	Junction at 12 o'clock, 100mm dia: Serving WC	00:01:22	3	
4.90	SC	Pipe size changes, new size(s), 150mm high	00:01:00		
5.10	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 20% cross-sectional area loss	00:00:56	4	3
5.70	JN	Junction at 2 o'clock, 100mm dia: Serving SVP	00:00:51	5	
6.10	DEEJ	Attached deposits, encrustation at joint from 4 o'clock to 8 o'clock, 30% cross-sectional area loss	00:00:40	6	4
10.50	JN	Junction at 2 o'clock, 100mm dia: Serving CWG	00:00:10	7	
11.60	MHF	Finish node, manhole, reference: MH2	00:00:00	8	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	3	5.0	0.8	9.0	4.0

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - MH3X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	MH3X		

1, 00:01:37, 0.00 m
Water level, 0% of the vertical dimension

2, 00:01:30, 0.30 m
Attached deposits, encrustation at joint from 4 o'clock to 8 o'clock, 15% cross-sectional area loss

3, 00:01:22, 2.10 m
Junction at 12 o'clock, 100mm dia, Serving WC

4, 00:00:56, 5.10 m
Attached deposits, encrustation from 4 o'clock to 8 o'clock, 20% cross-sectional area loss

5, 00:00:51, 5.70 m
Junction at 2 o'clock, 100mm dia, Serving SVP

6, 00:00:40, 6.10 m
Attached deposits, encrustation at joint from 4 o'clock to 8 o'clock, 30% cross-sectional area loss

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - MH3X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	MH3X		

7, 00:00:10, 10.50 m
Junction at 2 o'clock, 100mm dia, Serving CWG

8, 00:00:00, 11.60 m
Finish node, manhole, reference: MH2

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Inspection - 13/09/2023 - MH2X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	1	13/09/23	10:59	Not Specified	No Rain Or Snow	No	MH2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
G G	EJ70 SOC	P540	Not Specified	Private Drain	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	Downstream	**Upstream Node:**	MH2
Road:	Friars Stile Road	**Inspected Length:**	7.90 m	**Upstream Pipe Depth:**	1.610 m
Location:	Gardens (private)	**Total Length:**	7.90 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Footway	**Joint Length:**		**Downstream Pipe Depth:**	2.390 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:69

Position [m]		Code	Observation	MPEG	Photo	Grade
Depth: 1.61 m **MH2**						
0.00		MH	Start node, manhole, reference: MH2	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:14	1	
1.40		FCJ	Fracture, circumferential at joint from 8 o'clock to 4 o'clock	00:00:29	2	3 / 2
2.40		JN	Junction at 3 o'clock, 100mm dia: Serving basement gully.	00:00:42	3	
2.50	S01	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, start	00:00:47	4	
5.60		WL	Water level, 10% of the vertical dimension	00:01:23		
5.80	C01	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 15% cross-sectional area loss, change	00:01:23	5	
6.00	F01	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 15% cross-sectional area loss, finish	00:01:35	6	3
6.90		DEE	Attached deposits, encrustation from 3 o'clock to 6 o'clock, 10% cross-sectional area loss	00:02:12	7	3
7.60		WL	Water level, 5% of the vertical dimension	00:02:02	8	
MH1 7.90		MHF	Finish node, manhole, reference: MH1: Located within neighbouring garden.	00:01:59	9	
Depth: 2.39 m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	40.0	5.1	40.0	3.0	3	2.0	1.4	11.0	3.0

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - MH2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Downstream	MH2X		

1, 00:00:14, 0.00 m
Water level, 0% of the vertical dimension

2, 00:00:29, 1.40 m
Fracture, circumferential at joint from 8 o'clock to 4 o'clock

3, 00:00:42, 2.40 m
Junction at 3 o'clock, 100mm dia, Serving basement gully.

4, 00:00:47, 2.50 m
Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, start

5, 00:01:23, 5.80 m
Attached deposits, encrustation from 4 o'clock to 8 o'clock, 15% cross-sectional area loss, change

6, 00:01:35, 6.00 m
Attached deposits, encrustation from 4 o'clock to 8 o'clock, 15% cross-sectional area loss, finish

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - MH2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Downstream	MH2X		

7, 00:02:12, 6.90 m
Attached deposits, encrustation from 3 o'clock to 6 o'clock, 10% cross-sectional area loss

8, 00:02:02, 7.60 m
Water level, 5% of the vertical dimension

9, 00:01:59, 7.90 m
Finish node, manhole, reference: MH1, Located within neighbouring garden.

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Inspection - 13/09/2023 - MH1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
5	1	13/09/23	11:07	Not Specified	No Rain Or Snow	No	MH1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
G G	EJ70 SOC	P540	Not Specified	Private Drain	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	Downstream	**Upstream Node:**	MH1
Road:	Friars Stile Road	**Inspected Length:**	8.80 m	**Upstream Pipe Depth:**	2.390 m
Location:	Gardens (private)	**Total Length:**	8.80 m	**Downstream Node:**	SEWER
Surface Type:	Flowerbed	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:77

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:01:27	1	
0.30	REM	General remark: Interceptor trap.	00:01:06	2	
5.50	FCJ	Fracture, circumferential at joint from 7 o'clock to 3 o'clock	00:00:32	3	3 / 2
5.50	DEEJ	Attached deposits, encrustation at joint from 4 o'clock to 7 o'clock, 5% cross-sectional area loss	00:00:32		3
6.10	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	00:00:28	4	3 / 2
6.70	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	00:00:23	5	3 / 2
6.70	RFJ	Roots, fine at joint	00:00:23		2
7.90	RFJ	Roots, fine at joint	00:00:13	6	2
8.20	LR	Line deviates right	00:00:11	7	
8.80	BRF	Finish node, major connection without manhole, reference: Sewer	00:00:00	8	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
3	40.0	13.6	120.0	3.0	6	3.0	0.8	7.0	3.0

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Downstream	MH1X		

1, 00:01:27, 0.00 m
Water level, 0% of the vertical dimension

2, 00:01:06, 0.30 m
General remark, Interceptor trap.

3, 00:00:32, 5.50 m
Fracture, circumferential at joint from 7 o'clock to 3 o'clock

4, 00:00:28, 6.10 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock

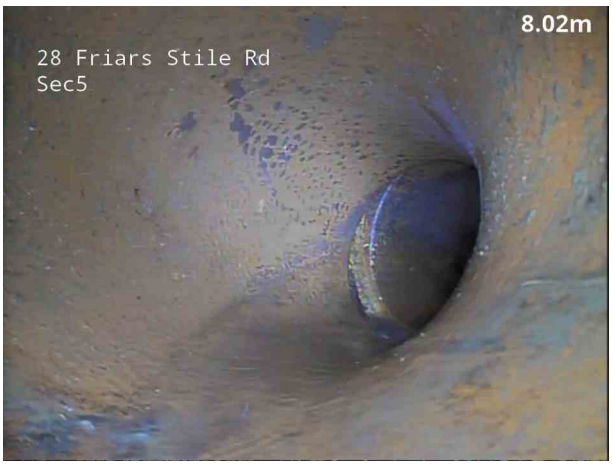
5, 00:00:23, 6.70 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock

6, 00:00:13, 7.90 m
Roots, fine at joint

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Section Pictures - 13/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Downstream	MH1X		



7, 00:00:11, 8.20 m
Line deviates right

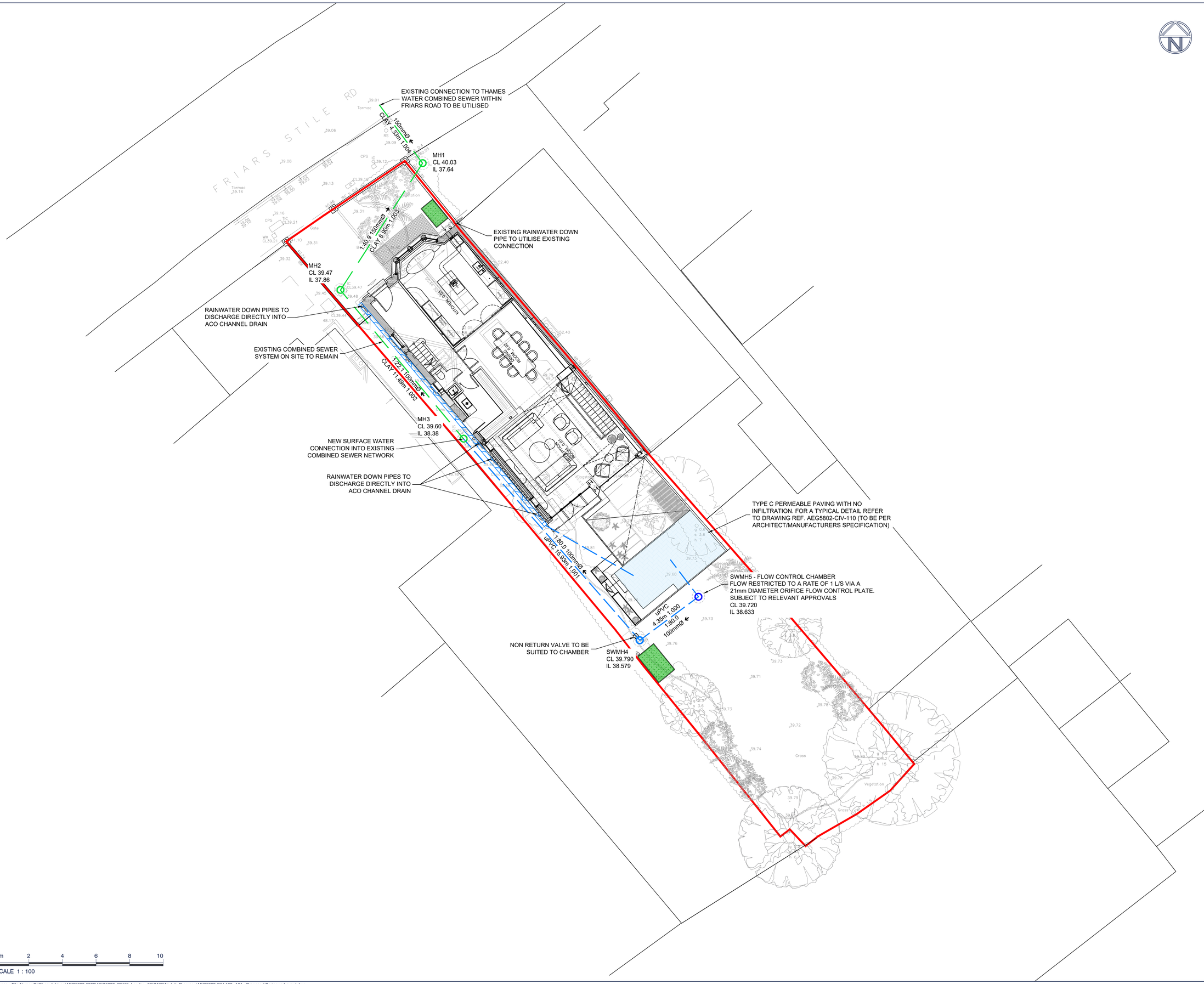
8, 00:00:00, 8.80 m
Finish node, major connection without manhole, reference: Sewer

Eyes On Drainage Services Ltd
Bines Green, Horsham
Tel. 01403 710971
info@eyesondrainage.co.uk

Disclaimer

Although every effort has been made to produce a thorough and precise report, Eyes On Drainage Services Ltd cannot be held liable for any descrepencies or omissions.
Furthermore Eyes On Drainage Services Ltd cannot be held responsible for any actions taken based on the information supplied within this report.

Appendix E - Drainage Layout and Details



0m 2 4 6 8 10

SCALE 1 : 100

DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
THE CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON SITE.
ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ENGINEER FOR CLARIFICATION BEFORE PROCEEDING.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
REFER TO THE RELEVANT CONSTRUCTION (DESIGN AND MANAGEMENT) DOCUMENTATION WHERE APPLICABLE.
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT.

GENERAL NOTES

1. THE CONTRACTOR IS TO CHECK AND VERIFY ALL SITE DIMENSIONS AND LEVELS, INCLUDING EXISTING SEWER INVERT LEVELS AND UTILITIES, PRIOR TO START ON SITE.
2. POSITIONS OF EXISTING SERVICES/STATUTORY UNDERTAKERS APPARATUS ADJACENT TO OR CROSSING PROPOSED EXCAVATIONS ARE TO BE CONFIRMED PRIOR TO START ON SITE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AND CHECKED AGAINST ALL, ENGINEERING DETAILS, SPECIFICATIONS, GEOTECHNICAL AND OTHER RELEVANT DOCUMENTATION PROVIDED.
4. POSITIONS OF PIPE RUNS AND MANHOLES MAY VARY ON SITE DUE TO ONGOING STATUTORY UNDERTAKER COMMENTS/SITE CONDITIONS.
5. WHERE TREES ADJACENT TO HIGHWAYS OR DRAINAGE ARE PROPOSED, ROOT BARRIERS (TYPE TO BE APPROVED) ARE REQUIRED TO PREVENT STRUCTURAL DAMAGE.
6. ANY ANOMALY OR CONTRADICTIONS BETWEEN ANY OF THE ABOVE IS TO BE REPORTED IMMEDIATELY.
7. THE CONTRACTOR IS TO COMPLY IN ALL ASPECTS WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND BUILDING LEGISLATION ETC.
8. ALL ADOPTED PIPE WORK ROUTING AND ANY EASEMENTS SUBJECT TO APPROVAL BY THE STATUTORY UNDERTAKER (AS PART OF THE SECTION 104 ADOPTION AGREEMENT.
9. ALL DRAINAGE DEPENDANT ON CONFIRMATION OF LEVELS
10. SEDUM ROOF AND PERMEABLE PAVING DESIGN TO BE PER MANUFACTURES/ ARCHITECTS SPECIFICATION

LEGEND

- SITE BOUNDARY
- EXISTING COMBINED DRAINAGE
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED ORIFICE PLATE CHAMBER
- PROPOSED CHANNEL SLOT DRAIN
- PROPOSED PERMEABLE PAVING
- PROPOSED SEDUM ROOF

Rev	Date	Description	By
A01	13.09.24	FIRST ISSUE	CM

Client

IRINA HEMMERS AND DARREN QUIGG

Project

28 FRIARS STILE ROAD, LONDON

Title

PROPOSED DRAINAGE LAYOUT

Project No.	Drawing No.	Revision
AEG5802	CIV-100	A01

Drawn	Checked	Approved	Date	Scale @ A1
CM	VW	JM	SEPT 2024	1:100

Drawing Status

DETAILED DESIGN

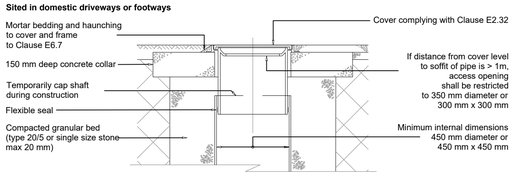
aegaea
water, civils and environment

FIGURE B.19
TYPICAL INSPECTION CHAMBER DETAIL - TYPE D

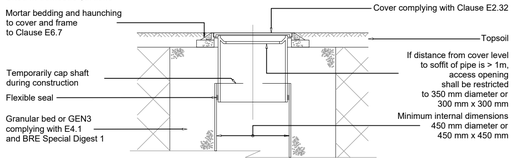
Flexible material construction alternative top details for use in areas of light vehicle loading or landscaped areas

Plastic chambers and rings shall comply with Clause E2.31

Sited in domestic driveways or footways



Sited in domestic gardens



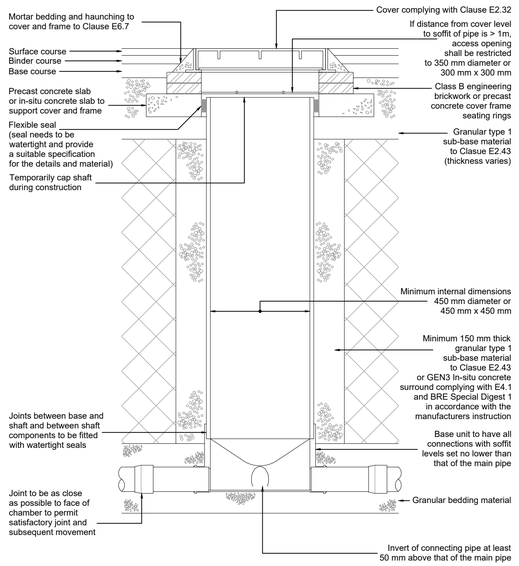
Note: Where the access chamber is in the highway (including and footway), the highway authority can have specific requirements

Not to scale

FIGURE B.18
TYPICAL INSPECTION CHAMBER DETAIL - TYPE D

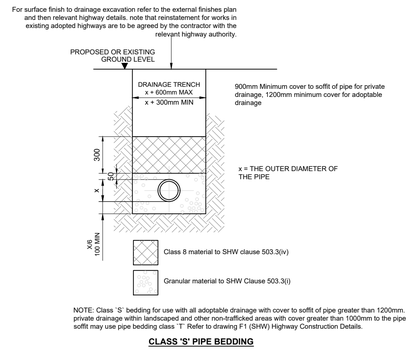
Depth from cover level to soffit of pipe up to 3 m
Flexible material construction for use in areas subject to vehicle loading

Plastic chambers and rings shall comply with Clause E2.31



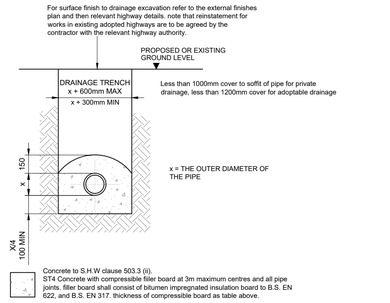
Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

Not to scale



NOTE: Class 'S' bedding for use with all adoptable drainage with cover to soffit of pipe greater than 1200mm. private drainage within landscaped and other non-trafficked areas with cover greater than 1000mm to the pipe soffit may use pipe bedding class 'T' Refer to drawing F1 (SHW) Highway Construction Details.

CLASS 'S' PIPE BEDDING

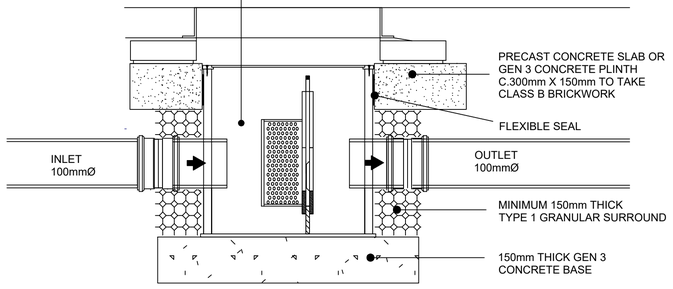


NOTE: Class 'Z' bedding for use with all adoptable drainage with cover to soffit of pipe less than 1200mm.

CLASS 'Z' PIPE BEDDING

TYPICAL TYPE C PERMEABLE PAVED DETAIL

(BITUMEN MACADAM TEMPORARY RUNNING COURSE)
(SCALE 1:20)



CONTROFLOW ORIFICE PLATE CHAMBER (OR SIMILAR)

NTS

DO NOT SCALE THIS DRAWING, USE FIGURED DIMENSIONS ONLY.
THE CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON SITE.
ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ENGINEER FOR CLARIFICATION BEFORE PROCEEDING.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
REFER TO THE RELEVANT CONSTRUCTION (DESIGN AND MANAGEMENT) DOCUMENTATION WHERE APPLICABLE.
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT.

NOTES

1. THE ADOPTING AUTHORITY'S STANDARD DETAILS, WHERE THEY EXIST, SHALL BE USED IN PREFERENCE TO THIS STANDARD DETAIL.
2. ALL ADOPTABLE HIGHWAY WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFIC REQUIREMENTS OF GLOUCESTERSHIRE COUNTY COUNCILS SPECIFICATION AND THE GENERAL REQUIREMENTS OF 'SPECIFICATION FOR HIGHWAY WORKS' (SHW), VOLUME 1 OF THE HIGHWAYS AGENCY'S MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS AND ANY AMENDMENTS THERETO CURRENT AT THE TIME OF TENDER ISSUE DATE.
3. ALL ADOPTABLE DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS (DCG). SEVERN TRENT WATER'S REQUIREMENTS AND ANY AMENDMENTS THERE TO CURRENT AT THE TIME OF TENDER ISSUE DATE.
4. LOCATION AND INVERT LEVELS OF DOWNSTREAM DRAINAGE CONNECTION POINTS ARE TO BE CONFIRMED.
5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS/SPECIFICATIONS.
6. DO NOT SCALE FROM THIS DRAWING, USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS ARE IN METERS.
7. ALL THE ABOVE REQUIREMENTS SHALL APPLY UNLESS OTHERWISE STATED IN THE GENERAL ARRANGEMENT DRAWINGS/SPECIFICATION. IN THE EVENT OF A CONTRADICTION THE CONTRACT SPECIFIC DOCUMENTS SHALL BE DEEMED TO PREVAIL.
8. THE CONTRACTOR IS TO CHECK AND VERIFY ALL SITE DIMENSIONS AND LEVELS, INCLUDING EXISTING SEWER INVERT LEVELS AND UTILITIES, PRIOR TO START ON SITE.
9. POSITIONS OF EXISTING SERVICES/STATUTORY UNDERTAKERS APPARATUS ADJACENT TO OR CROSSING PROPOSED EXCAVATIONS ARE TO BE CONFIRMED PRIOR TO START ON SITE.
10. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AND CHECKED AGAINST ALL, ENGINEERING DETAILS, SPECIFICATIONS, GEOTECHNICAL AND OTHER RELEVANT DOCUMENTATION PROVIDED.
11. THIS DRAWING IS SCHEMATIC FOR CLARITY ONLY, POSITIONS OF PIPE RUNS AND MANHOLES MAY VARY ON SITE DUE TO SITE CONDITIONS.
12. WHERE TREES ADJACENT TO HIGHWAYS OR DRAINAGE ARE PROPOSED, ROOT BARRIERS (TYPE TO BE APPROVED) ARE REQUIRED TO PREVENT STRUCTURAL DAMAGE.
13. ANY ANOMALY OR CONTRADICTIONS BETWEEN ANY OF THE ABOVE IS TO BE REPORTED IMMEDIATELY.
14. THE CONTRACTOR IS TO COMPLY IN ALL ASPECTS WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND BUILDING LEGISLATION ETC.

Rev	Date	Description	By
A01	13.09.24	FIRST ISSUE	CM

Client

IRINA HEMMERS AND DARREN QUIGG

Project

28 FRIARS STILE ROAD, LONDON

Title

PROPOSED DRAINAGE DETAILS

Project No.	Drawing No.	Revision
AEG5802	CIV-110	A01

Drawn	Checked	Approved	Date	Scale @ A1
CM	VW	JM	SEPT 2024	AS SHOWN

Drawing Status

DETAILED DESIGN

aegaea
water, civils and environment

Appendix F - Drainage Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
PAVING	0.024	5.00	39.220	1	518390.140	174223.381	1.300
SWMH5			39.720	450	518391.814	174221.177	2.087
SWMH4			39.600	450	518388.321	174218.586	2.021
MH3			39.600	600	518377.831	174230.575	2.220

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
PAVING	PAVING	SWMH5	2.768	0.600	37.920	37.633	0.287	9.6	100	5.02	50.0
1.000	SWMH5	SWMH4	4.349	0.600	37.633	37.579	0.054	80.5	100	5.10	50.0
1.001	SWMH4	MH3	15.930	0.600	37.579	37.380	0.199	80.1	100	5.41	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PAVING	2.503	19.7	3.3	1.200	1.987	0.024	0.0	28	1.861
1.000	0.858	6.7	3.3	1.987	1.921	0.024	0.0	49	0.849
1.001	0.861	6.8	3.3	1.921	2.120	0.024	0.0	49	0.852

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node SWMH5 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.087	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	37.633	Diameter (m)	0.021		

Node PAVING Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	37.920	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	87	Depth (m)	
Safety Factor	2.0	Width (m)	3.290	Inf Depth (m)	
Porosity	0.30	Length (m)	5.421		

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	PAVING	26	38.076	0.156	2.8	0.8174	0.0000	SURCHARGED
30 minute winter	SWMH5	26	38.075	0.442	2.1	0.0703	0.0000	SURCHARGED
30 minute winter	SWMH4	27	37.599	0.020	0.6	0.0033	0.0000	OK
30 minute winter	MH3	27	37.400	0.020	0.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	PAVING	PAVING	SWMH5	2.1	0.871	0.105	0.0217	
30 minute winter	SWMH5	Orifice	SWMH4	0.6				
30 minute winter	SWMH4	1.001	MH3	0.6	0.531	0.090	0.0181	2.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	PAVING	51	38.492	0.572	4.2	3.1936	0.0000	SURCHARGED
60 minute winter	SWMH5	51	38.491	0.858	1.5	0.1365	0.0000	SURCHARGED
60 minute winter	SWMH4	51	37.603	0.024	0.8	0.0039	0.0000	OK
60 minute winter	MH3	51	37.404	0.024	0.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	PAVING	PAVING	SWMH5	1.5	0.871	0.076	0.0217	
60 minute winter	SWMH5	Orifice	SWMH4	0.8				
60 minute winter	SWMH4	1.001	MH3	0.8	0.585	0.125	0.0231	6.2

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	PAVING	59	39.160	1.240	7.8	7.0070	0.0000	FLOOD RISK
60 minute winter	SWMH5	59	39.158	1.525	1.9	0.2425	0.0000	SURCHARGED
60 minute winter	SWMH4	59	37.607	0.028	1.1	0.0045	0.0000	OK
60 minute winter	MH3	59	37.408	0.028	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	PAVING	PAVING	SWMH5	1.9	0.857	0.098	0.0217	
60 minute winter	SWMH5	Orifice	SWMH4	1.1				
60 minute winter	SWMH4	1.001	MH3	1.1	0.635	0.168	0.0284	11.4