



**DRAINAGE IMPACT &
FLOOD RISK ASSESSMENT**

for

Proposed Residential Development
Land rear of The Hawthorns
57 Warminster Road
London SE25 4DF

on behalf of

Frankham Projects Limited

Document Control Sheet

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57 Warminster Road, London SE25 4DF

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Appendix A Drawings

Tridax Drawings

T-2023-015-01A - Site Location Plan

T-2023-015-02A - Proposed Drainage Strategy

T-2023-015-03A – Construction Details

Architects Drawings

P-1218-100 Rev 0 – Site Location Plan

P-1218-110 Rev P – Proposed Site Roof Plan

P-1218-111 Rev N – Proposed Ground Floor Plan

P-1218-112 Rev N – Proposed First Floor Plan

P-1218-113 Rev N – Proposed Second Floor Plan

P-1218-210 Rev A – Proposed Elevations
P-1218-211 Rev A – Proposed Elevations
P-1218-221 Rev 0 – Proposed Site Section
3613/1001 Rev R1 – Topographical Survey

Appendix B Thames Water Asset Details
Appendix C Thames Water Infrastructure Charges
Appendix D Environment Agency Flood Map

1.0 STATUS

- 1.1 This Report is prepared for the sole use of Frankham Projects Ltd and their agents in connection with the proposed forthcoming planning application. No responsibility can be assumed for the Report if used by others.
- 1.2 For the purposes of the Contracts (Rights of Third Parties) Act 1999, nothing in this Report shall confer on any third party any right to enforce or benefit from any terms of this Report.

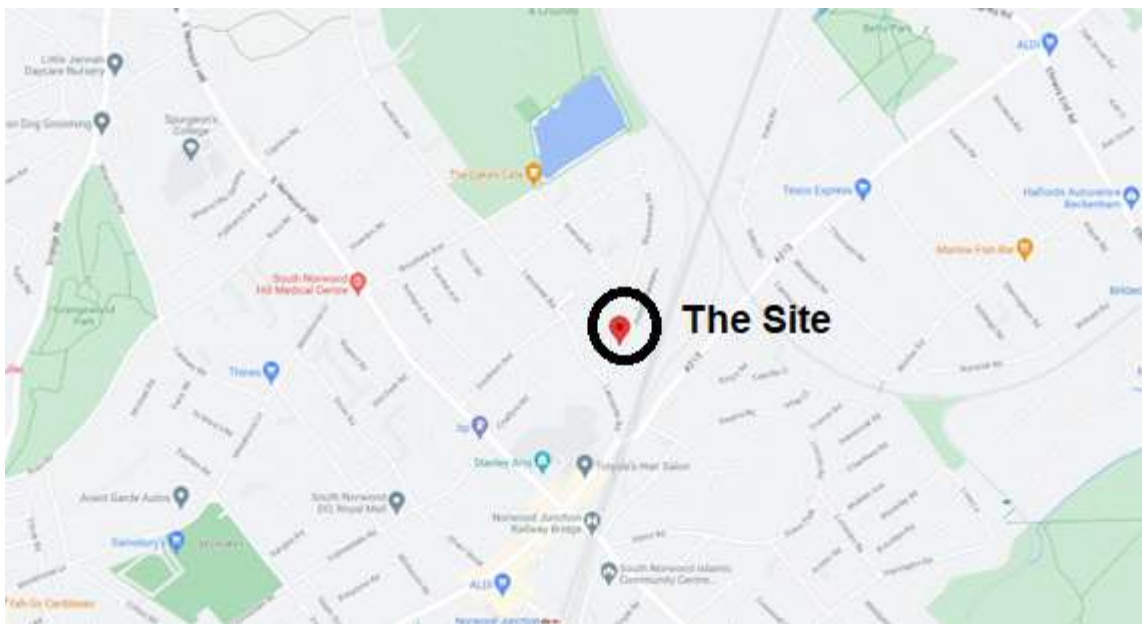
2.0 INTRODUCTION

Background

- 2.1 Tridax Ltd have been commissioned by Frankham projects Limited and requested to prepare a Drainage Impact Assessment and Flood Risk Statement for the proposed development at the rear of The Hawthorns, 57 Warminster Road, Croydon SE25 4DF to provide 8 residential apartments set over three floor levels.
- 2..2 This Report is in accordance with the Technical Guidance to the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance for Flood Risk and Coastal Change (PPG). The Report takes into consideration the London Borough of Croydon Strategic Flood Risk Assessment - Level 1 dated September 2021 and Level 2 dated February 2021, together with the Environment Agency advice note.
- 2.3 The Report details the observations, calculates the probable flows that may be generated by the development and makes recommendations for the disposal of the foul and surface water and identifies any special mitigation measures required to reduce the risks of flooding.

Site Location

2.4 The development site is currently the rear garden to the existing property The Hawthorns, 57 Warminster Road, Croydon, located 200m north of the junction of Lancaster Road with the A213 Penge Road and 400m south of the South Norwood Lake and Grounds. The rail line is adjacent the sites eastern boundary with Norwood Junction Station located approximately 550m southeast of the site, as indicated in Frames 1 and 2 below.



Frame 1 – Site Location



Frame 2 – Aerial Site View

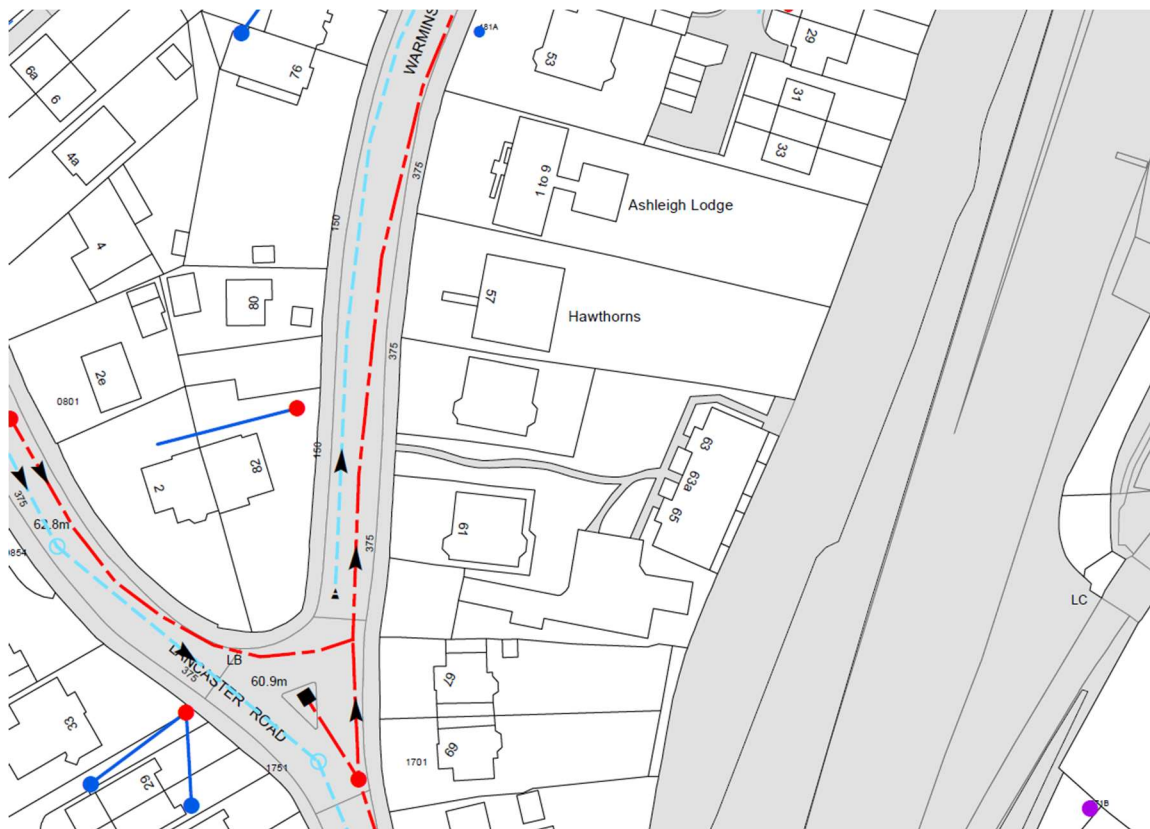
Existing Site Layout

2.5 The existing building “The Hawthorns” 57 Warminster Road is a four-storey brick-built property under a tiled roof and forms a mixture of flats and studio apartment with communal spaces on the ground floor. The Hawthorns will remain insitu and receive some general internal improvements. The new development will be built in the rear garden area of the Hawthorns. The site slopes approximately 3m west to east. The topographical survey indicates that levels along the carriageway of Warminster Road on the west boundary to be in the region of 60.12m - 60.5m AOD with levels at the centre of the site shown to be circa 59.0m AOD and levels on the eastern boundary in the region of 57.0 - 57.5m AOD. Refer to the topographical survey as extracted in Frame 3 below. A copy of the topographical survey is included in Appendix A of this report. The current total site area for ‘The Hawthorns’ is approximately 1,365m² (0.137ha) although the site is being split into two parts to form the new development site. The total site area of the development site will therefore be approximately 680m² (0.068ha) with impermeable finishes from the roof, patios and paths totalling approximately 270m² although approximately 215m² will be laid as a ‘Green’ roof. The site is centred at Ordnance Survey reference TQ 34168 68842 (534168mE, 168842mN).



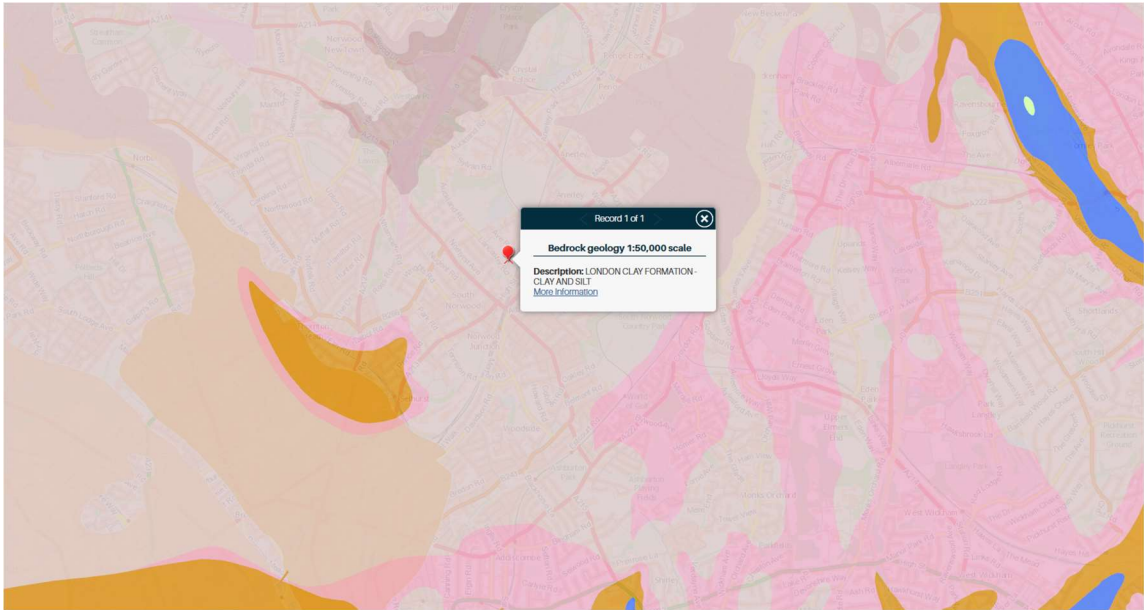
Frame 3 – Extract of Topographical Survey

2.6 Inspection of the Thames Water Asset Location Search indicates that there is a public 375Ø foul sewer in Warminster Road adjacent the western boundary. There is also a public 150Ø surface water sewer identified in Warminster Road adjacent the western boundary. The depths of these public sewers is unclear although it is assumed that the invert level of the public sewers will be higher than the finished ground floor level of the new development so will require pumped discharges to the public systems. An independent drainage investigation will be required to confirm this information together with details of the properties existing drainage arrangements and condition. Due to the ground conditions being London Clay, it is assumed that surface water run-off from the Hawthorns either combines with foul drainage or has a separate connection to the public surface water sewer in Warminster Road, although this will require confirmation. The public sewer record information is extracted in Frame 4 below and included in Appendix B of this report.



Frame 4 – Extract of Thames Water Sewer Records

- 2.7 A study of the British Geological Survey Map indicates the site to be underlain by a bedrock of **London Clay Formation – Clay and Silt**. There are no superficial deposits recorded. Infiltration techniques are unlikely to be acceptable for surface water disposal at this site. No intrusive site investigation has been undertaken on site yet but will be once planning has been granted. An extract of the Geological Map of Great Britain is shown in Frame 5 below.



Frame 5 – Extract of British Geological Map

Proposed Development

- 2.8 The proposed development is for the construction of 8 residential apartments set over three floor levels. The ground and first floors will each provide 3 apartments laid out as two one-bedroom apartments together with a single two-bedroom apartment. The third floor will provide a single one-bedroom apartment together with a single two-bedroom apartment. The proposed building will have a total footprint of approximately 270m². All apartments will also provide living/dining area, and a bathroom. There is a communal entrance with access to the upper floor levels. From the topographical survey it can be seen that the ground level at the position of the new front entrance is in the region of 58.0mAOD. It is therefore assumed that the minimum ground floor finished level for the new development will be circa 57.3mAOD although this will need to be agreed. Refer to the

Architects drawings submitted with the planning application and included in Appendix A of this report together with details extracted in Frames 6 -8 below.



Frame 6 – Ground Floor Plan



Frame 7 – First Floor Site Plan



Frame 8 – Second Floor Site Plan

3.0 FOUL WATER DRAINAGE

Existing Discharge

3.1 The site is considered to be a ‘Greenfield’ development with no foul water currently being discharge to the public system.

Proposed Discharge

3.2 A conservative proposed peak flow discharge is estimated to be in the order of 3.22 litres/second ($Q=(0.5)kDU\sqrt{(\sum(DU))}$).

Peak Flow Rates
to BS EN 752: Part 4

kDU

frequency factor (0.5 for dwellings)

	Sanitary Appliance	No of Features	DU	$\sum DU$
Existing	WC's	11	1.20	13.2
	Washbasin	11	0.30	3.3
	Kitchen Sink	8	0.80	6.4
	Washing Machine	8	0.50	4.0
	Dish washer	8	0.80	6.4
	Shower	6	0.30	1.8
	Bath	8	0.80	6.4
				41.5

$(Q=(0.5)kDU\sqrt{(\sum(DU))})$

Q= 3.22 l/s

3.3 The design flow from the proposed development using ‘sewers for adoption’ 7th Edition is calculated as **0.37 litres/second** as below.

$$6DWF = \frac{4,000 \text{ litres/dwelling/day} \times 8 \text{ No Dwellings}}{24 \text{ hours}} = 0.37 \text{ l/s}$$

3.4 The proposed development will increase the flow discharged to the public foul sewer by **0.37l/s**.

3.5 Thames Water has introduced a new charging arrangement for all new homes that connect to the public sewer as per the extract below in Frame 9 and included in Appendix C.

Introduction

This 2021-22 Charges Scheme is made by Thames Water Utilities Limited under the powers conferred by Section 143 of the Water Industry Act 1991 (as amended) and complies with Ofwat's Charges Scheme Rules issued in March 2020. It does not cover charges raised under agreements.

Infrastructure Charges Scheme 2021

- 1 This scheme, which revokes all previous Infrastructure Charges Schemes made by Thames Water and which may be referred to as "the Thames Water Infrastructure Charges Scheme 2021", is made by Thames Water Utilities Limited under Section 143 of the Act and in accordance with the Charges Scheme Rules and shall operate from 1 April 2021 until 31 March 2022 inclusive.

Charges

- 4 (1) Subject to the provisions of Condition C of the Licence, where a customer requests Thames Water to make a connection to a water main of any one or more premises which have never at any previous time been connected to a supply of water provided for domestic purposes by Thames Water or any statutory predecessor to it, or where the customer otherwise makes arrangements for such a connection, there shall be payable to Thames Water in respect of each such premises the charge, (less any Related Amount), shown in the Infrastructure Charges Schedule.

Provided that in calculating the total of such premises for the purposes of this charge, there shall be deducted from such total any premises on the same site which were separately connected to such water supply at the date of such calculation or within the previous period of five years provided that each such separately connected premises shall be deducted once only in calculating such total.

- (2) Subject to the provisions of Condition C of the Licence, where a customer requests Thames Water to make a connection to a public sewer of one or more premises which have never at any previous time been connected to a sewer used for the drainage for domestic purposes of those premises by Thames Water or any statutory predecessor to it, or where the customer otherwise makes arrangements for such a connection, there shall be payable to Thames Water in respect of each such premises the charge, (less any Related Amount), shown in the Infrastructure Charges Schedule.

Provided that in calculating the total of such premises for the purposes of this charge there shall be deducted from such total any premises on the same site which were separately connected to a public sewer at the date of such calculation or within the previous period of five years provided that each such separately connected premises shall be deducted once only in calculating such total.

Infrastructure Charges Schedule 2021-22

Infrastructure charges payable

The published charges are for a single property supplied via a standard sized (25 or 32mm external diameter pipe) water connection. For other properties, such as student housing, offices or care homes, we apply a multiplier (the Relevant Multiplier as detailed below) to the published charge to reflect the increased impact on our networks.

The wastewater infrastructure charge is calculated on the same basis as the water infrastructure charge unless you are able to show that waste and surface water flows are not being discharged to the public sewer.

Standard infrastructure charges are shown in Table 1.

Table 1 Infrastructure charges

Infrastructure charges	Charge
Water	£400
Wastewater	£365

Frame 9 – Thames Water Charging Arrangements extract

- 3.6 It should be noted that an infra-charge of £2,920.00 (8 New Dwellings x £365/property) and includes for a necessary local network reinforcement to the public sewers to provide capacity for new development related growth.
- 3.7 Included within Appendix A are drawings T-2023-015-01A, -02A and -03A indicating the proposed foul and surface water drainage strategy for this development.

Consents

- 3.8 An application under Section 106 of the Water Industry Act (connection to the public sewer) will require Thames Water Services approval of the new foul connection to the public foul sewer. The detailed drainage design will need to comply with the Building Regulations.
- 3.9 Should any public sewers be identified within 3m of the new development an application for a 'Build Over/Near to a public sewer' will require submitting to Thames Water for approval.

4.0 SURFACE WATER DRAINAGE

Existing Discharge

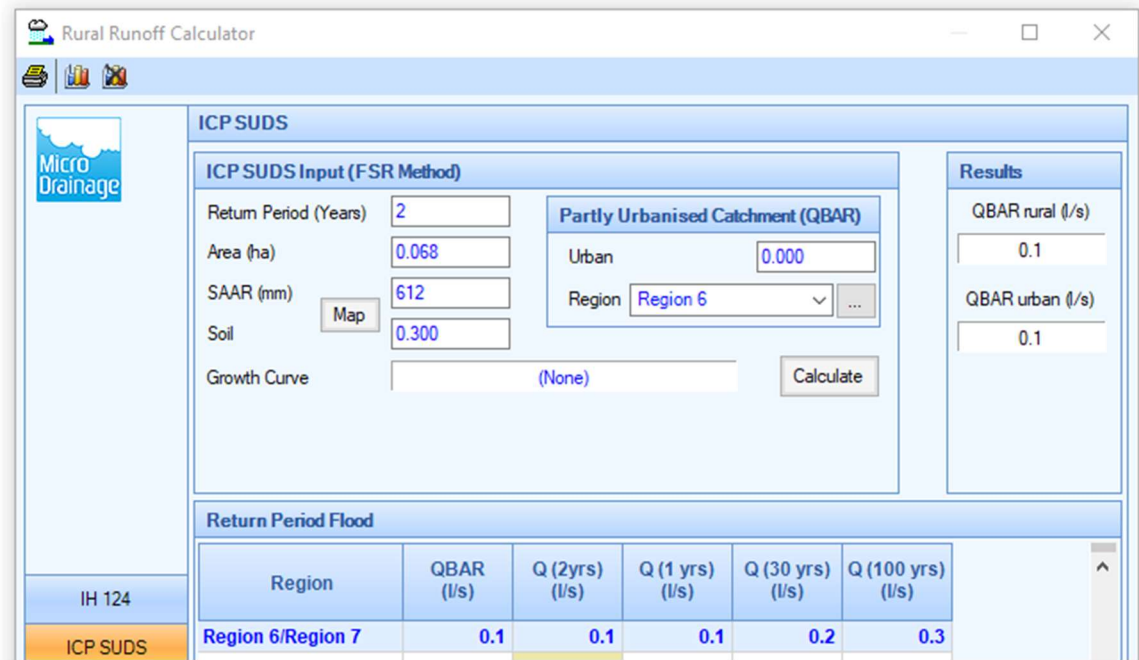
4.1 The requirement of NPPF is that the run-off from the development proposals replicates the natural drainage characteristics of the pre-developed site. In the case of 'Brownfield' development, the drainage proposal will be measured against the existing performance of the site, although it is preferable for solutions to provide characteristics similar to the 'Greenfield' development wherever possible.

4.2 The existing site characteristics are summarised as below.

Total Site Area	680m ² (0.068 ha)
Current Site Condition	Greenfield
Existing Impermeable Area	None
Proposed Impermeable Area	270m ² (0.027 ha)
Green Sedum Roof	215m ² (0.022 ha)
Existing Surface Water Discharge Method	To ground

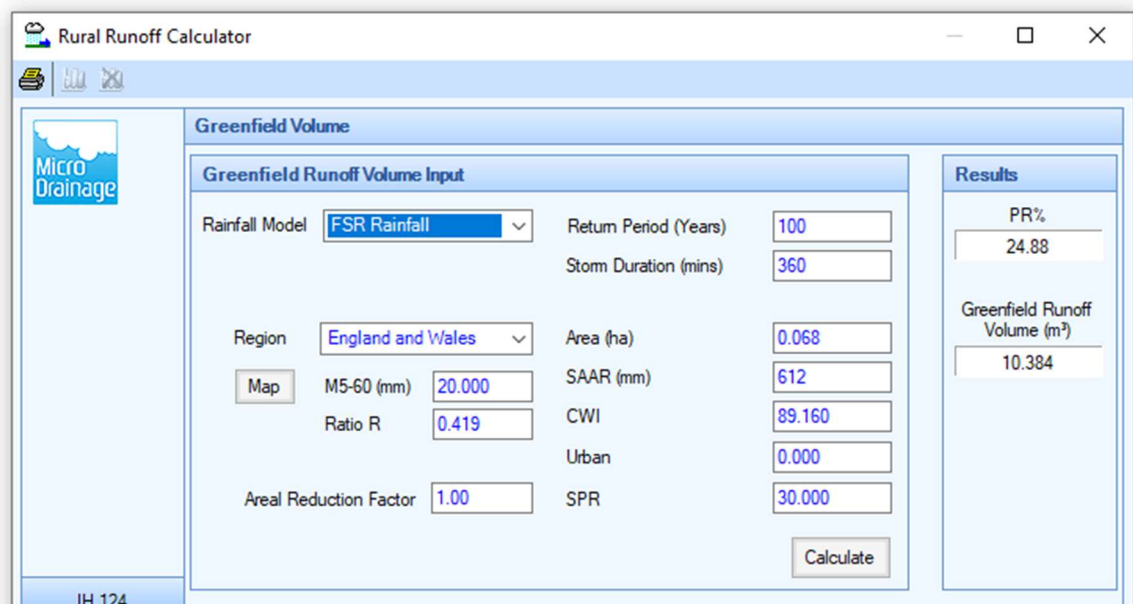
4.3 The proposed development looks to install a new residential development in the rear garden of the existing property. This will therefore introduce impermeable surface finishes that will generate surface water runoff. There will be an opportunity to introduce SUD's features into the development to reduce the impact of surface water entering the public system. The total footprint for the new development will be 270m² although a Sedum 'Green' roof with a footprint of 215m² is proposed. Due to the ground conditions likely to be London Clay surface water runoff will be collected and attenuated within the site with a controlled discharge to the public surface water system.

4.4 Greenfield Profile - Using the Institute of Hydrology Report 124 – Flood Estimation of Small Catchments (ICP SUDS) method, the mean annual flood flow (Q_{bar}) for small catchments is calculated as 0.1l/s, see Frame 10 below.



Frame 10 – Pre-Development Run-off Rates

4.5 The existing Greenfield run-off rate for the site is calculated as **1.5l/s/ha**. (0.1l/s / 0.068 ha). The pre-development run-off volume from a 1in100 year return period storm of 6hr duration is calculated as 10.384m³ as per the run-off calculator results as frame 11 below. Post-development the run-off volume is reduced to 7.024m³ as per the run-off calculator results as frame 12 below.



Frame 11 – Pre-Development Run-off Calculator Results

The screenshot shows the 'Rural Runoff Calculator' window. The main area is titled 'Greenfield Volume' and contains a 'Greenfield Runoff Volume Input' section. The input fields are as follows:

Parameter	Value
Rainfall Model	FSR Rainfall
Return Period (Years)	100
Storm Duration (mins)	360
Region	England and Wales
Area (ha)	0.046
M5-60 (mm)	20.000
SAAR (mm)	612
Ratio R	0.419
CWI	89.160
Urban	0.000
Areal Reduction Factor	1.00
SPR	30.000

The 'Results' section on the right displays the following values:

Result	Value
PR%	24.88
Greenfield Runoff Volume (m ³)	7.024

A 'Calculate' button is located at the bottom right of the input section. The window title bar includes 'Rural Runoff Calculator' and standard window controls. A 'Micro Drainage' logo is visible in the top left corner of the application area, and 'IH 124' is displayed in the bottom left corner.

Frame 12 – Post-Development Run-off Calculator Results

Sustainable Urban Drainage Systems (SUDS)

- 4.6 The proposed surface water system will cater for approximately 270m² of impermeable area. In certain developments SUDS can potentially be utilised such that they not only attenuate run-off but also provide a level of improvement to the quality of the water passed on to watercourses or into the groundwater. This is known as source control and is a fundamental part of the SUDS philosophy. There will be an opportunity to introduce SUD's features to reduce surface water runoff as mentioned in 4.4 above.
- 4.7 A range of typical SUDS components that can potentially be used following the hierarchy of sustainability, as established by the Environment Agency and included in the Environment Agency publication: *SUDS – A Practical Guide*, are listed below in Frame 13 with the relative benefits of each feature and the appropriateness for the subject site.

SUDS Feature	Environmental Benefit	Water Quality Improved	Suitability for low permeability Soil	Ground water Recharge	Site specific restrictions	Appropriate for the Site?
Wetlands	✓	✓	X	X	Limited Site Area	No
Retention Ponds	✓	✓	✓	X	Limited Site Area	No
Soakaways	X	✓	X	✓	Poor infiltration rate	No
Swales	✓	✓	✓	✓	Limited Site Area	No
Underground Storage	X	X	✓	X	None	Yes
Permeable Paving	X	✓	X	✓	Poor infiltration rate	No
Green Roofs	✓	✓	✓	X	None	Yes
Water Butts	✓	X	✓	X	None	Yes
Rainwater Harvesting	X	X	✓	X	Limited catchment areas	No

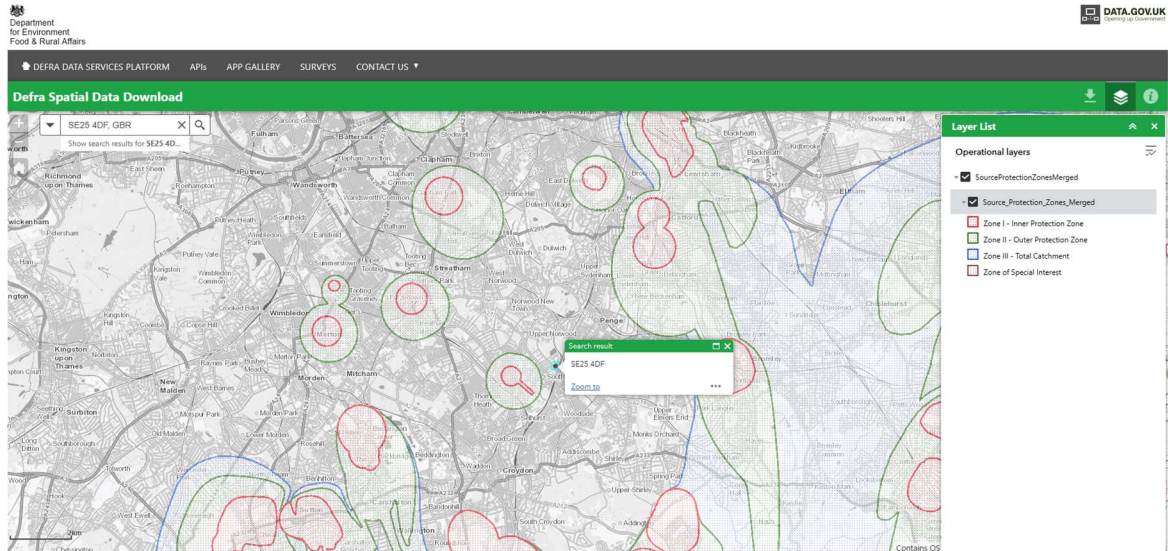
Frame 13 – Typical SUD's Components

4.8 From the table above it can be seen that there are a number of SUDS elements that are potentially suitable for this site. In reaching this conclusion the following has been taken into account.

- Underlying London Clay Formation therefore anticipate a poor percolation rate.
- The natural topography of the site.
- There is a public surface water sewer in close proximity to the site.
- A flat roof is proposed for the new development which will incorporate a 'Green' roof providing a catchment area of 215m².

Pollution Protection

4.9 Inspection of the Groundwater Protection Zone map indicates that the site is located outside of any Source Protection Zone. Refer to Frame 14 below.



Frame 14 - EA Source Protection Zones

4.10 Reference to Frame 15 below, Table 4.3 of Chapter 4 of the Ciria’s SUDS design manual indicates that a simple index approach for the site would be appropriate with a Low Pollution Hazard Level. However, due to the anticipated ground geology, London Clay, it is considered that infiltration techniques will not be considered suitable for incorporating into the design of the surface water drainage system at this development site.

TABLE 4.3 Minimum water quality management requirements for discharges to receiving surface waters and groundwater			
Land use	Pollution hazard level	Requirements for discharge to surface waters, including coasts and estuaries²	Requirements for discharge to groundwater
Residential roofs	Very low	Removal of gross solids and sediments only	
Individual property driveways, roofs (excluding residential), residential car parks, low traffic roads (eg cul de sacs, home zones, general access roads), non-residential car parking with infrequent change (eg schools, offices)	Low	Simple index approach ² <i>Note: extra measures may be required for discharges to protected resources¹</i>	
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	Simple index approach ² <i>Note: extra measures may be required for discharges to protected resources¹</i>	Simple index approach ² <i>Note: extra measures may be required for discharges to protected resources¹</i> In England and Wales, Risk Screening ⁴ must be undertaken first to determine whether consultation with the environmental regulator is required. In Northern Ireland, the need for risk screening should be agreed with the environmental regulator.
Trunk roads and motorways	High	Follow the guidance and risk assessment process set out in HA (2009)	
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured, industrial sites	High	Discharges may require an environmental licence or permit ⁵ . Obtain pre-permitting advice from the environmental regulator. Risk assessment is likely to be required ⁵ .	

Notes

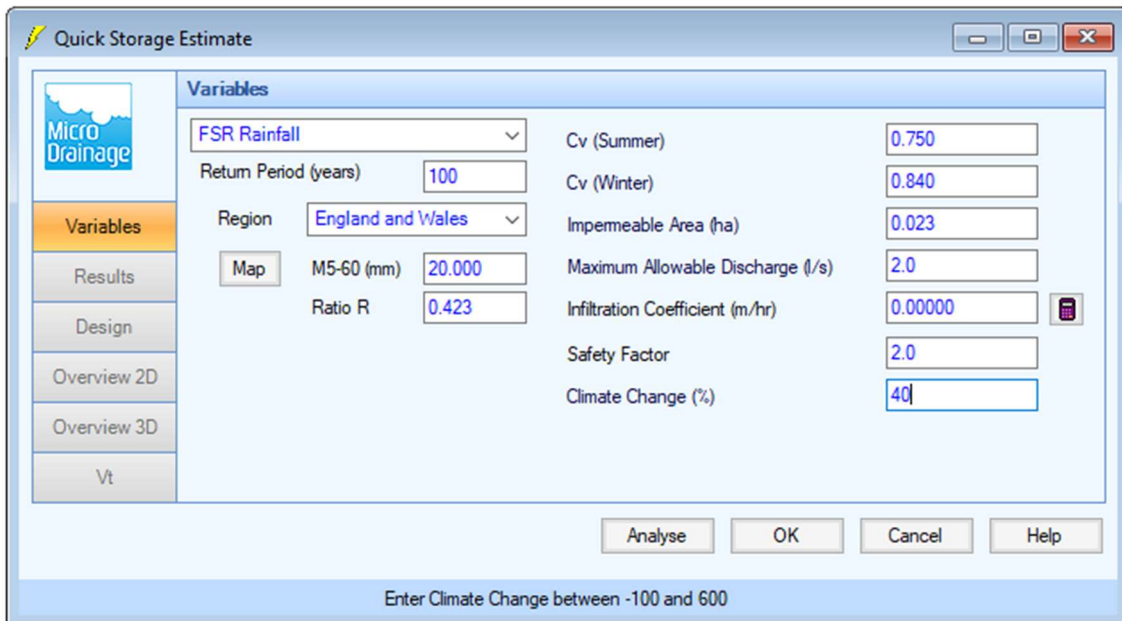
The minimum water quality management requirements for discharges to receiving surface waters and groundwater are presented here. (For Northern Ireland, this guidance should be considered as interim until such time as Northern Ireland publishes its own legislation/policy/guidance.)

- 1 These are not required in Scotland and Northern Ireland. For England and Wales, see Step 3 of the simple index approach (Section 26.7.1).
Protected surface water resources will include those designated for drinking water abstraction or for other environmental protection reasons. Protected groundwater resources are represented by SPZ1s in England and Wales.
- 2 In Scotland, the Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 General Binding Rules, Rule 10 (d) (iv) effectively provides an exemption from requiring SuDS for coastal discharges. However, control of any contaminants likely to be present in surface water runoff is still required, but can be delivered using alternative methods such as proprietary treatment products. As the term 'SuDS' in this manual includes proprietary treatment products, this exemption is not valid in this context.
- 3 The application of the simple index approach should follow the approach outlined in Section 26.7.1 (or equivalent approved).
- 4 Risk screening is an assessment to identify high risk scenarios where the Environment Agency or Natural Resources Wales (NRW) would wish to be consulted regarding infiltration of water from surface runoff in order to agree the proposed design approach. The risk screening method is provided in Section 26.7.2.
- 5 The risk assessment should determine the appropriate design approach to mitigate risk to acceptable levels following the guidance outlined in Section 26.7.3. This assessment should be approved by the environmental regulator.

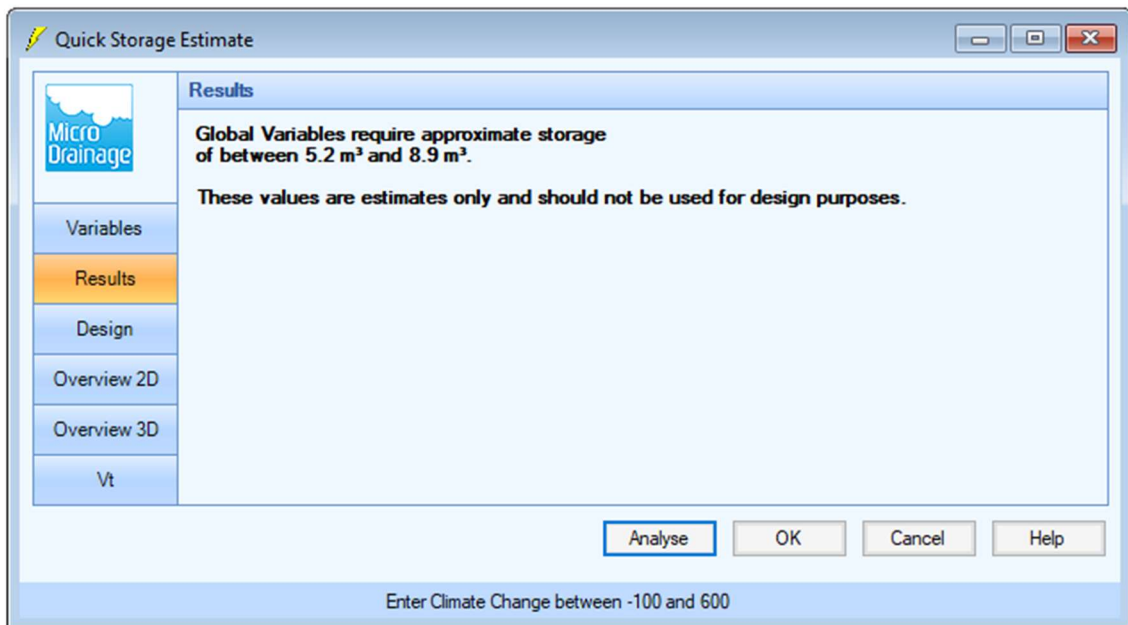
Frame 15 – Ciria Sud's Manual Table 4.3

Proposed Discharge

- 4.11 A surface water drainage strategy is shown on drawings T-2023-015-01A, -02A and -03A enclosed within Appendix A. There will be an opportunity to introduce SUD’s underground storage with a controlled discharge rate together with a sedum green roof into the scheme to improve the water quality but due to the limited space available together with the anticipated poor ground conditions there will be no opportunity to infiltrate within the development site. Foul and surface water drainage will be kept separate within the site and discharge to the public foul and surface water systems in Warminster Road.
- 4.12 Quick storage estimates indicate that between 5.2m³ and 8.9m³ storage will be required as shown in Frames 16 and 17 below. Using a moderately efficient flow control it is anticipated that the attenuation tank will require 7m³ capacity.



Frame 16 – Micro Drainage Quick Storage Variables



Frame 17 – Micro Drainage Quick Storage Estimate

Consents

- 4.13 A Section 106 Water Industry Act application to connect surface water run-off into the public surface water sewer will be required to be made to and approved by Thames Water Services. The detail drainage design will need to comply with the Building Regulations.
- 4.14 The responsibility of the management and maintenance of the SUD's drainage system will remain with the property owner, or a suitable management company appointed to meet the requirements of the Flood and Water Management Act.

5.0 FLOOD RISK

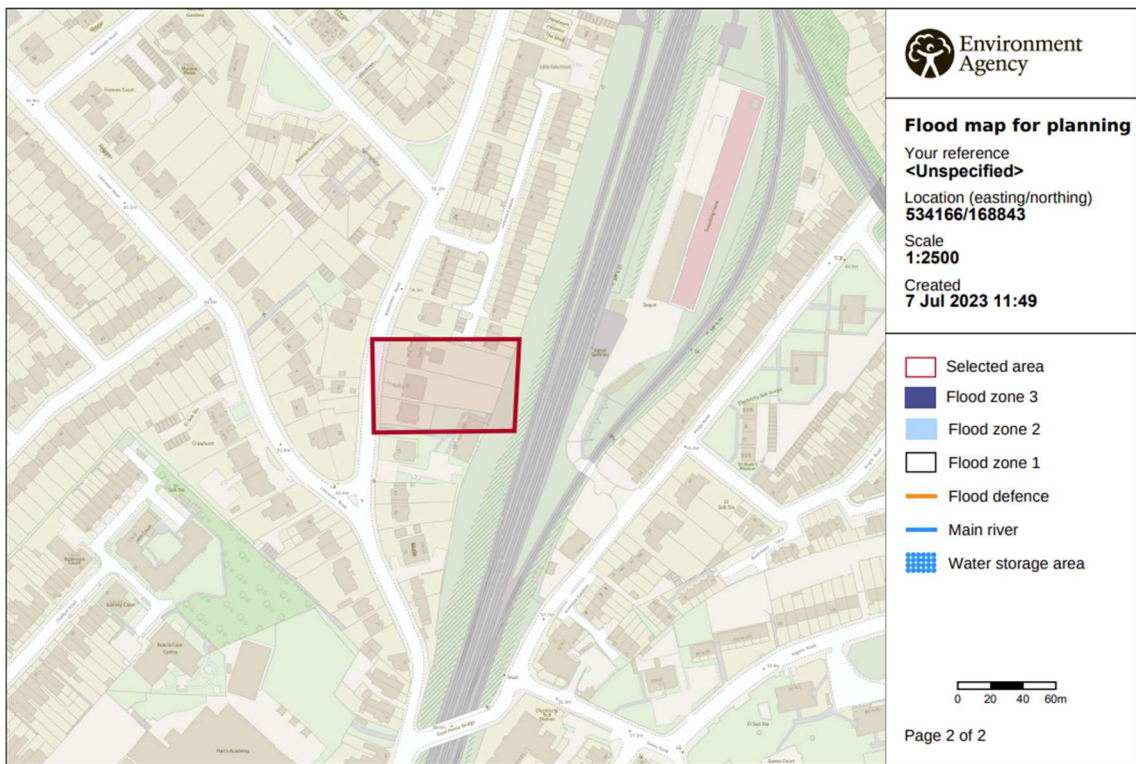
Requirement for Flood Risk Assessment

- 5.1 Flood risk is primarily regulated through planning policy. Key requirements with respect to flooding are outlined in the National Planning Policy Framework (NPPF) which was published in March 2012, revised in July 2018 and February 2019. The current update was issued in July 2021.
- 5.2 The NPPF requires that an FRA should be submitted with planning applications for all sites over one ha in area and all smaller sites within Flood Zones 2 and 3 to determine the risks of flooding at a development site (from all sources including rivers, the sea, sewers and groundwater). An FRA is therefore an essential element in the overall acceptability of the proposed development in planning terms. **The proposed development site is below one ha and not located within a Flood Zone 2 or 3. A Flood Risk Assessment is therefore not required.**
- 5.3 Guidance on the content of FRAs is contained in Technical Guidance to the National Planning Policy Framework which has been used to inform the scope and content of this report.
- 5.4 The primary resource for reviewing fluvial and tidal flood risks is via the Environment Agency (EA) indicative floodplain maps. These classify risks as follows:
- Flood Zone 1 (Low Probability): annual probability of flooding less than 1 in 1,000 (<0.1%);
 - Flood Zone 2 (Medium Probability): annual probability of flooding more than 1 in 1,000 (0.1%) but less than 1 in 100 (1%) for fluvial flooding or 1 in 200 (0.5%) for tidal flooding; and
 - Flood Zone 3 (High Probability): annual probability of flooding more than 1 in 100 (1%) for fluvial flooding or 1 in 200 (0.5%) for tidal flooding.

Consultation

- 5.5 Inspection of the Environment Agency Website indicates the site to lie within a Flood Zone 1 (Low Probability), and as the application site is less than one hectare in area, an FRA will not be required by the Planning Authority.

- 5.6 No Consultation with the Environment Agency has been carried apart from inspection of their website. A copy of the Environment Agency Flood Map information is extracted as Frame 18 below and included in Appendix D.



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Frame 18 – Extract of Environment Agency Flood Maps

6.0 OPERATION & MAINTENANCE STATEMENT

6.1 The surface water system as indicated on the design drawings is a private Sustainable Urban Drainage System (SUDS) and the owners of the properties (Management Company) will be responsible for the inspection and maintenance for this system.

6.2 It is recommended that the chambers, catch pits, pumping chambers and the attenuation structure are inspected as part of the general planned inspection and maintenance regime for the development, but certainly at no greater intervals than once a year. The green roof will require inspections in accordance with the designer/installers recommendations but should be a minimum of two inspections per year to check the structural integrity of the roof, irrigation system and vitality of the vegetative layer.

6.3 Annual Inspection to include;

- Lift manhole covers and gratings to the catch pits and drainage channels to check general condition and build-up of debris.
- Check that inlet and outlets to flow control (pump) chamber and attenuation structure are clear of obstructions.
- Note that the chambers upstream of attenuation tank are constructed as catchpits and from the construction detail it can be seen that there is a 450mm sump for silt collection below the standing water that will need to be dipped and emptied as required. by a licensed carrier.
- **It is imperative that silt is not allowed to build-up and spill into the pipe runs, attenuation tank or flow control chamber as this will affect the performance of these structures**
- Review the quantities of silt removed and consider whether inspections should be increased or possibly reduced to every two years.
- Carry out works as identified from inspection.

6.4 Five year Inspection / Five Year Anniversary

- Rod and flush all pipe work to ensure no blockages and free flow of water to the catch pits and to check overall integrity and remove any silt.
- Remove all silt and water from the catchpits with a vacuum sucker and dispose off-site by a licensed carrier.

6.5 Implementation Programme

The developer will be responsible for the first year's maintenance and will arrange for a joint handover inspection between the Developer and the maintenance contractor to be appointed by the Management Company with a copy of this report provided in order for the Maintenance Contractor to become familiar with and understand the requirements.

7.0 CONCLUSION

- 7.1 Tridax Limited have been commissioned by Frankham projects Limited and requested to prepare a Drainage Impact Assessment and Flood Risk Statement for the proposed development at The Hawthorns, 57 Warminster Road, Croydon SE25 4DF to provide 8 residential apartments set over three floor levels.
- 7.2 The Geological map of Great Britain indicates that the site will be underlaid with a bedrock of London Clay Formation – Clay and Silt with no superficial deposits recorded. Due to the anticipated geology of this site the use of infiltration techniques is not considered appropriate. In consideration to the ground conditions, topography and proximity of the public surface water sewer to the site, surface water runoff will be designed to be collected predominantly through a ‘Green Roof’ system, attenuated within the site and then have a controlled discharge into the public surface water system. Due to the site topography discharge to the public surface water sewer will be controlled via a pump with discharge rates restricted to be as close to the greenfield rate. Attenuation will be provided within the development site. Foul and surface water drainage will be kept separate and have individual connections to the respective public foul and surface water sewers.
- 7.3 The proposed development will increase the design flow rate of foul drainage to the public foul sewer by 0.37l/s. This is a Greenfield development site where surface water runoff currently discharges to the ground or follows the topography to flow off site to lower ground. The proposed development site is created by the separation of the rear garden from the existing property. The proposed development looks to install a residential development that will create approximately 270m² of impermeable surface finishes .There will be an opportunity to introduce SUD’s features to reduce surface water runoff which will reduce the impact on the public system, increase available capacity and provide an improvement in quality for the water being discharged. As mentioned previously the proposal is to provide a green roof which is suitable for low permeability soils, will improve water quality and provide an environmental benefit. It will also reduce the impact on adjacent properties. By the introduction of separate foul and surface water systems within the site it will reduce the potential for contaminated flooding occurring. It should be noted that Thames Water will make an infra-structure charge upon connection and

this sum includes for any necessary local network reinforcement to the public sewers to provide capacity for new development related growth.

- 7.2 New separate foul and surface water connections will need to be made to the public foul and surface water sewers. Subject to a successful planning application, Section 106 Water Industry Act applications to connect to the public sewers will be made to Thames Water Services; at which point an infra-structure charge would be invoiced to the Client. The detailed drainage design will need to comply with the Building Regulations.
- 7.5 An application to Thames Water for a 'Build Over/Near to a public sewer' may be required if the development is within 3m of any public sewer.
- 7.6 Drawing T-2023-015-02B in Appendix A demonstrates the strategy for foul and surface water drainage disposal. A detailed foul and surface water drainage design will need to be undertaken once planning approval has been granted.
- 7.7 The site is identified to be within a Flood Zone 1 (Low Probability) and less than 1ha therefore a Flood Risk Assessment is not required.
- 7.8 The topographical survey identifies the carriageway levels at the entrance to the existing property as being in the region of 60.12m – 60.5mAOD. It is assumed that the ground floor level of the proposed development will be set at approx. 57.3mAOD to be a minimum 150mm higher than the ground level. The proposals are to have three flats located at the ground floor level which will include sleeping arrangements. It is generally required that sleeping accommodation be located above any predicted flood level. This is a Flood Zone 1 with Low Risk and by raising the floor 150mm above ground level will avoid the potential risk of internal flooding from surface water run-off.
- 7.9 In accordance with the requirements of the Technical Guidance to the National Planning Policy Framework (NPPF) and GOV.UK Guidance – Flood risk and coastal change, we conclude that the site can be adequately drained, and is

sustainable in terms of flood risk and that the proposals do not increase the risk to the neighbouring properties.

7.10 A copy of this report should be included with the 'New Homeowners Handbook' and any potential future purchaser made aware of any mitigation measures included on the site and the long-term maintenance requirement.

7.11 This report should be issued to the Environment Agency via the planning process for confirmation that the measures including all finished floor levels are acceptable to minimise the risk to life and damage to the development and that drainage conditions are not worsened elsewhere as a result of this development.

Tridax Limited considers that with the inclusion of the above, the site is sustainable in terms of flood risk and that the proposals do not increase the risk to the neighbouring properties.

APPENDIX A

DRAWINGS

Tridax Drawings

T-2023-015-01A - Site Location Plan

T-2023-015-02A - Proposed Drainage Strategy

T-2023-015-03A – Construction Details

Architects Drawings

P-1218-100 Rev 0 – Site Location Plan

P-1218-110 Rev P – Proposed Site Roof Plan

P-1218-111 Rev N – Proposed Ground Floor Plan

P-1218-112 Rev N – Proposed First Floor Plan

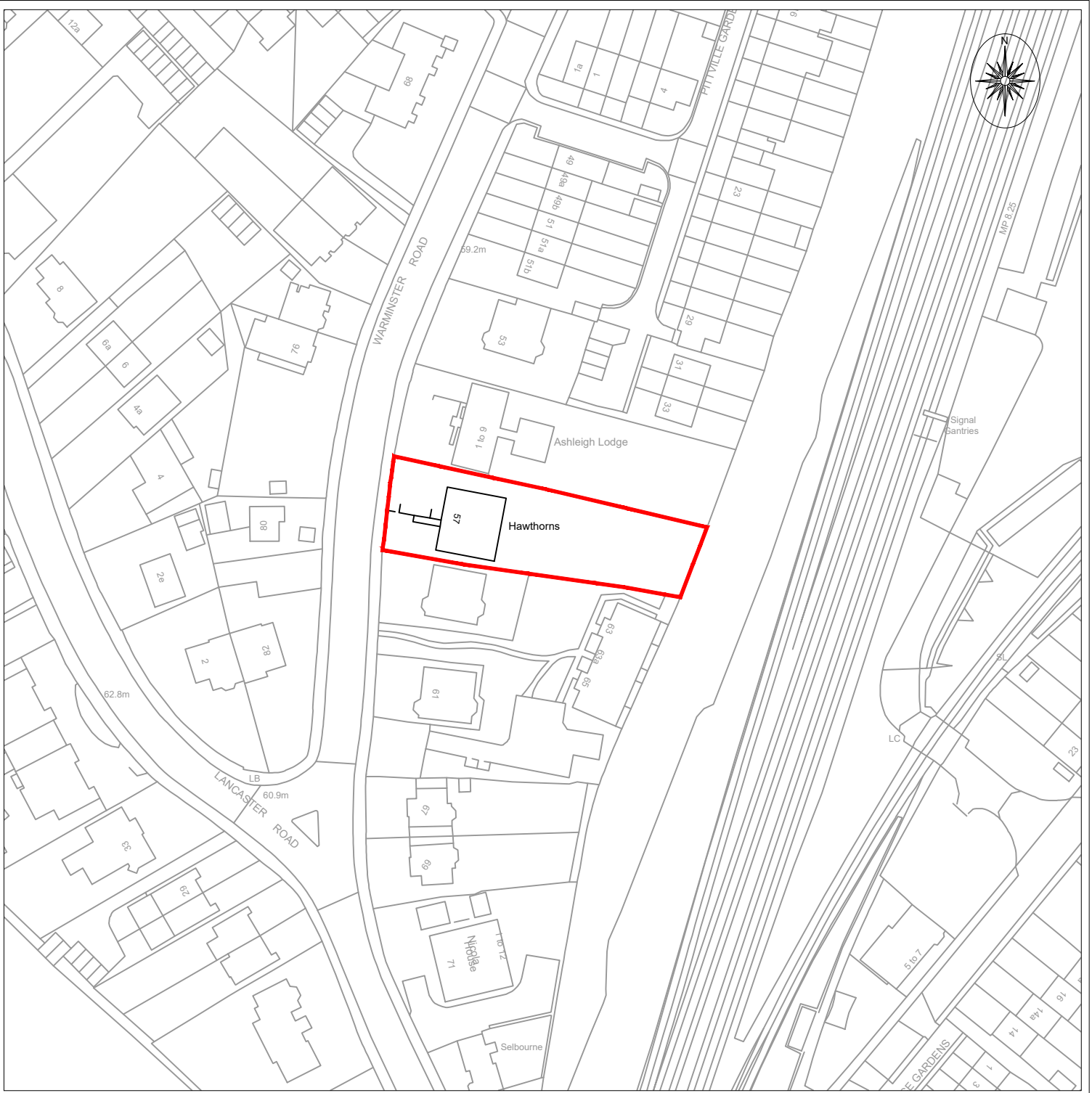
P-1218-113 Rev N – Proposed Second Floor Plan

P-1218-210 Rev A – Proposed Elevations

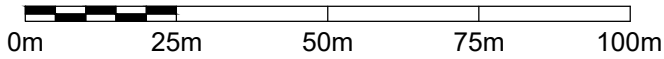
P-1218-211 Rev A – Proposed Elevations

P-1218-221 Rev 0 – Proposed Site Section

3613/1001 Rev R1 – Topographical Survey



1:1250 METRIC



PROJECT
Proposed Residential development to the rear of 'The Hawthorns', 57 Warminster Road, Croydon SE25 4DF

CLIENT
Frankham Projects

DRAWING
Site Location Plan

STATUS
PLANNING - DIA Report



Design Office, Suite 3, Honeywood House,
 Whitfield, Dover, Kent, CT16 3EH
 Tel: 01304 820777

SCALES
1 : 1250

DATE
06/07/2023

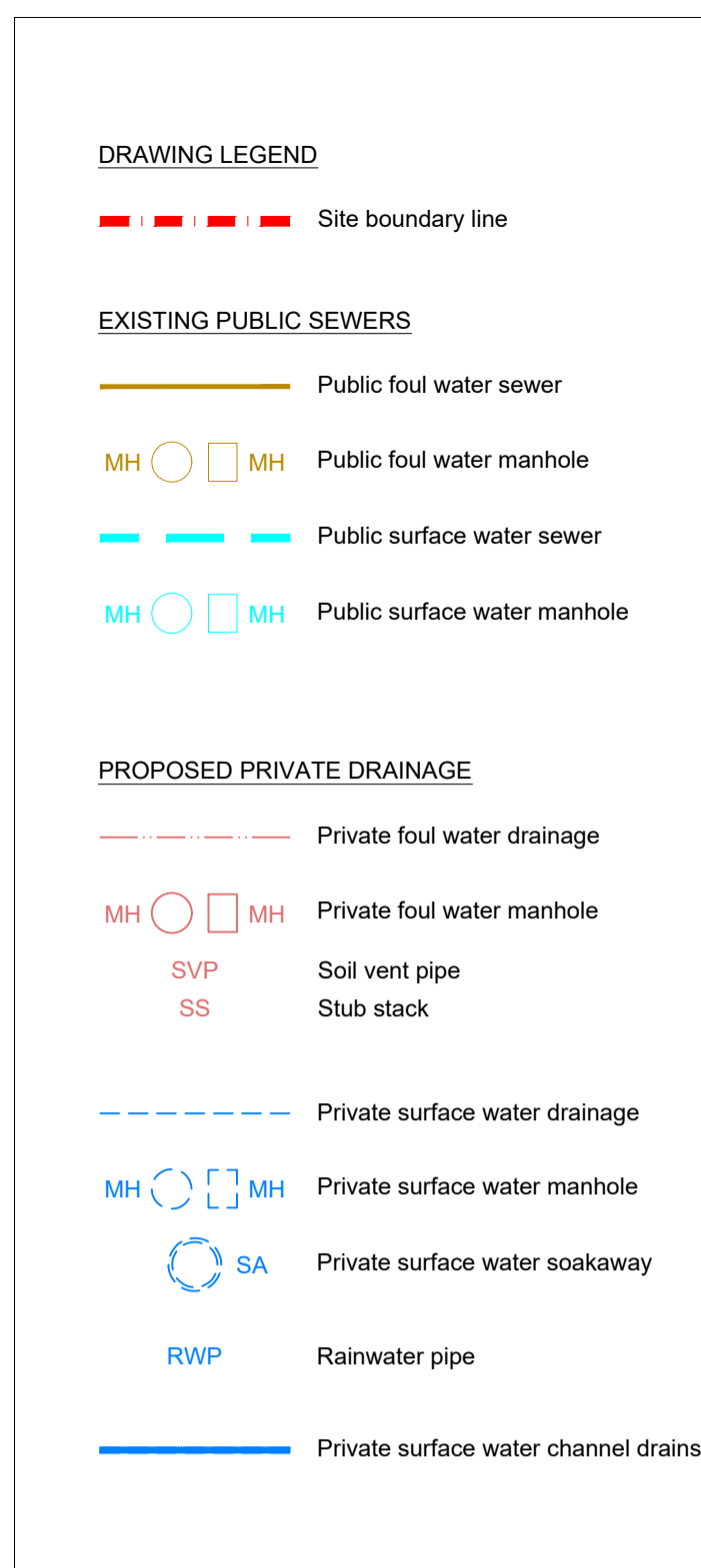
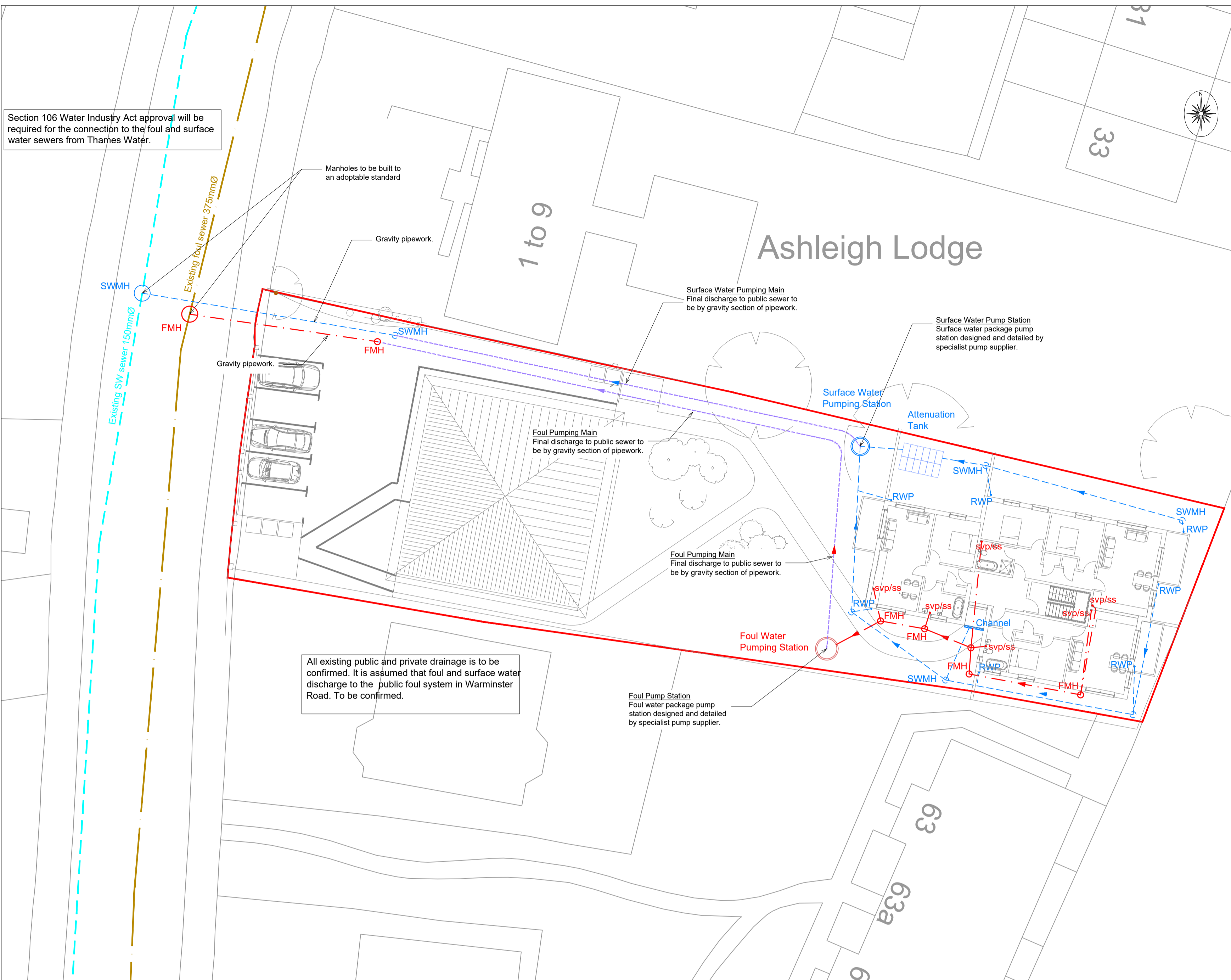
SIZE
A4

Dwg No.
T-2023-015-01

REV.
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Rev	Description	Date
00	First Issue	06/07/2023

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Drainage Philosophy

Surface Water Disposal.
Surface water runoff from the new properties roof, hardstandings, patios and paved areas is to be collected via a network of gutters, downpipes and pipework and then discharge to a private package pumping station with additional storage created by an attenuation tank (7m3). Discharge flows are to be controlled to 2l/s. Rising main to discharge to manhole prior to leaving the site so that final connection is by gravity.

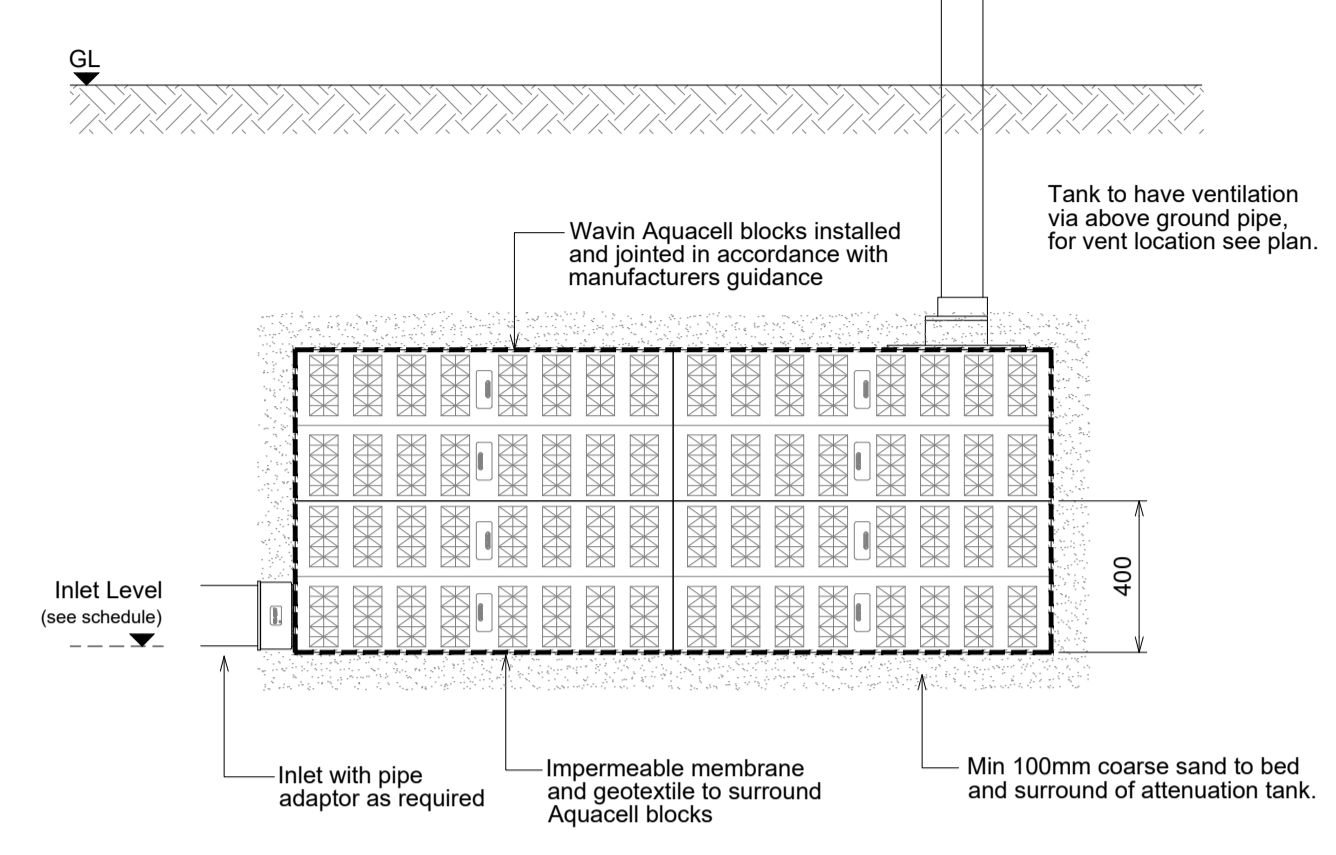
Foul drainage
The proposed developments foul drainage is to be collected via a network of suitable pipework to discharge to a private package pumping station. Rising main to discharge to manhole prior to leaving the site so that final connection is by gravity.

S106 Agreements will be required for discharging into the public foul and surface water sewers.

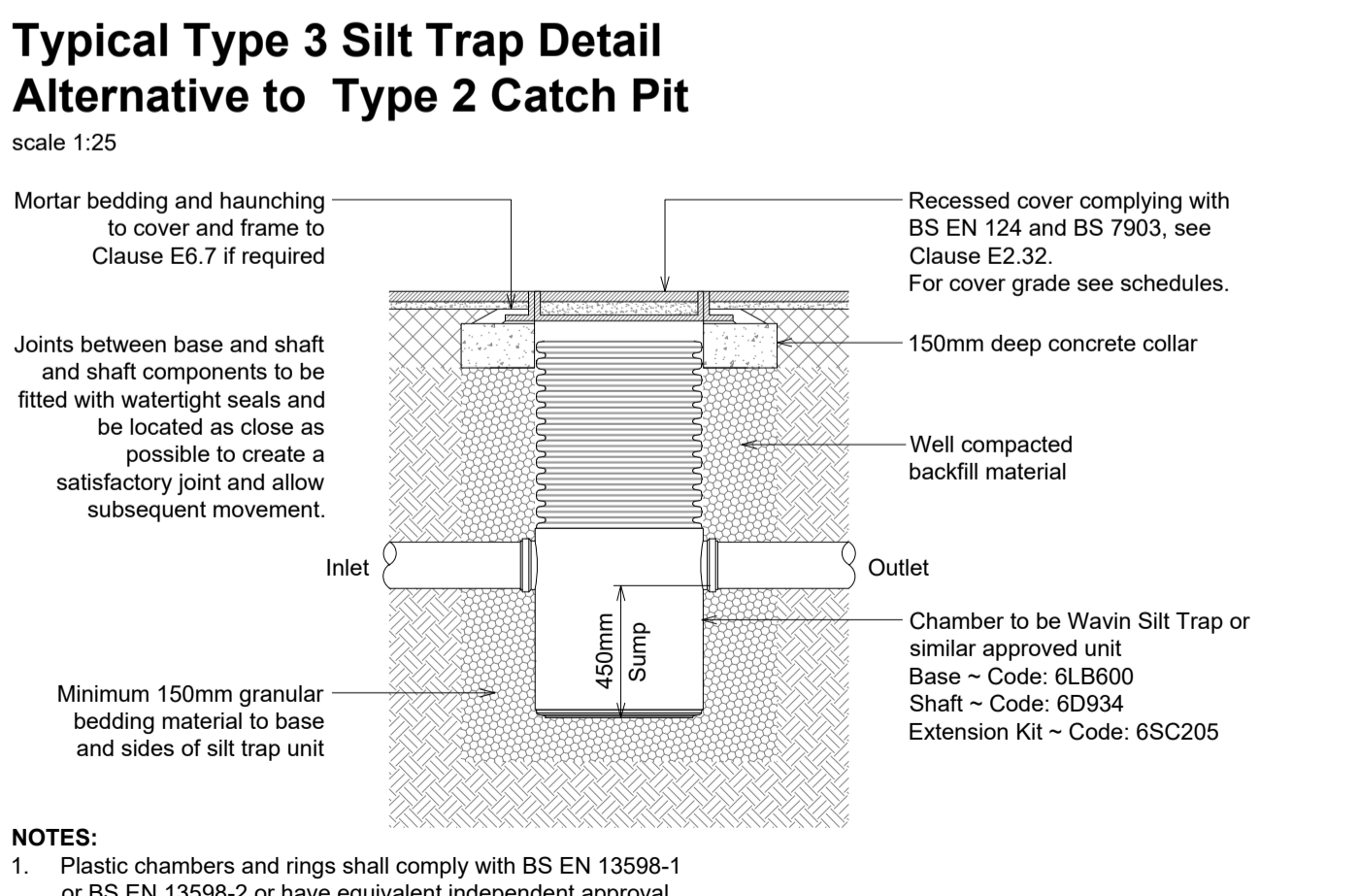
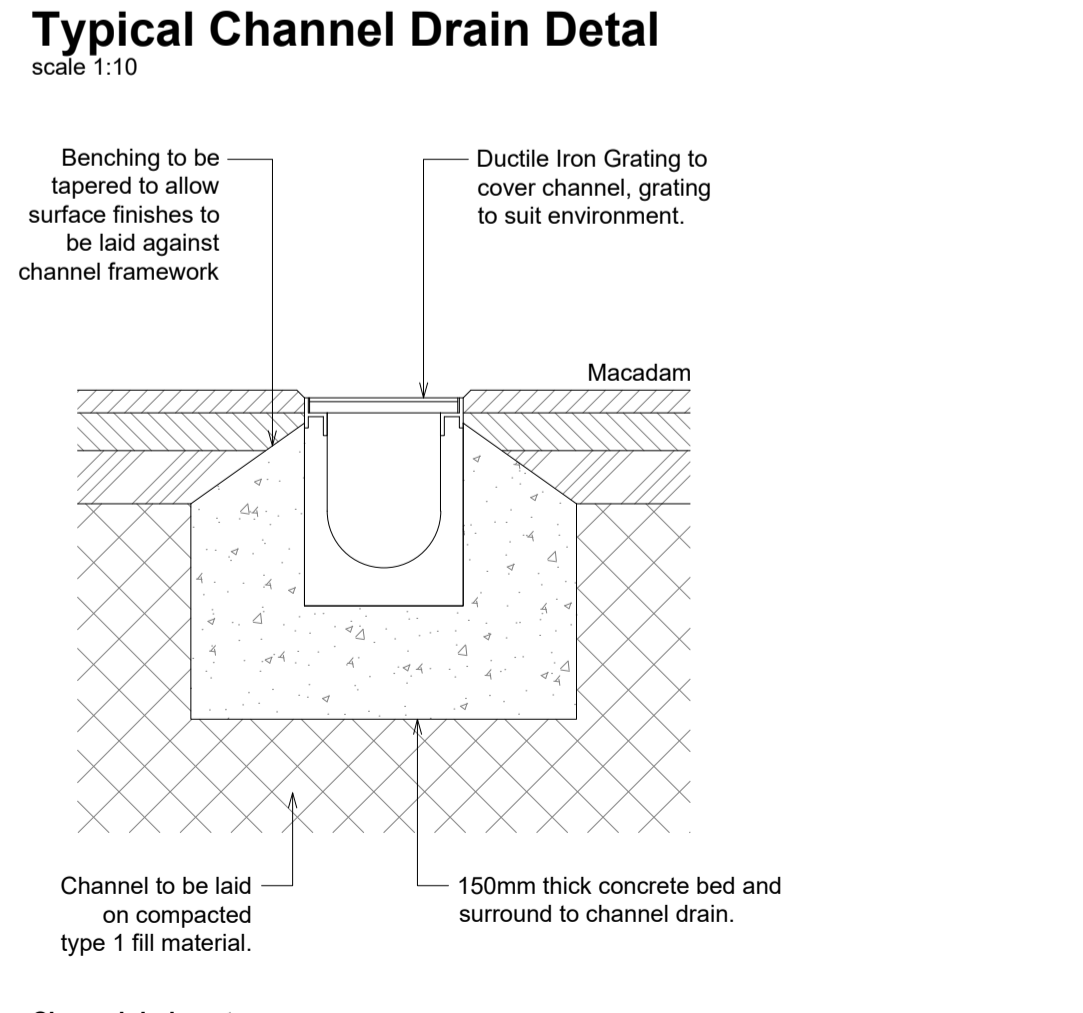
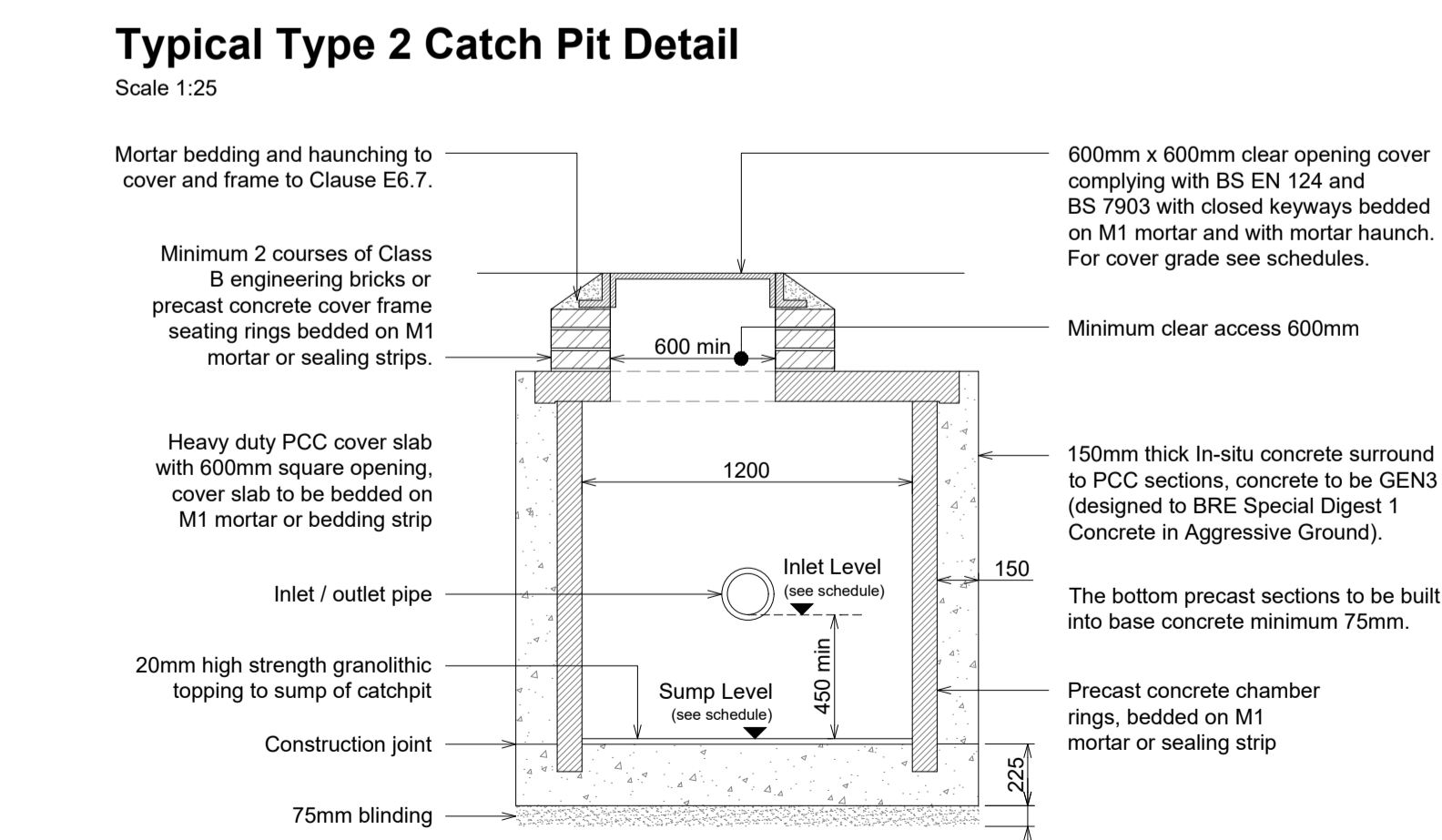
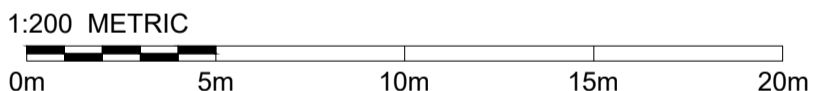
ALTERNATIVE
Rather than connecting direct to the public sewers in Warminster Road, subject to approval from the owner it may be possible to connect to the private drainage serving 57 Warminster Road. To be investigated further.

Section: Cellular Attenuation Tank (AquaCell)

scale 1:20



- AquaCell Installation Notes:** (Contractor to consult manufacturers literature for full details)
- Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell units.
 - Lay 100mm bed of coarse sand, level and compact.
 - Lay the geotextile over the base and up the sides of the trench.
 - Lay the impermeable membrane on top of the geotextile over the base and up the sides of the trench.
 - 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 AquaCell Clips and for multi layers use AquaCell Clips and AquaCell Shear Connectors (vertical rods).
 - Wrap the Impermeable membrane around the AquaCell structure and seal in accordance with the manufacturers recommendations.
 - If side connections into the AquaCell units are required, (other than the preformed socket), use the appropriate Flange Adaptor. Fix the flange adaptor to the unit using self-tapping screws. Drill a hole through the Flange Adaptor and connect the pipework.
 - In order to prevent silt from entering the tank, clogging the inlet pipework and reducing the tank capacity, it is recommended that a silt trap / catchpit is installed upstream of the tank inlet.
 - Wrap and overlap the geotextile to cover the entire AquaCell structure protecting the impermeable membrane.
 - Lay 100mm of coarse sand between the trench walls and the AquaCell structure and compact being careful not to damage the blocks or either of the membranes.
 - Lay 100mm bed of coarse sand over the geotextile and compact.
 - Backfill tank with suitable clean material, free of organic matter and debris.



Channel drain notes:

- A trash box is to be located at every channel outlet.
- In macadam surfaced areas, benching to be tapered to allow base course and wearing course to be in close contact with edge of channel grating. Wearing course to be 3-6mm above the grating after rolling, in heavy duty traffic areas benching should be carried up to protect the edge of the channel.

- NOTES:**
- Plastic chambers and rings shall comply with BS EN 13598-1 or BS EN 13598-2 or have equivalent independent approval.
 - Backfill to be well compacted around shaft of chamber.

- ### DRAINAGE NOTES
- The location of any existing drains and sewers are to be accurately located and reported prior to any work commencing on site.
 - All materials, workmanship and construction to be in accordance with the requirements of 'Sewers for Adoption - 7th Edition' and published addendum and corrigendum.
 - Channel drains shown are only to collect surface water run-off from hard paved areas and door thresholds and are not intended to collect groundwater or run-off from gardens and landscaped areas.
 - All abandoned pipework to be completely removed or grout filled unless stated otherwise.

- ### NOTES
- The Contractor should check all dimensions on site.
 - It is the Contractors responsibility to ensure compliance with building regulations and current codes of practice.
 - Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
 - Commencement of any building works prior to full building regulation approval is entirely at the clients risk.

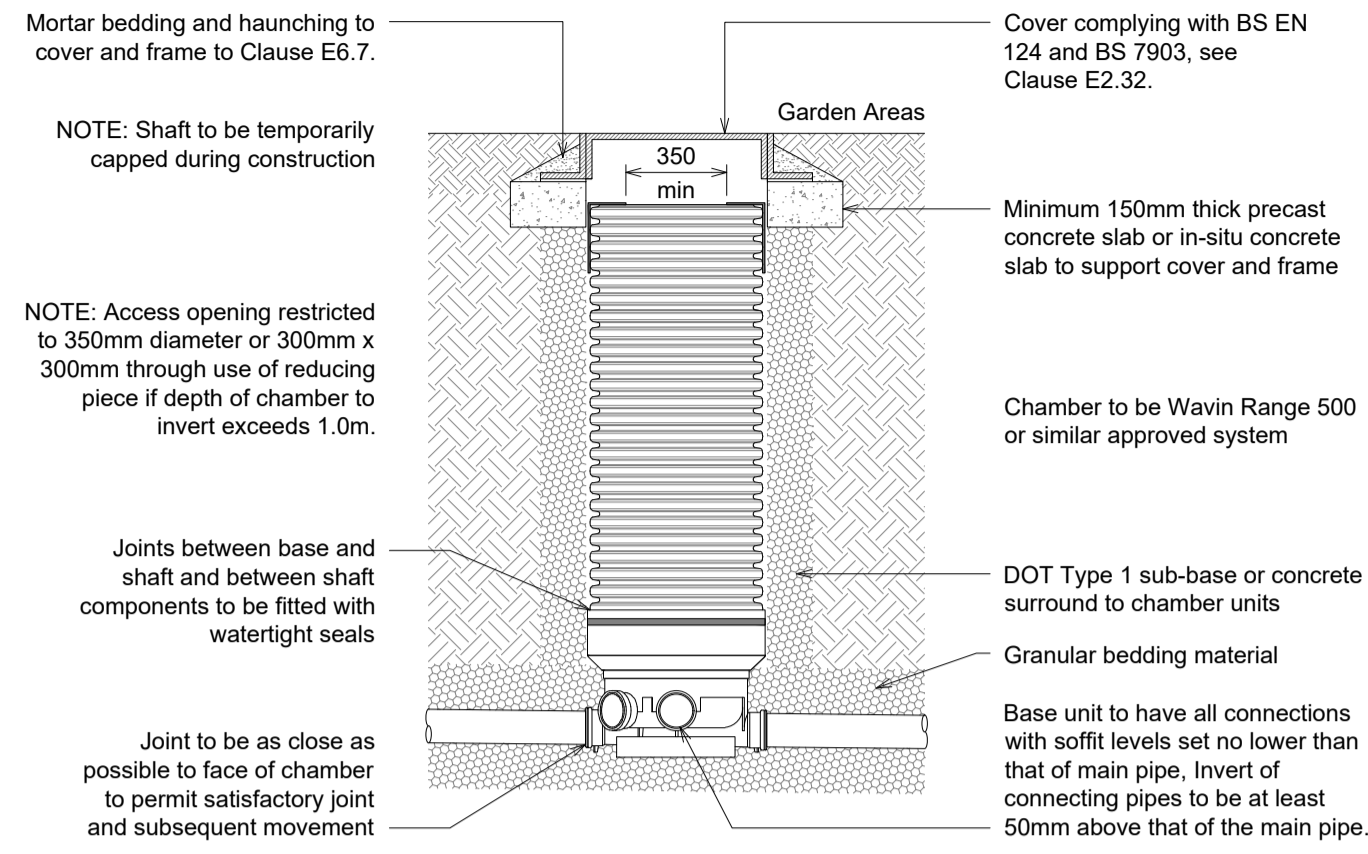
B	New layout plan	15/11/2023
A	First issue to client	06/07/2023
Rev	Description	Date
PROJECT: Proposed Residential development to the rear of 'The Hawthorns', 57 Warminster Road, Croydon SE25 4DF		
CLIENT: Frankham Projects		
DRAWING:	SCALE:	DATE:
Outline Drainage Strategy Plan & Construction Details	As Noted	06/07/2023
STATUS:	PLANNING - DIA Report	T-2023-013-02
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Typical Type 3 Chamber Detail (Non-Entry)

scale 1:25

- Maximum depth of cover level to soffit of pipe 3.0m
- For individual access cover grades see schedules.



NOTE: Plastic chambers and rings in areas subject to vehicle loading shall comply with BS EN 13598-2, in all other areas they are to comply with BS EN 13598-1 or BS EN 13598-2 or have equivalent independent approval.

Clause E6.6 - Pipes and Joints Adjacent to Structures

1. Where rigid pipes are used, a flexible joint (rocker pipe) shall be provided as close as is feasible to the outside face of any structure into which a pipe is built, within 150mm for pipe diameters less than 300mm. The design of the joints shall be compatible with any subsequent movement.
2. The recommended length of the next pipe (rocker pipe) away from the structure shall be as shown in Table E.12.

Table E.12 Rocker Pipes

Nominal Diameter (mm)	Effective length of Rocker Pipe (mm)
150	600

Text taken from Figure B.14

1. Stub pipes into structures shall be of rigid material.
2. No incoming branch is to be less than 90° from the outgoing direction of flow, all pipes entering the bottom of the manhole are to have level soffits.

Clause E6.7 - Setting Manhole Covers and Frames

1. Manhole frames shall be set to level, bedded and haunched externally over the base and sides of the frame in mortar, in accordance with the manufacturers instructions.
2. Frames for manhole covers shall be bedded in a polyester resin based mortar in all situations where covers are sited in NRSWA Road Categories I,II or III (i.e. all except residential cul-de-sacs).

Table E.6

NRSWA road category	Description	Minimum frame depth (mm)
I	Trunk roads and dual carriageways	150
II	All other A roads	150
III	Bus services	150
IV	All other roads except residential cul-de-sacs	150
-	Residential cul-de-sacs	100

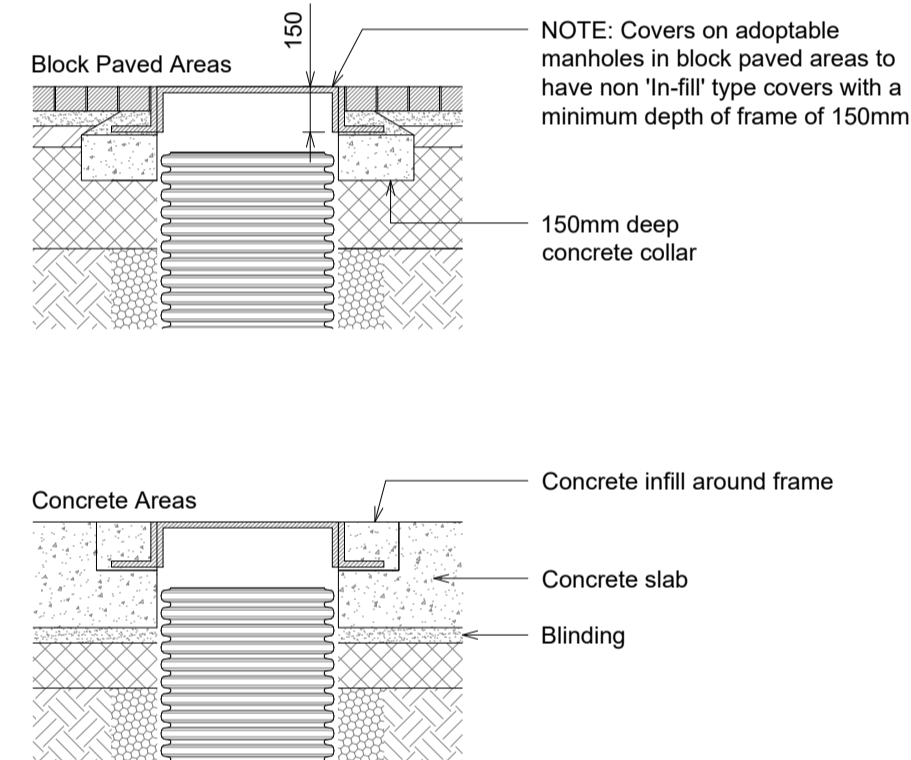
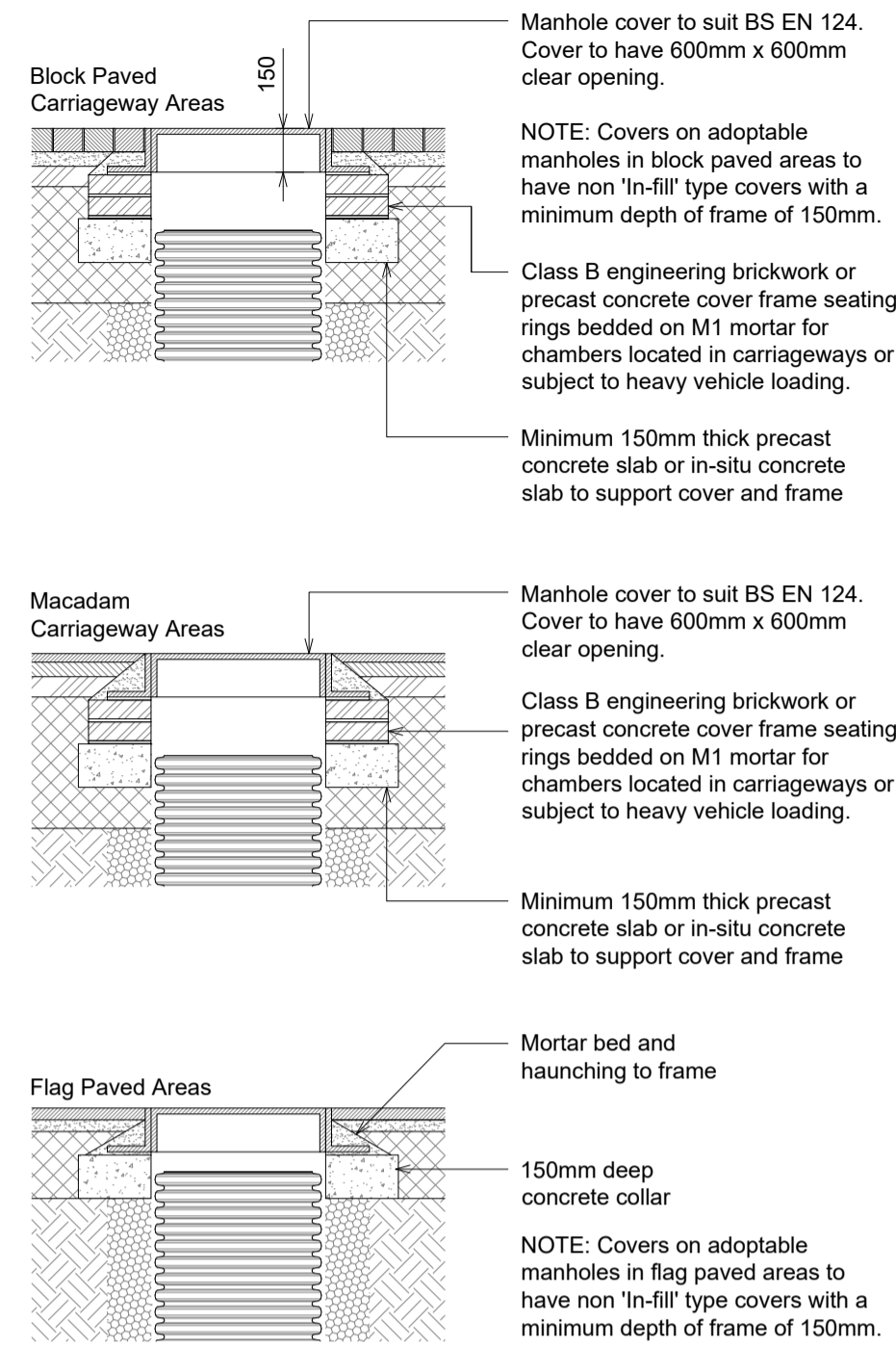
Clause: E2.32 Manhole Covers and Frames

1. Manhole covers and frames shall comply with the relevant provisions of BS EN124, BS7903 and Highways Agency Guidance Document HA 104/09. They shall be of a non-rocking design which does not rely on the use of cushion inserts.
2. Manhole covers on foul-only sewers shall be of low leakage types in order to prevent excessive surface water ingress.
3. As a minimum, Class D400 covers shall be used in carriageways of roads (including pedestrian streets), hard shoulders and parking areas used by all types of road vehicles.
4. Minimum frame depths for NRSWA road categories I to IV shall be as Table E.6.

Type 3 Alternate Cover Details

scale 1:25

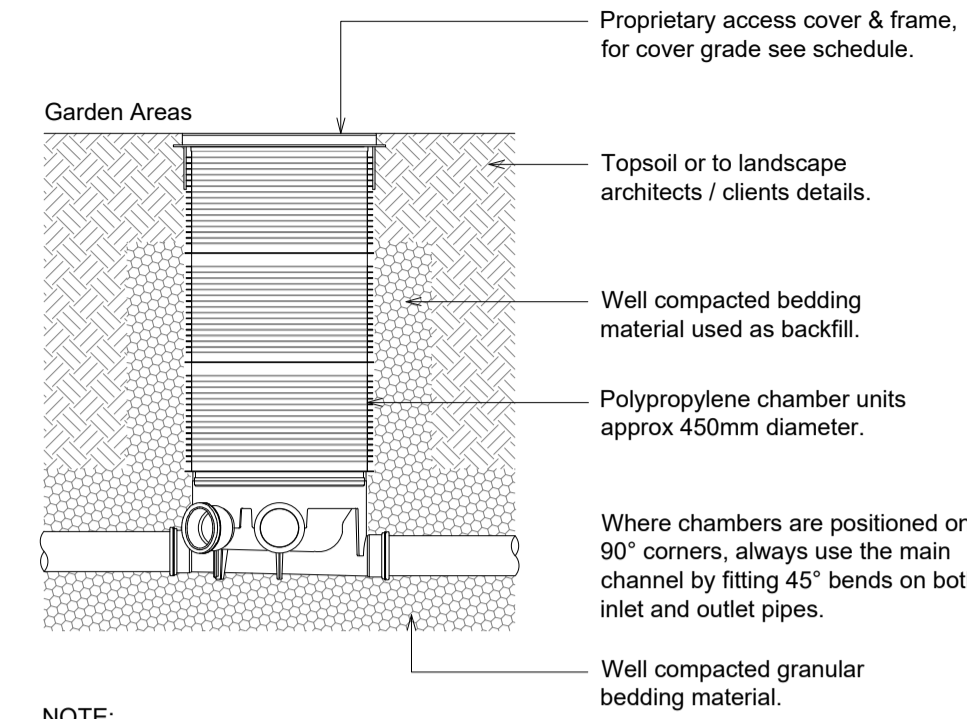
All covers to comply with BS EN 124 and BS7903, see Clause E2.32. All covers to have mortar bedding and haunching to cover and frame to Clause E6.7



Polypropylene Inspection Chamber (PPIC)

Use on private drainage works only

scale 1:20



NOTE: Maximum diameter of main channel 150/160mm. Maximum pipe diameter of inlets 100/110mm

Unused inlets are to be sealed and made watertight.

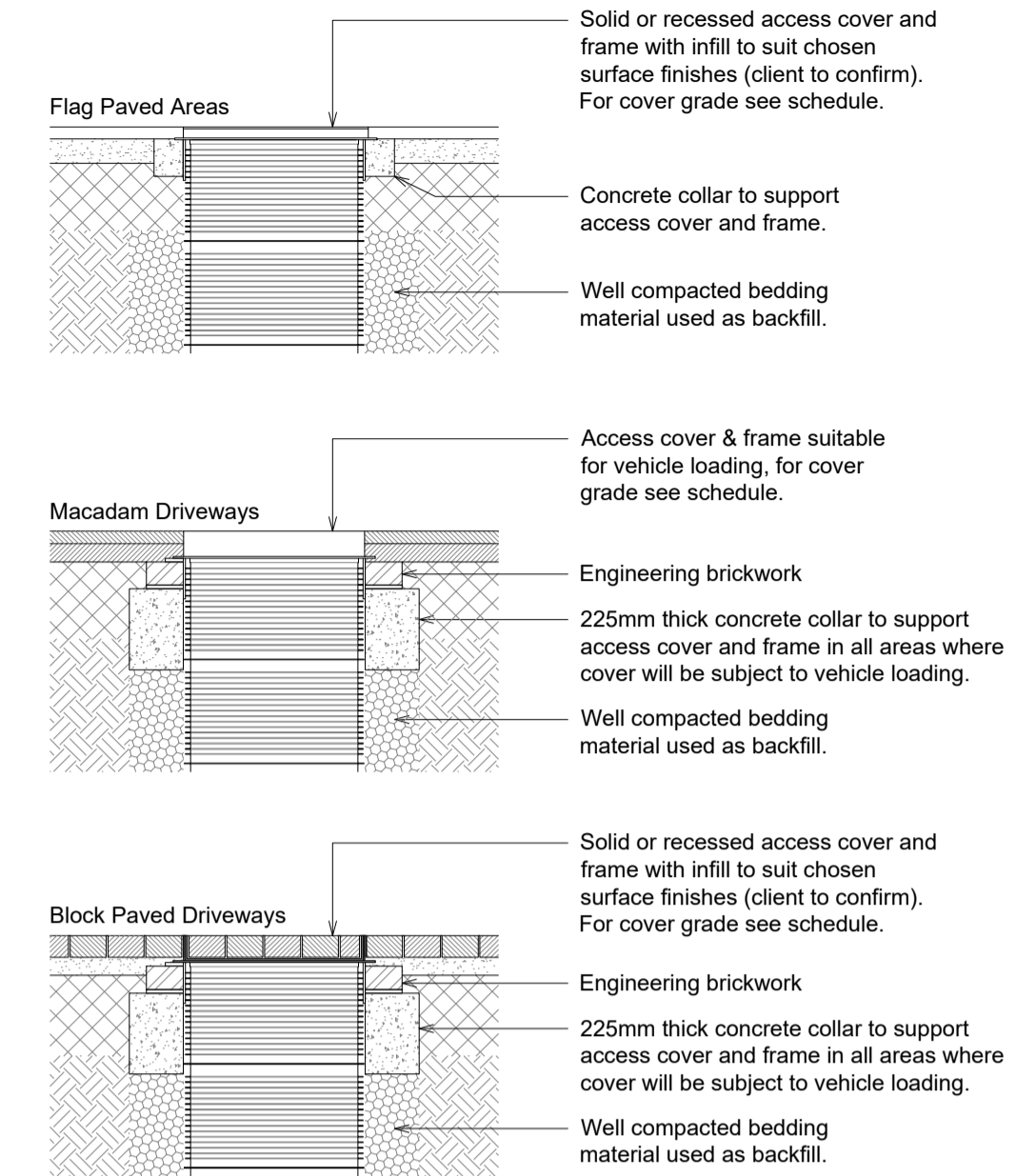
Backfill to be well compacted around shaft of chamber.

No incoming branch is to be less than 90° from the outgoing direction of flow, all pipes entering the bottom of the manhole are to have level soffits.

Alternate Access Cover Details (PPIC)

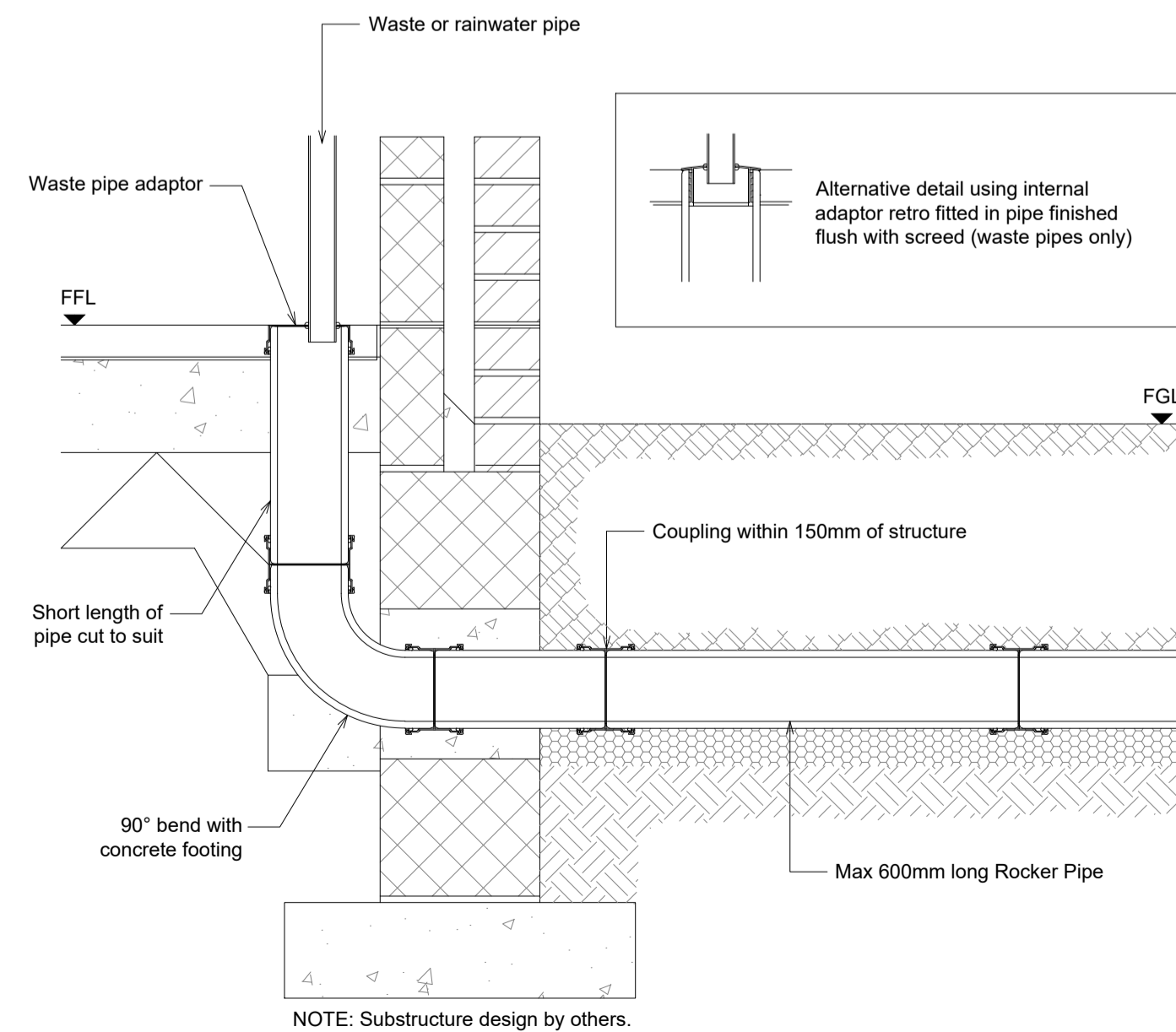
Use on private drainage works only

scale 1:20



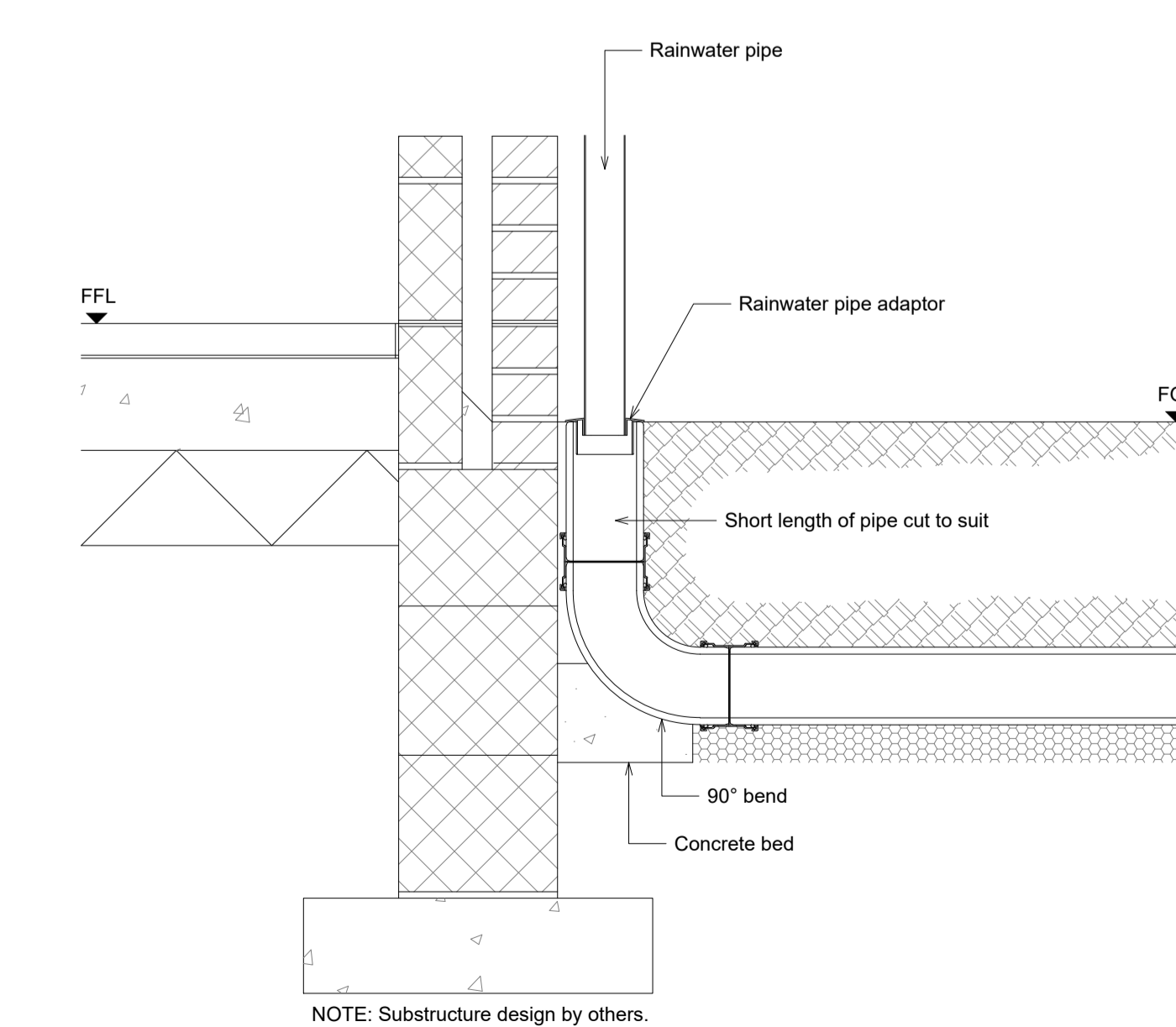
Typical Internal Waste Pipe Connection Detail

scale 1:10



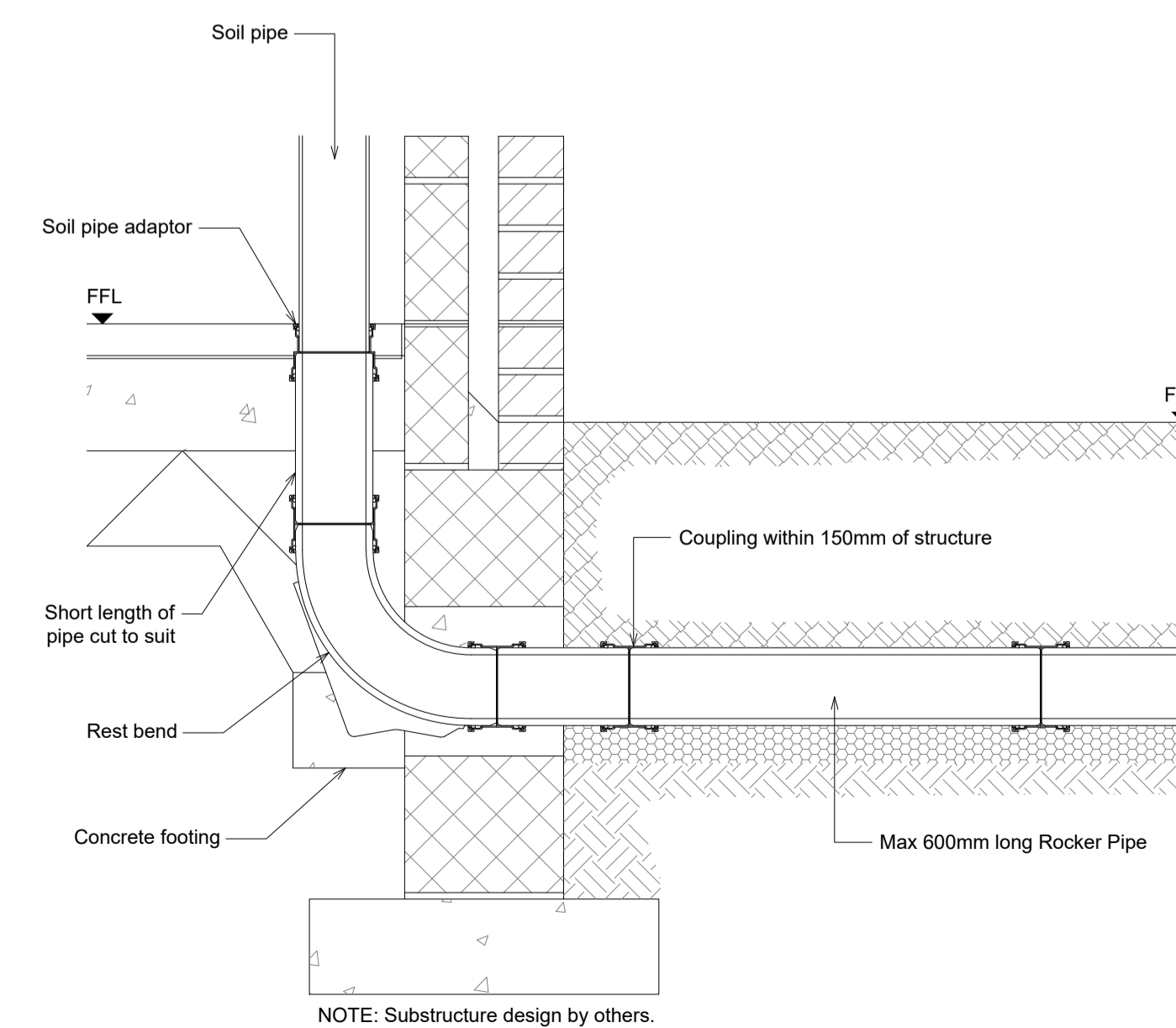
Typical External Rainwater Pipe Connection Detail

scale 1:10



Typical Soil Vent Pipe / Stub Stack Connection Detail

scale 1:10



DRAINAGE NOTES

- The location of any existing drains and sewers are to be accurately located and reported prior to any work commencing on site.
- All materials, workmanship and construction to be in accordance with the requirements of 'Sewers for Adoption - 7th Edition' and published addendum and corrigendum.
- Channel drains shown are only to collect surface water run-off from hard paved areas and door thresholds and are not intended to collect groundwater or run-off from gardens and landscaped areas.
- All abandoned pipework to be completely removed or grout filled unless stated otherwise.

NOTES

- The Contractor should check all dimensions on site.
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- Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
- Commencement of any building works prior to full building regulation approval is entirely at the clients risk.

Rev	Description	Date
A	First issue to client	06/07/2023

PROJECT: Proposed Residential development to the rear of 'The Hawthorns', 57 Warminster Road, Croydon SE25 4DF	SCALE: As Noted	DATE: 06/07/2023	SHEET: A1
CLIENT: Frankham Projects	STATUS: PLANNING - DIA Report	DWG No: T-2023-015-03	REV: A



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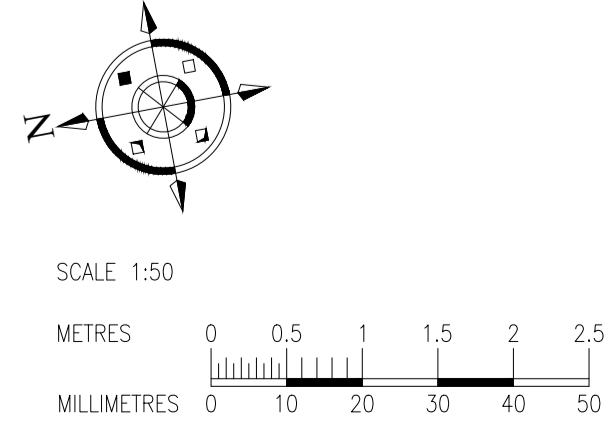
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NOTES



Rev	Date	By	Chk	Apr	Comment
N	05/11/23	TG	DB	OM	New scheme design

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Client:

Project Title:

**57 Warminster Rd
Croydon
SE25 4DF**

Drawing Title:

Proposed First Floor Plan

Status:

PLANNING ISSUE

Drawn By:	Designed By:	Checked By:	Approved By:
GG	GG	DB	OM
Original Issue Date:	Scale @ A1:		
16/03/2022	1:50		
Job No/ File Ref	Originator	Zone	Level
1218	FCG	XX	XX
Type	Discipline	Number	Suitability
DR	B	112	XX
			Revision
			N

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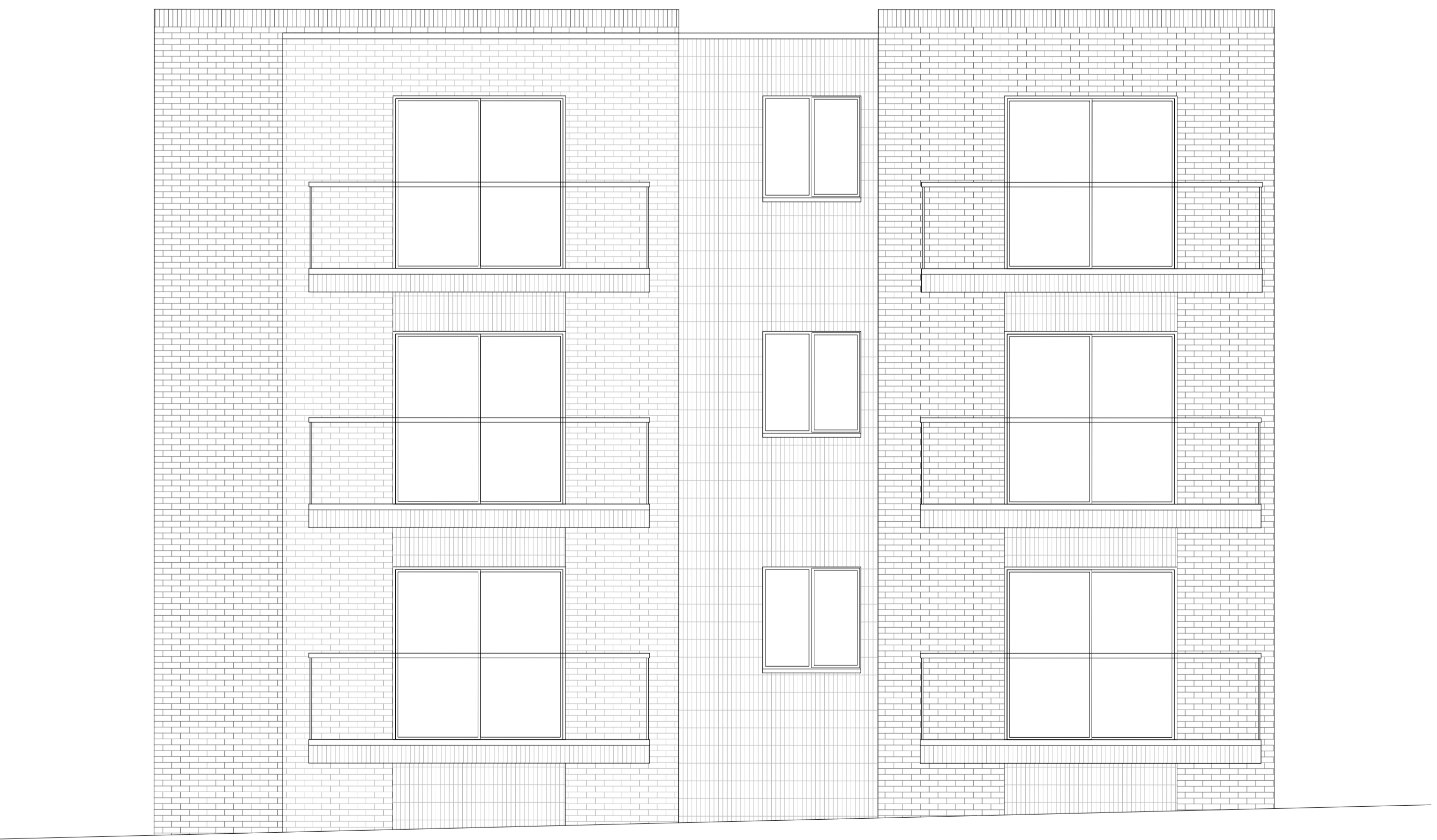
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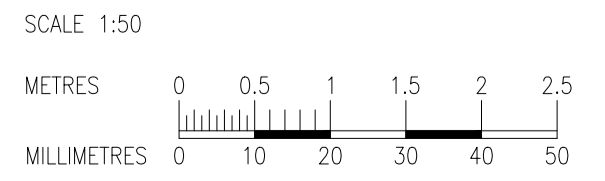
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NORTH ELEVATION



EAST ELEVATION



NOTES

Rev	Date	By	Chk	Apr	Comment
A	08/11/23	TG	DB	OM	First Issue - Draft Pre-planning

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Client:

Project Title:
**57 Warminster Rd
Croydon
SE25 4DF**

Drawing Title:
Proposed Elevations (2 of 2)

Status:
PLANNING ISSUE

Drawn By: GG Designed By: GG Checked By: DB Approved By: OM

Original Issue Date: 09/07/2023 Scale @ A1: 1:50

Job No/ File Ref	Originator	Zone	Level	
1218	FCG	XX	XX	
Type	Discipline	Number	Suitability	Revision
DR	B	211	XX	A

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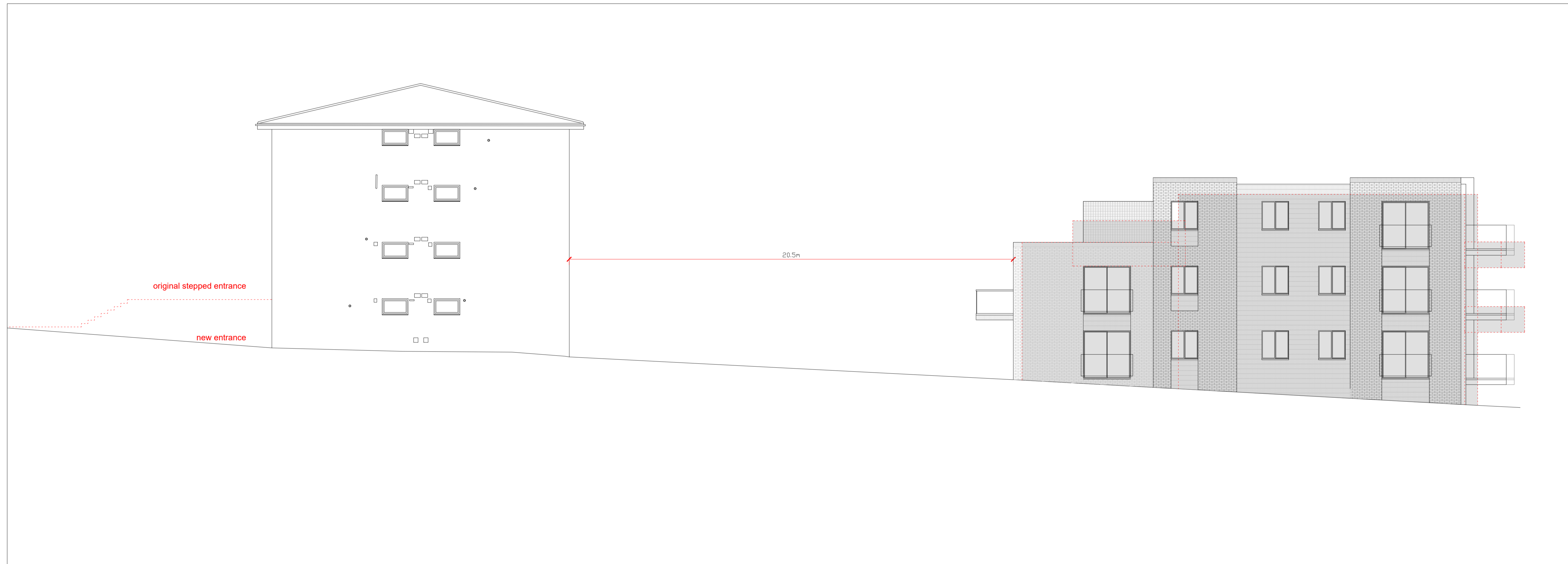
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-	08/11/23	TG	DB	OM	First Issue - Draft Pre-planning

BRANDING IDEAS TO LIFE



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LONDON OFFICE Third Floor Bard House 15-17 St Cross Street London EC1N 8JW T: 020 7653 0790	STEVENAGE OFFICE Suite 237, Second Floor Kings Court Business Centre London Road, Stevenage Hertfordshire SG1 2NG T: 020 374 7063

Client:

Project Title:
**57 Warminster Rd
Croydon
SE25 4DF**

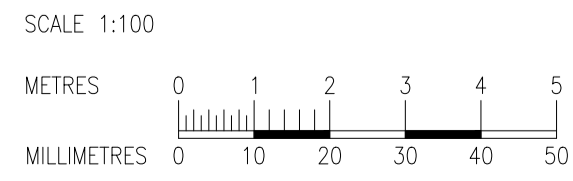
Drawing Title:
Proposed Site Section

Status:
DRAFT ISSUE

Drawn By:	Designed By:	Checked By:	Approved By:
GG	GG	DB	OM

Original Issue Date:	Scale @ A1:
09/07/2023	1:50

Job No/ File Ref	Originator	Zone	Level
1218	FCG	XX	XX
Type	Discipline	Number	Suitability
DR	B	221	XX
			Revision
			-



ABBREVIATIONS			
AL	Arch Level	MH	Manhole
ASL	Arch Spring Level	MK	Marker
BB	Belisha Beacon	OBF	Open Board Fence
BC	Brick Column	O/H	Overhead
B	Bollard	OSBM	Ordinance Survey Benchmark
BP	Block Paving	PI	Petrol Interceptor
BSL	Beam Soffit Level	PO	Post
BT	British Telecom	P&RF	Post & Rail Fence
BU	Bus Stop	P&W	Post & Wire Fence
BW	Brick Wall	(R)	Records
C	Cable TV	RR	Recessed Door Mat
CBF	Closed Board Fence	R/R	Rodding Eye
CBX	Control Box	RL	Ridge Level
CL	Cover Level	RSN	Road Name
CLF	Chain Link Fence	RS	Road Sign
CO	Controller	RTW	Retaining Wall
Conc	Concrete	RWP	Rain Water Pipe
CPS	Concrete Paving Slabs	S	Window Sill
DC	Drainage Channel	SA	Soakaway
DK	Drop Kerb	SPS	Sign Post
DL	Door Soffit Level	SV	Slip Valve
DP	Down Pipe	SW	Surface Water
ELC	Electric Inspection Cover	TTP	Tactile Paving
EL	Eaves Level	T	Tarmac
ERG	Earthing Rod	TBM	Temporary Benchmark
ESG	Electrical Switchgear	TL	Traffic Light
FB	Flower Bed	TOW	Top Of Water Level
FH	Fire Hydrant	TP	Telegraph Pole
FRL	Flat Roof Level	TS	Tree Stump
FW	Foul Water	TV	Cable TV
GP	Gate Post	UTL	Unable to Lift
GM	Gas Meter	u/s	Underside
GV	Gas Valve	v	Vocal
h	Height	VP	Vent Pipe
HR	Window Head	WL	Water Level
IC	Hand Rail	WM	Water Meter
IC	Inspection Cover	WV	Water Valve
IRF	Invert Level		
KG	Kerb Gully		
KI	Kerb Inlet		
LP	Lamp Post		

TREE SCHEDULE					
NO	TYPE	GIRTH	SPREAD	HEIGHT	REMARKS
1	SYCAMORE	0.9	4	13	
2	SYCAMORE	0.9	4	13	
3	SYCAMORE	0.9	4	13	
4	DEAD TREE	0.6	2	09	
5	SYCAMORE	0.7	6	12	
6	SYCAMORE	1.0	8	10	
7	DEAD TREE	0.5	2	06	
8	SYCAMORE	0.7	6	09	
9	SYCAMORE	1.5	8	13	
10	SYCAMORE	0.7	4	08	
11	SYCAMORE	0.4	4	06	
12	SYCAMORE	1.2	8	13	
13	ELM	0.5	4	04	
14	ELDER	0.4	4	04	
15	SYCAMORE	0.5	4	08	
16	FIELD MAPLE	0.6	4	08	
17	ELDER	0.5	4	05	
18	HOLLY	0.4	4	05	
19	SYCAMORE	1.5	10	12	
20	SYCAMORE	0.5	4	09	
21	ASH	0.8	6	09	
22	ASH	1.4	10	12	
23	SYCAMORE	0.9	10	11	
24	SYCAMORE	0.9	10	11	
25	SYCAMORE	0.9	10	11	
26	SYCAMORE	0.4	4	07	
27	SYCAMORE	0.4	4	04	
28	SYCAMORE	1.4	10	14	
29	SYCAMORE	0.8	8	11	
30	SYCAMORE	1.4	10	14	
31	SYCAMORE	1.0	6	12	
32	ASH	0.5	4	11	
33	ASH	1.0	8	11	
34	ELM	0.5	4	08	
35	ASH	0.5	6	08	
36	ASH	0.5	4	07	
37	FRUIT	1.4	8	08	
38	SYCAMORE	0.8	6	05	
39	ROWAN	0.8	4	08	
40	UNIDENTIFIED	0.6	4	08	
41	SYCAMORE	1.4	10	14	

ALL DIMENSIONS, LEVELS AND CLEARANCES TO BE CHECKED ON SITE PRIOR TO WORKS COMMENCING

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER PROJECT RELATED DRAWINGS, SPECIFICATIONS AND DOCUMENTS AS PART OF A SINGLE PROJECT PACKAGE.

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NOTES

ALL LEVELS ARE IN METRES AND ARE ABOVE ORDNANCE SURVEY NEWLYN DATUM DERIVED BY MULTIPLE NETWORK RTK GPS OBSERVATIONS.

THE SURVEY GRID SHOWN ON THIS DRAWING IS ONLY REFERENCED TO ORDNANCE SURVEY (OS) NATIONAL GRID AT THE FOLLOWING POINT: 534127 274E, 168853 394N 60.441m / STN1. OBTAINED BY MULTIPLE NETWORK RTK GPS OBSERVATIONS.

Rev	Date	By	Chk	Apr	Comment
R1	28.10.21	GH	HBS	NC	Issue

Rev	Date	By	Chk	Apr	Comment
R1	28.10.21	GH	HBS	NC	Issue

Lane & Frankham
 info@laneandfrankham.com
 www.laneandfrankham.com

The Independent Measurement Choice

SIDCUP OFFICE Irene House Five Arches Business Park Maidstone Road Sidcup, Kent DA14 5AE T: 020 8309 7777	OXFORD OFFICE Wootton Business Park Besselsleigh Road Wootton, Abingdon Oxfordshire OX13 6FD T: 01865 322500
---	--

LONDON OFFICE Third Floor Baird House 15-17 St Cross Street London EC1N 8UW T: 020 7651 0790	STEVENAGE OFFICE Suite 237, Second Floor Kings Court Business Centre London Road, Stevenage Hertfordshire SG1 2NG T: 020 3714 7063
--	--

Client:
Client

Project Title:
The Hawthorns SE25 4DF

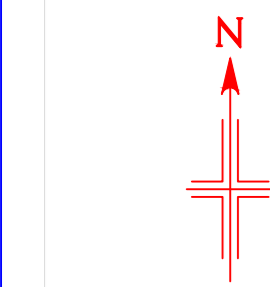
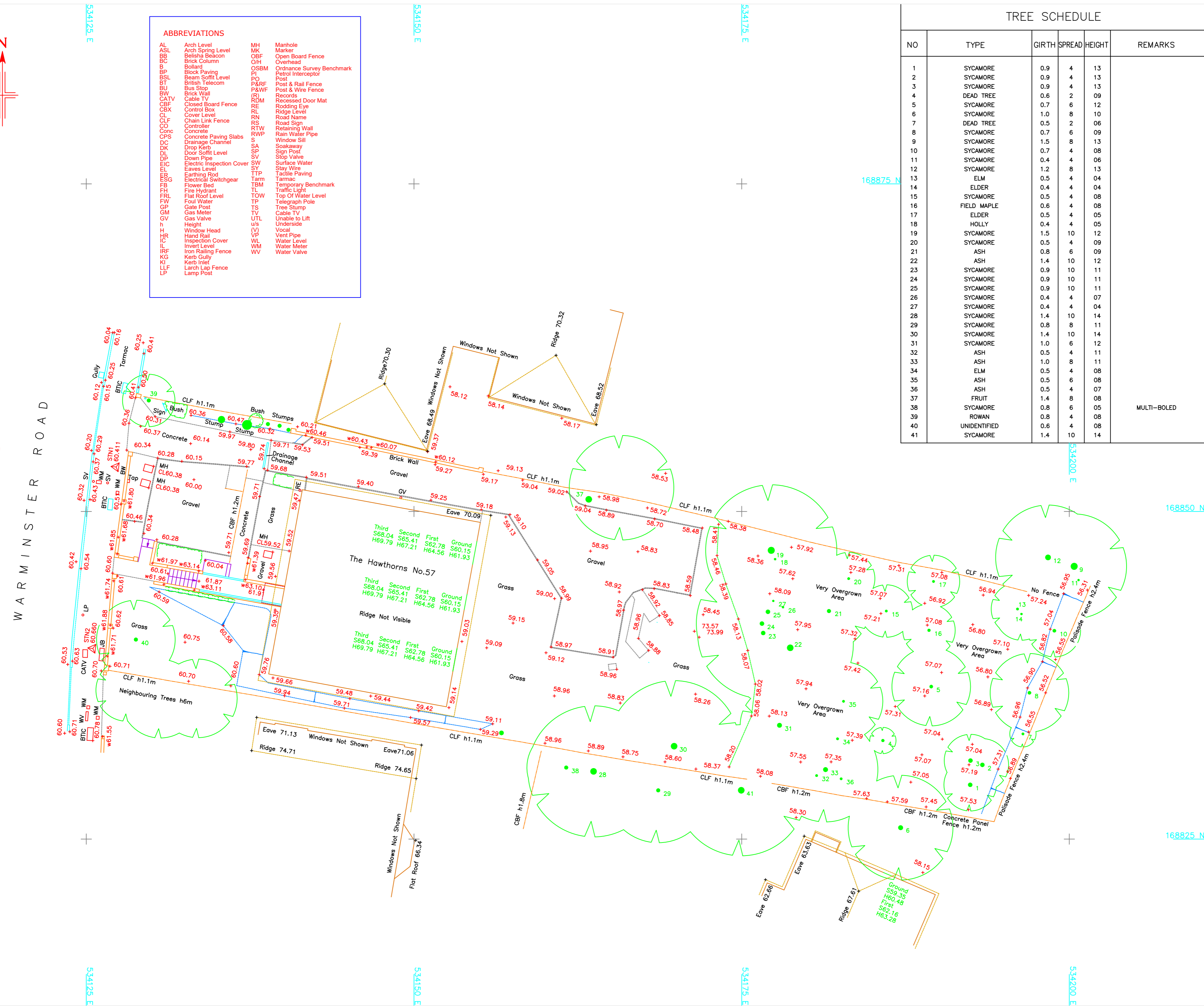
Drawing Title:
Site Survey

Status:
RECORD

Drawn By: GH	Designed By: GH	Checked By: HBS	Approved By: NC
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Original Issue Date: 28/10/2021	Scale @ A2: 1:200
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Job No/ File Ref 3613	Originator LAF	Zone XX	Level ST
Type DR	Discipline G	Number 1001	Suitability S2
			Revision R1



APPENDIX B

Thames Water Asset Details

Asset location search



Property Searches

CHECKED

Atkins Ltd
Stats Enquiries Team The Hub
500 Park Avenue
BRISTOL
BS32 4RZ

Search address supplied Site off Warminster Road, London, Croydon
SE25 4DF

Your reference 110828

Our reference ALS/ALS Standard/2022_4693330

Search date 1 August 2022

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



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



0800 009 4540

Search address supplied: Site off Warminster Road, London, Croydon, SE25 4DF

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 search provides 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

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.

Asset location search



Property Searches

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

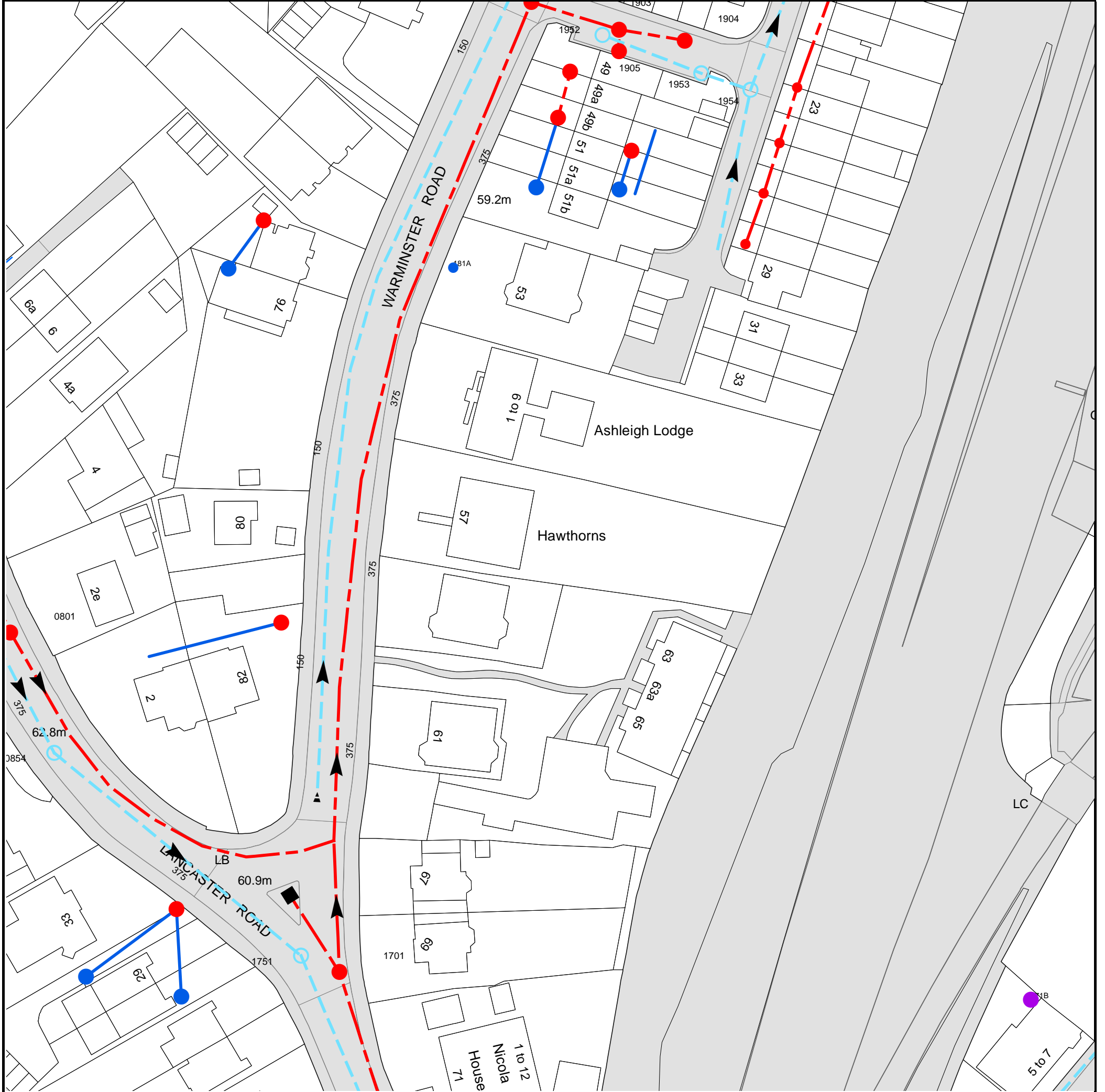
Clean Water queries

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/2022 4693330



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 534158,168839

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.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

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
08AB	n/a	n/a
18AH	n/a	n/a
181A	n/a	n/a
1902	58.32	54.49
19FA	n/a	n/a
19FB	n/a	n/a
19FC	n/a	n/a
1952	57.53	56.56
1905	57.46	55.4
1903	57.54	54.86
19EH	n/a	n/a
19EI	n/a	n/a
1904	57.1	55.04
1953	57.01	56.33
18AC	n/a	n/a
1954	57.02	56.31
19DC	n/a	n/a
19DD	n/a	n/a
29CC	n/a	n/a
07AE	n/a	n/a
07AF	n/a	n/a
1701	60.93	57.08
1751	61.13	59
07AG	n/a	n/a
0854	62.66	60.14
0801	63.16	59.1
18AJ	n/a	n/a
271B	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

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.

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

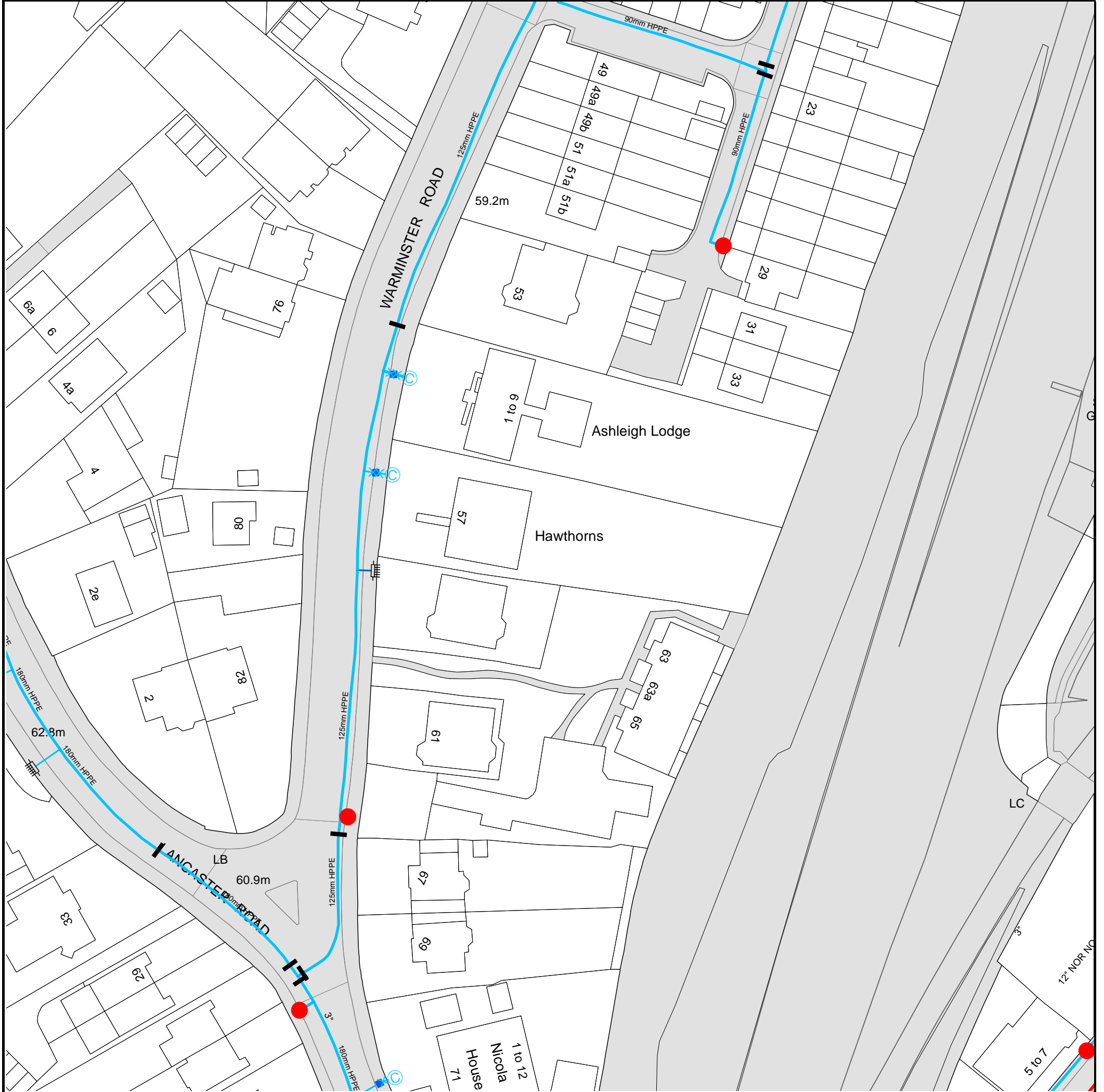
Ducts or Crossings

-  Casement
 -  Conduit Bridge
 -  Subway
 -  Tunnel
- Ducts may contain high voltage cables. Please check with Thames Water.

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/2022 4693330










The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 534158, 168839.
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.

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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
-  **Caseament:** 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:** Indicates 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.

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 14 days from due 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. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL's terms and conditions shall apply.
6. 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'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. 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 not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

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 0121 345 1000 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	Cheque
<p>Call 0800 009 4540 quoting your invoice number starting CBA or ADS / OSS</p>	<p>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</p>	<p>By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number</p>	<p>Made payable to 'Thames Water Utilities Ltd' Write your Thames Water account number on the back. Send to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW or by DX to 151280 Slough 13</p>

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

APPENDIX C

Thames Water Infrastructure Charges

Thames Water Utilities Limited (TWUL)

Published date: 1 February 2021

Effective date: 1 April 2021

Version 1.0



Infrastructure Charges Scheme

2021-22

Infrastructure charges for the supply of water
and wastewater services

Contents

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Infrastructure Charges Scheme 2021.....	4
How to contact us	8
Infrastructure Charges Schedule 2021-22.....	9

Introduction

This 2021-22 Charges Scheme is made by Thames Water Utilities Limited under the powers conferred by Section 143 of the Water Industry Act 1991 (as amended) and complies with Ofwat's Charges Scheme Rules issued in March 2020. It does not cover charges raised under agreements.

This booklet includes schedules of infrastructure charges for 2021-22, which forms part of the Charges Scheme.

Infrastructure Charges Scheme 2021

- 1 This scheme, which revokes all previous Infrastructure Charges Schemes made by Thames Water and which may be referred to as “the Thames Water Infrastructure Charges Scheme 2021”, is made by Thames Water Utilities Limited under Section 143 of the Act and in accordance with the Charges Scheme Rules and shall operate from 1 April 2021 until 31 March 2022 inclusive.

Interpretation

- 2 (1) Subject to sub-clause (2), the Interpretation Act 1978 shall have effect for the interpretation of this scheme as it has effect for the interpretation of an Act of Parliament;

(2) In this scheme, unless the context otherwise requires:

“the Act”

means the Water Industry Act 1991 including any statutory amendments whether made before or after the date of this scheme;

“the Charges Scheme Rules”

means the Charges Scheme Rules issues by the Water Services Regulation Authority under sections 143(6A) and 143B of the Act in March 2020;

“Charging Arrangements”

means the statement of charges published by Thames Water under and as required by the Charging Rules;

“the Charging Rules”

means the Charging Rules for New Connection Services (English Undertakers) issued by the Water Services Regulation Authority under sections 51CD, 105ZF and 144ZA of the Act in March 2020;

“connection”

includes a connection to a water main or a public sewer (as the case may be) via an intervening pipe or conduit not necessarily in the ownership of the customer;

“customer”

means a person in ownership or occupation of any premises who requests Thames Water to make a connection to a water supply for domestic purposes or to a public sewer for the drainage for domestic purposes of such premises or for both services or who otherwise makes arrangements for a connection to be made to such premises for either or both of such services;

“domestic purposes”

in relation to a supply of water to any premises or in relation to the drainage of premises has the same meaning as in Sections 218 and 98 of the Act respectively;

“Income Offset”

shall have the same meaning as appears in the Charges Scheme Rules. The value of the Income Offset is included in the Infrastructure Charges Schedule;

“Infrastructure Charges Schedule”

means the schedule of charges fixed by Thames Water for the financial year 2021-22, which forms part of this scheme;

“the Licence”

means the Instrument of Appointment dated August 1989 whereby the Secretary of State for the Environment appointed Thames Water as the water undertaker and the sewerage (wastewater) undertaker for the areas respectively described therein, and includes any subsequent amendments;

“Network Reinforcement”

has the same meaning as in the Charging Rules;

“premises”

includes any part of a building which is intended to be occupied as a separate unit;

“public sewer” “service pipe” “sewerage (wastewater) undertaker”, “water main” and “water undertaker” have the same meanings as in the Act;

“Related Amount” “the Wastewater Infrastructure Charges Limit” and “the Water Infrastructure Charges Limit” have the same meanings as in Condition C of the Licence;

“Thames Water”

means Thames Water Utilities Limited.

General

- 3 (1) Charges payable under this scheme are fixed in accordance with the provisions of the Licence, the Act and the Charges Scheme Rules, and are shown in the Infrastructure Charges Schedule. Any taxes imposed by law on the making of such charges shall be recoverable in addition to such charges.

(2) It is intended that the charges made under this scheme, will, with any other relevant sources of revenue, supply income necessary for the costs of Network Reinforcement that Thames Water reasonably incurs over a rolling five year period in accordance with the Charges Scheme Rules and before the application of any Income Offset.

(3) Rates for water infrastructure charges have been derived by dividing the average expected spend on water Network Reinforcement for the years 2021-2025 by the expected number of water infrastructure charges payable for the same period. We have capped any increase so it does not exceed the price as set out in Licence Condition C, which still applies for some connections.

(4) Rates for waste infrastructure charges have been derived by dividing the average expected spend on waste Network Reinforcement for the years 2021-2025 by the expected number of waste infrastructure charges payable for the same period. The resulting price increase is lower than the price set out in Licence Condition C.

Charges

- 4 (1) Subject to the provisions of Condition C of the Licence, where a customer requests Thames Water to make a connection to a water main of any one or more premises which have never at any previous time been connected to a supply of water provided for domestic purposes by Thames Water or any statutory predecessor to it, or where the customer otherwise makes arrangements for such a connection, there shall be payable to Thames Water in respect of each such premises the charge, (less any Related Amount), shown in the Infrastructure Charges Schedule.

Provided that in calculating the total of such premises for the purposes of this charge, there shall be deducted from such total any premises on the same site which were separately connected to such water supply at the date of such calculation or within the previous period of five years provided that each such separately connected premises shall be deducted once only in calculating such total.

- (2) Subject to the provisions of Condition C of the Licence, where a customer requests Thames Water to make a connection to a public sewer of one or more premises which have never at any previous time been connected to a sewer used for the drainage for domestic purposes of those premises by Thames Water or any statutory predecessor to it, or where the customer otherwise makes arrangements for such a connection, there shall be payable to Thames Water in respect of each such premises the charge, (less any Related Amount), shown in the Infrastructure Charges Schedule.

Provided that in calculating the total of such premises for the purposes of this charge there shall be deducted from such total any premises on the same site which were separately connected to a public sewer at the date of such calculation or within the previous period of five years provided that each such separately connected premises shall be deducted once only in calculating such total.

Income Offset

- 5 (1) Charges payable under Clause 4 shall be subject to an Income Offset credit for each new connection to a water main or public sewer (as set out in the Charges Schedule).

(2) Where an Income Offset credit is applicable to a multiple property building (such as a block of flats) in which the loading units per property is 13 or lower, the value of

the Income Offset shall be two times the standard amount that would otherwise be applicable.

(3) In order to calculate the value of the Income Offset, we have taken the value of income offset and asset payments made in the three years from 2015-16 to 2017-18 and divided this by the number of properties connected during those years, thus giving a figure that reflects the revenue likely to be received.

(4) The Income Offset calculated in clause 5(3) helps to ensure that the balance of contributions to costs from developers and other customers that was in place prior to 1 April 2018 is broadly maintained. This can be evidenced through the modelled recovery of our allowed wholesale revenues and by way of developers paying the cost of development and no more.

Payment of Charges

6 (1) The charges shall become due and payable after the connection has been made and within 14 days after demand being made by Thames Water.

(2) For information it should be noted that the charges payable under this scheme are in addition to the charges for making the actual physical connection to the water main and/or public sewer. In the event that Thames Water makes the connection it is empowered by the Act to charge the customer in accordance with the Charging Arrangements for the connection works in addition to raising infrastructure charges under this scheme.

(3) Infrastructure charges are payable at the rates published and in effect on the date of connection. This may be different to the rate on a quote we issue or the rate applying when you begin your development. In order to provide you with the opportunity of price certainty, we invite you to pay infrastructure charges as set out in the quote within the validity period of such quote, in which case the rate will become fixed at that point. No additional infrastructure charges will become payable unless the information you provided to us about the development is found to be incorrect or you change your development.

(4) The developer will receive the Income Offset credit at the same time they pay the infrastructure charges. If infrastructure charges have been paid as set out in a quote, within the validity period of that quote, the Income Offset rate will become fixed at that point unless the information you provided to us about the development is found to be incorrect or you change your development. An upfront payment will not be made if the net total is such that a payment is due from Thames Water. If this is the case, it will be paid once the connection has been made.

Agreements

7 The provisions of this scheme are without prejudice to the power of Thames Water to enter into an agreement with a customer as to the terms on which any charges due in respect of the connection of any premises to a water supply or a public sewer system shall be paid to Thames Water including in particular any agreement to make a lump sum payment (whether or not in advance of the connection or connections being made) in respect of such charges.

How to contact us

If you have a specific enquiry, please visit thameswater.co.uk/contactus for advice. You can also contact us via Facebook and Twitter, or by calling us on the following numbers:

- Operational enquiries: 0800 316 9800
- Billing enquiries: 0800 980 8800
- Extra care services: 0800 009 3652

If your hearing or speech is impaired, you can contact us using [Relay UK](https://relayuk.bt.com) – see relayuk.bt.com.

If you are unhappy with any aspect of our service, you can find more information about our complaints procedure at thameswater.co.uk/complaints, or call us and request a version.

CCW is an independent body that acts as the voice for water consumers.

For free independent advice visit ccwater.org.uk, call 0300 034 2222 or write to CCW – the voice for water consumers, c/o 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Our regulator Ofwat can deal with certain issues – for more information see ofwat.gov.uk.

Infrastructure Charges Schedule 2021-22

Infrastructure charges payable

The published charges are for a single property supplied via a standard sized (25 or 32mm external diameter pipe) water connection. For other properties, such as student housing, offices or care homes, we apply a multiplier (the Relevant Multiplier as detailed below) to the published charge to reflect the increased impact on our networks.

The wastewater infrastructure charge is calculated on the same basis as the water infrastructure charge unless you are able to show that waste and surface water flows are not being discharged to the public sewer.

Standard infrastructure charges are shown in Table 1.

Table 1 Infrastructure charges

Infrastructure charges	Charge
Water	£400
Wastewater	£365

Income Offset

The standard Income Offset credits applicable under clause 5(1) are shown in Table 2.

Table 2 Income Offset credits

Income Offset	Credit
Water	£230
Wastewater	£15

Where the connection is to a multiple property building in which the loading units per property is 13 or lower, the Income Offset credit applicable under clause 5(2) will be £460 per connection for a water main and £30 for each connection to a public sewer.

Relevant Multiplier

The Relevant Multiplier (“RM”) is a way of working out infrastructure charges for the following types of property:

- Residential properties with a single, shared supply pipe and which are subject to a ‘common billing agreement’; this includes sheltered housing, student accommodation and high-rise flats
- Non-residential properties where the supply pipe is larger than the standard size, such as office blocks

How the Relevant Multiplier is calculated

Each water fitting (wash basin, bath, shower, etc.) is given a 'loading unit' based on the amount of water it uses. The average number of units per property is taken as 24, equal to an RM of 1.00. We use this as the basis for calculating the RM for each property on a development where the RM applies.

We do this by adding up the loading units for all the water fittings on a development. We divide this by the number of properties to give the average loading units per property. We divide this again by 24 (the average loading units) to give the RM for each property.

For properties subject to a common billing agreement, the RM can be more or less than 1.00. For other properties the minimum is 1.00.

Details of the number of loading units assigned to each water fitting are shown below in Table 3.

Table 3 Loading units for calculating the Relevant Multiplier

Water fitting	Loading units
WC flushing cistern	1
Wash basin	1
Bath (tap nominal size ¾" / 20mm)	4
Non-domestic bath	8
Shower	2
Sink (tap nominal size ½" / 15mm)	2
Non-domestic sink	8
Bidet	1
Domestic appliance	2
Commercial or communal appliance	5
External tap	5
Urinal	3

Using the Relevant Multiplier to calculate infrastructure charge

We use the RM multiplied by the standard charge to give us the infrastructure charge for that property.

Example of a residential development

The development consists of 20 flats with a common billing agreement and the total loading units are 460.

Infrastructure charges

- We divide the total loading units (460) by the number of properties (20) and again by the average (24). This gives an RM for each flat of 0.96 ($460 \div 20 \div 24 = 0.96$)
- The infrastructure charge for each flat is the RM of 0.96 multiplied by the standard charges
- The infrastructure charge for the whole development is the RM multiplied by the standard charge multiplied by the number of properties

The water infrastructure charge for the development is therefore

$$\text{RM } 0.96 \times 20 \text{ properties} \times \text{£}400 \text{ standard charge} = \text{£}7,680.00$$

The wastewater infrastructure charge for the development is therefore

$$\text{RM } 0.96 \times 20 \text{ properties} \times \text{£}365 \text{ standard charge} = \text{£}7,008.00$$

Income Offset

The water Income Offset for the development is therefore

$$\text{RM } 0.96 \times 20 \text{ properties} \times \text{£}230 \text{ standard charge} = \text{£}4,416.00$$

The wastewater Income Offset for the development is therefore

$$\text{RM } 0.96 \times 20 \text{ properties} \times \text{£}15 \text{ standard charge} = \text{£}288.00$$

Net Infrastructure charge payable

The net water charge payable by the customer is therefore

$$\text{water infrastructure charge (£}7,680) - \text{water Income Offset (£}4,416) = \text{£}3,264$$

The net wastewater charge payable by the customer is therefore

$$\text{wastewater infrastructure charge (£}7,008) - \text{wastewater Income Offset (£}288) = \text{£}6,720$$

Network charges may also be payable in respect of supplies for non-domestic purposes within the development such as the irrigation supply and bin store. Details of these can be found in Thames Water's Charging Arrangements which is available at [thameswater.co.uk/developers/charges](https://www.thameswater.co.uk/developers/charges).

APPENDIX D

Environment Agency Flood Map

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
534166/168843

Created
7 Jul 2023 11:49

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>

Flood map for planning





Your reference
<Unspecified>

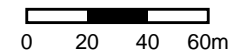
Location (easting/northing)
534166/168843

Scale
1:2500

Created
7 Jul 2023 11:49



-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



If you live in an area that is at risk of flooding, there are things you can do to reduce the damage that a flood can do to your home. The illustration below shows some examples.

Electrical sockets

Raising electrical sockets, fuse boxes and associated wiring to at least 1.5 metres above ground floor level will limit the risk of them being damaged by water during a flood. You may be able to use them again once the water has receded and the electricity supply is restored. If rewiring, bring cables down the wall from the top to the raised socket so that cabling doesn't get affected. Controls and ventilation systems should also be well above floor level.

TV and hi-fi

Mount your TV or hi-fi and speakers on the wall.

Walls

Use lime-based plaster instead of gypsum on walls.

Flood sacks

These are a lighter, modern version of sandbags. The sacks need to be soaked in water so they expand, then placed around the entrances to your home to protect against flood water. If they have not been in contact with contaminated water, they can be left to dry and shrink and can be reused. They take up little storage and can be cost-effective.

Doors and windows

Install synthetic or waxed window frames and doors.

Kitchen units and appliances

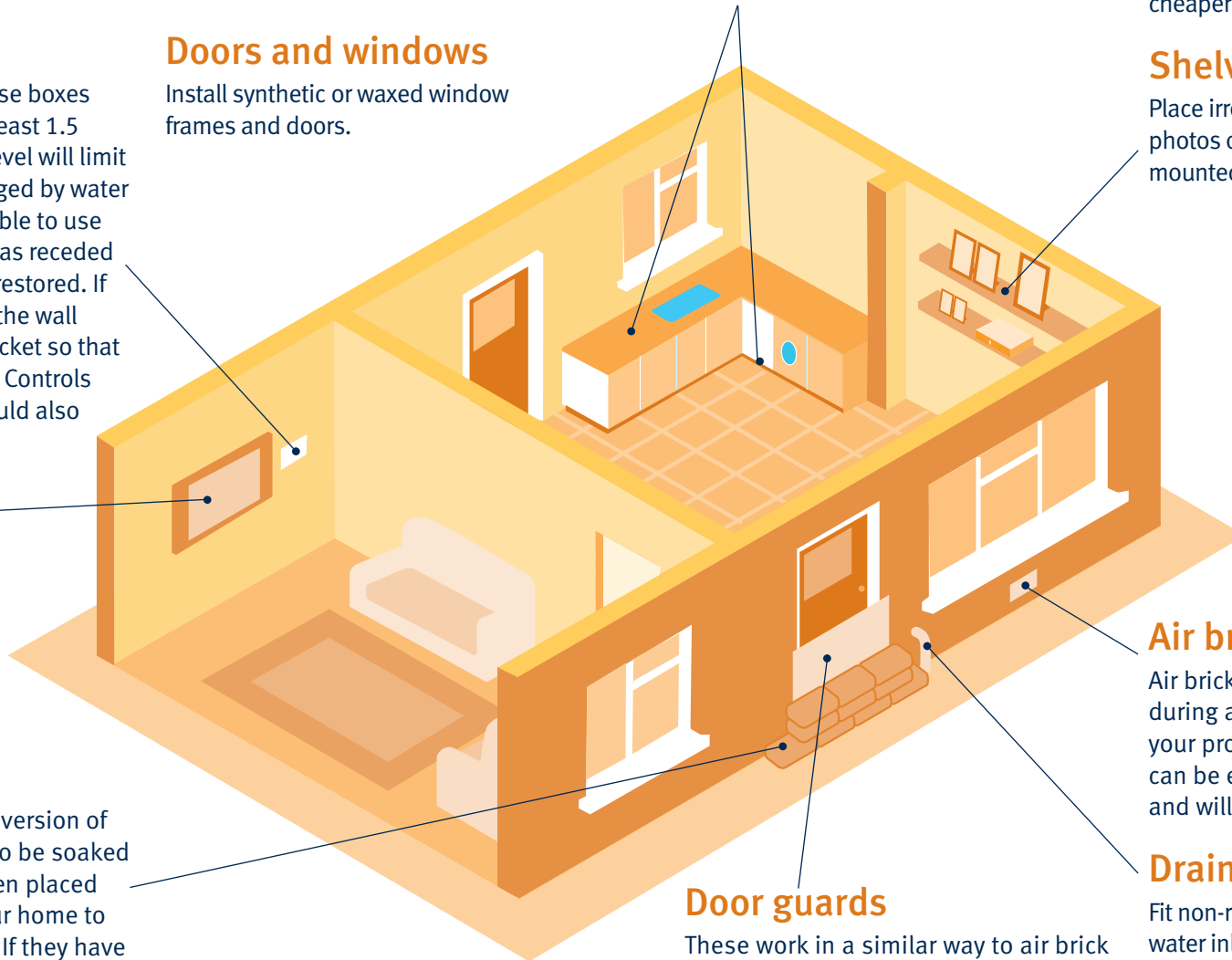
Fit stainless steel, plastic or solid wood kitchen units rather than chipboard. White goods such as fridges should be raised on plinths.

Flooring

Lay ceramic tiles or rugs on your ground floor rather than carpets. Rugs can easily be removed and placed out of reach. Non-carpeted floors can be easier to clean once the water has subsided and are cheaper to replace.

Shelving

Place irreplaceable items, such as family photos or treasured possessions, on high mounted shelves.



Air brick covers

Air bricks are used for ventilation, but during a flood, they can let water into your property. The covers are airtight, can be easily attached to the air bricks and will prevent water entering.

Drains and pipes

Fit non-return valves to all drains and water inlet pipes.

Door guards

These work in a similar way to air brick covers but on a larger scale. They can be placed across the bottom of your external doors to hold back low levels of water.