



HMCTS READING TRIBUNALS COURT (SOVEREIGN HOUSE)

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Executive Summary

The Civil Engineering Drainage Strategy has been produced for the rehousing of the HMCTS Reading Tribunals Court to Sovereign House. The following report details the management of surface water and foul water drainage for the proposed development.

Proposed Development

It is proposed to retain the existing building structure and provide additional toilets and showers on the ground floor, first floor and second floors as part of the improvement works. It is also proposed to construct an external lift, ramps to the southwest and southeast of the building, and a Scottish and Southern Electricity Networks (SSEN) substation building adjacent to the existing building.

Existing Drainage

Surveys show that surface water runoff from the development discharge into a culverted watercourse referred to as the 'Vastern Ditch'. Surface water runoff from the existing car park and external ancillary buildings drain to an existing surface water pipe which runs to the east of the site.

Existing foul water drainage from the development currently discharges into an existing Thames Water public sewer manhole located in the Vastern Road.

As the development site falls within a Flood Zone 2, a flood risk assessment (FRA) has been undertaken to understand the risk of flooding from various sources. The outcome of the FRA has determined the flooding risk to be low, with no mitigation measures required.

Proposed Surface Water Strategy

The proposed surface water drainage strategy involves maintaining existing drainage connections and routes, as well as the discharge into the Vasten Ditch. A localised diversion of the existing drainage pipe along the northern face of the building is proposed; the proposed diversion will facilitate the implementation of the proposed external lift.

It is proposed to manage the surface water runoff from the proposed ramps and substation building by controlling the surface water discharge via an online flow control chamber at a flow rate of 2l/sec which connects to the existing drainage network.

The proposed surface water drainage strategy is subject to agreement with the LLFA.

Proposed Foul Water Strategy

The redevelopment proposes additional WCs, washing basins and showers blocks on all floors in the northwest corner of building. It is proposed to discharge the foul water from these areas into the existing building foul drainage network through a new inspection chamber along the western side of the building.

Thames Water has confirmed that adequate capacity is available within the public sewer network to accept the additional loading.

1. Introduction

1.1 General

His Majesty's Courts and Tribunals Services (HMCTS) have purchased Sovereign House in Reading to rehouse the current Reading Tribunals Court. AtkinsRéalis has been commissioned to produce a drainage strategy relating to the drainage works for the development. This report has been submitted to support requirements for planning approval.

Sovereign House is located on the northern side of Vastern Road in Reading, less than 200m to the north of Reading Station. The postcode is RG1 8BT and the grid reference of the site is N 174060m, E 471601m. The site is bound by Vastern Road to the south, a residential complex and the River Thames to the north, an office building to the east and additional buildings to the west. Vehicle access is provided via Norman Place leading to a secure parking area (see Figure 1-1).



Figure 1-1 - Site Location (Ref: Google Map, 2024)

Sovereign House is currently used as commercial office space and the proposed conversion into a Tribunal Court will largely involve internal modifications. The existing toilet block, adjacent to the existing lift core, will be maintained. Additional toilets and showers are proposed on the ground floor, first floor and second floors, towards the northwestern side of the building (see Figure 1-2). The plant enclosure on the roof will also be enlarged to provide space for additional equipment

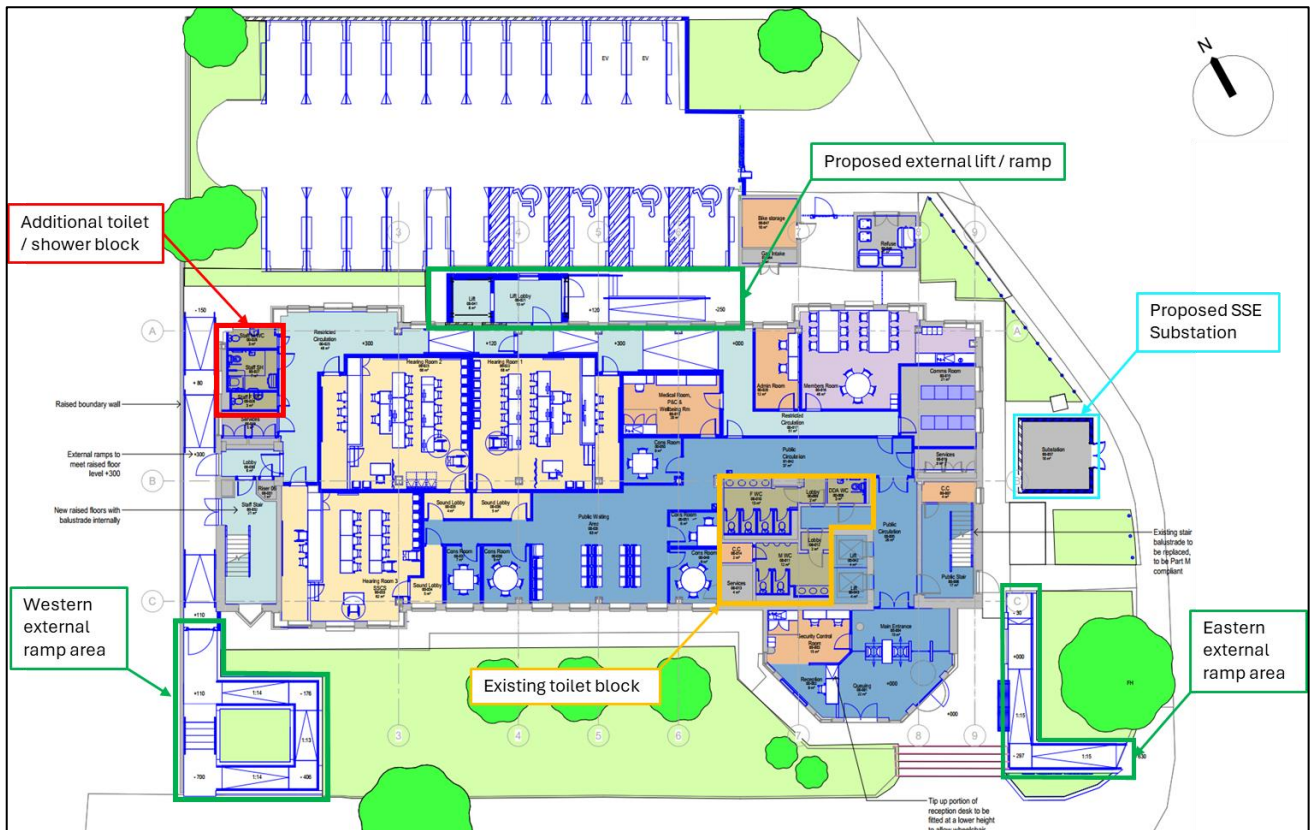


Figure 1-2 - Proposed Ground Floor Internal Layout (Ref. Feiden+Mawson – 377915_15380-FMA-RTC-00-D-A-1100)

Modifications to external areas outside the existing building footprint involve the addition of access ramps to the southeast (near the main entrance) and the southwest (to a new gated access) of the site. A new external lift is proposed on the north elevation of the building to provide accessibility to the upper floors. A new external SSEN substation is proposed on the eastern side of the building, currently occupied by an area of landscaping.

1.2 Planning Legislation

The drainage strategy has been produced in accordance with the national and local policies and guidance listed below:

- National Planning Policy Framework (NPPF).
- National Planning Practice Guidance (NPPG).
- DEFRA Non-statutory Technical Standards for Sustainable Drainage Systems (2015).
- Reading Borough Council Local Plan (Adopted November 2019).
- Reading Borough Council Local Flood Risk Management Strategy (October 2015).

1.2.1 National Planning Policy Framework Guidance (NPPF)

The NPPF sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. The most applicable policy to this drainage strategy is paragraph 173, which states:

"173. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment."

Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- d) any residual risk can be safely managed; and*
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.”*

1.2.2 National Planning Practice Guidance

The ‘Flood risk and coastal change section’ of the NPPG advises how to take account of and address the risks associated with flooding and coastal change in the planning process. Paragraphs 055 – 061 provide guidance on SuDS and their implementation. Paragraph 056 stipulates a preference for multi-functional SuDS that allow surface water to be discharged according to the following hierarchy of drainage options:

1. Into the ground (infiltration).
2. To a surface water body.
3. To a surface water sewer, highway drain, or another drainage system.
4. To a combined sewer.

1.2.3 Defra Non-Statutory Technical Standards for Sustainable Drainage systems

This document sets out non-statutory technical standards for sustainable drainage systems. It is used in conjunction with the National Planning Policy Framework and Planning Practice Guidance.

- *“S2 For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event.”*
- *“S3 For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.”*
- *“S4 Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.”*



- *“S5 Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.”*
- *“S6 Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk.”*
- *“S7 The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event.”*
- *“S8 The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development.”*
- *“S9 The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in exceedance routes that minimise the risks to people and property.”*
- *“S10 Components must be designed to ensure structural integrity of the drainage system and any adjacent structures or infrastructure under anticipated loading conditions over the design life of the development taking into account the requirement for reasonable levels of maintenance.”*
- *“S11 The materials, including products, components, fittings or naturally occurring materials, which are specified by the designer must be of a suitable nature and quality for their intended use.”*
- *“S12 Pumping should only be used to facilitate drainage for those parts of the site where it is not reasonably practicable to drain water by gravity.”*

1.2.4 Reading Borough Council Local Plan

The site falls under the jurisdiction of Reading Borough Council as the both the Local Authority and the Lead Local Flood Authority (LLFA).

The Civils report has been written in line with policies detailed within the Reading Borough Local Plan with the most applicable provided below:

1. Extract from ‘Policy CC3: ADAPTATION TO CLIMATE CHANGE’

“All developments will demonstrate how they have been designed to incorporate measures to adapt to climate change. The following measures shall be incorporated into development:

- *All development shall minimise the impact of surface water runoff from the development in the design of the drainage system, and where possible incorporate mitigation and resilience measures for any increases in river flooding levels as a result of climate change”*

2. ‘Policy EN18: FLOODING AND SUSTAINABLE DRAINAGE SYSTEMS’

“Development will be directed to areas at lowest risk of flooding in the first instance, following the Sequential and Exceptions Test set out in the NPPF, and taking into account the effects of climate change. It will consider flooding



from all sources, including fluvial, surface water, groundwater and sewer flooding. Where development in areas at risk of flooding is necessary, it will not reduce the capacity of the flood plain to store floodwater, impede the flow of floodwater or in any way increase the risks to life and property arising from flooding. Wherever possible, development should be designed to reduce flood risk, both on- and off-site.

All major developments must incorporate sustainable drainage systems (SuDS) as appropriate and in line with the Government's Technical Standards. Smaller schemes are encouraged to incorporate SuDS, where possible. Runoff rates should aim to reflect greenfield conditions and, in any case, must be no greater than the existing conditions of the site. Schemes should ensure that the movement of water through vertical infiltration as well as horizontal run-off does not worsen contamination effects. Wherever possible, SuDS provision should maximise ecological benefits, link into the existing Green Network, incorporate tree planting and landscaping and avoid damage to existing significant trees, including through changes to the site hydrology. All new developments in areas of flood risk should give priority to SuDS."

1.2.5 Reading Borough Council Pre-Planning Application Response

Following a pre-application consultation between the project design leads and Reading Borough Council (Ref. PL/24/1401 - Dec 2023), the proposed drainage strategy must ensure the following is met:

"The proposed development would be required to be supported by a Sustainable Urban Drainage Strategy (SUDs) at validation stage."

This report aims to meet the above requirement.

1.3 Existing Site

The existing site layout includes the office building consisting of 3 floors, external landscaping and an external car parking area. An external bin store, bike store and gas isolation building adjoin the main building to the north (see Figure 1-3). The internal building layout comprises of a reception, office staff spaces, a kitchen, sanitation facilities, stairs, lifts and MEP plant room on the roof. The site boundary measures approximately 0.24 ha.

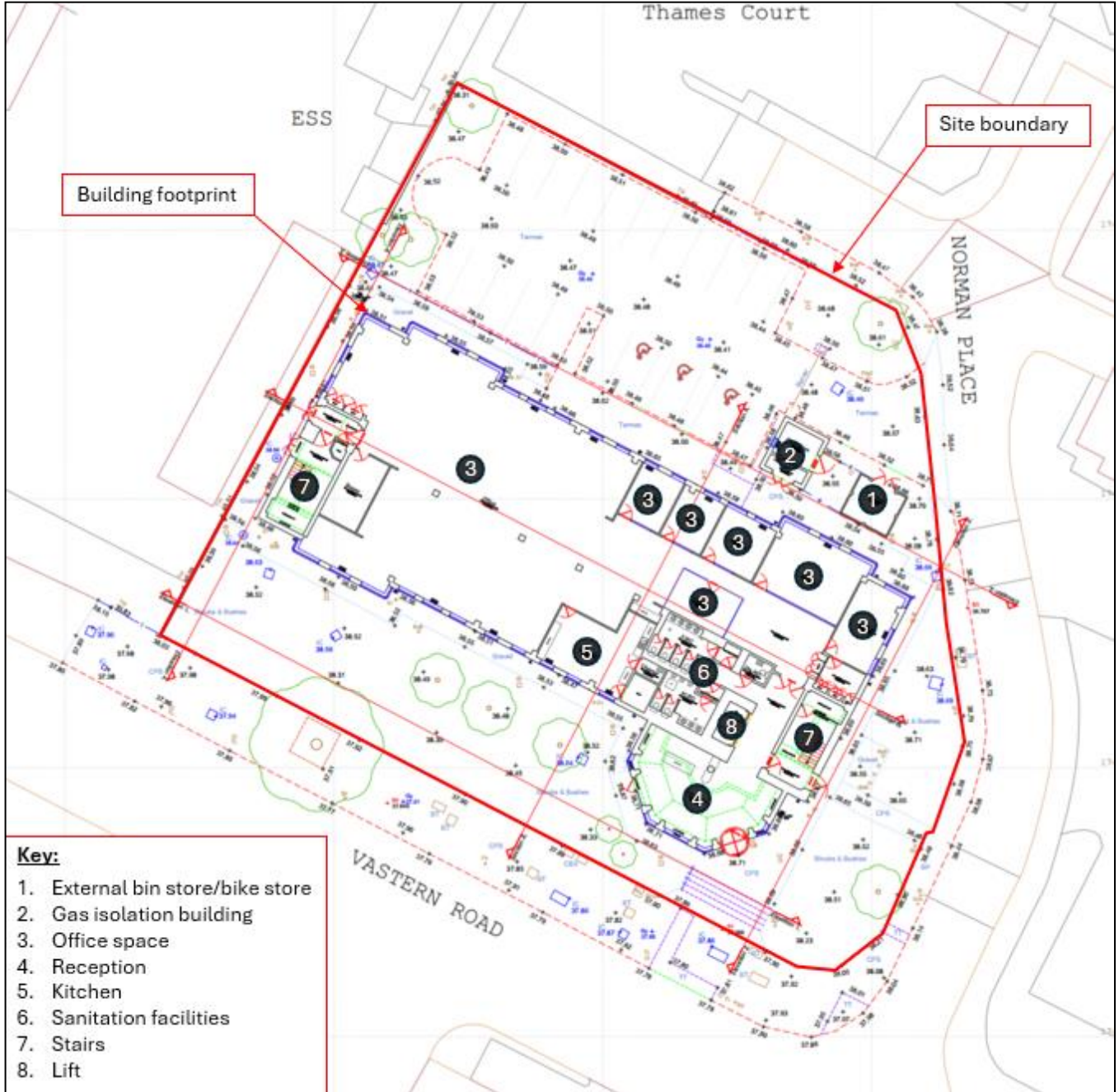


Figure 1-3 - Existing Site Plan (Ref. Greenhatch Group - '34202A_01-07_PES')

1.3.1 Topography

A topographical survey was carried out for the site with existing levels shown in the existing site plan drawing. The site is shown to be built up approximately 0.8m from the Vastern Road pavement to the building and is accessed via stairs and a ramp to the southeast. The building and immediate area is fairly flat with elevations ranging from 38.71 mAOD in the southeast to 38.48 mAOD to the northwest. See Appendix A for full details.

1.3.2 Existing Drainage

1.3.2.1 Public Sewer Records

Public sewer records from client record information show an existing Thames Water foul sewer network on the southern and eastern sides of the site (see Figure 1-4). A 150mm pipe runs from north to south beneath Norman Place, which connects to a 300mm dia. pipe running west to east within Vastern Road.

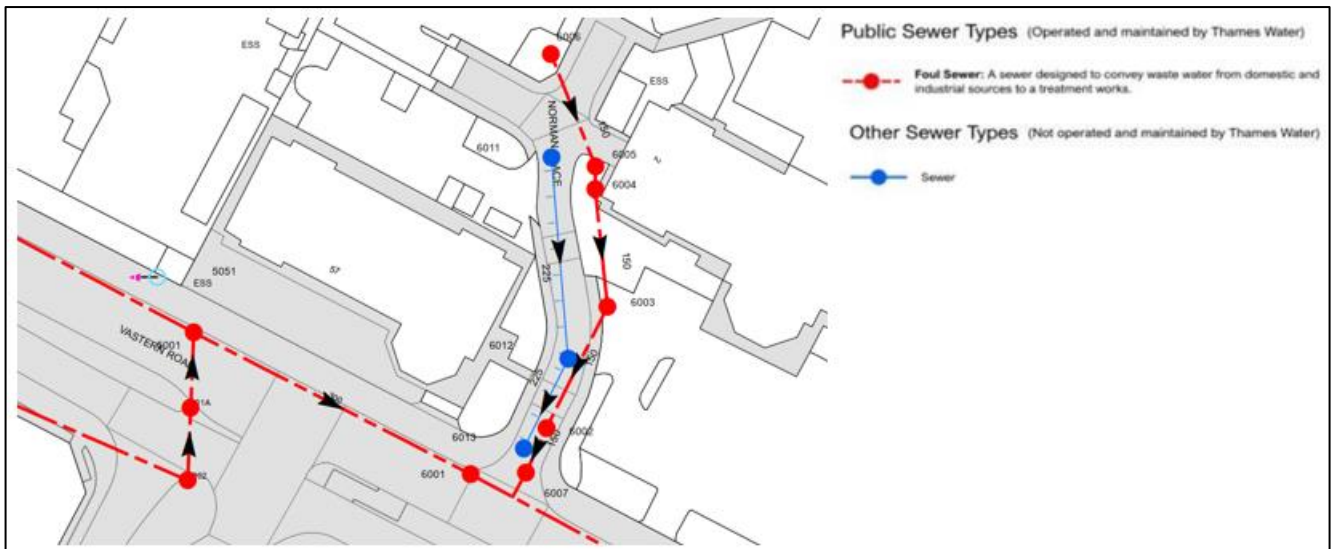


Figure 1-4 - Thames Water Sewer Records (Ref. ALS/ALS Standard/2023_4773851)

Another 225mm dia. sewer is shown running adjacent to the foul sewer beneath Norman Place, however, this is not understood to be operated or maintained by Thames Water. Cover and invert levels for the recorded manholes have been provided within the sewer records, a full version of which can be found in Appendix B.

1.3.2.2 Private Sewer Records

A CCTV survey undertaken on the existing private below ground drainage network within the site was obtained from the client record information, showing the connectivity of the drainage network (see Figure 1-5).

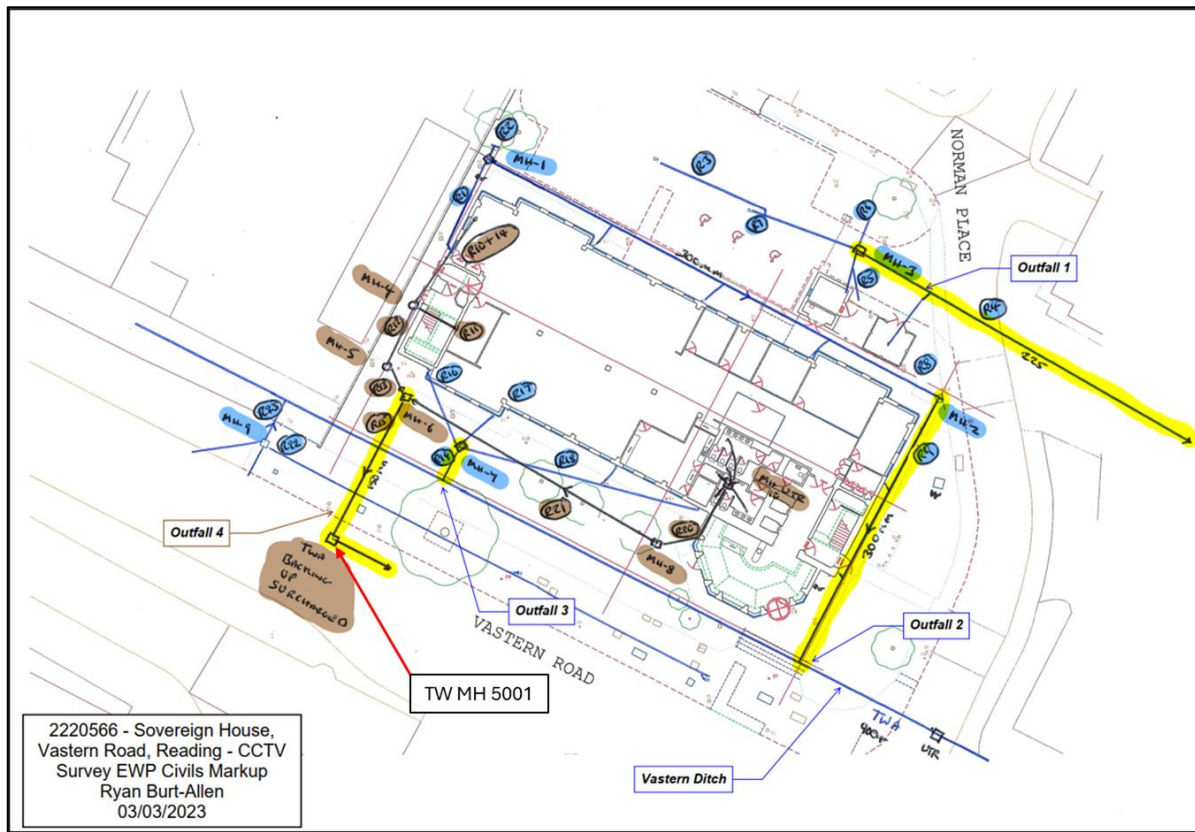


Figure 1-5 - Site CCTV Survey Plan (Ref. EWP CCTV Survey)

The CCTV survey indicates that the surface water drainage from the car park, external bike storage and bin store area discharges to an existing 225mm in diameter pipe (Outfall 1) located along the eastern section of the site. The rainwater pipes around the perimeter of the building are understood to discharge into buried pipes and outfall into the 'Vastern Ditch' (Outfall 2 & 3). From the Reading Borough Council Strategic Flood Risk Assessment, this is believed to be a culverted water course that discharges into the River Thames near the Caversham Lock and is understood to be a Reading Borough asset.

The foul water drainage from the building is shown as discharging into the Thames Water foul sewer within Vastern Road (manhole reference 5001 is believed to be where Outfall 4 connects).

In December 2024, a CCTV survey was undertaken by Vision Survey to determine and confirm the line, level, diameter and condition of the existing foul and surface water networks. The survey does not note any significant structural condition issues within the present network.

A complete survey of the drainage network was not possible due to obstructions encountered on site. Also, downstream surface outfall inverts to the Vastern Ditch have not been recorded. Where pipe and chamber inverts are unknown, assumptions have been made in the development of the proposed drainage strategy. Further confirmation of the existing drainage networks must be undertaken at the next design stage.

A full record of the CCTV survey information can be found in Appendix B.

1.3.3 Geology

A review of the site geology was undertaken based on the data available from the British Geological Survey (BGS) Geology Viewer mapping tool (see Figure 1-6). This shows the superficial and bedrock geology as indicated in Table 1-1.

Table 1-1 - Site Geology Description

Geology Layer	Description
Superficial	Langley Silt Member - Clay and silt
Bedrock	Seaford Chalk Formation and Newhaven Chalk Formation - Chalk

This superficial geology suggests that infiltration may not be possible given the lower rates of infiltration achievable in clay soils.

**Figure 1-6 - Superficial Geology of Site (Ref. BGS Geology Viewer Mapping Tool)**

1.3.4 Hydrogeology

A review of the British Geological Survey historical borehole records identifies no historical borehole logs area available within the immediate site boundary.

The nearest historical borehole record is SU77SW210 located approximately 57m from the site (see Figure 1-7). The record notes ground water to have been struck at 34.9 mAOD. Ground water was also noted to increase to 35.9 mAOD at borehole log SU77SW210. Due to the site's proximity to the River Thames, ground water levels are expected to be fairly high.

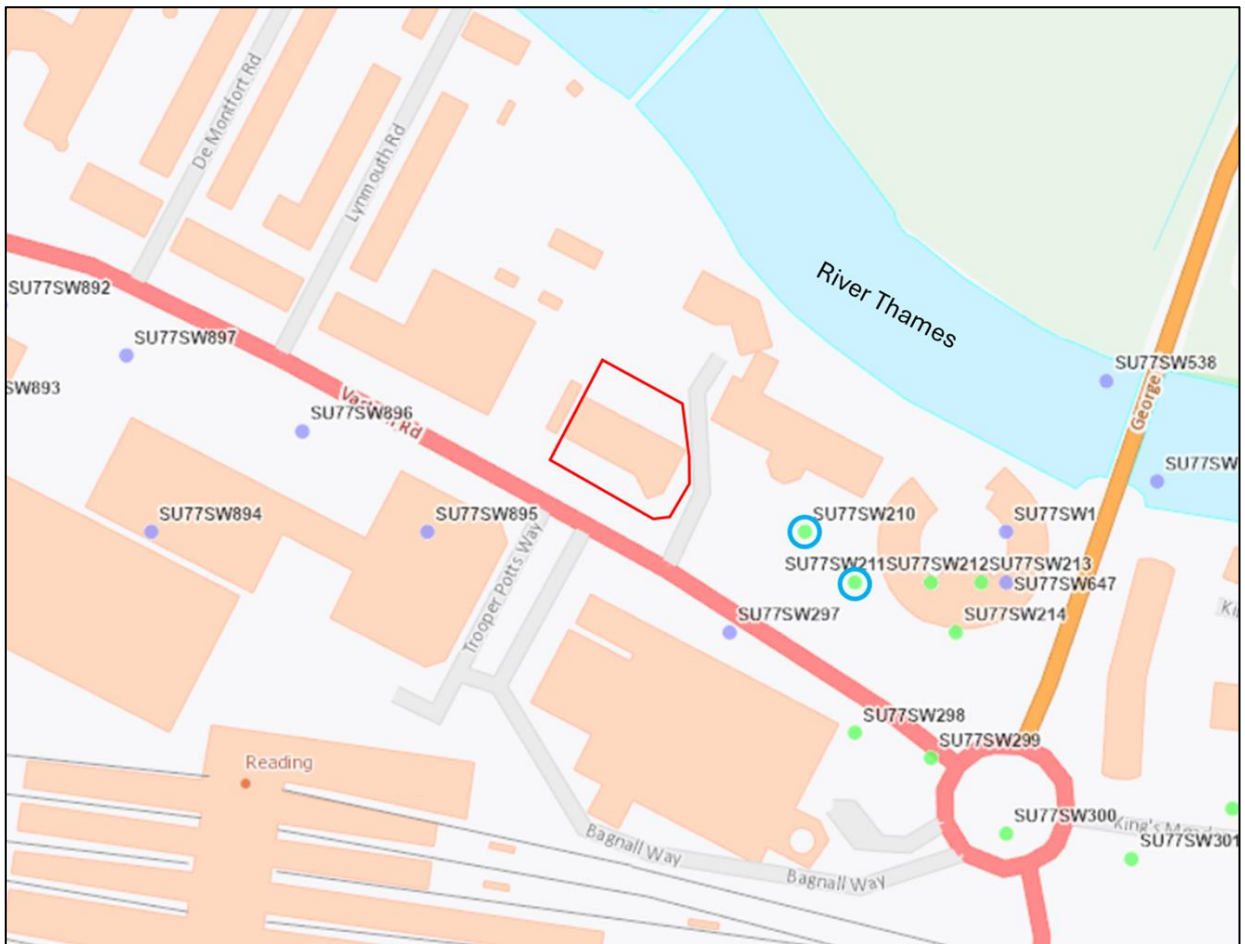


Figure 1-7 - BGS GeoIndex Onshore Borehole Records Near Sovereign House

The site is not located within a Source Protection Zone (SPZ).

2. Surface Water Drainage Strategy

2.1 Design Standards

The following design standards have been adopted in the development of the surface water design:

- The Building Regulations 2015 - Drainage and Waste Disposal - Approved Document H.
- BS EN 752:2017 - Drainage Sewer Systems Outside Buildings - Sewer System Management.
- BS EN 16933-2 - Drain and Sewer Systems Outside Buildings - Design (Hydraulic Design).
- Sewerage Sector Guidance - Appendix C, Version 2.3 – 2023.

2.2 Design Criteria

The surface water drainage system has been designed to the following design criteria, in accordance with the standards and guidance listed in Section 2.1 and the planning legislation in Section 1.2:

- The design is based on FEH 2022 rainfall point data at E: 471600, N: 174060.
- No surcharging in a 1 in 2-year storm event.
- No flooding in a 1 in 30-year storm event (plus 35% climate change).
- Controlled/no flooding for 1 in 100-year storm event (plus 40% climate change) and no flows to offsite areas.
- Minimum pipework self-cleaning velocity 1 m/s.

2.2.1 Climate Change

Climate change factors have been derived from the Environmental Agency's 'Climate change allowances for peak rainfall in England' for the Thames and South Chilterns Management Catchment. The allowances for the site are summarised below, based on a project lifetime of 50 years:

- 1 in 30-year storm event – Climate Change factor of 35% applied based on an upper end allowance.
- 1 in 100-year storm event – Climate Change factor of 40% applied based on an upper end allowance.

2.2.2 Hydraulic Design

Hydraulic modelling has been undertaken for the surface water drainage network using Causeway Flow V12.0 (Flow). The summary of the hydraulic design calculations is available in Appendix E.

The following design criteria in Table 2-1 was used within Flow to develop the hydraulic model.

Table 2-1 - Flow Hydraulic Design Criteria

Design Rainfall Dataset Used	FEH2022
Design Storm	1 in 2-year event + 0% climate change (No surcharge)
Global Time of Entry (mins)	5
Max. Time of Concentration (mins)	30
Max. Rainfall (mm/hr)	250
PIMP (%)	100



Volumetric Runoff Coefficient (Cv)	1.00
Hydraulic Pipeline roughness (mm)	0.6

The minimum size of a gravity surface water sewer is 100mm diameter. To provide a self-cleansing regime within the proposed surface water network, the minimum flow velocity shall be 1 m/s at pipe full flow.

The system has been designed not to flood the site in events up to and including a 1 in 30-year design storm. During events exceeding this threshold, consideration has been given to the flow paths of any water escaping from the system onto the site to ensure it is contained above ground temporarily.

2.3 Outfall Strategy

The viability of each of the outfall options from the NPPG hierarchy of drainage options was assessed as is summarised in Table 2-2.

Table 2-2 - Drainage Hierarchy Evaluation

No.	Drainage Hierarchy	Evaluation Comments
1	Infiltration	Not Viable – The identified Langley Silt Member silt and clay soil superficial geology from the BGS online tool does not provide appropriate infiltration rates. No current proprietary treatment for existing drainage regime - additional treatment will be required to mitigate risk of contamination to groundwater. High groundwater levels are anticipated based on BGS borehole logs and proximity to the River Thames.
2	Discharge to surface waters	Not Viable – No direct existing outfall exists for the site to a surface water body. The site is located approximately 90m south from the River Thames. Discharge to the River Thames will not be viable without construction of new drainage infrastructure across privately owned land.
3	Discharge to surface water sewer, highway drain or another drainage system	Viable – The existing building is understood to drain into a private drainage network within the site and discharges into the Vastern Ditch via two outfall locations. The gullies in the car park area and external buildings drain to a northeastern outfall, which is then assumed to discharge to another surface water sewer. The surface water drainage discharge regime to all of these outfalls are to remain.
4	Discharge to a combined sewer	Not viable – Public sewer records do not identify combined sewer assets within the proximity of the site.

Based on the evaluation, the strategy shall be to discharge runoff into the Vastern Ditch with minimal interference to the existing surface water drainage regime.

No changes to the drainage network will be required to the existing car park area, external bike shed, and bin store. Hence, discharge to 'Outfall 1' to the east will remain unchanged.



Discharge of surface water from the building and external areas to 'Outfall 2' and 'Outfall 3' to the Vastern Ditch will remain. The proposed external lift shaft will have no impact on the downstream outfalls and will only require a minor diversion upstream of 'Outfall 2'.

2.4 SuDS Evaluation

A full suite of SuDS options has been evaluated for the surface water drainage management. The evaluation considered the following:

- Attenuation, amenity, biodiversity and treatment properties of each SuDS element.
- Planning legislation and guidance (as described in Section 1.2).
- Site spatial constraints.
- Existing roof type and drainage regime.

The results of the evaluation and proposed solution are summarised in Table 2-3.

Table 2-3 - SuDS evaluation summary

SuDS Type	Evaluation Comments	Conclusion
Ponds	Site specific constraints, such as proximity to buildings and site use does not allow the use of ponds.	Not Viable
Pervious Pavement	The pavement areas around the building and car park are not being modified to maximise existing material reuse.	Not Viable
Wetlands	Site specific constraints, such as proximity to buildings and site use does not allow the use of wetlands.	Not Viable
Infiltration Systems	Ground conditions discussed in Section 1.3.3, the presence of superficial clay and chalk bedrock indicates the site is unsuitable for discharge via infiltration. Pre-application response describes the potential risk of contaminants within the ground due to former industrial land use.	Not Viable
Proprietary Treatment Systems	Not deemed to be required to the surface water drainage system as the catchment consists of roof areas, pedestrian accessways, and a small car park. The pollution risk from the roof area and proposed hardstanding areas are considered low.	Not Viable
Filter Strips	Existing vegetated slopes are present along the southern and eastern sides of the building. Additional filter strips are unable to be proposed due to limited space.	Not Viable
Filter Drains	Insufficient space within the development.	Not Viable
Tree Pit Drainage	Not feasible to implement tree pit drainage for proposed tree due to existing site constraints.	Not Viable

Bio Retention	Insufficient space within the development.	Not Viable
Green/Blue Roofs	The building modifications are largely internal, therefore green and blue roofs are not practical without significant architectural, structural and M&E changes. Roof type proposed for new substation will be unable to support green and blue roofs.	Not Viable
Dry/Wet Swales	Insufficient space within the development. The topography does not support flow in the direction of the drainage system.	Not Viable
Detention Basins	Insufficient space within the development.	Not Viable
Attenuation Tank	An attenuation tank is a viable option to provide sufficient attenuation to manage peak flows volumes for various rainfall return periods.	Viable
Rainwater Harvesting	Water butt rainwater harvesting can be used to capture and store runoff from rainwater downpipes. Rainwater can be reused as an alternative source to watering the landscape. Alternative complex rainwater storage tanks and pumping are unsuitable for due to the existing infrastructure in place.	Viable

2.5 Proposed Discharge Rates

As the proposed development seeks to reuse the existing building footprint and drainage network, the existing discharge rates will be maintained. Where additional impermeable areas are being added within the site (namely the access ramps and substation), these will be restricted to greenfield runoff rates prior to discharging into the existing below ground drainage network

The greenfield runoff rates and volumes for the 0.243 ha site have been accessed using the FEH methodology using FEH22 data (see Appendix C). This method has been used as it is more applicable to smaller catchments less than 50 ha in size. The HR Wallingford Greenfield Runoff tool has been used. The output is in Table 2-4.

Table 2-4 – Estimated greenfield runoff rates of 0.243 ha site for the design storm events

Annual Exceedance Probability (AEP) Event	Greenfield Rates (l/s)
100% (1 in 1 year)	0.16 l/s
Q _{BAR} (1 in ~2.3 year)	0.19 l/s
3.3% (1 in 30 year)	0.44 l/s
1% (1 in 100 year)	0.61 l/s

Based on the estimated greenfield rates, the Q_{BAR} flow rate is considered to require a small flow restriction diameter, resulting in onerous maintenance requirements. Consequently, a practical minimum flow rate of 2 l/s is proposed, in

accordance with the UKSuDS.com guidance on minimum flow rates. This has been considered to reduce the risk of blockage and to avoid potentially creating a flood risk.

2.6 Storage Requirements

The storage requirements for the new external areas of development have been assessed via hydraulic modelling within Causeway Flow using the FEH22 dataset (see Table 2-5).

Table 2-5 – The storage requirement for the design storm criteria for a non-infiltration-based solution

Annual Exceedance Probability (AEP) Event	Maximum Storage Requirements (m ³)	
	Southwestern Ramp Area	Southeastern Ramp Area & Substation
50% (1 in 2 year)	<1	<1
3.3% (1 in 30 year)	1	2
1% (1 in 100 year)	1	2

The diameters of the outfall pipes are known but the gradients are not. The calculated pipe full-flow capacities of the outfall pipes that discharge into the receiving sewers are listed in Table 2-6 to estimate the existing discharge rates, noting the assumptions used below to determine the capacities.

The following assumptions have been made:

- Colebrook-White equation used to determine pipe full flow capacity.
- A 100mm is laid at 1:100 and 150mm pipe is laid at 1:150, in accordance with Building Regulations Approved Document H.
- A 300mm pipe is laid at approximately 1:240 to achieve a self-cleansing velocity of 1m/s.

Table 2-6 – Estimated discharge rate of existing outfalls

Existing Outfall	Pipe Diameter	Pipe Full Flow Capacity (l/s)
Outfall 1	150	14
Outfall 2	300	71
Outfall 3	100	6

The proposed drainage strategy involves discharging additional surface water runoff from new infrastructure required by the redevelopment into the pipes that are connected to Outfalls 2 and 3. No changes are proposed to the drainage network that discharges into Outfall 1

2.7 Proposed Drainage Solution

The proposed drainage strategy is to maintain the existing below ground drainage arrangement for the building. This involves maintaining the existing connections from the building discharges to an existing private drainage network, which outfalls to Vastern Ditch. The existing car park area is understood to discharge to a separate network offsite.

Where the external lift is proposed along the northern face of the building, a diversion of the existing below ground drainage system is required to avoid the lift's foundations. The existing drainage pipe will be routed around the lift footprint, connecting back into the existing pipe run alignment once the lift has been circumvented. As there are no additional impermeable areas contributing to this pipe along this diversion, the existing discharge rates remain the same.

Where external modifications to the site are proposed, there will be a change to the impermeable areas discharging into the private drainage network. These locations will be at the southwestern and southeastern access ramps, and at the substation on the eastern side of the site. These areas will drain to a buried drainage network which will connect into the existing private drainage network via flow control manholes, which will restrict the flow to 2l/s.

Hydraulic modelling of the proposed network indicates that attenuation volumes can be stored within the additional pipes and manholes, removing the requirement for an attenuation tank.

The 'National standards for sustainable drainage systems (SuDS)' guidance applies to new infrastructure and development. However, in adopting a proactive approach to managing rainwater, it is proposed to retrofit a SuDS Pod on the existing surface water drainage downpipe located along the western section of the building. The SuDS pod will retain the first 5mm of rainfall from this section of the roof area as well as harvest the surface water runoff from this section of the roof. The surface water runoff will be reuse for landscaping and other non-potable water requirements. The proposed SuDS Pod will provide 300 litres of non-potable water storage (Figure 2-1).

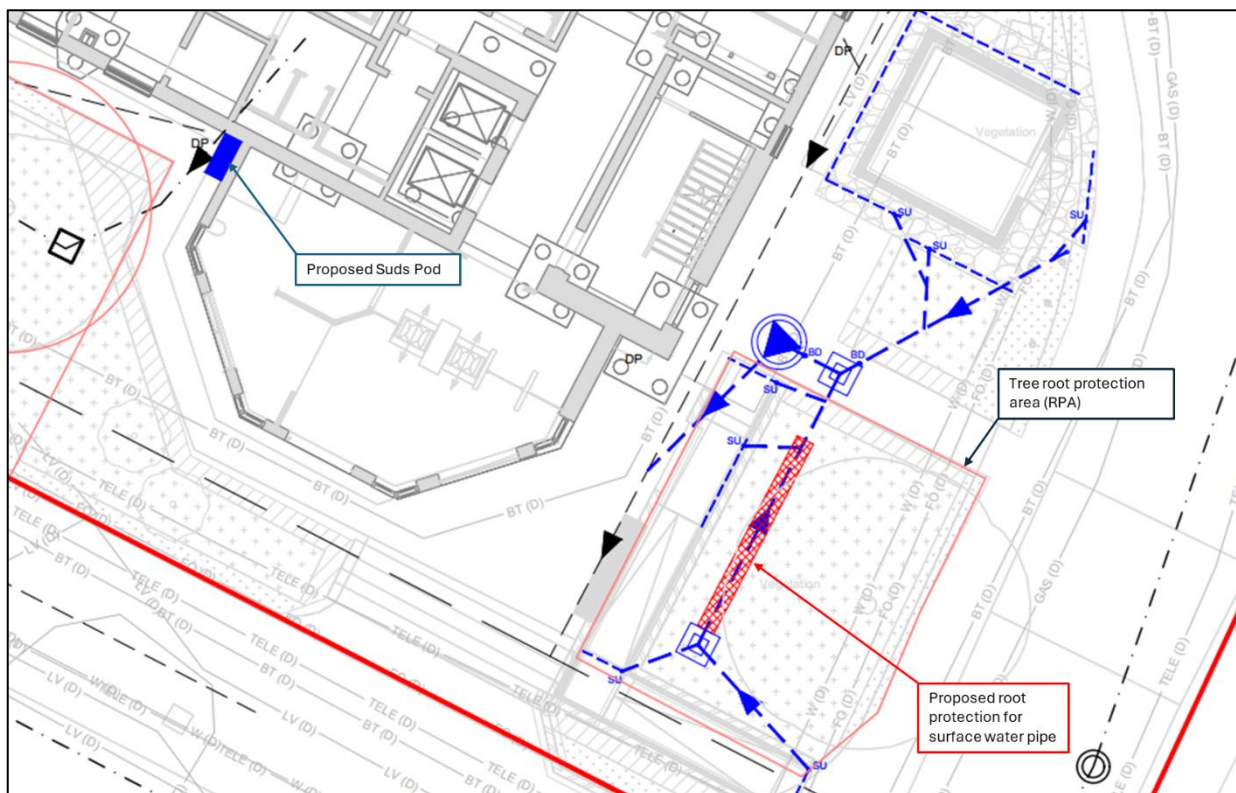


Figure 2-1 - Proposed surface water drainage layout (southeast section)

Given the presence of existing trees on the site, care is to be taken during the construction of the drainage network to ensure adequate protection of existing trees, along with their root network (Figure 2-1). Where drainage infrastructure is required within tree root protection areas, the excavations shall be carried out by hand to avoid cutting through roots and supervised by a certified arboriculturist. Detail of the root protection barrier to be applied for proposed drainage pipes is shown below (Figure 2-2).

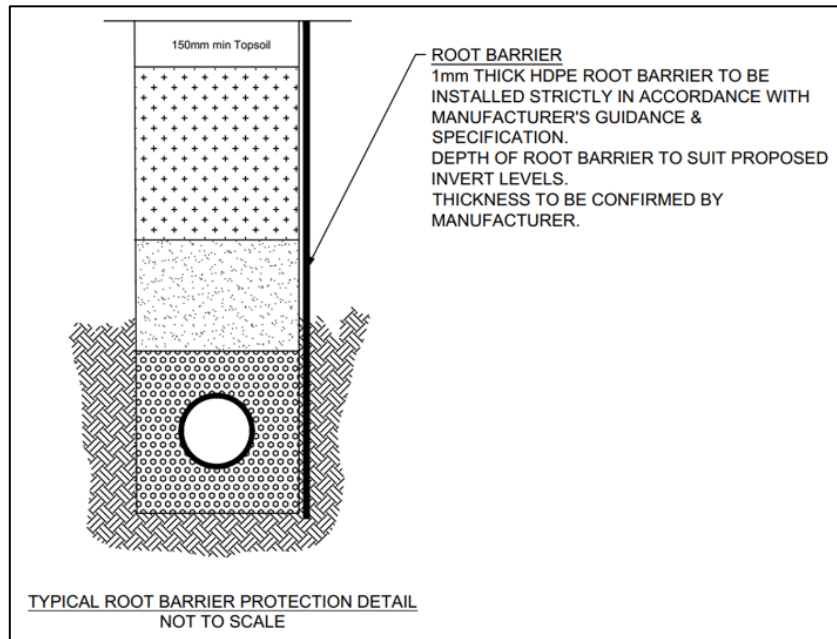


Figure 2-2 – Typical pipe root protection barrier (Ref. 377915_15380-ATR-RTC-XX-D-C-0022)

It is proposed to provide tree root irrigation system within proposed tree pit located in the northern section of the site. The tree root irrigation system is proposed to manage surface water runoff from the immediate vicinity of the tree (Figure 2-3). The feasibility of implementing tree pit drainage for the proposed tree from the surface water drainage network was also explored, this has been assessed as not feasible following a review of the existing site conditions and constraints relating to the presence of existing root protect zone, as well as the depth of existing drainage network. Hence, tree pit drainage from surface water drainage network is not considered appropriate for the drainage proposal.

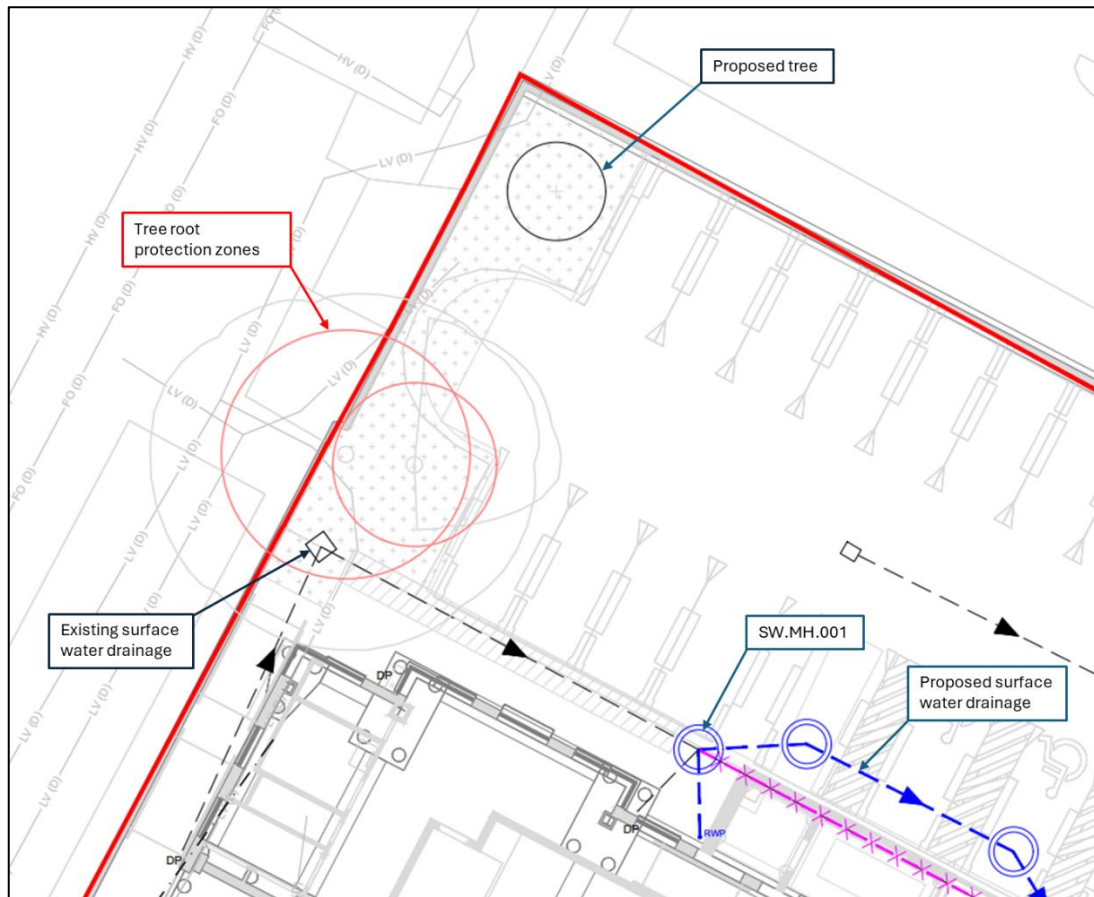


Figure 2-3 - Surface water drainage (northern section)

See Appendix D for the surface water drainage drawings and Appendix E for the hydraulic calculations.

2.8 Water Quality

The water quality impact of the development has been assessed using the CIRIA SuDS Manual (C753) Simple Index Approach pollution hazard indices. The majority of the redevelopment can be classed as 'other roofs' and pedestrian areas. Therefore, the pollution hazard level is determined as 'Low' (Figure 2-4).

TABLE 26.2 Pollution hazard indices for different land use classifications				
Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
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 ¹	Medium	0.7	0.6	0.7
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; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

Figure 2-4 - Pollution hazard indices from the CIRIA SuDS Manual report (C753)

As the additional catchment draining to the drainage system will predominantly be from roof and pedestrian areas, pollution will be managed through catchpits installed upstream of the proposed flow control chambers to separate out any solid material.

2.9 Biodiversity and Amenity

It is proposed to retain some landscape features within the site to provide amenity space and encourage biodiversity on the site.

2.10 Exceedance Assessment

As discussed in Section 2.2, the drainage system has been designed so ensure there is no onsite or offsite flooding during a 100 year (plus 40% climate change event) rainfall event.

3. Foul Drainage Strategy

3.1 Design Standards

The following design standards have been adopted in the development of the foul water design:

- The Building Regulations 2015 - Drainage and Waste Disposal - Approved Document H.
- BS EN 752:2017 - Drainage Sewer Systems Outside Buildings - Sewer System Management.
- BS EN 12056-2:2000 Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation.
- BS EN 16933-2 - Drain and Sewer Systems Outside Buildings - Design (Hydraulic Design).
- Sewerage Sector Guidance - Appendix C, Version 2.3 – 2023.

3.2 Design Criteria

The following design criteria has been adopted in the development of the foul water network with reference to the standards and guidance listed in Section 3.1, where applicable.

- Foul water flow will be derived using the Probability (Discharge Unit) method.
 - Discharge Units have been based on the information supplied by the MEP Engineers (BakerHicks).
- Where peak flow is < 1l/s, a pipe diameter of 100mm at a gradient of 1:40 can be used.
- Where peak flow is > 1l/s, a pipe diameter of 100mm at a gradient of 1:80 can be used where it is connected to at least one toilet. A pipe diameter of 150mm at a gradient of 1:150 can be used where it is connected to at least five toilets.
- Maximum allowed distance between manholes is 90m.
- Maximum allowed distance between inspection chambers to a manhole is 45m.
- Maximum allowed distance from rodding point to an inspection chamber is 45m.
- To provide a self-cleansing regime within gravity foul sewers, the minimum flow velocity should be 0.75 m per second at one-third design flow.

3.3 Outfall Strategy

The discharge hierarchy, as per Requirement H1 of The Building Regulations 2015, was assessed and is summarised in Table 3-1.

Table 3-1 – Foul Water Discharge HierarchyEvaluation

No.	Discharge Hierarchy	Evaluation Comments
1.	Public Sewer	Not practical to have a direct connection from the building to the Thames Water sewer.
2.	Private Sewer Communicating with a Public Sewer	Viable – There is an existing foul water network serving the building that can be connected into.
3.	Septic Tank with Appropriate Secondary Treatment / Another Wastewater Treatment System	Not practical due to availability of a private sewer connection.
4.	Cesspool	Not practical due to availability of a private sewer connection.



3.4 Design Proposal

The existing toilet blocks are to remain and will continue discharging to the Thames Water sewer in Vastern Road via the existing drainage network. Additional flows are expected to contribute to the existing stacks from tea points on the ground floor via drain pumps.

The proposed addition of WCs, washing basins and showers on all floors in the northwest corner of the building will also contribute to the increase of flows. These proposed sanitary facilities are expected to discharge internally via two new soil vent pipes: SVP 1 & SVP 2 (see Figure 3-1). A kitchen sink on the second floor will also connect to these stacks.

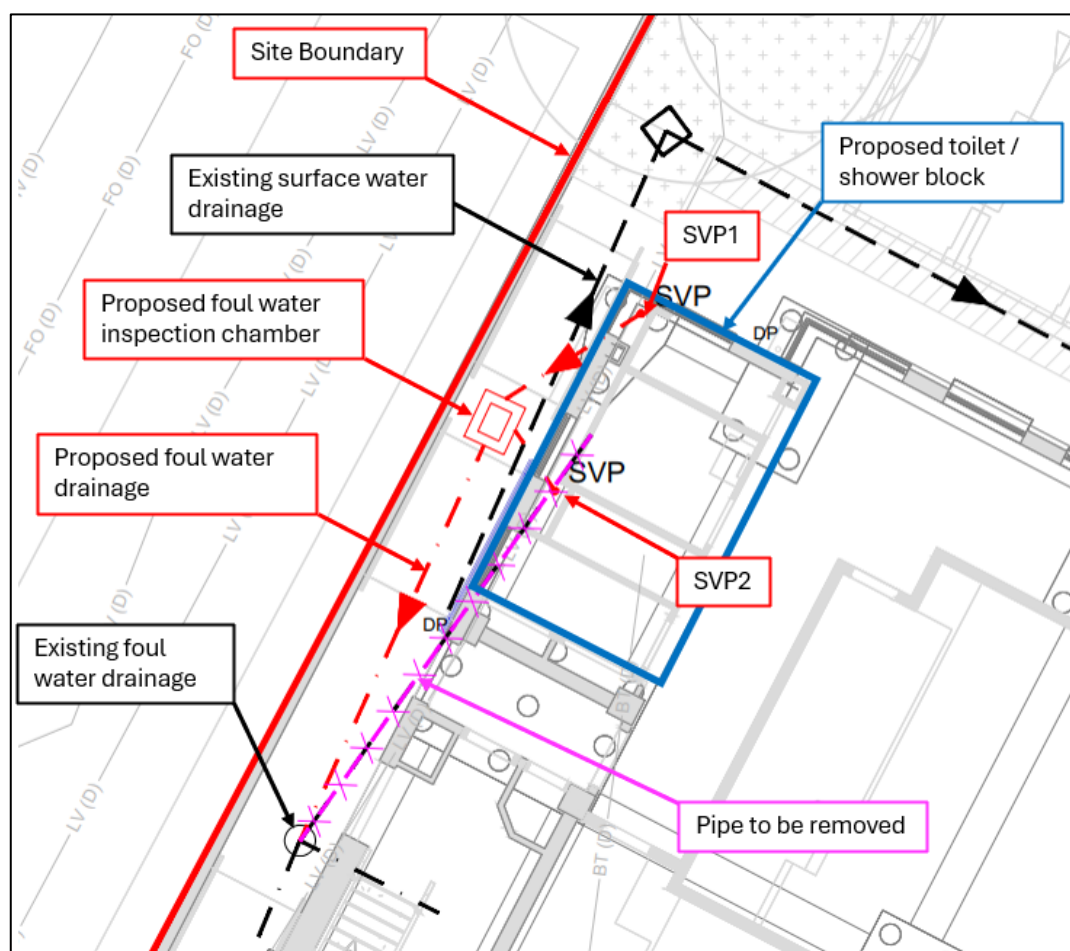


Figure 3-1 - Proposed Foul Water Drainage

The additional flow from the new stacks have been derived using the Discharge Unit (DU) method, in-line with The Building Regulations, Approved Document H and the methodology detailed in BS EN 12056-2. Based on the building usage, a typical frequency factor (K) 0.7 – ‘frequent use’ has been used for the calculation of the total flow rate. The results show an expected additional foul flow of 3.44l/s from the new stacks. An external foul pipe will be located at the base of each stack and will convey to the nearby existing inspection chamber.

See Appendix F for the full foul water drainage layout plan and Appendix G manhole schedule.

A pre-planning capacity check application was submitted to Thames Water (see Appendix I) who confirmed that sufficient capacity is available within the existing public sewer via manhole ref. SU7175001 to receive additional foul loading.

4. Maintenance

The maintenance of the proposed drainage systems is summarised below:

- Below ground drainage system - Litter, debris removal and periodical jetting. The surface water drainage has been designed for a self-cleansing velocity of 1 m/s and foul pipework in accordance with the minimum falls in BS EN 752:2017, allowing for the appliances connected.



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APPENDICES

OFFICIAL

Appendix A. Topographical Survey

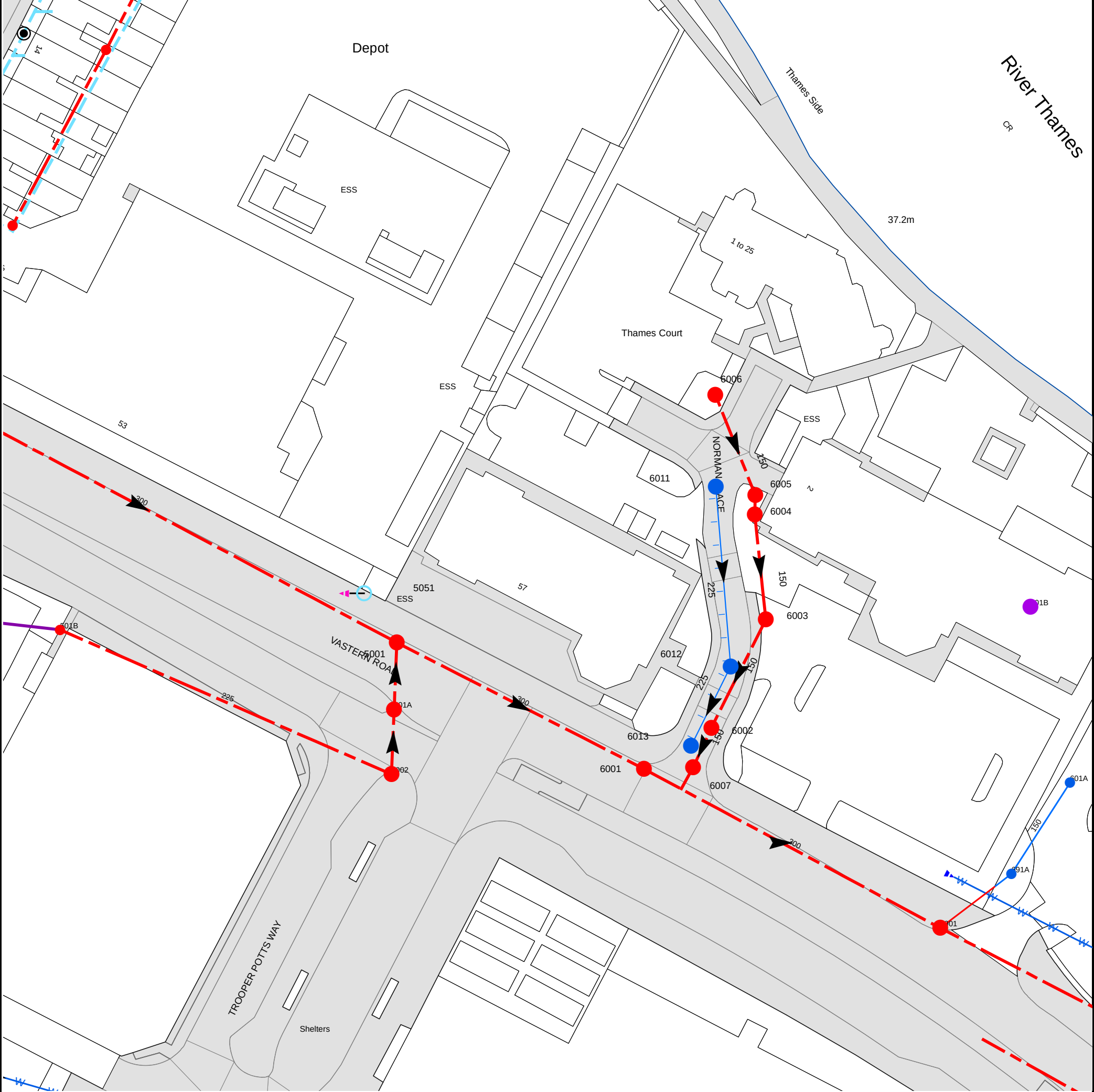
A.1 Greenhatch Group - '34202A_01-07_PES'



Appendix B. Existing Utility Information

B.1 Thames Water Public Sewer Records





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
501B	n/a	n/a
5051	37.83	36.87
5002	37.85	35.77
501A	n/a	n/a
5001	37.82	35.09
6001	37.84	35.02
6013	37.99	36.73
6007	38.86	35.75
6002	38.24	35.9
6006	38.2	36.47
6011	38.72	36.91
6012	38.64	36.78
6004	38.65	36.25
6005	38.65	36.3
6003	38.62	36.06
6901	37.7	34.91
691A	n/a	n/a
601B	n/a	n/a
601A	n/a	n/a
41NK	n/a	n/a
51NL	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

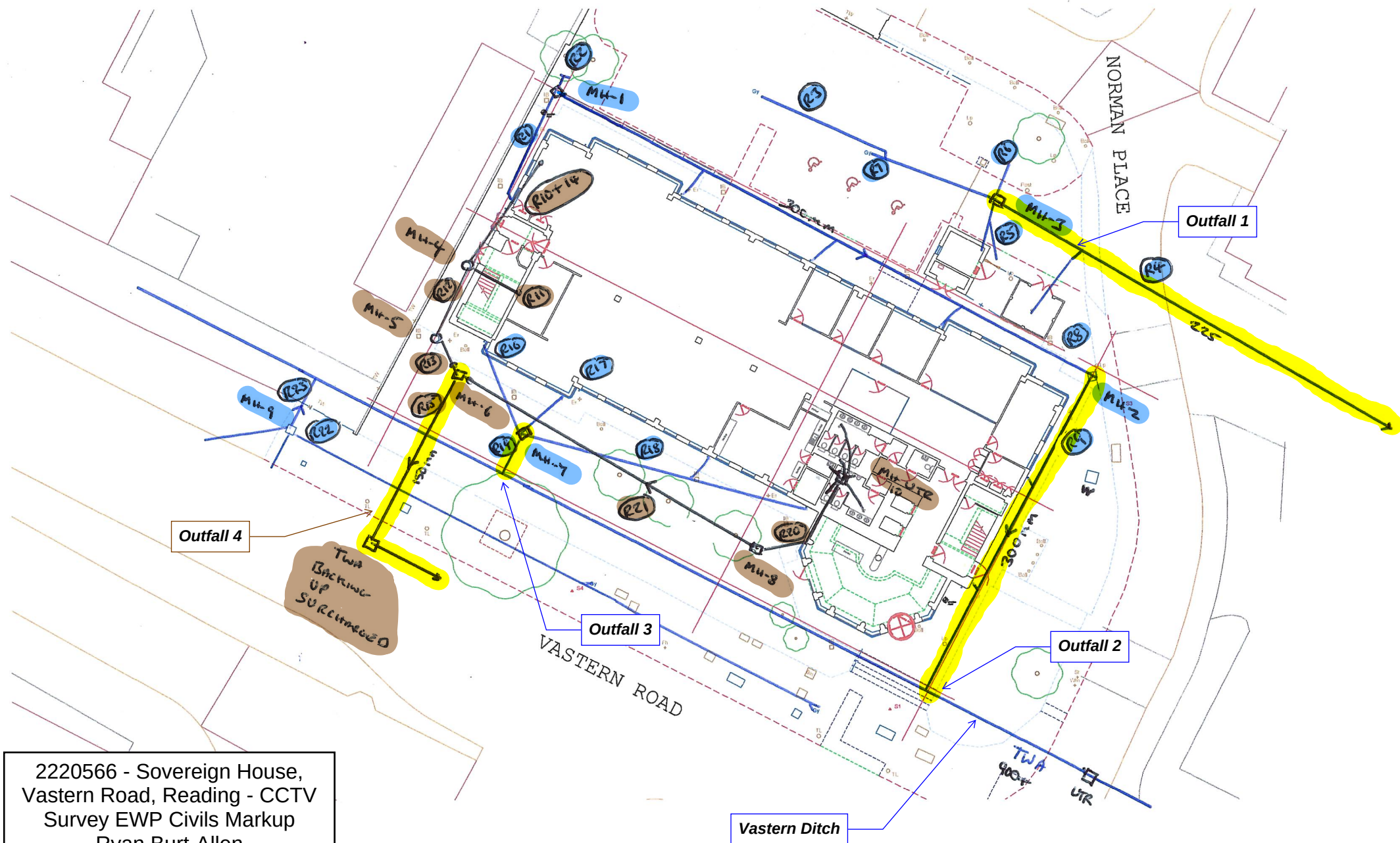
	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

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.

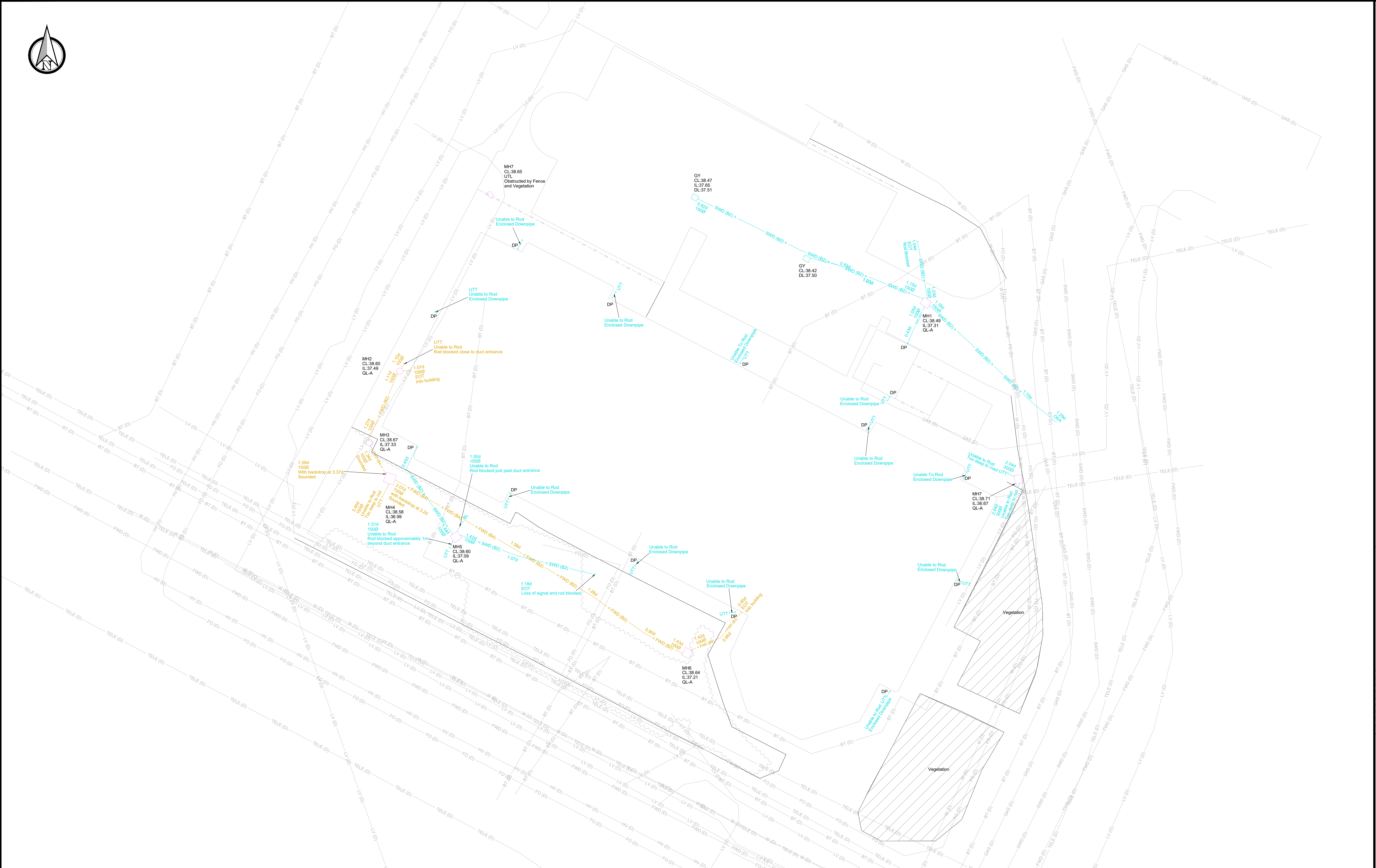
B.2 EWP CCTV Survey





B.3 Vision Sovereign House CCTV Survey





Legend
Utilities:
FOUL WATER DRAINAGE*
SURFACE WATER DRAINAGE*
FOUL WATER RISING MAIN*
SURFACE WATER RISING MAIN*
COMBINED SEWER*
* FLOW DIRECTION DENOTED BY ARROW (>) or (<) IF KNOWN]
TELECOMMUNICATIONS (BT)
TELECOMMUNICATIONS (CATV)
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ELECTRIC (UNKNOWN)
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GPR SCAN AREA

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GPR POSSIBLE TARGET

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GPR REBAR

GPR BURIED FEATURE

GPR POSSIBLE UNDERGROUND

STRUCTURES

Obstructions:

VEGETATION

OBSTRUCTION

NO ACCESS

Topographical:

CHANNEL

GULLY

MANHOLE/INSPECTION COVER

SCAR

STREET FURNITURE

SURVEY BOUNDARY

Topographical background shown in grey for reference

BUILDING

BUILDING OVERHANG

BUILDING STRUCTURE

WALL

STREET FURNITURE

TREE

VEGETATION

KERB TOP

KERB BOTTOM

DROP KERB

SURFACE CHANGE

SCAR

YELLOW PAINT LINE

WHITE PAINT LINE

BANK TOP

BANK BOTTOM

RAMP

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BARRIER

MISCELLANEOUS

STEPS

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SPOT LEVEL

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Appendix C. Greenfield Runoff Calculations



Calculated by:	Ka Po Leung
Site name:	HMCTS Reading
Site location:	RG1 8BT

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha):

0.243

Methodology

Q _{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.802
Q _{MED} (l/s):	
Q _{BAR} / Q _{MED} factor:	1.14

Hydrological characteristics

	Default	Edited
SAAR (mm):	645	645
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Site Details

Latitude:	51.46089° N
Longitude:	0.97075° W
Reference:	2507798659
Date:	Jan 30 2025 11:56

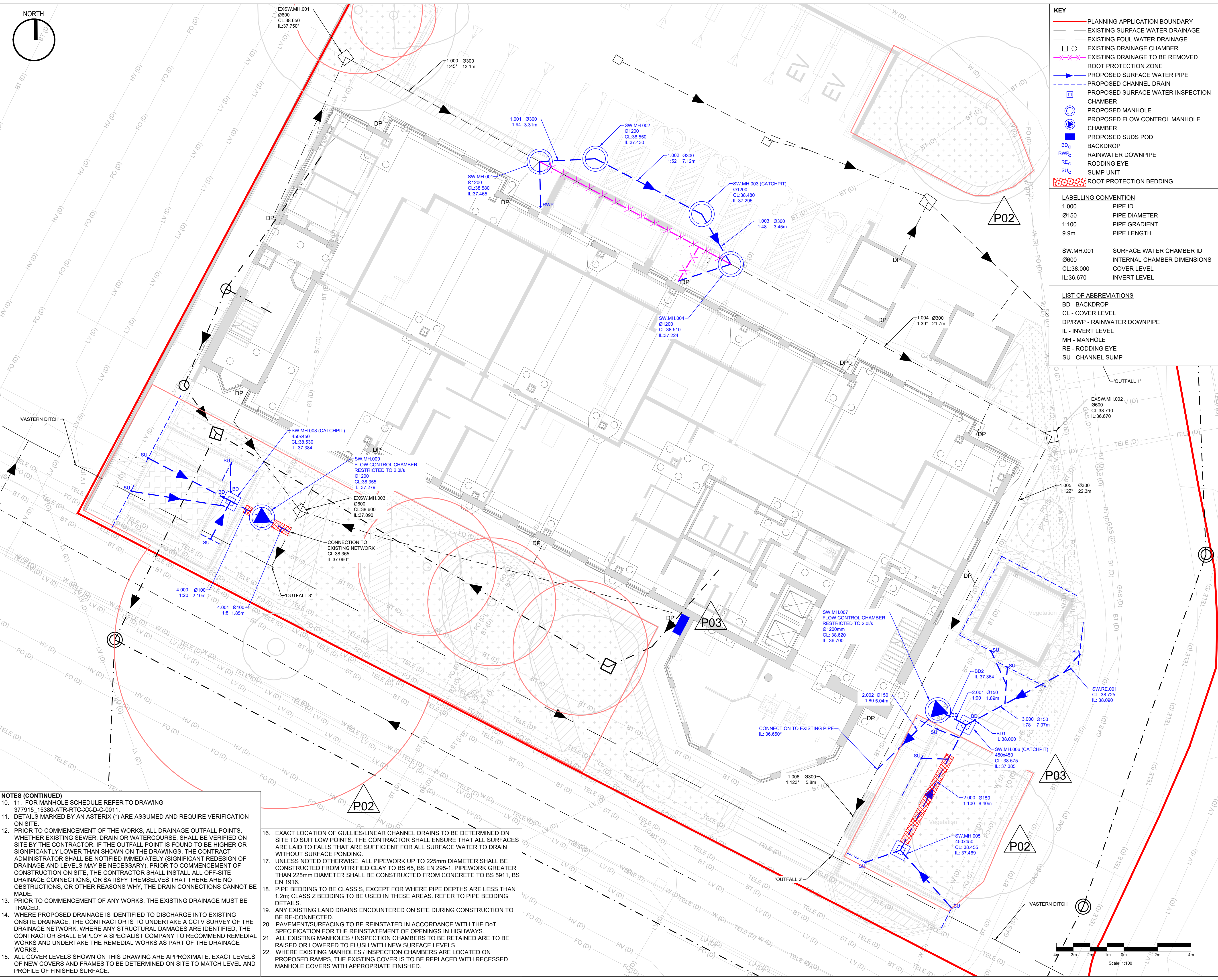
Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):		0.19
1 in 1 year (l/s):		0.16
1 in 30 years (l/s):		0.44
1 in 100 year (l/s):		0.61
1 in 200 years (l/s):		0.72

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Appendix D. Proposed Surface Water Drainage Layout





NOTES (CONTINUED)

10. 11. FOR MANHOLE SCHEDULE REFER TO DRAWING 377915_15380-ATR-RTC-XX-D-C-0011.

11. DETAILS MARKED BY AN ASTERIX (*) ARE ASSUMED AND REQUIRE VERIFICATION ON SITE.

12. PRIOR TO COMMENCEMENT OF THE WORKS, ALL DRAINAGE OUTFALL POINTS, WHETHER EXISTING SEWER, DRAIN OR WATERCOURSE, SHALL BE VERIFIED ON SITE BY THE CONTRACTOR. IF THE OUTFALL POINT IS FOUND TO BE HIGHER OR SIGNIFICANTLY LOWER THAN SHOWN ON THE DRAWINGS, THE CONTRACT ADMINISTRATOR SHALL BE NOTIFIED IMMEDIATELY (SIGNIFICANT REDESIGN OF DRAINAGE AND LEVELS MAY BE NECESSARY). PRIOR TO COMMENCEMENT OF CONSTRUCTION ON SITE, THE CONTRACTOR SHALL INSTALL ALL OFF-SITE DRAINAGE CONNECTIONS, OR SATISFY THEMSELVES THAT THERE ARE NO OBSTRUCTIONS, OR OTHER REASONS WHY, THE DRAIN CONNECTIONS CANNOT BE MADE.

13. PRIOR TO COMMENCEMENT OF ANY WORKS, THE EXISTING DRAINAGE MUST BE TRACED.

14. WHERE PROPOSED DRAINAGE IS IDENTIFIED TO DISCHARGE INTO EXISTING ON-SITE DRAINAGE, THE CONTRACTOR IS TO UNDERTAKE A CCTV SURVEY OF THE DRAINAGE NETWORK. WHERE ANY STRUCTURAL DAMAGES ARE IDENTIFIED, THE CONTRACTOR SHALL EMPLOY A SPECIALIST COMPANY TO RECOMMEND REMEDIAL WORKS AND UNDERTAKE THE REMEDIAL WORKS AS PART OF THE DRAINAGE WORKS.

15. ALL COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE. EXACT LEVELS OF NEW COVERS AND FRAMES TO BE DETERMINED ON SITE TO MATCH LEVEL AND PROFILE OF FINISHED SURFACE.

16. EXACT LOCATION OF GULLIES/LINEAR CHANNEL DRAINS TO BE DETERMINED ON SITE TO SUIT LOW POINTS. THE CONTRACTOR SHALL ENSURE THAT ALL SURFACES ARE LAID TO FALLS THAT ARE SUFFICIENT FOR ALL SURFACE WATER TO DRAIN WITHOUT SURFACE POONDING.

17. UNLESS NOTED OTHERWISE, ALL PIPEWORK UP TO 225mm DIAMETER SHALL BE CONSTRUCTED FROM VITRIFIED CLAY TO BS 65, BS EN 295-1. PIPEWORK GREATER THAN 225mm DIAMETER SHALL BE CONSTRUCTED FROM CONCRETE TO BS 5911, BS EN 1916.

18. PIPE BEDDING TO BE CLASS S, EXCEPT FOR WHERE PIPE DEPTHS ARE LESS THAN 1.2m; CLASS Z BEDDING TO BE USED IN THESE AREAS. REFER TO PIPE BEDDING DETAILS.

19. ANY EXISTING LAND DRAINS ENCOUNTERED ON SITE DURING CONSTRUCTION TO BE RE-CONNECTED.

20. PAVEMENT/SURFACING TO BE REINSTATED IN ACCORDANCE WITH THE D0t SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS.

21. ALL EXISTING MANHOLES / INSPECTION CHAMBERS TO BE RETAINED ARE TO BE RAISED OR LOWERED TO FLUSH WITH NEW SURFACE LEVELS.

22. WHERE EXISTING MANHOLES / INSPECTION CHAMBERS ARE LOCATED ON PROPOSED RAMPS, THE EXISTING COVER IS TO BE REPLACED WITH RECESSED MANHOLE COVERS WITH APPROPRIATE FINISHED.

KEY

- PLANNING APPLICATION BOUNDARY
- EXISTING SURFACE WATER DRAINAGE
- EXISTING FOUL WATER DRAINAGE
- EXISTING DRAINAGE CHAMBER
- ✕✕✕ EXISTING DRAINAGE TO BE REMOVED
- ROOT PROTECTION ZONE
- PROPOSED SURFACE WATER PIPE
- - - PROPOSED CHANNEL DRAIN
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- PROPOSED MANHOLE
- PROPOSED FLOW CONTROL MANHOLE
- CHAMBER
- PROPOSED SUDS POD
- BD ○ BACKDROP
- RWP ○ RAINWATER DOWNPIPE
- RE ○ RODDING EYE
- SU ○ SUMP UNIT
- ▨ ROOT PROTECTION BEDDING

LABELLING CONVENTION

1.000	PIPE ID
Ø150	PIPE DIAMETER
1:100	PIPE GRADIENT
9.9m	PIPE LENGTH

SW.MH.001 SURFACE WATER CHAMBER ID
Ø600 INTERNAL CHAMBER DIMENSIONS
CL:38.000 COVER LEVEL
IL:36.670 INVERT LEVEL

LIST OF ABBREVIATIONS

BD - BACKDROP
CL - COVER LEVEL
DP/RWP - RAINWATER DOWNPIPE
IL - INVERT LEVEL
MH - MANHOLE
RE - RODDING EYE
SU - CHANNEL SUMP

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Do not scale from drawings. Verify all dimensions on site prior to construction. This drawing is to be read in conjunction with all relevant documents and drawings. Report all discrepancies to MoJ immediately.

No unauthorised use, disclosure, storage or copying.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

BURIED SERVICES INCLUDING POSSIBILITY OF UNCHARTED SERVICES - REFER TO SERVICE PLANS AND USE CABLE AVOID TOOLS PRIOR TO DIGGING. POTENTIAL OF BURIED CONTAMINATION INCLUDED ASBESTOS. LOW RISK OF UNEXPLODED ORDNANCE - KEEP WATCH DURING GROUND WORKS. IF IN DOUBT, STOP WORK AND ASK. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

MAINTENANCE/CLEANING

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

DECOMMISSIONING/DEMOLITION

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

NOTES

- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL PROJECT DRAWINGS AND SPECIFICATIONS.
- ALL CO-ORDINATES ARE IN METRES (m) UNLESS OTHERWISE STATED.
- ALL DRAINAGE WORKS TO BE DESIGNED IN ACCORDANCE WITH MOJ STANDARDS STD/Z/DG/053 AND STD/X/SPEC/010.
- EXISTING DRAINAGE INFORMATION HAS BEEN TAKEN FROM THE FOLLOWING SOURCES:
 - THAMES WATER PUBLIC SEWER RECORDS "ASSET LOCATION SEARCH SEWER MAP" (ALS/ALS STANDARD/2023_4773851)
 - CCTV SURVEY MARKUP DRAWING "2220566 - SOVEREIGN HOUSE, VASTERN ROAD, READING - CCTV SURVEY EWP CIVILS MARKUP"
 - VISION SURVEY DRAWING "SOVEREIGN HOUSE CCTV DRAINAGE SURVEY" (VIS-10300-DWG-001-V1.0)
- THE POSITION OF BURIED SERVICES SHOWN ON THE PLAN ARE AS DETERMINED FROM VISION SURVEY DRAWING "SOVEREIGN HOUSE CCTV DRAINAGE SURVEY" (DOC REF: VIS-10300-DWG-001-V1.0).
- ALL UTILITY APPARATUS MUST BE VERIFIED INOPERATIVE BEFORE CARRYING OUT WORK OR EXCAVATIONS IN THE VICINITY.
- FOR FOUNDATIONAL PLAN REFER TO STRUCTURAL DRAWING 377915_15380-ATR-RTC-00-D-S-0002.
- FOR ARCHITECTURAL SITE LAYOUT REFER TO 377915_15380-FMA-RTC-ZZ-D-A-1099.
- FOR DRAINAGE STANDARD DETAILS SEE DRAWING 377915_15380-ATR-RTC-XX-D-C-0021 TO 0023.

P03	ATR	MOJ	16/07/25	TREE LAYOUT UPDATES
P02	ATR	MOJ	20/06/25	TREE RPA UPDATES
P01	ATR	MOJ	14/03/25	RIBA STAGE 3
Rev	Issued by	Issued to	Date	Description

Key Plan

NOT APPLICABLE

Project Status

RIBA STAGE 3

Client

Ministry of Justice

Project

HMCTS READING TRIBUNALS COURT (SOVEREIGN HOUSE) REFURBISHMENT PROJECT

Ministry of Justice, 102 Petty France, London, SW1H 9AJ

Project Description / Site

HMCTS READING TRIBUNAL COURT (SOVEREIGN HOUSE)

Project Address

SOVEREIGN HOUSE, VASTERN ROAD, READING, RG1 8BT

Building Type

TRIBUNAL COURT

Drawing Title

SURFACE WATER DRAINAGE LAYOUT

Drawing Number

377915_15380-ATR-RTC-XX-D-C-0001

Sheet No.	Scale	Orig. Sheet Size	Rev.
1 of 1	1:100	@ A1	P02

Data Security Classification

OFFICIAL

Suitability

S4(3)

Appendix E. Hydraulic Model Calculations

E.1 Surface Water Network



Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.900
Return Period (years)	2	Maximum Rainfall (mm/hr)	250.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.500		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)
EXSW.MH.001	0.013	5.00	38.650	600	
SW.MH.001	0.017	5.00	38.580	1200	
SW.MH.002			38.550	1200	
SW.MH.003			38.480	1200	
SW.MH.004	0.016	5.00	38.510	1200	
EXSW.MH.002	0.022	5.00	38.710	600	
SW.MH.005	0.002	5.00	38.455	450	450
RE		5.00	38.725		
SW.MH.006	0.006	5.00	38.575	450	450
SW.MH.007			38.620	1200	
PROP CONNECTION 1			38.669		
OUTFALL 2			38.480	1200	
SW.MH.008	0.005	5.00	38.530	450	450
SW.MH.009			38.355	1200	
PROP CONNECTION 2			38.365		

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	EXSW.MH.001	SW.MH.001	13.095	0.600	37.750	37.465	0.285	45.9	300	5.09	49.2
1.001	SW.MH.001	SW.MH.002	3.311	0.600	37.465	37.430	0.035	94.6	300	5.13	49.1
1.002	SW.MH.002	SW.MH.003	7.120	0.600	37.430	37.295	0.135	52.7	300	5.18	48.9
1.003	SW.MH.003	SW.MH.004	3.448	0.600	37.295	37.224	0.071	48.6	300	5.21	48.8
1.004	SW.MH.004	EXSW.MH.002	21.651	0.600	37.224	36.670	0.554	39.1	300	5.35	48.3
1.005	EXSW.MH.002	PROP CONNECTION 1	21.268	0.600	36.670	36.500	0.170	125.1	300	5.60	47.4
2.000	SW.MH.005	SW.MH.006	8.403	0.600	37.469	37.385	0.084	100.0	150	5.14	49.1
3.000	RE	SW.MH.006	7.071	0.600	38.090	38.000	0.090	78.6	150	5.10	49.2
2.001	SW.MH.006	SW.MH.007	1.888	0.600	37.385	37.364	0.021	90.0	150	5.17	49.0
2.002	SW.MH.007	PROP CONNECTION 1	4.038	0.600	36.700	36.650	0.050	80.0	150	5.23	48.7
1.006	PROP CONNECTION 1	OUTFALL 2	7.052	0.600	36.500	36.443	0.057	123.0	300	5.69	47.1
4.000	SW.MH.008	SW.MH.009	2.107	0.600	37.384	37.279	0.105	20.0	100	5.02	49.5
4.001	SW.MH.009	PROP CONNECTION 2	1.837	0.600	37.279	37.060	0.219	8.4	100	5.03	49.5

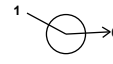
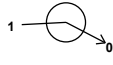
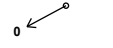
Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	EXSW.MH.001	SW.MH.001	2.325	164.4	2.3	0.600	0.815	25	0.844
1.001	SW.MH.001	SW.MH.002	1.616	114.3	5.3	0.815	0.820	44	0.834
1.002	SW.MH.002	SW.MH.003	2.169	153.3	5.3	0.820	0.885	38	1.026
1.003	SW.MH.003	SW.MH.004	2.261	159.8	5.3	0.885	0.986	37	1.059
1.004	SW.MH.004	EXSW.MH.002	2.522	178.3	8.0	0.986	1.740	43	1.294
1.005	EXSW.MH.002	PROP CONNECTION 1	1.404	99.2	11.6	1.740	1.869	69	0.948
2.000	SW.MH.005	SW.MH.006	1.005	17.8	0.4	0.836	1.040	15	0.397
3.000	RE	SW.MH.006	1.135	20.1	0.0	0.485	0.425	0	0.000
2.001	SW.MH.006	SW.MH.007	1.060	18.7	1.4	1.040	1.106	28	0.624
2.002	SW.MH.007	PROP CONNECTION 1	1.125	19.9	1.4	1.770	1.869	27	0.654
1.006	PROP CONNECTION 1	OUTFALL 2	1.416	100.1	12.9	1.869	1.737	72	0.984
4.000	SW.MH.008	SW.MH.009	1.734	13.6	0.9	1.046	0.976	18	0.982
4.001	SW.MH.009	PROP CONNECTION 2	2.685	21.1	0.9	0.976	1.205	14	1.346

Pipeline Schedule

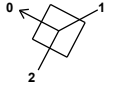
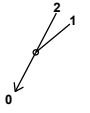
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	13.095	45.9	300	Proposed SW	38.650	37.750	0.600	38.580	37.465	0.815
1.001	3.311	94.6	300	Proposed SW	38.580	37.465	0.815	38.550	37.430	0.820
1.002	7.120	52.7	300	Proposed SW	38.550	37.430	0.820	38.480	37.295	0.885
1.003	3.448	48.6	300	Proposed SW	38.480	37.295	0.885	38.510	37.224	0.986
1.004	21.651	39.1	300	Proposed SW	38.510	37.224	0.986	38.710	36.670	1.740
1.005	21.268	125.1	300	Proposed SW	38.710	36.670	1.740	38.669	36.500	1.869
2.000	8.403	100.0	150	Proposed SW	38.455	37.469	0.836	38.575	37.385	1.040
3.000	7.071	78.6	150	Proposed SW	38.725	38.090	0.485	38.575	38.000	0.425
2.001	1.888	90.0	150	Proposed SW	38.575	37.385	1.040	38.620	37.364	1.106
2.002	4.038	80.0	150	Proposed SW	38.620	36.700	1.770	38.669	36.650	1.869
1.006	7.052	123.0	300	Proposed SW	38.669	36.500	1.869	38.480	36.443	1.737
4.000	2.107	20.0	100	Proposed SW	38.530	37.384	1.046	38.355	37.279	0.976
4.001	1.837	8.4	100	Proposed SW	38.355	37.279	0.976	38.365	37.060	1.205

Link	US Node	Dia (mm)	Width (mm)	Node Type	DS Node	Dia (mm)	Width (mm)	Node Type
1.000	EXSW.MH.001	600		Manhole	SW.MH.001	1200		Manhole
1.001	SW.MH.001	1200		Manhole	SW.MH.002	1200		Manhole
1.002	SW.MH.002	1200		Manhole	SW.MH.003	1200		Manhole
1.003	SW.MH.003	1200		Manhole	SW.MH.004	1200		Manhole
1.004	SW.MH.004	1200		Manhole	EXSW.MH.002	600		Manhole
1.005	EXSW.MH.002	600		Manhole	PROP CONNECTION 1			Junction
2.000	SW.MH.005	450	450	Manhole	SW.MH.006	450	450	Manhole
3.000	RE			Junction	SW.MH.006	450	450	Manhole
2.001	SW.MH.006	450	450	Manhole	SW.MH.007	1200		Manhole
2.002	SW.MH.007	1200		Manhole	PROP CONNECTION 1			Junction
1.006	PROP CONNECTION 1			Junction	OUTFALL 2	1200		Manhole
4.000	SW.MH.008	450	450	Manhole	SW.MH.009	1200		Manhole
4.001	SW.MH.009	1200		Manhole	PROP CONNECTION 2			Junction

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
EXSW.MH.001	38.650	0.900	600						
					0	1.000	37.750	300	
SW.MH.001	38.580	1.115	1200			1	1.000	37.465	300
					0	1.001	37.465	300	
SW.MH.002	38.550	1.120	1200			1	1.001	37.430	300
					0	1.002	37.430	300	
SW.MH.003	38.480	1.185	1200			1	1.002	37.295	300
					0	1.003	37.295	300	
SW.MH.004	38.510	1.286	1200			1	1.003	37.224	300
					0	1.004	37.224	300	
EXSW.MH.002	38.710	2.040	600			1	1.004	36.670	300
					0	1.005	36.670	300	
SW.MH.005	38.455	0.986	450	450					
					0	2.000	37.469	150	
RE	38.725	0.635							
					0	3.000	38.090	150	

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
SW.MH.006	38.575	1.190	450	450		1	3.000	38.000
						2	2.000	37.385
						0	2.001	37.385
SW.MH.007	38.620	1.920	1200			1	2.001	37.364
						0	2.002	36.700
PROP CONNECTION 1	38.669	2.169				1	2.002	36.650
						2	1.005	36.500
						0	1.006	36.500
OUTFALL 2	38.480	2.037	1200			1	1.006	36.443
SW.MH.008	38.530	1.146	450	450		0	4.000	37.384
SW.MH.009	38.355	1.076	1200			1	4.000	37.279
						0	4.001	37.279
PROP CONNECTION 2	38.365	1.305				1	4.001	37.060

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	100 year (l/s)	0.4	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	✓	Check Discharge Volume	x
Summer CV	0.750	Drain Down Time (mins)	240	2 year (l/s)	0.1		
Winter CV	0.840	Additional Storage (m³/ha)	0.0	30 year (l/s)	0.3		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	40	0	0
30	35	0	0				

Pre-development Discharge Rate

Site Makeup	Greenfield	BFIHost	0.802	Growth Factor 100 year	2.48	Q 30 year (l/s)	0.3
Greenfield Method	FEH	Region	1	Betterment (%)	0	Q 100 year (l/s)	0.4
Positively Drained Area (ha)	0.234	QBar/QMed conversion factor	1.111	QMed	0.2		
SAAR (mm)	638	Growth Factor 1 year	0.85	QBar	0.2		
Host	1	Growth Factor 30 year	1.95	Q 1 year (l/s)	0.1		

Node SW.MH.009 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	4.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0075-2000-0500-2000
Invert Level (m)	37.279	Min Outlet Diameter (m)	0.100
Design Depth (m)	0.500	Min Node Diameter (mm)	0
Design Flow (l/s)	2.0		

Node SW.MH.007 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	2.002	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0064-2000-1200-2000
Invert Level (m)	36.700	Min Outlet Diameter (m)	0.100
Design Depth (m)	1.200	Min Node Diameter (mm)	1200
Design Flow (l/s)	2.0		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	98.952	28.000	2 year 1440 minute winter	3.520	1.404
2 year 15 minute winter	69.440	28.000	30 year +35% CC 15 minute summer	410.900	116.270
2 year 30 minute summer	63.321	17.918	30 year +35% CC 15 minute winter	288.351	116.270
2 year 30 minute winter	44.436	17.918	30 year +35% CC 30 minute summer	267.413	75.669
2 year 60 minute summer	41.847	11.059	30 year +35% CC 30 minute winter	187.658	75.669
2 year 60 minute winter	27.802	11.059	30 year +35% CC 60 minute summer	178.457	47.161
2 year 120 minute summer	30.005	7.929	30 year +35% CC 60 minute winter	118.563	47.161
2 year 120 minute winter	19.935	7.929	30 year +35% CC 120 minute summer	107.637	28.445
2 year 180 minute summer	24.377	6.273	30 year +35% CC 120 minute winter	71.512	28.445
2 year 180 minute winter	15.846	6.273	30 year +35% CC 180 minute summer	81.277	20.915
2 year 240 minute summer	19.802	5.233	30 year +35% CC 180 minute winter	52.832	20.915
2 year 240 minute winter	13.156	5.233	30 year +35% CC 240 minute summer	63.311	16.731
2 year 360 minute summer	15.436	3.972	30 year +35% CC 240 minute winter	42.062	16.731
2 year 360 minute winter	10.034	3.972	30 year +35% CC 360 minute summer	47.126	12.127
2 year 480 minute summer	12.230	3.232	30 year +35% CC 360 minute winter	30.633	12.127
2 year 480 minute winter	8.126	3.232	30 year +35% CC 480 minute summer	36.302	9.593
2 year 600 minute summer	10.024	2.742	30 year +35% CC 480 minute winter	24.118	9.593
2 year 600 minute winter	6.849	2.742	30 year +35% CC 600 minute summer	29.164	7.977
2 year 720 minute summer	8.921	2.391	30 year +35% CC 600 minute winter	19.927	7.977
2 year 720 minute winter	5.996	2.391	30 year +35% CC 720 minute summer	25.559	6.850
2 year 960 minute summer	7.286	1.918	30 year +35% CC 720 minute winter	17.177	6.850
2 year 960 minute winter	4.826	1.918	30 year +35% CC 960 minute summer	20.406	5.373
2 year 1440 minute summer	5.238	1.404	30 year +35% CC 960 minute winter	13.517	5.373

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year +35% CC 1440 minute summer	14.218	3.811	100 year +40% CC 240 minute winter	55.237	21.972
30 year +35% CC 1440 minute winter	9.555	3.811	100 year +40% CC 360 minute summer	61.433	15.809
100 year +40% CC 15 minute summer	554.159	156.808	100 year +40% CC 360 minute winter	39.933	15.809
100 year +40% CC 15 minute winter	388.883	156.808	100 year +40% CC 480 minute summer	47.182	12.469
100 year +40% CC 30 minute summer	364.578	103.163	100 year +40% CC 480 minute winter	31.346	12.469
100 year +40% CC 30 minute winter	255.844	103.163	100 year +40% CC 600 minute summer	37.833	10.348
100 year +40% CC 60 minute summer	244.148	64.521	100 year +40% CC 600 minute winter	25.849	10.348
100 year +40% CC 60 minute winter	162.206	64.521	100 year +40% CC 720 minute summer	33.106	8.873
100 year +40% CC 120 minute summer	143.503	37.924	100 year +40% CC 720 minute winter	22.250	8.873
100 year +40% CC 120 minute winter	95.340	37.924	100 year +40% CC 960 minute summer	26.353	6.939
100 year +40% CC 180 minute summer	107.327	27.619	100 year +40% CC 960 minute winter	17.457	6.939
100 year +40% CC 180 minute winter	69.765	27.619	100 year +40% CC 1440 minute summer	18.258	4.893
100 year +40% CC 240 minute summer	83.141	21.972	100 year +40% CC 1440 minute winter	12.271	4.893

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Status
15 minute winter	EXSW.MH.001	10	37.771	0.021	1.7	0.0061	OK
15 minute winter	SW.MH.001	10	37.506	0.040	3.9	0.0458	OK
15 minute winter	SW.MH.002	10	37.464	0.034	3.8	0.0380	OK
15 minute winter	SW.MH.003	11	37.329	0.034	3.8	0.0384	OK
15 minute winter	SW.MH.004	11	37.261	0.037	5.7	0.0415	OK
15 minute winter	EXSW.MH.002	11	36.729	0.059	8.4	0.0167	OK
15 minute winter	SW.MH.005	10	37.482	0.013	0.3	0.0026	OK
15 minute summer	RE	1	38.090	0.000	0.0	0.0000	OK
15 minute winter	SW.MH.006	10	37.410	0.025	1.1	0.0052	OK
15 minute winter	SW.MH.007	11	36.757	0.057	1.0	0.0649	OK
15 minute winter	PROP CONNECTION 1	11	36.564	0.064	9.4	0.0000	OK
15 minute winter	OUTFALL 2	11	36.505	0.062	9.4	0.0000	OK
15 minute winter	SW.MH.008	11	37.398	0.014	0.6	0.0029	OK
15 minute winter	SW.MH.009	11	37.317	0.038	0.6	0.0427	OK
15 minute summer	PROP CONNECTION 2	1	37.060	0.000	0.6	0.0000	OK

US Node	Link	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
EXSW.MH.001	1.000	1.7	0.440	0.010	0.0516	
SW.MH.001	1.001	3.8	0.766	0.033	0.0165	
SW.MH.002	1.002	3.8	0.873	0.025	0.0307	
SW.MH.003	1.003	3.8	0.816	0.024	0.0160	
SW.MH.004	1.004	5.7	0.794	0.032	0.1586	
EXSW.MH.002	1.005	8.4	0.812	0.085	0.2208	
SW.MH.005	2.000	0.3	0.195	0.014	0.0112	
RE	3.000	0.0	0.000	0.000	0.0000	
SW.MH.006	2.001	1.0	0.534	0.053	0.0035	
SW.MH.007	Hydro-Brake®	1.0				
PROP CONNECTION 1	1.006	9.4	0.877	0.094	0.0755	4.4
SW.MH.008	4.000	0.6	0.674	0.044	0.0036	
SW.MH.009	Hydro-Brake®	0.6				0.3

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Status
15 minute winter	EXSW.MH.001	10	37.792	0.042	6.9	0.0118	OK
15 minute winter	SW.MH.001	10	37.550	0.085	15.8	0.0966	OK
15 minute winter	SW.MH.002	10	37.500	0.070	15.7	0.0792	OK
15 minute winter	SW.MH.003	10	37.369	0.074	15.6	0.0835	OK
15 minute winter	SW.MH.004	10	37.298	0.074	24.0	0.0833	OK
15 minute winter	EXSW.MH.002	10	36.797	0.127	35.4	0.0359	OK
15 minute winter	SW.MH.005	10	37.494	0.025	1.1	0.0051	OK
15 minute summer	RE	1	38.090	0.000	0.0	0.0000	OK
15 minute winter	SW.MH.006	10	37.440	0.055	4.3	0.0112	OK
15 minute winter	SW.MH.007	14	37.423	0.723	4.2	0.8175	SURCHARGED
15 minute winter	PROP CONNECTION 1	11	36.634	0.134	36.7	0.0000	OK
15 minute winter	OUTFALL 2	11	36.568	0.125	37.0	0.0000	OK
15 minute winter	SW.MH.008	12	37.429	0.045	2.6	0.0091	OK
15 minute winter	SW.MH.009	12	37.435	0.156	2.6	0.1763	SURCHARGED
15 minute summer	PROP CONNECTION 2	1	37.060	0.000	2.0	0.0000	OK

US Node	Link	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
EXSW.MH.001	1.000	6.9	0.632	0.042	0.1465	
SW.MH.001	1.001	15.7	1.087	0.137	0.0480	
SW.MH.002	1.002	15.6	1.206	0.102	0.0923	
SW.MH.003	1.003	15.5	1.159	0.097	0.0463	
SW.MH.004	1.004	23.9	1.159	0.134	0.4511	
EXSW.MH.002	1.005	35.0	1.197	0.353	0.6228	
SW.MH.005	2.000	1.1	0.283	0.060	0.0328	
RE	3.000	0.0	0.000	0.000	0.0000	
SW.MH.006	2.001	4.2	0.780	0.224	0.0102	
SW.MH.007	Hydro-Brake®	1.8				
PROP CONNECTION 1	1.006	37.0	1.269	0.370	0.2056	18.6
SW.MH.008	4.000	2.6	0.771	0.192	0.0107	
SW.MH.009	Hydro-Brake®	2.0				1.2

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Status
15 minute winter	EXSW.MH.001	10	37.798	0.048	9.3	0.0136	OK
15 minute winter	SW.MH.001	10	37.566	0.101	21.3	0.1140	OK
15 minute winter	SW.MH.002	10	37.513	0.083	21.1	0.0935	OK
15 minute winter	SW.MH.003	10	37.383	0.088	21.0	0.0993	OK
15 minute winter	SW.MH.004	10	37.309	0.085	32.3	0.0967	OK
15 minute winter	EXSW.MH.002	10	36.821	0.151	47.8	0.0429	OK
15 minute winter	SW.MH.005	14	37.565	0.096	2.2	0.0195	OK
15 minute summer	RE	1	38.090	0.000	0.0	0.0000	OK
15 minute winter	SW.MH.006	15	37.569	0.184	5.7	0.0374	SURCHARGED
15 minute winter	SW.MH.007	15	37.569	0.869	5.6	0.9832	SURCHARGED
15 minute winter	PROP CONNECTION 1	11	36.659	0.159	48.7	0.0000	OK
15 minute winter	OUTFALL 2	11	36.590	0.147	49.1	0.0000	OK
15 minute winter	SW.MH.008	13	37.557	0.173	3.6	0.0351	SURCHARGED
15 minute winter	SW.MH.009	13	37.553	0.274	2.8	0.3098	SURCHARGED
15 minute summer	PROP CONNECTION 2	1	37.060	0.000	2.0	0.0000	OK

US Node	Link	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
EXSW.MH.001	1.000	9.2	0.680	0.056	0.1835	
SW.MH.001	1.001	21.1	1.160	0.185	0.0605	
SW.MH.002	1.002	21.0	1.278	0.137	0.1172	
SW.MH.003	1.003	20.9	1.243	0.131	0.0580	
SW.MH.004	1.004	32.1	1.241	0.180	0.5648	
EXSW.MH.002	1.005	47.1	1.288	0.474	0.7777	
SW.MH.005	2.000	1.4	0.295	0.077	0.1240	
RE	3.000	0.0	0.000	0.000	0.0000	
SW.MH.006	2.001	5.6	0.840	0.298	0.0332	
SW.MH.007	Hydro-Brake®	1.8				
PROP CONNECTION 1	1.006	49.1	1.362	0.490	0.2541	25.0
SW.MH.008	4.000	3.1	0.771	0.231	0.0165	
SW.MH.009	Hydro-Brake®	2.0				1.6

E.2 Foul Water Network



Design Settings

Frequency of use (kDU)	0.70	Additional Flow (%)	0	Preferred Cover Depth (m)	0.900
Flow per dwelling per day (l/day)	0	Minimum Velocity (m/s)	0.75	Include Intermediate Ground	✓
Domestic Flow (l/s/ha)	0.0	Connection Type	Level Soffits		
Industrial Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.500		

Nodes

Name	Units	Cover Level (m)	Diameter (mm)	Width (mm)
EXFW.MH.003	54.3	38.640	600	600
FW.MH.001	20.5	38.858	450	450
EXFW.MH.001		39.078	450	
EXFW.MH.002		38.888	450	
EXFW.MH.004		38.580	750	
EX.MH.5001		37.820		

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	EXFW.MH.003	EXFW.MH.004	27.089	1.500	37.210	36.510	0.700	38.7	100
2.000	FW.MH.001	EXFW.MH.001	8.953	1.500	38.058	37.490	0.568	15.8	100
2.001	EXFW.MH.001	EXFW.MH.002	6.316	1.500	37.490	37.330	0.160	39.5	100
2.002	EXFW.MH.002	EXFW.MH.004	3.376	1.500	37.330	36.990	0.340	9.9	100
1.001	EXFW.MH.004	EX.MH.5001	13.662	1.500	35.210	35.120	0.090	151.8	150

Name	US Node	DS Node	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	EXFW.MH.003	EXFW.MH.004	0.837	1.072	8.4	5.2	1.330	1.970	57	1.128
2.000	FW.MH.001	EXFW.MH.001	0.984	1.682	13.2	3.2	0.700	1.488	33	1.370
2.001	EXFW.MH.001	EXFW.MH.002	0.725	1.061	8.3	3.2	1.488	1.458	43	0.985
2.002	EXFW.MH.002	EXFW.MH.004	1.174	2.121	16.7	3.2	1.458	1.490	30	1.634
1.001	EXFW.MH.004	EX.MH.5001	0.517	0.710	12.5	6.1	3.220	2.550	74	0.704

Pipeline Schedule

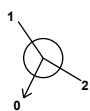
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	27.089	38.7	100	Existing SW	38.640	37.210	1.330	38.580	36.510	1.970
2.000	8.953	15.8	100	Existing SW	38.858	38.058	0.700	39.078	37.490	1.488
2.001	6.316	39.5	100	Existing SW	39.078	37.490	1.488	38.888	37.330	1.458
2.002	3.376	9.9	100	Existing SW	38.888	37.330	1.458	38.580	36.990	1.490
1.001	13.662	151.8	150	Existing SW	38.580	35.210	3.220	37.820	35.120	2.550

Link	US Node	Dia (mm)	Width (mm)	Node Type	DS Node	Dia (mm)	Node Type
1.000	EXFW.MH.003	600	600	Manhole	EXFW.MH.004	750	Manhole
2.000	FW.MH.001	450	450	Manhole	EXFW.MH.001	450	Manhole
2.001	EXFW.MH.001	450		Manhole	EXFW.MH.002	450	Manhole
2.002	EXFW.MH.002	450		Manhole	EXFW.MH.004	750	Manhole
1.001	EXFW.MH.004	750		Manhole	EX.MH.5001		Junction

Manhole Schedule

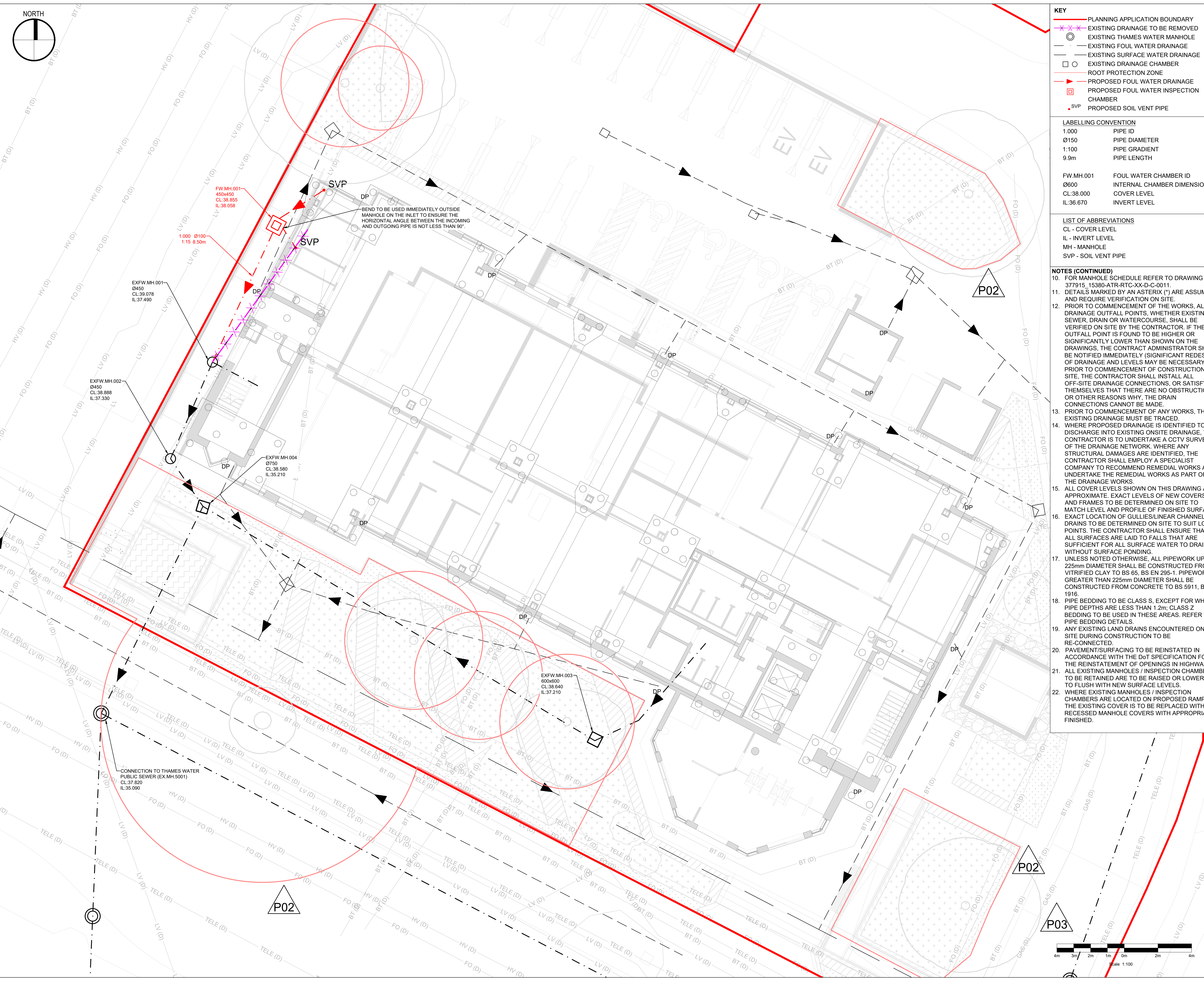
Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
EXFW.MH.003	38.640	1.430	600	600				
					0	1.000	37.210	100
FW.MH.001	38.858	0.800	450	450				
					0	2.000	38.058	100
EXFW.MH.001	39.078	1.588	450			1	2.000	37.490
					0	2.001	37.490	100

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
EXFW.MH.002	38.888	1.558	450			1	2.001	37.330	100
					0	2.002	37.330	100	
EXFW.MH.004	38.580	3.370	750			1	2.002	36.990	100
					2	1.000	36.510	100	
					0	1.001	35.210	150	
EX.MH.5001	37.820	2.700				1	1.001	35.120	150

Appendix F. Proposed Foul Water Drainage Layout





KEY

- PLANNING APPLICATION BOUNDARY
- EXISTING DRAINAGE TO BE REMOVED
- EXISTING THAMES WATER MANHOLE
- EXISTING FOUL WATER DRAINAGE
- EXISTING SURFACE WATER DRAINAGE
- EXISTING DRAINAGE CHAMBER
- ROOT PROTECTION ZONE
- PROPOSED FOUL WATER DRAINAGE
- PROPOSED FOUL WATER INSPECTION CHAMBER
- SVP
- PROPOSED SOIL VENT PIPE

LABELLING CONVENTION

1.000	PIPE ID
Ø150	PIPE DIAMETER
1:100	PIPE GRADIENT
9.9m	PIPE LENGTH

FW.MH.001	FOUL WATER CHAMBER ID
Ø600	INTERNAL CHAMBER DIMENSIONS
CL:38.000	COVER LEVEL
IL:36.670	INVERT LEVEL

LIST OF ABBREVIATIONS

CL - COVER LEVEL
IL - INVERT LEVEL
MH - MANHOLE
SVP - SOIL VENT PIPE

NOTES (CONTINUED)

- FOR MANHOLE SCHEDULE REFER TO DRAWING 377915_15380-ATR-RTC-XX-D-C-0011.
- DETAILS MARKED BY AN ASTERIX (*) ARE ASSUMED AND REQUIRE VERIFICATION ON SITE.
- PRIOR TO COMMENCEMENT OF THE WORKS, ALL DRAINAGE OUTFALL POINTS, WHETHER EXISTING SEWER, DRAIN OR WATERCOURSE, SHALL BE VERIFIED ON SITE BY THE CONTRACTOR. IF THE OUTFALL POINT IS FOUND TO BE HIGHER OR SIGNIFICANTLY LOWER THAN SHOWN ON THE DRAWINGS, THE CONTRACT ADMINISTRATOR SHALL BE NOTIFIED IMMEDIATELY (SIGNIFICANT REDESIGN OF DRAINAGE AND LEVELS MAY BE NECESSARY). PRIOR TO COMMENCEMENT OF CONSTRUCTION ON SITE, THE CONTRACTOR SHALL INSTALL ALL OFF-SITE DRAINAGE CONNECTIONS, OR SATISFY THEMSELVES THAT THERE ARE NO OBSTRUCTIONS, OR OTHER REASONS WHY, THE DRAIN CONNECTIONS CANNOT BE MADE.
- PRIOR TO COMMENCEMENT OF ANY WORKS, THE EXISTING DRAINAGE MUST BE TRACED.
- WHERE PROPOSED DRAINAGE IS IDENTIFIED TO DISCHARGE INTO EXISTING ONSITE DRAINAGE, THE CONTRACTOR IS TO UNDERTAKE A CCTV SURVEY OF THE DRAINAGE NETWORK. WHERE ANY STRUCTURAL DAMAGES ARE IDENTIFIED, THE CONTRACTOR SHALL EMPLOY A SPECIALIST COMPANY TO RECOMMEND REMEDIAL WORKS AND UNDERTAKE THE REMEDIAL WORKS AS PART OF THE DRAINAGE WORKS.
- ALL COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE. EXACT LEVELS OF NEW COVERS AND FRAMES TO BE DETERMINED ON SITE TO MATCH LEVEL AND PROFILE OF FINISHED SURFACE.
- EXACT LOCATION OF GULLIES/LINEAR CHANNEL DRAINS TO BE DETERMINED ON SITE TO SUIT LOW POINTS. THE CONTRACTOR SHALL ENSURE THAT ALL SURFACES ARE LAID TO FALLS THAT ARE SUFFICIENT FOR ALL SURFACE WATER TO DRAIN WITHOUT SURFACE PONDING.
- UNLESS NOTED OTHERWISE, ALL PIPEWORK UP TO 225mm DIAMETER SHALL BE CONSTRUCTED FROM VITRIFIED CLAY TO BS 65, BS EN 295-1. PIPEWORK GREATER THAN 225mm DIAMETER SHALL BE CONSTRUCTED FROM CONCRETE TO BS 5911, BS EN 1916.
- PIPE BEDDING TO BE CLASS S, EXCEPT FOR WHERE PIPE DEPTHS ARE LESS THAN 1.2m; CLASS Z BEDDING TO BE USED IN THESE AREAS. REFER TO PIPE BEDDING DETAILS.
- ANY EXISTING LAND DRAINS ENCOUNTERED ON SITE DURING CONSTRUCTION TO BE RE-CONNECTED.
- PAVEMENT SURFACING TO BE REINSTATED IN ACCORDANCE WITH THE DOT SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS.
- ALL EXISTING MANHOLES / INSPECTION CHAMBERS TO BE RETAINED ARE TO BE RAISED OR LOWERED TO FLUSH WITH NEW SURFACE LEVELS.
- WHERE EXISTING MANHOLES / INSPECTION CHAMBERS ARE LOCATED ON PROPOSED RAMPS, THE EXISTING COVER IS TO BE REPLACED WITH RECESSED MANHOLE COVERS WITH APPROPRIATE FINISHED.

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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

BURIED SERVICES INCLUDING POSSIBILITY OF UNCHARTED SERVICES - REFER TO SERVICE PLANS AND USE CABLE AVOID TOOLS PRIOR TO DIGGING. POTENTIAL OF BURIED CONTAMINATION INCLUDED ASBESTOS. LOW RISK OF UNEXPLODED ORDNANCE - KEEP WATCH DURING GROUND WORKS. IF IN DOUBT, STOP WORK AND ASK. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

MAINTENANCE/CLEANING

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

DECOMMISSIONING/DEMOLITION

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

NOTES

- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL PROJECT DRAWINGS AND SPECIFICATIONS.
- ALL CO-ORDINATES ARE IN METRES (m) UNLESS OTHERWISE STATED.
- ALL DRAINAGE WORKS TO BE DESIGNED IN ACCORDANCE WITH MOJ STANDARDS STDZ/DG/053 AND STDX/SPEC/010.
- EXISTING DRAINAGE INFORMATION HAS BEEN TAKEN FROM THE FOLLOWING SOURCES:
 - THAMES WATER PUBLIC SEWER RECORDS "ASSET LOCATION SEARCH SEWER MAP" (ALS/ALS STANDARD/2023_4773851)
 - CCTV SURVEY MARKUP DRAWING "2220566 - SOVEREIGN HOUSE, VASTERN ROAD, READING - CCTV SURVEY EWP CIVILS MARKUP"
 - VISION SURVEY DRAWING "SOVEREIGN HOUSE CCTV DRAINAGE SURVEY" (VIS-10300-DWG-001-V1.0)
- THE POSITION OF BURIED SERVICES SHOWN ON THE PLAN ARE AS DETERMINED FROM VISION SURVEY DRAWING "SOVEREIGN HOUSE CCTV DRAINAGE SURVEY" (DOC REF: VIS-10300-DWG-001-V1.0).
- ALL UTILITY APPARATUS MUST BE VERIFIED INOPERATIVE BEFORE CARRYING OUT WORK OR EXCAVATIONS IN THE VICINITY.
- FOR FOUNDATIONAL PLAN REFER TO STRUCTURAL DRAWING 377915_15380-ATR-RTC-00-D-S-0002.
- FOR ARCHITECTURAL SITE LAYOUT REFER TO 377915_15380-FMA-RTC-ZZ-D-A-1099.
- FOR DRAINAGE STANDARD DETAILS SEE DRAWING 377915_15380-ATR-RTC-XX-D-C-0021 TO 0023.

P03	ATR	MOJ	16/07/25	TREE LAYOUT UPDATES
P02	ATR	MOJ	20/06/25	TREE RPA UPDATES
P01	ATR	MOJ	14/03/25	RIBA STAGE 3
Rev	Issued by	Issued to	Date	Description

Key Plan

NOT APPLICABLE

Project Status

RIBA STAGE 3

Client

Ministry of Justice, 102 Petty France, London, SW1H 9AJ

Project

HMCTS READING TRIBUNALS COURT (SOVEREIGN HOUSE) REFURBISHMENT PROJECT

Project Description / Site

HMCTS READING TRIBUNAL COURT (SOVEREIGN HOUSE)

Project Address

SOVEREIGN HOUSE, VASTERN ROAD, READING, RG1 8BT

Building Type

TRIBUNAL COURT

Drawing Title

FOUL WATER DRAINAGE LAYOUT

Drawn By: KPL	Date: 24/02/2025
Checked By: GSS	Date: 07/03/2025
Approved By: AS	Date: 13/03/2025

Drawing Number

377915_15380-ATR-RTC-XX-D-C-0002

Sheet No.	Scale	Orig. Sheet Size	Rev.
1 of 1	1:100	@ A1	P02

Data Security Classification

OFFICIAL

Suitability

S4(3)

Appendix G. Proposed Drainage Manhole Schedule



PROPOSED SURFACE WATER DRAINAGE NETWORK MANHOLE SCHEDULE									
CHAMBER REFERENCE	EASTING (m)	NORTHING (m)	TYPE	INTERNAL DIMENSIONS (mm)	COVER LEVEL (m)	CHAMBER INVERT LEVEL (m)	DEPTH (m)	MIN COVER DIMENSION AND LOAD CLASS	NOTES
SW.MH.001	471594.383	174070.601	TYPE B MANHOLE	1200	38.580	37.465	1.115	600mm x 600mm C250	
SW.MH.002	471597.690	174070.771	TYPE B MANHOLE	1200	38.550	37.430	1.120	600mm x 600mm D400	
SW.MH.003	471604.004	174067.481	TYPE B MANHOLE	1200	38.480	37.295	1.185	600mm x 600mm D400	CATCHPIT
SW.MH.004	471605.739	174064.501	TYPE B MANHOLE	1200	38.510	37.224	1.286	600mm x 600mm C250	
SW.MH.005	471615.808	174029.680	TYPE D INSPECTION CHAMBER	450x450	38.455	37.469	0.986	450mm x 450mm C250	BRICKWORK CHAMBER
SW.MH.006	471619.713	174037.121	TYPE D INSPECTION CHAMBER	450x450	38.575	37.385	1.190	450mm x 450mm C250	BRICKWORK CHAMBER. CATCHPIT
SW.MH.007	471618.039	174037.995	TYPE B MANHOLE	1200	38.620	36.700	1.920	600mm x 600mm C250	FLOW CONTROL CHAMBER DISCHARGE RESTRICTED TO 2 l/s VIA VORTEX FLOW CONTROL
SW.MH.008	471576.018	174050.423	TYPE D INSPECTION CHAMBER	450x450	38.530	37.384	1.146	450mm x 450mm C250	BRICKWORK CHAMBER. RECESSED ACCESS COVER. CATCHPIT
SW.MH.009	471577.887	174049.451	TYPE B MANHOLE	1200	38.355	37.279	1.076	600mm x 600mm C250	FLOW CONTROL CHAMBER DISCHARGE RESTRICTED TO 2 l/s VIA VORTEX FLOW CONTROL

PROPOSED FOUL WATER DRAINAGE NETWORK MANHOLE SCHEDULE									
CHAMBER REFERENCE	EASTING (m)	NORTHING (m)	TYPE	INTERNAL DIAMETER (mm)	COVER LEVEL (m)	CHAMBER INVERT LEVEL (m)	DEPTH (m)	COVER DIMENSION AND LOAD	NOTES
FW.MH.001	471579.530	174071.151	TYPE D INSPECTION CHAMBER	450x450	38.858	38.058	0.800	450mm x 450mm C250	BRICKWORK CHAMBER

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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

BURIED SERVICES INCLUDING POSSIBILITY OF UNCHARTED SERVICES - REFER TO SERVICE PLANS AND USE CABLE AVOID TOOLS PRIOR TO DIGGING. POTENTIAL OF BURIED CONTAMINATION INCLUDED ASBESTOS. LOW RISK OF UNEXPLODED ORDNANCE - KEEP WATCH DURING GROUND WORKS. IF IN DOUBT, STOP WORK AND ASK. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

MAINTENANCE/CLEANING

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

DECOMMISSIONING/DEMOLITION

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

- NOTES**
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL PROJECT DRAWINGS AND SPECIFICATIONS.
 - ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES TO ORDINANCE SURVEY DATUM UNLESS STATED OTHERWISE
 - EXISTING DRAINAGE INFORMATION HAS BEEN TAKEN FROM THE FOLLOWING SOURCES:
 - THAMES WATER PUBLIC SEWER RECORDS "ASSET LOCATION SEARCH SEWER MAP" (ALS/ALS STANDARD/2023_4773851)
 - CCTV SURVEY MARKUP DRAWING "2220566 - SOVEREIGN HOUSE, VASTERN ROAD, READING - CCTV SURVEY EWP CIVILS MARKUP"
 - VISION SURVEY DRAWING 'SOVEREIGN HOUSE CCTV DRAINAGE SURVEY' (VIS-10300-DWG-001-V1.0)
 - LOCATIONS OF EXISTING PIPEWORK AND CHAMBERS MAY NOT BE ACCURATE AND WILL NEED TO BE VERIFIED.
 - ALL DRAINAGE WORKS TO BE DESIGNED IN ACCORDANCE WITH MOJ STANDARDS STD/Z/DG/053 AND STD/X/SPEC/010.
 - FOR DRAINAGE LAYOUTS REFER TO DRAWINGS 377915_15380-ATR-RTC-XX-D-C-0001 TO 0003.
 - FOR DRAINAGE STANDARD DETAILS SEE DRAWING 377915_15380-ATR-RTC-XX-D-C-0021 TO 0023.
 - COVERS TO BE DUCTILE IRON, ONE-PIECE UNITS. COVERS SHALL NOT BE HINGED.
 - COVERS OF EXISTING CHAMBERS TO BE RAISED TO MATCH PROPOSED SURFACE LEVELS.

P01	ATR	MOJ	14/03/25	RIBA STAGE 3
Rev	Issued by	Issued to	Date	Description

Key Plan

NOT APPLICABLE

Project Status

RIBA STAGE 3

Client	Project
 Ministry of Justice	HMCTS READING TRIBUNALS COURT (SOVEREIGN HOUSE) REFURBISHMENT PROJECT

Ministry of Justice, 102 Petty France, London, SW1H 9AJ

Project Description / Site

HMCTS READING TRIBUNAL COURT (SOVEREIGN HOUSE)

Project Address

SOVEREIGN HOUSE, VASTERN ROAD, READING, RG1 8BT

Building Type

TRIBUNAL COURT

Drawing Title

PROPOSED DRAINAGE MANHOLE SCHEDULES

	Drawn By: KPL	Date: 28/02/2025
	Checked By: GSS	Date: 05/03/2025
	Approved By: AS	Date: 14/03/2025

Drawing Number

377915_15380-ATR-RTC-XX-D-C-0011

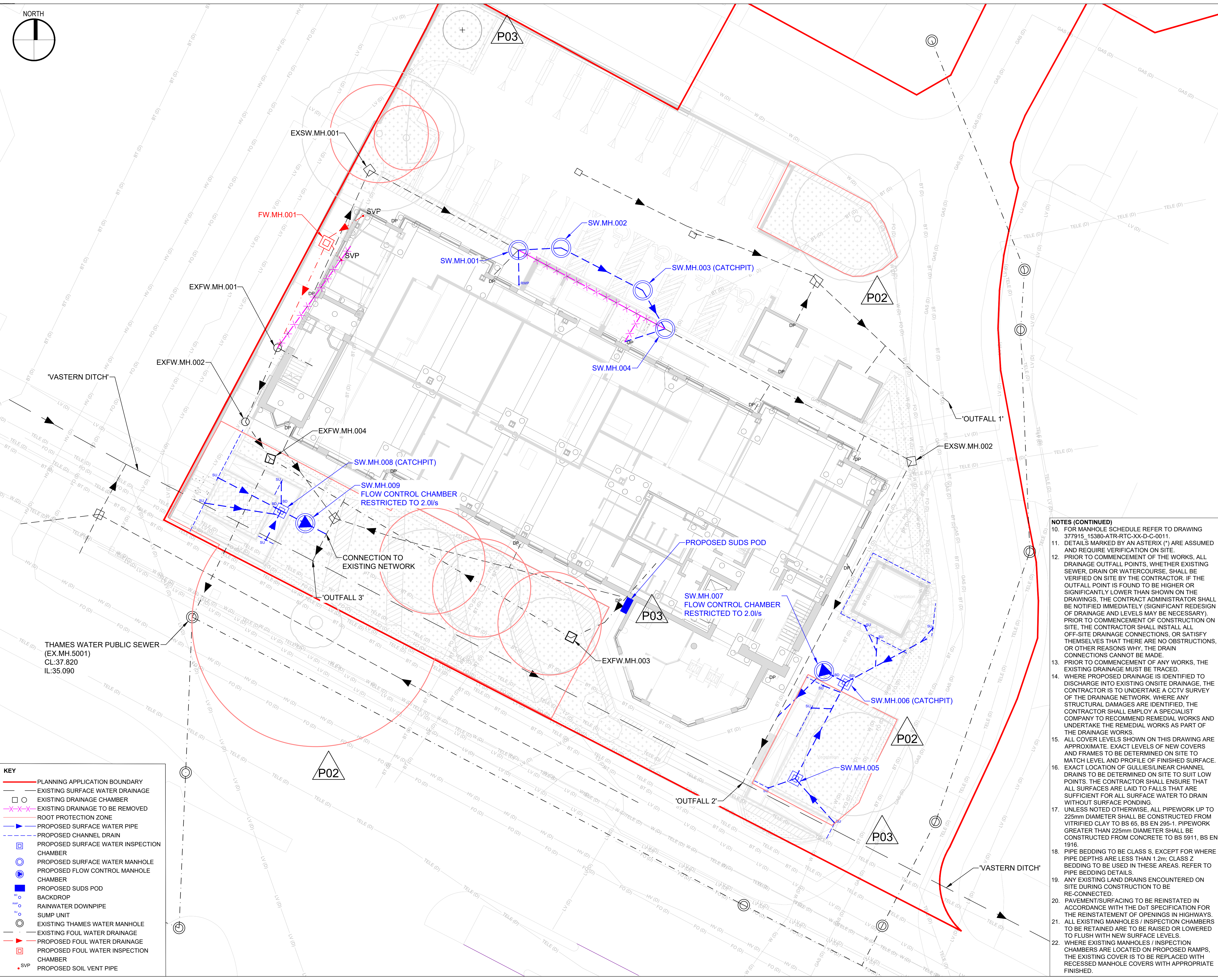
Sheet No.	Scale	Orig. Sheet Size	Rev.
1 of 1	NA	@ A1	P01

Data Security Classification	Suitability
OFFICIAL	S4(3)

File Path:

Appendix H. Proposed Combined Drainage Layout





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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

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CONSTRUCTION

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MAINTENANCE/CLEANING

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

DECOMMISSIONING/DEMOLITION

NO SIGNIFICANT RISK IDENTIFIED. FOR ALL PROJECT AND BUILDING RISKS REFER TO PROJECT & DESIGN RISK REGISTER.

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

NOTES

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL PROJECT DRAWINGS AND SPECIFICATIONS.

2. ALL CO-ORDINATES ARE IN METRES (m) UNLESS OTHERWISE STATED.

3. ALL DRAINAGE WORKS TO BE DESIGNED IN ACCORDANCE WITH MOJ STANDARDS STD/Z/DG/053 AND STD/X/SPEC/010.

4. EXISTING DRAINAGE INFORMATION HAS BEEN TAKEN FROM THE FOLLOWING SOURCES:

4.1. THAMES WATER PUBLIC SEWER RECORDS "ASSET LOCATION SEARCH SEWER MAP" (ALS/SALS STANDARD/2023_4773851)

4.2. CCTV SURVEY MARKUP DRAWING "2220566 - SOVEREIGN HOUSE, VASTERN ROAD, READING - CCTV SURVEY EWP CIVILS MARKUP"

4.3. VISION SURVEY DRAWING "SOVEREIGN HOUSE CCTV DRAINAGE SURVEY" (VIS-10300-DWG-001-V1.0)

5. THE POSITION OF BURIED SERVICES SHOWN ON THE PLAN ARE AS DETERMINED FROM VISION SURVEY DRAWING "SOVEREIGN HOUSE CCTV DRAINAGE SURVEY" (DOC REF: VIS-10300-DWG-001-V1.0).

6. ALL UTILITY APPARATUS MUST BE VERIFIED INOPERATIVE BEFORE CARRYING OUT WORK OR EXCAVATIONS IN THE VICINITY.

7. FOR FOUNDATIONAL PLAN REFER TO STRUCTURAL DRAWING 377915_15380-ATR-RTC-00-D-S-0002.

8. FOR ARCHITECTURAL SITE LAYOUT REFER TO 377915_15380-FMA-RTC-ZZ-D-A-1099.

9. FOR DRAINAGE STANDARD DETAILS SEE DRAWING 377915_15380-ATR-RTC-XX-D-C-0021 TO 0023.

P03

ATR

MOJ

16/07/25

TREE LAYOUT UPDATES

P02

ATR

MOJ

20/06/25

TREE RPA UPDATES

P01

ATR

MOJ

14/03/25

RIBA STAGE 3

Rev

Issued by

Issued to

Date

Description

Key Plan

NOT APPLICABLE

Project Status

RIBA STAGE 3

Client

Ministry of Justice

Ministry of Justice, 102 Petty France, London, SW1H 9AJ

Project

HMCTS READING TRIBUNALS COURT (SOVEREIGN HOUSE) REFURBISHMENT PROJECT

Project Description / Site

HMCTS READING TRIBUNAL COURT (SOVEREIGN HOUSE)

Project Address

SOVEREIGN HOUSE, VASTERN ROAD, READING, RG1 8BT

Building Type

TRIBUNAL COURT

Drawing Title

COMBINED DRAINAGE LAYOUT

Drafter Logo

AtkinsRéalis

Drawn By: KPL

Date: 24/02/2025

Checked By: GSS

Date: 24/02/2025

Approved By: AS

Date: 13/03/2025

Drawing Number

377915_15380-ATR-RTC-XX-D-C-0003

Sheet No.

1 of 1

Scale

NTS

Orig. Sheet Size

@ A1

Rev.

P02

Data Security Classification

OFFICIAL

Suitability

S4(3)

File Path:

Appendix I. Thames Water Correspondence





Ka Po Leung

AtkinsRéalis
Nova North
11 Bressenden Place
London SW1E 5BY



25 October 2024

Pre-planning enquiry: Confirmation of sufficient capacity

Site Address: Sovereign House, Vastern Road, Reading, RG1 8BT

Dear Ka Po,

Thank you for providing information on your development to convert office into court, including an increase in sanitation facilities, with gross internal floor area of approximately 2655 m².

Foul water to discharge via gravity flow into manhole ref. SU7174**5001** on a 300mm foul sewer.

We have completed the assessment of the foul water flows based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

Surface water assessment of capacity has not been undertaken under this application.

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you

have followed the sequential approach to the disposal of surface water and considered all practical means.

The disposal hierarchy being:

- 1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
- 2) rainwater infiltration to ground at or close to source
- 3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
- 4) rainwater discharge direct to a watercourse (unless not appropriate)
- 5) controlled rainwater discharge to a surface water sewer or drain
- 6) controlled rainwater discharge to a combined sewer.

Where connection to the public sewerage network is required to manage surface water flows, we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

Where disposal of surface water is other than to a public sewer, then the applicant shall ensure that approval for the discharge has been obtained from the appropriate authorities.

Please see our [FAQ's leaflet](#) for additional information.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you have any further questions, please contact us.

Yours sincerely,

Jiahang Yu

Adoptions & Pre-Planning Engineer
Developer Services
Thames Water Utilities Limited

AtkinsRéalis



Ka Po Leung
AtkinsRéalis UK Limited
Nova North
11 Bressenden Place
Westminster
London
SW1E 5BY

Tel: +44 (0)20 7121 2000
Fax: +44 (0)20 7121 2111

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