FLOOD RISK ASSESSMENT & SuDS STATEMENT v03

Project	1 & 2 Longwalk Road, Stockley Park, Uxbridge
Client	Royal UK Property Holdings LLP
Our ref.	P25124-HWA-ZZ-XX-RP-C-5001
Date	August 2026
Prepared by	 Michelly Ferreira Santana BEng (Hons) MCIWEM Senior Engineer michelly.santana@hwaconsulting.co.uk For and on behalf of Howard Ward Associates Ltd
Checked by	 Andy Bowler BEng (Hons) MCIWEM Director andy.bowler@hwaconsulting.co.uk For and on behalf of Howard Ward Associates Ltd

HOWARD WARD ASSOCIATES Ltd
BREWERY HOUSE WALKERS YARD NOTTNGHAM NG12 2FF
T 0115 9332838
www.hwaconsulting.co.uk

CERTIFIED BY AFNOR UK LIMITED

Version	Issue Date	Reason	By
v01	28/08/2026	DRAFT ISSUE	MS
v02	11/09/2026	DRAINAGE STRATEGY DRAWING REVISED	MS
v03	08/10/2026	CLIENT NAME UPDATED	MS

1 & 2 LONGWALK ROAD, STOCKLEY PARK, UXBRIDGE
FLOOD RISK ASSESSMENT & SuDS STATEMENT

1. INTRODUCTION

1.1. Howard Ward Associates Ltd has been appointed to provide civil and structural engineering services in relation to a planning application for the Stockley Park, Uxbridge project. The proposed development involves the demolition of the current office buildings and the redevelopment of Plots 1 and 2 with two new commercial warehouse units. Each of the proposed units will include first-floor office accommodation, internal floorspace, service yards, and new car parking areas.

1.2. This report has been prepared with reference to the following resources:

- British Geological website – Geology of Britain viewer
- Preliminary (Geo-Environmental) Risk Assessment (PRA) ref EGE-25-06-13-01 prepared by Evolve Geo-Environmental dated 8th July 2025.
- Topographical Survey ref: 250702-SP-2D-PAS128 prepared by ADE Mapping dated 28/07/2025.
- General Arrangement Plan ref: 25025-EXA-ZZ-00-DR-L-00101 prepared by Exterior Architecture dated 18/09/2026.
- CIRIA C753 Report The SuDS Manual 2015
- Environment Agency Flood Map for Planning website
- GOV.UK Long term flood risk information website
- The London Plan 2021
- London Borough Strategic Flood Risk Assessment (SFRA)
- The London Borough of Hillingdon Local Flood Risk Management Strategy
- NPPF by the Department for Communities and Local Government

2. EXISTING SITE

2.1. The existing site comprises two office buildings located at 2 Longwalk Road, together with an access road and car parking. The total site area is approximately 2.53 hectares, with ground levels ranging from about 36.00 m AOD to 34.30 m AOD, falling from west to east. See Appendix E for topographical Survey.

2.2. To the north, the site is bounded by Bennetsfield Road, with Stockley Park Golf Club beyond. To the east the Longwalk Road and ponds. To the south and east is the wider Stockley Park Trading Estate, and to the west the site is also bordered by the wider Stockley Park Trading Estate.

2.3. Site Location Plan:



Imagery ©2025 CNES / Airbus, Maxar Technologies, Map data ©2025

3. PROPOSED WORKS

3.1. The proposed development involves the demolition of the current office buildings and the redevelopment of Plots 1 and 2 with two new commercial warehouse units. Each of the proposed units will include first-floor office accommodation, internal floorspace, service yards, and new car parking areas. Additionally, the site is surrounded by open landscaped amenity space, which will be retained and redesigned in its current location. Figure 3.1 below shows the proposed site layout.



Figure 3.1 General Arrangement Plan ref: 25025-EXA-ZZ-00-DR-L-00101 prepared by Exterior Architecture dated 18/09/2026.

4. GROUND CONDITIONS

4.1. A Preliminary Geo-Environmental Risk Assessment (PRA) was prepared by Evolve Geo-Environmental to evaluate initial information and identify any potential geotechnical constraints associated with the site. All information regarding the site's ground conditions was based on the report, in conjunction with data from the British Geological Survey (BGS) and the Defra MAGIC Map. A summary of relevant geological information to the site is summarised in Table 4.1:

TABLE 4.1	
FORMATION	**DESCRIPTION**
Artificial Ground (Made Ground)	Site is mapped as being located within an area of potentially infilled land. Deep Made Ground cannot be discounted
Bedrock Geology	London Clay Formation-Clay, silt and sand
Superficial Geology	Lynch Hill Gravel Member-Sand and gravel
Source Protection Zone	None
Aquifer Designation - Bedrock	Unproductive
Aquifer Designation – Superficial	Principal
Soilscape	6
Groundwater Vulnerability	Medium-High

4.2. The subsoils in the area are underlain by bedrock belonging to the London Clay Formation comprising clay, silt and sand with superficial deposits classified as Lynch Hill Gravel Member, comprising Sand and gravel. A sample trial hole log (Ref No. TQ08SE208) is included in Appendix F of this report and indicates the upper layers comprise made ground of sand and clay fill to about 1.75 m below ground level (BGL). Beneath this, presence of gravel and coarse sand with pockets of clay extend to approximately 7.20 m. Stiff fissured blue-grey clay was recorded, consistent with the London Clay Formation, to the maximum depth of 10.00 m. The borehole shows that groundwater was found between 1.78 and 1.85m BGL. Based on these ground conditions the site is likely underlain by Made Ground, it is anticipated that the use of a soakaway system is unlikely to be feasible at this location.

5. FLOOD ZONES

5.1. The Environment Agency Flood Map for Planning website indicates that the site falls within Flood Zone 1 and is therefore suitable for all kinds of development.



Figure 5.1 Environment Agency Flood Map for Planning website

5.2. Table 5.2 below defines flood zones based upon event return probability and is used to steer development and classify land for development (Table 1 of the Planning Practice Guidance).

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
None 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

5.3. Table 5.3 below: Flood Risk Vulnerability Classification. This table defines development type by associated vulnerability to flooding (Annex F of the National Planning Policy Framework).

Development Type	Vulnerability Classification
Essential Infrastructure	Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; and water treatment works that need to remain operational in times of flood. Wind turbines. Solar farms
Highly Vulnerable	Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. Emergency dispersal points. Basement dwellings. Caravans, mobile homes and park homes intended for permanent residential use. Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)
More Vulnerable	Hospitals. Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. Non–residential uses for health services, nurseries and educational establishments. Landfill* and sites used for waste management facilities for hazardous waste. Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable	Police, ambulance and fire stations which are not required to be operational during flooding. Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure. Land and buildings used for agriculture and forestry. Waste treatment (except landfill* and hazardous waste facilities). Minerals working and processing (except for sand and gravel working). Water treatment works which do not need to remain operational during times of flood. Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place. Car parks.
Water Compatible Development	Flood control infrastructure. Water transmission infrastructure and pumping stations. Sewage transmission infrastructure and pumping stations. Sand and gravel working. Docks, marinas and wharves. Navigation facilities. Ministry of Defence installations. Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. Water-based recreation (excluding sleeping accommodation). Lifeguard and coastguard stations. Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan

5.4. Table 5.4 below: Flood Risk Vulnerability and flood zone 'compatibility' outlines the circumstances in which development may or may not be appropriate and when an Exception Test will be required (Table 2 of the Flood risk and coastal change guidance).

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	**Highly Vulnerable**	**More Vulnerable**	**Less Vulnerable**	**Water Compatible**
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required	✓	✓	✓
Zone 3a	Exception Test Required	×	Exception Test Required	✓	✓
Zone3b	Exception Test Required	×	×	×	×

Key:

✓ Development is appropriate.

× Development should not be permitted.

5.5. In terms of the Flood Risk Vulnerability Classification outlined in Annex 3 of the National Planning Policy Framework, the proposed use of the site is classified as 'Less vulnerable.' Additionally, the flood map for planning indicates that the site falls within Flood Zone 1, making it suitable for the proposed development.

6. FLOOD RISK ASSESSMENT

6.1. In accordance with the NPPF and local planning guidance this strategy considers the flooding risk posed to the development from a range of sources. This section of the report details the investigation of flood risk from all potential sources.

6.2. The flood risks that may be posed to any site are summarised overleaf in Table 6.2. The degree of risk posed to the site is indicated in the table.

TABLE 6.2		
FLOOD TYPE	**DEGREE OF RISK**	**SOURCE OF RISK**
RIVERS	Very Low	The site is in FZ1 and therefore not influenced by fluvial flooding.
TIDAL/COASTAL	None	The site is identified at not being at risk of tidal flooding
CANAL	low	Grand union canal is located to the south of the development at approximately 300m.
GROUNDWATER	Medium	West London Strategic Flood Risk Assessment (SFRA) indicates that the site is located within an area classified as having 50% to less than 75% susceptibility to groundwater flooding.
OVERLAND FLOW	Low to medium	flood risk assessment indicates that the site is at low to medium risk.
SEWERS	none	There are no Thames Water sewers recorded on the site
RESERVOIRS	Unlikely	Flooding from reservoirs is unlikely in this area
IMPACT OF DEVELOPMENT	NONE	The proposed change of use will cause no adverse implications from the current property. The proposed development will provide a significant betterment to current surface water discharge rates therefore reducing flood risk

RIVERS

6.3. The flood risk from rivers or the sea is a VERY LOW risk means that each year this area has a chance of flooding of less than 0.1% each year. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail.



Figure 6.3 Flood Risk from river taken from Gov.uk Long term flood risk information website

CANAL FLOODING

6.4. The Grand Union Canal is located approximately 300 m to the south of the development. It is classified as an ordinary watercourse that flows through the Borough and interacts with the main rivers. The canal levels are regulated through a series of overflow and control structures managed by the Canal & River Trust. Water from the canal discharges via ordinary watercourses into the River Colne. In a number of historic cases, water has flowed over the towpath and into the River. The London Borough of Hillingdon Local Flood Risk Management Strategy states the following:

"The CRT manages the Grand Union Canal, which flows through Hillingdon from north to south, and also connects with the Slough Arm. The Canal contributes to the complex nature of Hillingdon waterways and flood risks. In a number of cases it is perched above the surrounding area and the maintenance of its assets, such as embankments, is critical for managing flood risk in the Borough. Also important is how the CRT operates sluices to manage water levels which overflow from the Canal into the River Colne".

"For non-critical events you can call weekdays between 8am and 6pm, Monday to Friday on 0303 040 4040 or email. In an emergency if lives or property are at risk or there is danger of serious environmental contamination please use 24 hour emergency contact number 0800 47 999 47. This includes serious injury or a fatality, a fire or explosion on a boat, a dangerously damaged lock, bridge or tunnel, a boat trapped in a dangerous situation e.g. on a weir or in a lock, serious flooding or a breech which risks lives or property or serious pollution".

GROUNDWATER FLOODING

6.5. The Long-Term Flood Risk Service website states that this location is outside of a groundwater flood alert area. However, West London Strategic Flood Risk Assessment (SFRA) indicates that the site is located within an area classified as having 50% to less than 75% susceptibility to groundwater flooding. Figure 6.5 below shows the site's red boundary is an extract from the SFRA map.



Figure 6.5 Extract from the Map of Areas at Risk of Flooding from Groundwater of the SFRA

6.6. Given the site's topography, groundwater is anticipated to occur at lower elevations. The finished floor levels (FFLs) for Unit 1 and Unit 2 are set at 35.400 m and 35.200 m respectively. As the site levels range from 36.0 m to 34.300 m AOD, the proposed FFLs will sit approximately 0.9–1.1 m above the lowest ground level. This elevation provides a reasonable margin of safety against potential groundwater emergence.

SURFACE WATER/ OVERLAND FLOW

6.7. The flood risk assessment indicates that the site is at low to medium risk. This means that part of the site has an annual flood probability of less than 0.1%, while other areas have a probability between 1% and 3.3%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding

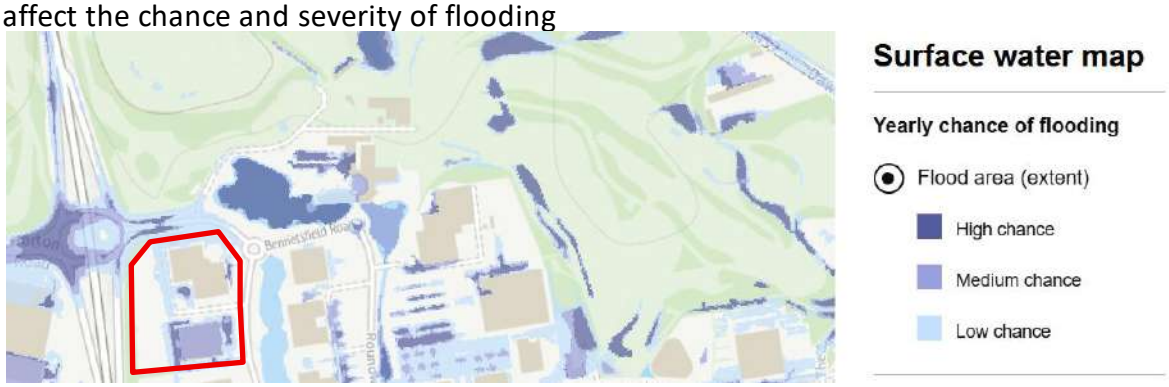


Figure 6.7 Flood Risk from Surface Water taken from Gov.uk Long term flood risk information website

RESERVOIRS

6.8. The London Borough of Hillingdon Local Flood Risk Management Strategy notes that there are several reservoirs within the Borough and in surrounding areas that could potentially affect Hillingdon. The areas at risk are identified on the Environment Agency Flood Maps for Reservoir Flooding, which indicate that flooding from reservoirs is unlikely in this location. Figure 6.8 below provides an extract of the government's long-term flood risk information.

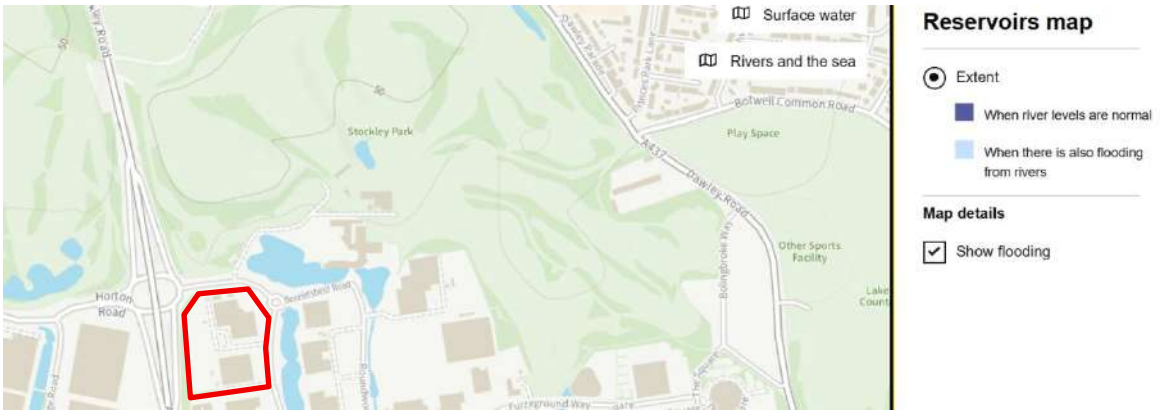


Figure 6.8 Flood Risk from reservoir taken from Gov.uk Long term flood risk information website

IMPACT OF DEVELOPMENT

6.9. The redevelopment will be constructed using SuDS features as identified in the following sections which will greatly improve the current condition.

7. EXISTING SITE DRAINAGE

PRIVATE SURFACE WATER

7.1. There are no Thames Water sewers recorded on the site. Based on investigations and available records, it is assumed that the site is drained via a private drainage system, discharging surface water into the balancing ponds located within the site. This system is understood to be managed and maintained by an estate management company. It is likely that surface water discharges freely into the balancing ponds through a petrol interceptor, similar to arrangements at other sites within the park. The balancing ponds are understood to ultimately discharge into an adopted surface water sewer or directly into the Grand Union Canal to the south of the site. See Appendix E for topographical Survey showing existing drainage system.

7.2. The existing site is a brownfield with existing drainage features that is likely to have a free discharge into the existing pond, however, In accordance with the London Plan 2021, Policy SI 13, development proposals should aim to achieve greenfield run-off rates, as closely as possible depending on site conditions. The greenfield runoff rates for the development area, identified in Table 7.2, have been calculated using the Greenfield Run-off Rate Calculator from UK SuDS.

RETURN PERIOD	DEVELOPMENT SITE AREA(ha)	FEH FLOW RATE
QBAR	2.53	7.3l/s
1 in 1 Year	2.53	6.2 l/s
1in 30 Year	2.53	16.9 l/s
1 in 100 Year	2.53	23.4 l/s

PRIVATE FOUL WATER

7.3. The foul drainage for the estate drains to a pumping station on Longwalk to the South of the development site and is then pumped into a Thames Water sewer approximately 350m NE of the site. Refer to Figure 7.3 for extract from as built foul drainage layout indicating pumping station location, and Appendix D for the As built records of the foul drainage and Thames Water asset map records, additionally Appendix E for topographical Survey showing existing drainage system.

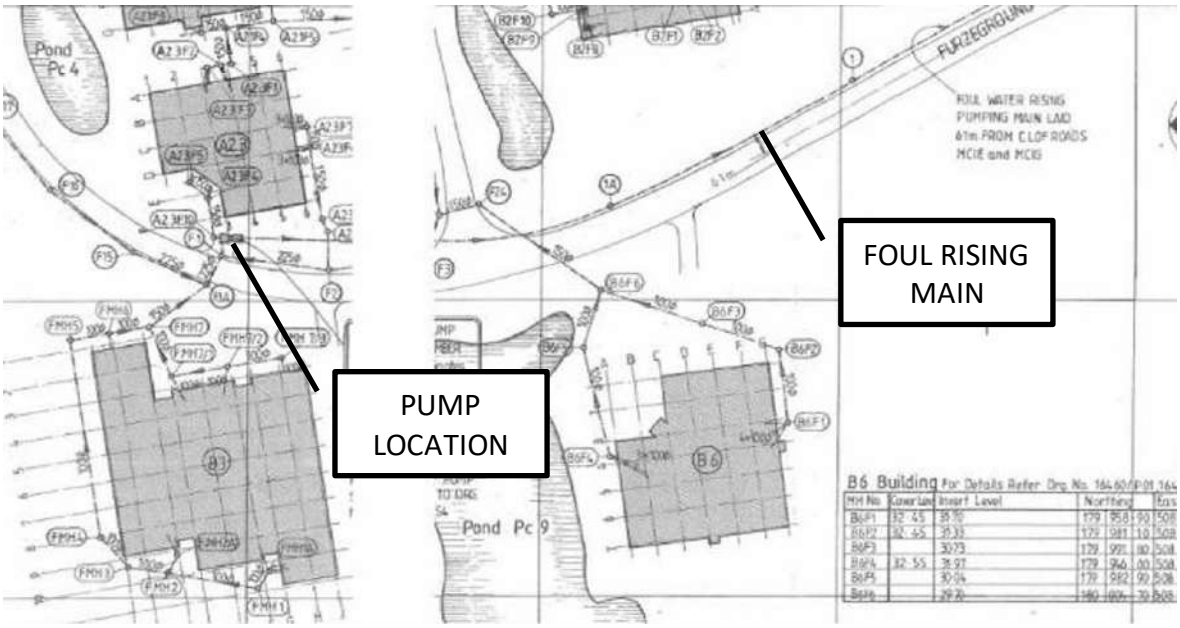


Figure 7.3 Extract from as built foul drainage layout indicating pumping station location.

8. PROPOSED DRAINAGE STRATEGY

SURFACE WATER DISCHARGE HEIRARCHY

8.1 In accordance with Building Regulations, the disposal of surface water should be prioritised in the following order*:*

a) An adequate soakaway or some other adequate infiltration system,

b) a watercourse: or where that is not reasonably practical,

c) a surface water sewer,

d) a combined sewer.

8.2 With regard to the surface water hierarchy, the use of infiltration has been discounted, based on the site's ground conditions. For more information see section 4 of this report.

8.3 It is assumed that the site is drained via a private drainage system, discharging surface water into the balancing ponds located within the site.

SURFACE WATER

8.4 It is suggested that the new property symphonic rainwater downpipes are connected into an underground gravity system compliant to Building Regulations Approved Document Part H.

8.5 The private surface water drainage system for the proposed redevelopment will be divided into two restricted systems, one serving Unit 100 and the other serving Unit 200. Each unit will be provided with two attenuation tanks connected via a 450 mm piped system, discharging via a flow control chamber. The discharge rate from the Unit 100 site will be restricted to 3.7 l/s using a flow control chamber, while the discharge rate from Unit 200 will be restricted to 3.6 l/s. Combined, the two systems will provide a total discharge rate of 7.3 l/s, in line with the greenfield runoff rate In accordance with the London Plan 2021, Policy SI 13. The design of surface water system will consider storms up to and including the critical 1 in 100-year +40% CC event for durations of 15 minutes to 24 hrs (1440 mins).

8.6 The main driveway and car parking bays are proposed to be constructed using porous construction and act as suitable treatment and conveyance prior to reaching the final discharge point.

8.7 The surface water runoff from the service yard will be treated using a SPEL ESR Bypass for Stormwater Treatment system

8.8 Refer to Appendix C for surface water hydraulic calculations, to the HWA drawing P25124-HWA-ZZ-XX-DR-C-5001 and P25124-HWA-ZZ-XX-DR-C-5002 for the surface water drainage layout, which can be seen in Appendix A of this report, and to drawing P25124-HWA-ZZ-XX-DR-C-5003 in Appendix B for the impermeable areas.

SUSTAINABLE DRAINAGE SYSTEM (SuDS)

8.9 Pollution control measures should be put in place during the detailed design, in accordance with The SuDS Manual C753, Chapter 26 - Table 26.2. This development, which encompasses both commercial and residential properties, is expected to provide pollution hazard indices as indicated in Table 10.9 below.

TABLE 8.9 – POLLUTION HAZARD INDICIES FROM THE SuDS MANUAL C753 CHAPTER 26 TABLE 26.2

LAND USE	POLLUTION HAZARD LEVEL	TOTAL SUSPENDED SOLIDS (TSS)	METALS	HYDRO-CARBONS
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 CARPARKS, LOW TRAFFIC ROADS (E.G., CUL-DE-SACS, HOME ZONES AND GENERAL ACCESS ROADS) AND NON-RESIDENTIAL CAR PARKING WITH INFREQUENT CHANGE (E.G., SCHOOLS, OFFICES) I.E., < 300 TRAFFIC MOVEMENTS/ DAY	LOW	0.5	0.4	0.4
COMMERCIAL YARD AND DELIVERY AREAS, NON-RESIDENTIAL CAR PARKING WITH FREQUENT CHANGE (E.G., HOSPITALS, RETAIL), ALL ROADS EXCEPT LOW TRAFFIC ROADS AND TRUNK ROADS/ MOTORWAYS	MEDIUM	0.7	0.6	0.7

8.10 The chosen suitable SuDS components will provide the following mitigation indices for discharges to surface waters, as provided within Table 26.3 of The SuDS Manual C753 and summarised within Table 10.10 below.

TABLE10.10 – IND. SuDS MITIGATION INDICIES FOR DISCHARGES TO SURFACE WATER CH. 26 TABLE 26.3			
Type of SuDS component	**TSS**	**METALS**	**HYDRO-CARBONS**
Filter strips	0.4	0.4	0.5
Filter drain	0.4	0.4	04
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable Pavement	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8
PROPRIETARY TREATMENT SYSTEMS	THESE MUST DEMONSTRATE THAT THEY CAN ADDRESS EACH OF THE CONTAINMENT TYPES TO ACCEPTABLE LEVELS FOR FREQUENT EVENTS UP TO APPROXIMATELY THE 1 IN 1 YEAR RETURN PERIOD EVENT, FOR INFLOW CONCENTRATIONS RELEVANT TO THE CONTRIBUTING DRAINAGE AREA.		

8.11 The car park, driveway and main road is considered to present a medium pollution risk. As a result, a permeable paving system will be introduced to provide mitigation indices that satisfy the required pollution risk index. A summary of the proposed mitigation measures is provided in Table 8.11 below.

TABLE 8.11 – SUMMARY OF SuDS MITIGATION INDICIES FOR DISCHARGE TO SURFACE WATER			
	TSS	METALS	HYDROCARBONS
Hazard Index	0.7	0.6	0.7
Mitigation index	0.7	0.6	0.7
Mitigation achieved	✓	✓	✓

8.12 The service yard is considered to be a medium risk. As a result is proposed to be drained via channel drains connected to SPEL ESR Bypass Stormwater Treatment system, which are designed for use in SuDS drainage schemes requiring full pollution treatment. The separator helps reduce pollution by removing TSS, metals, and hydrocarbons and oil separation. This system provides mitigation indices as summarised in Table 8.12 below.

TABLE 8.12 – SUMMARY OF SuDS MITIGATION INDICIES FOR DISCHARGE TO SURFACE WATER

	TSS	METALS	HYDROCARBONS
Hazard Index RET.	0.7	0.6	0.7
Mitigation Index RET.	0.8	0.6	0.9
Mitigation achieved	✓	✓	✓

8.13 In addition, the storm water flow will be discharged into an existing balancing pond, which will provide additional treatment for the wider surface water runoff, including the roof areas.

FOUL WATER

8.14 The strategy for foul water drainage consists of an underground gravity network designed in accordance with Building Regulations Part H.

8.15 The proposed foul water drainage system will utilise existing connections within the site for discharge. Unit 100 is proposed to discharge foul water into existing Manhole 12, while Unit 200 is proposed to discharge into existing Manhole 70. Based on the available records, the existing foul drainage network serving the estate drains to a pumping station located on Longwalk, to the south of the development site. The flows are then pumped into a Thames Water sewer approximately 350 m north-east of the site.

8.16 Refer to drawing P25124-HWA-ZZ-XX-DR-C-5001 and P25124-HWA-ZZ-XX-DR-C-5002 for the proposed foul water drainage layout, which is included in Appendix A of this report.

EXCEEDANCE FLOWS

8.17 All proposed ground levels be laid to falls away from the building to prevent exceedance flows entering the building. In the event of exceedance the flow will be managed through the proposed site levels and external paving arrangements. The service yards located to the west of Units 100 and 200 fall towards the loading dock areas, which are approximately 1.2 m below the finished floor levels (FFLs) of 35.40 m AOD and 35.20 m AOD, respectively. Although exceedance flows may be directed towards the loading bays, the substantial level difference ensures that floodwater will remain external to the buildings and will not enter the units.

8.18 To the east of the site, exceedance flows will be directed towards retained soft landscaped areas and existing trees. The proposed parking bays and access roads will be constructed using permeable paving, providing additional storage and allowing temporary ponding during extreme rainfall events. This approach prevents adverse impact on neighbouring properties. Refer to Figure 8.19 for the identified flood exceedance pathway.



Figure 8.19 – Site plan showing flood eceedance path

9. MAINTENANCE AND MANAGEMENT

9.1 This section provides guidance on the maintenance of specific Sustainable Drainage Systems (SuDS) components for which the site management team or individual residents will be responsible. Duties will include to perform certain inspections and undertake necessary maintenance as listed below

ATTENUATION STORAGE TANKS

9.2 Attenuation tanks are structures designed to manage surface water runoff by storing it and then releasing it at a controlled rate to prevent flooding and manage downstream flow.

9.3 The plastic storage tank will be lined with an impermeable membrane. The pipe collection system, surrounded by granular fill and wrapped with geotextile, will prevent silt and particles from being washed into the reservoir, thereby minimizing maintenance. However, the maintenance procedures should also follow the manufacturer's guidance.

The operation and maintenance requirements are given in the table below:

TABLE 1: GEOCELLULAR STORAGE MAINTENANCE

Maintenance Schedule	Required Action	Recommended Frequency
Remedial actions	Repair/rehabilitation of inlets, outlets, vents. If required, jetting to remove any accumulated silt in the pipework system.	As required.
Monitoring	Inspect/check all inlets, outlets and vents to ensure that they are in good condition and operation as designed.	Annually and after large storms.

MANHOLES/ CATCHPITS

9.4 Catch pit chambers and manholes provide a degree of pollution control in preventing silt and debris passing forwards into the drainage network/ attenuation tanks. Catch pit manholes are located upstream of the attenuation units and can be inspected and accessed for removal of silt/debris build up, as and when required.

TABLE 2: CATCHPIT MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQ.
Regular maintenance.	Clean and empty Manhole / catch pits.	Quarterly.

PERMEABLE PAVING

9.5 The permeable paving construction comprises porous surfacing on sub-base stone with a void ratio of 30%. An upper layer of Inbitex Geotextile is used for separation, filtration and pollution control. Next is a graded sub-base stone that allows storage of collected storm water. This is sealed by an impermeable membrane.

9.6 To improve the long-term performance of the system, a joint aggregate stabiliser will be installed to assist with durability and maintenance. The permeable block paving and stabiliser shall be installed in accordance with the manufacturer's recommendations and designed to accommodate the anticipated vehicular loading requirements.

TABLE 3: PERMEABLE PAVING MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQ.
Regular maintenance	Remove moss and weeds from joints within blocks.	When build up starts to occur. Annually.

ACO CHANNEL(OR SIMILAR APPROVED)

9.7 ACO channel drainage runs should include silt traps and/or access units to allow for inspection and cleaning. Their location should be determined by the length of the channel run and maintenance access requirements. The drainage channels should be inspected regularly to ensure they remain free from debris, silt build-up, and blockages. As a minimum, inspections should be carried out annually, with more frequent inspections undertaken where site conditions require.

9.8 Channel drains shall be cleaned and maintained in accordance with ACO's maintenance guidance and product documentation. Failure to follow these maintenance requirements may reduce the hydraulic performance and long-term durability of the drainage system.

SPEL ESR BYPASS TREATMENT SYSTEM

9.9 The SPEL ESR Bypass System is fully certified to meet the CIRIA SuDS Mitigation Index. SPEL's ESR range is a total treatment system removing Hydrocarbons, Total Suspended Solids (TSS) and Metals. It's a highly efficient, single unit, water quality SuDS component.

9.10 It is recommended that the site management team conduct periodic inspections of the SPEL ESR Bypass System to ensure continuous performance in line with the manufacturer's requirements. Additionally, consider professional bi-annual maintenance, which includes waste removal, alarm cleaning, and coalescer replacement. Regular maintenance and inspections will help prevent blockages, maintain efficiency, and ensure compliance with environmental regulations.

FLOW CONTROL CHAMBER MAINTENANCE

9.11 A two flow control manholes will be installed to regulate runoff prior to discharge into the downstream drainage network. The flow control chambers will consist of precast concrete manholes fitted with Hydro-Brake® vortex flow control devices. The maintenance requirements presented below are indicative of routine maintenance activities only. The manufacturer should be consulted for detailed operation and maintenance guidance and to identify any specific inspection, servicing, or replacement requirements associated with the flow control device

TABLE 4: FLOW CONTROL MAINTENANCE

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Remove litter, debris and grass cuttings, and removal of cuttings from the upstream SuDS to prevent these begin washed into the control. Inspection of control chamber and removal of any sediments, debris etc.	Quarterly or as required following monitoring.
Remedial actions	Check orifice for obstructions and remove. Check flow control fixing to manhole chamber and access into the control chamber is functional.	Quarterly or as required following monitoring.
Monitoring	Inspect flow controls and check flow is not impeded.	Monthly or after periods of heavy rainfall.

DESIGN LIFE

9.12 The design life of the development may exceed the design life of the SuDS components listed above. During routine inspections of any SuDS components, it may become apparent that they have reached the end of their functional lifetime. In the interest of sustainability repairs should be the first-choice solution where practicable. If this is not the case, then it will be necessary for the operators to undertake complete replacement of the component in question.

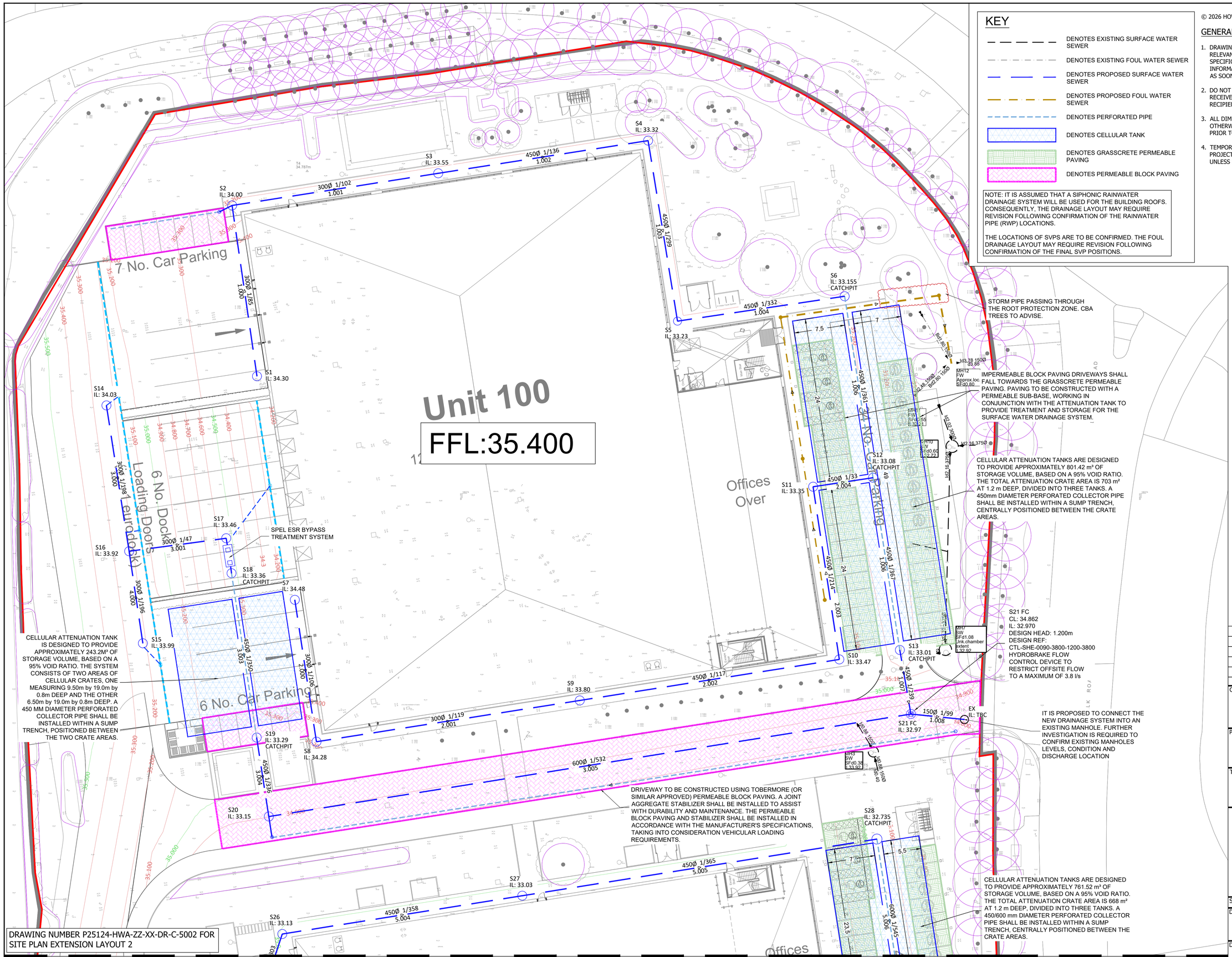
9.13 The design life of modular Geo-cellular storage systems is unproven, but BBA certification states that for the majority of Geo-cellular units a design life in excess of 60 years should be expected when installed as per the certification. Therefore, the routine assessment and maintenance should take into account an assessment of creep deflection and visual monitoring of the surface above any underground Geo-cellular units. Notwithstanding the remedial actions noted in the above maintenance schedules, the site management team will be required to repair and or replace any defective parts of any of the SuDS system to ensure continuous performance.

9.14 Notwithstanding the remedial actions noted in the above maintenance schedules, the operators will be required to repair and or replace any defective parts of any of the SuDS system to ensure continuous performance.

APPENDIX A

DRAINAGE STRATEGY DRAWING

HWA PROPOSED DRAINAGE STRATEGY LAYOUT DRAWING NUMBER P25124-HWA-ZZ-XX-DR-C-5001 and P25124-HWA-ZZ-XX-DR-C-5002



DRAWING NUMBER P25124-HWA-ZZ-XX-DR-C-5002 FOR SITE PLAN EXTENSION LAYOUT 2

KEY

- DENOTES EXISTING SURFACE WATER SEWER
- DENOTES EXISTING FOUL WATER SEWER
- DENOTES PROPOSED SURFACE WATER SEWER
- DENOTES PROPOSED FOUL WATER SEWER
- DENOTES PERFORATED PIPE
- DENOTES CELLULAR TANK
- DENOTES GRASSCRETE PERMEABLE PAVING
- DENOTES PERMEABLE BLOCK PAVING

NOTE: IT IS ASSUMED THAT A SIPHONIC RAINWATER DRAINAGE SYSTEM WILL BE USED FOR THE BUILDING ROOFS. CONSEQUENTLY, THE DRAINAGE LAYOUT MAY REQUIRE REVISION FOLLOWING CONFIRMATION OF THE RAINWATER PIPE (RWP) LOCATIONS.

THE LOCATIONS OF SVPS ARE TO BE CONFIRMED. THE FOUL DRAINAGE LAYOUT MAY REQUIRE REVISION FOLLOWING CONFIRMATION OF THE FINAL SVP POSITIONS.

© 2026 HOWARD WARD ASSOCIATES LTD

GENERAL NOTES

1. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERING & ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. ANY CONFLICTS BETWEEN THIS DRAWING AND INFORMATION ELSEWHERE TO BE REPORTED TO THE ENGINEER AS SOON AS POSSIBLE.
2. DO NOT SCALE FROM THIS DRAWING. IF THIS DRAWING HAS BEEN RECEIVED ELECTRONICALLY IT IS THE RESPONSIBILITY OF THE RECIPIENT TO PRINT THE DRAWING TO THE CORRECT SCALE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE. CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION.
4. TEMPORARY WORKS INDICATED OR IMPLIED AS PART OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS NOTED OTHERWISE.

Rev	Drawn	Checked	Description	Date
P05	MS	MS	CLIENT REVISED	08.10.26
P04	MS	MS	CONTOURS REVISED	11.09.26
P03	MS	MS	DRAINAGE REVISED	28.08.26
P02	MS	DB	DRAINAGE REVISED	06.11.25
P01	MS	DB	PRELIMINARY ISSUE	30.10.25

Client: ROYAL UK PROPERTY HOLDINGS LLP

Project: 1 LONGWALK ROAD, HAYES, UXBRIDGE UB11 1DB

Title: DRAINAGE STRATEGY LAYOUT 1

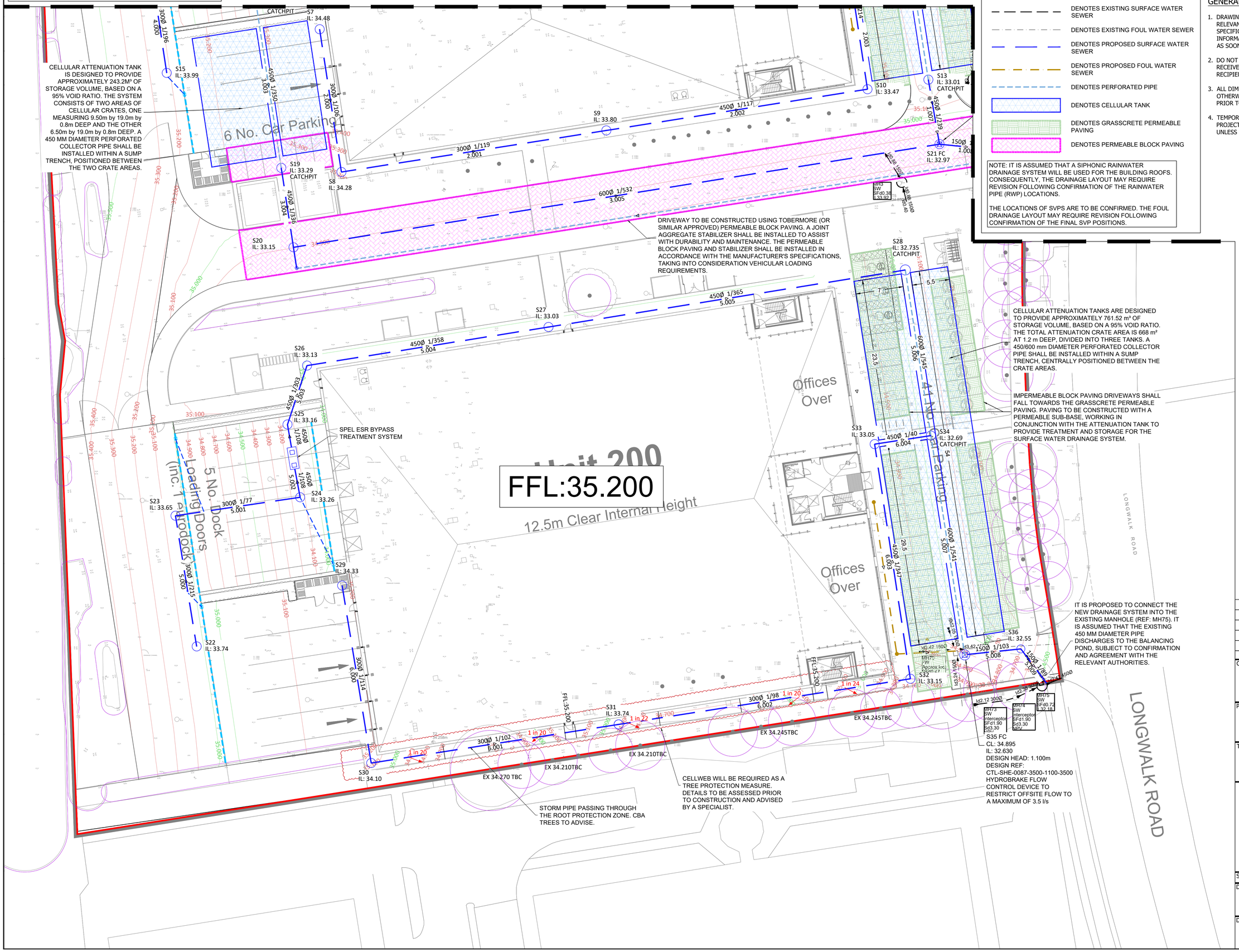
HWA CONSULTING ENGINEERS
Howard Ward Associates
Brewery House, Walkers Yard
Nottingham NG12 2FF
Tel: 0115 933 2838

Scale	Size	Drawn	Checked
1:250	A1	MS	DB

Drawing status: PRELIMINARY

Drawing no.: P25124-HWA-ZZ-XX-DR-C-5001 Rev P05

DRAWING NUMBER P25124-HWA-ZZ-XX-DR-C-5001 FOR SITE PLAN EXTENSION LAYOUT 1



KEY

- DENOTES EXISTING SURFACE WATER SEWER
- DENOTES EXISTING FOUL WATER SEWER
- DENOTES PROPOSED SURFACE WATER SEWER
- DENOTES PROPOSED FOUL WATER SEWER
- DENOTES PERFORATED PIPE
- DENOTES CELLULAR TANK
- DENOTES GRASSCRETE PERMEABLE PAVING
- DENOTES PERMEABLE BLOCK PAVING

NOTE: IT IS ASSUMED THAT A SIPHONIC RAINWATER DRAINAGE SYSTEM WILL BE USED FOR THE BUILDING ROOFS. CONSEQUENTLY, THE DRAINAGE LAYOUT MAY REQUIRE REVISION FOLLOWING CONFIRMATION OF THE RAINWATER PIPE (RWP) LOCATIONS.

THE LOCATIONS OF SVPS ARE TO BE CONFIRMED. THE FOUL DRAINAGE LAYOUT MAY REQUIRE REVISION FOLLOWING CONFIRMATION OF THE FINAL SVP POSITIONS.

© 2026 HOWARD WARD ASSOCIATES LTD

GENERAL NOTES

1. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERING & ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. ANY CONFLICTS BETWEEN THIS DRAWING AND INFORMATION ELSEWHERE TO BE REPORTED TO THE ENGINEER AS SOON AS POSSIBLE.
2. DO NOT SCALE FROM THIS DRAWING. IF THIS DRAWING HAS BEEN RECEIVED ELECTRONICALLY IT IS THE RESPONSIBILITY OF THE RECIPIENT TO PRINT THE DRAWING TO THE CORRECT SCALE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE. CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION.
4. TEMPORARY WORKS INDICATED OR IMPLIED AS PART OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS NOTED OTHERWISE.

Rev	Drawn	Checked	Description	Date
P05	MS	MS	CLIENT REVISED	08.10.26
P04	MS	MS	SOUTH PATH REVISED	11.09.26
P03	MS	MS	DRAINAGE REVISED	28.08.26
P02	MS	DB	DRAINAGE REVISED	06.11.25
P01	MS	DB	PRELIMINARY ISSUE	30.10.25

Client
ROYAL UK PROPERTY HOLDINGS LLP

Project
2 LONGWALK ROAD, HAYES, UXBRIDGE UB11 1BA

Title
DRAINAGE STRATEGY LAYOUT 2

HWA CONSULTING ENGINEERS
Howard Ward Associates
Brewery House, Walkers Yard
Nottingham NG12 2FF
Tel: 0115 933 2838

Scale	Size	Drawn	Checked
1:250	A1	MS	DB

Drawing status
PRELIMINARY

Drawing no. P25124-HWA-ZZ-XX-DR-C-5002 Rev P05

APPENDIX B

IMPERMEABLE AREAS

HWA IMPERMEABLE AREAS PLAN DRAWING NUMBER P2124-HWA-ZZ-XX-DR-C-5003


Shelter
STOCKLEY ROAD
Pond
FB
LONGWALK ROAD
Pond
Internal Height
Over
6 No. Dock Loading Doors (K)
6 No. Car Parking
5 No. Dock Loading Doors
3
1
1
1

APPENDIX C
HYDRAULIC CALCULATIONS

GREEFIELD RUN-OFF RATE

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

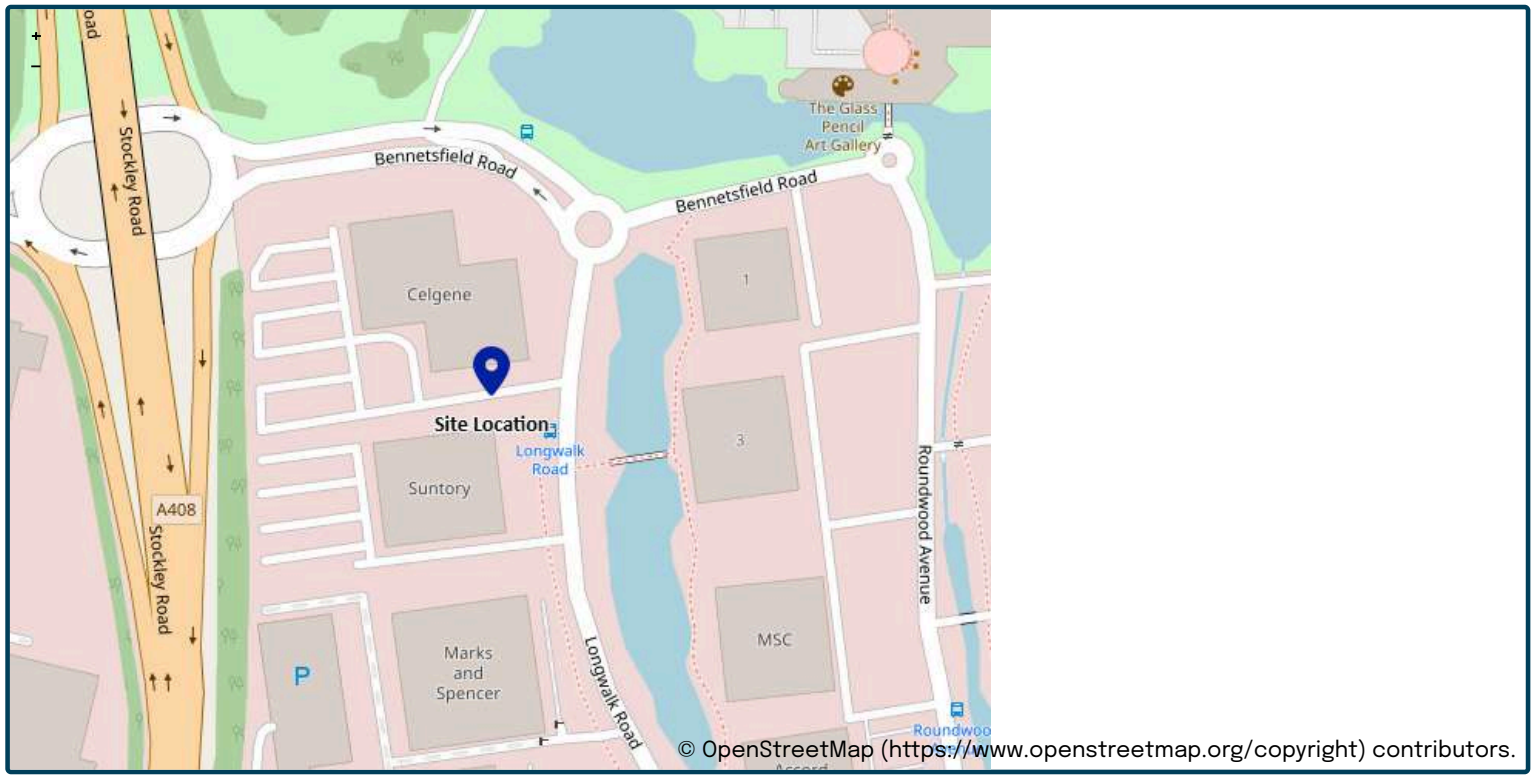
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	13/10/2025
Calculated by	Michelly Santana
Reference	P25124
Model version	2.2.1

Location

Site name	Stockley Park
Site location	Uxbridge



Site easting (British National Grid)	507841
Site northing (British National Grid)	180227

Site details

Total site area (ha)	2.53 ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	640 mm		
BFIHOST19scaled	0.449		
QMed-QBar conversion	1.136		1.136
QMed (l/s)	6.5 l/s		
QBar (FEH statistical 2025) (l/s)	7.3 l/s		

Growth curve factors

	My value		Map value
Hydrological region	6		6
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	6.2 l/s
Flow rate 2 year (l/s)	6.5 l/s
Flow rate 10 years (l/s)	11.9 l/s
Flow rate 30 years (l/s)	16.9 l/s
Flow rate 100 years (l/s)	23.4 l/s
Flow rate 200 years (l/s)	27.4 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.1) developed by HR Wallingford and available at uksuds.com (https://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 uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate 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, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

PROPOSED DEVELOPMENT HYDRAULIC CALCULATIONS

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	1.000
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100 | 150

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	S1	0.116	5.00	35.387	Manhole	Adoptable	1350	507755.766	180291.242	1.087
✓	S2	0.010	5.00	35.212	Manhole	Adoptable	1350	507752.101	180316.391	1.212
✓	S3	0.116	5.00	35.224	Manhole	Adoptable	1350	507782.454	180321.123	1.674
✓	S4			35.213	Manhole	Adoptable	1350	507813.369	180325.943	1.893
✓	S5	0.038	5.00	35.229	Manhole	Adoptable	1200	507817.701	180299.357	1.999
✓	S6	0.039	5.00	35.037	Manhole	Adoptable	1350	507842.316	180303.018	1.882
✓	S7	0.121	5.00	35.388	Manhole	Adoptable	1350	507761.340	180258.306	0.908
✓	S8			35.214	Manhole	Adoptable	1350	507764.525	180237.415	0.934
✓	S9	0.111	5.00	35.228	Manhole	Adoptable	1350	507803.307	180243.494	1.428
✓	S10	0.038	5.00	35.200	Manhole	Adoptable	1350	507841.528	180249.534	1.730
✓	S11			35.225	Manhole	Adoptable	1350	507837.663	180274.971	1.875
✓	S12	0.050	5.00	35.283	Manhole	Adoptable	1350	507846.496	180276.291	2.203
✓	S13			35.253	Manhole	Adoptable	1350	507850.441	180250.923	2.243
✓	S14	0.097	5.00	35.239	Manhole	Adoptable	1350	507733.593	180286.937	1.209
✓	S15	0.074	5.00	35.216	Manhole	Adoptable	1350	507738.957	180251.912	1.226
✓	S16			35.221	Manhole	Adoptable	1350	507736.935	180265.464	1.301
✓	S17	0.058	5.00	34.541	Manhole	Adoptable	2100	507751.233	180267.378	1.081
✓	S18			34.541	Manhole	Adoptable	2100	507752.013	180262.226	1.181
✓	S19			35.241	Manhole	Adoptable	1350	507755.724	180238.017	1.951
✓	S20	0.185	5.00	34.902	Manhole	Adoptable	1350	507757.508	180226.399	1.752
✓	S21 FC			34.862	Manhole	Adoptable	1350	507852.070	180241.488	1.892
✓	EX			34.814	Manhole	Adoptable	1200	507859.950	180240.690	1.924
✓	EX MH75			34.475	Manhole	Adoptable	1200	507867.741	180162.629	1.995

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	S22	0.089	5.00	35.050	Manhole	Adoptable	1350	507743.338	180167.996	1.310
✓	S23	0.033	5.00	35.056	Manhole	Adoptable	1350	507740.243	180187.120	1.406
✓	S24	0.052	5.00	34.146	Manhole	Adoptable	2100	507758.482	180189.825	0.886
✓	S25			34.145	Manhole	Adoptable	2100	507756.637	180200.475	0.985
✓	S26	0.075	5.00	35.013	Manhole	Adoptable	1350	507759.493	180209.091	1.883
✓	S27	0.094	5.00	35.031	Manhole	Adoptable	1350	507794.838	180214.735	2.001
✓	S28	0.053	5.00	35.052	Manhole	Adoptable	1500	507847.066	180223.078	2.317
✓	S29	0.045	5.00	35.187	Manhole	Adoptable	1350	507764.634	180176.906	0.857
✓	S30	0.076	5.00	35.169	Manhole	Adoptable	1350	507768.888	180150.938	1.069
✓	S31	0.093	5.00	35.007	Manhole	Adoptable	1350	507805.110	180156.595	1.267
✓	S32	0.046	5.00	34.743	Manhole	Adoptable	1350	507847.807	180163.264	1.593
✓	S33			34.990	Manhole	Adoptable	1350	507842.576	180197.601	1.940
✓	S34	0.075	5.00	35.053	Manhole	Adoptable	1350	507850.811	180198.843	2.363
✓	S35 FC			34.895	Manhole	Adoptable	1500	507855.769	180166.763	2.265
✓	S36			34.700	Manhole	Adoptable	1200	507863.981	180167.637	2.150

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	S1	S2	25.415	0.600	34.300	34.000	0.300	84.7	300	5.25	30.8
1.001	S2	S3	30.720	0.600	34.000	33.700	0.300	102.4	300	5.58	30.1
1.002	S3	S4	31.288	0.600	33.550	33.320	0.230	136.0	450	5.88	29.3
1.003	S4	S5	26.937	0.600	33.320	33.230	0.090	299.3	450	6.26	28.5
1.004	S5	S6	24.886	0.600	33.230	33.155	0.075	331.8	450	6.63	27.7
1.005	S6	S12	27.052	0.600	33.155	33.080	0.075	360.7	450	7.06	26.8
2.000	S7	S8	21.132	0.600	34.480	34.280	0.200	105.7	300	5.23	30.9
2.001	S8	S9	39.256	0.600	34.280	33.950	0.330	119.0	300	5.68	29.8
2.002	S9	S10	38.695	0.600	33.800	33.470	0.330	117.3	450	6.03	29.0
2.003	S10	S11	25.729	0.600	33.470	33.350	0.120	214.4	450	6.34	28.3
2.004	S11	S12	8.931	0.600	33.350	33.080	0.270	33.1	450	6.38	28.2
1.006	S12	S13	25.673	0.600	33.080	33.010	0.070	366.8	450	7.46	26.1
1.007	S13	S21 FC	9.575	0.600	33.010	32.970	0.040	239.4	450	7.59	25.8
3.000	S14	S16	21.732	0.600	34.030	33.920	0.110	197.6	300	5.32	30.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.709	120.8	13.0	0.787	0.912	0.116	0.0	66	1.127
1.001	1.553	109.8	13.8	0.912	1.224	0.127	0.0	71	1.070
1.002	1.741	276.9	25.7	1.224	1.443	0.243	0.0	92	1.106
1.003	1.170	186.0	25.0	1.443	1.549	0.243	0.0	110	0.823
1.004	1.110	176.6	28.1	1.549	1.432	0.281	0.0	121	0.821
1.005	1.064	169.3	31.0	1.432	1.753	0.320	0.0	130	0.818
2.000	1.529	108.1	13.5	0.608	0.634	0.121	0.0	71	1.053
2.001	1.440	101.8	13.1	0.634	0.978	0.121	0.0	72	1.001
2.002	1.876	298.4	24.3	0.978	1.280	0.232	0.0	86	1.146
2.003	1.384	220.1	27.7	1.280	1.425	0.271	0.0	107	0.957
2.004	3.544	563.6	27.6	1.425	1.753	0.271	0.0	67	1.880
1.006	1.055	167.9	60.3	1.753	1.793	0.641	0.0	186	0.971
1.007	1.309	208.2	59.8	1.793	1.442	0.641	0.0	165	1.138
3.000	1.115	78.8	10.8	0.909	1.001	0.097	0.0	75	0.788

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

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)
4.000	S15	S16	13.702	0.600	33.990	33.920	0.070	195.7	300	5.20	30.9
3.001	S16	S17	14.426	0.600	33.920	33.610	0.310	46.5	300	5.43	30.4
3.002	S17	S18	5.211	0.600	33.460	33.360	0.100	52.1	450	5.46	30.3
3.003	S18	S19	24.492	0.600	33.360	33.290	0.070	349.9	450	5.84	29.4
3.004	S19	S20	11.754	0.600	33.290	33.255	0.035	335.8	450	6.01	29.0
3.005	S20	S21 FC	95.758	0.600	33.150	32.970	0.180	532.0	600	7.54	25.9
1.008	S21 FC	EX	7.920	0.600	32.970	32.890	0.080	99.0	150	7.72	25.6
5.000	S22	S23	19.373	0.600	33.740	33.650	0.090	215.3	300	5.30	30.7
5.001	S23	S24	18.438	0.600	33.650	33.410	0.240	76.8	300	5.47	30.3
5.002	S24	S25	10.809	0.600	33.260	33.160	0.100	108.1	450	5.57	30.1
5.003	S25	S26	9.077	0.600	33.160	33.130	0.030	302.6	450	5.70	29.8
5.004	S26	S27	35.793	0.600	33.130	33.030	0.100	357.9	450	6.25	28.5
5.005	S27	S28	52.890	0.600	33.030	32.885	0.145	364.8	450	7.09	26.7
5.006	S28	S34	24.523	0.600	32.735	32.690	0.045	544.9	600	7.48	26.0
6.000	S29	S30	26.314	0.600	34.330	34.100	0.230	114.4	300	5.30	30.7
6.001	S30	S31	36.661	0.600	34.100	33.740	0.360	101.8	300	5.69	29.8
6.002	S31	S32	43.215	0.600	33.740	33.300	0.440	98.2	300	6.14	28.7
6.003	S32	S33	34.733	0.600	33.150	33.050	0.100	347.3	450	6.68	27.6
6.004	S33	S34	8.328	0.600	33.050	32.840	0.210	39.7	450	6.72	27.5
5.007	S34	S35 FC	32.461	0.600	32.690	32.630	0.060	541.0	600	8.00	25.1
5.008	S35 FC	S36	8.258	0.600	32.630	32.550	0.080	103.2	150	8.14	24.8
5.009	S36	EX MH75	6.262	0.600	32.550	32.480	0.070	89.5	150	8.24	24.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	1.120	79.2	8.2	0.926	1.001	0.074	0.0	65	0.730
3.001	2.310	163.3	18.8	1.001	0.631	0.171	0.0	68	1.556
3.002	2.821	448.7	25.1	0.631	0.731	0.229	0.0	72	1.553
3.003	1.081	171.9	24.4	0.731	1.501	0.229	0.0	114	0.774
3.004	1.104	175.5	24.0	1.501	1.197	0.229	0.0	111	0.780
3.005	1.049	296.5	38.7	1.152	1.292	0.414	0.0	145	0.734
1.008	1.010	17.8	97.5	1.742	1.774	1.054	0.0	150	1.029
5.000	1.067	75.5	9.9	1.010	1.106	0.089	0.0	73	0.744
5.001	1.795	126.9	13.4	1.106	0.436	0.123	0.0	65	1.178
5.002	1.955	310.9	19.0	0.436	0.535	0.175	0.0	74	1.098
5.003	1.163	185.0	18.8	0.535	1.433	0.175	0.0	96	0.758
5.004	1.069	169.9	25.7	1.433	1.551	0.250	0.0	117	0.778
5.005	1.058	168.3	33.3	1.551	1.717	0.344	0.0	135	0.830
5.006	1.036	292.9	37.3	1.717	1.763	0.397	0.0	143	0.720
6.000	1.469	103.8	5.0	0.557	0.769	0.045	0.0	45	0.770
6.001	1.558	110.1	13.1	0.769	0.967	0.122	0.0	69	1.058
6.002	1.586	112.1	22.3	0.967	1.143	0.215	0.0	91	1.247
6.003	1.085	172.5	26.0	1.143	1.490	0.260	0.0	117	0.790
6.004	3.235	514.6	25.9	1.490	1.763	0.260	0.0	68	1.729
5.007	1.040	294.0	66.4	1.763	1.665	0.733	0.0	192	0.846
5.008	0.989	17.5	65.8	2.115	2.000	0.733	0.0	150	1.007
5.009	1.063	18.8	65.4	2.000	1.845	0.733	0.0	150	1.083

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

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	25.415	84.7	300	Circular	35.387	34.300	0.787	35.212	34.000	0.912
1.001	30.720	102.4	300	Circular	35.212	34.000	0.912	35.224	33.700	1.224
1.002	31.288	136.0	450	Circular	35.224	33.550	1.224	35.213	33.320	1.443
1.003	26.937	299.3	450	Circular	35.213	33.320	1.443	35.229	33.230	1.549
1.004	24.886	331.8	450	Circular	35.229	33.230	1.549	35.037	33.155	1.432
1.005	27.052	360.7	450	Circular	35.037	33.155	1.432	35.283	33.080	1.753
2.000	21.132	105.7	300	Circular	35.388	34.480	0.608	35.214	34.280	0.634
2.001	39.256	119.0	300	Circular	35.214	34.280	0.634	35.228	33.950	0.978
2.002	38.695	117.3	450	Circular	35.228	33.800	0.978	35.200	33.470	1.280
2.003	25.729	214.4	450	Circular	35.200	33.470	1.280	35.225	33.350	1.425
2.004	8.931	33.1	450	Circular	35.225	33.350	1.425	35.283	33.080	1.753
1.006	25.673	366.8	450	Circular	35.283	33.080	1.753	35.253	33.010	1.793
1.007	9.575	239.4	450	Circular	35.253	33.010	1.793	34.862	32.970	1.442
3.000	21.732	197.6	300	Circular	35.239	34.030	0.909	35.221	33.920	1.001
4.000	13.702	195.7	300	Circular	35.216	33.990	0.926	35.221	33.920	1.001
3.001	14.426	46.5	300	Circular	35.221	33.920	1.001	34.541	33.610	0.631
3.002	5.211	52.1	450	Circular	34.541	33.460	0.631	34.541	33.360	0.731
3.003	24.492	349.9	450	Circular	34.541	33.360	0.731	35.241	33.290	1.501
3.004	11.754	335.8	450	Circular	35.241	33.290	1.501	34.902	33.255	1.197
3.005	95.758	532.0	600	Circular	34.902	33.150	1.152	34.862	32.970	1.292
1.008	7.920	99.0	150	Circular	34.862	32.970	1.742	34.814	32.890	1.774
5.000	19.373	215.3	300	Circular	35.050	33.740	1.010	35.056	33.650	1.106
5.001	18.438	76.8	300	Circular	35.056	33.650	1.106	34.146	33.410	0.436
5.002	10.809	108.1	450	Circular	34.146	33.260	0.436	34.145	33.160	0.535
5.003	9.077	302.6	450	Circular	34.145	33.160	0.535	35.013	33.130	1.433

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	1350	Manhole	Adoptable	S2	1350	Manhole	Adoptable
1.001	S2	1350	Manhole	Adoptable	S3	1350	Manhole	Adoptable
1.002	S3	1350	Manhole	Adoptable	S4	1350	Manhole	Adoptable
1.003	S4	1350	Manhole	Adoptable	S5	1200	Manhole	Adoptable
1.004	S5	1200	Manhole	Adoptable	S6	1350	Manhole	Adoptable
1.005	S6	1350	Manhole	Adoptable	S12	1350	Manhole	Adoptable
2.000	S7	1350	Manhole	Adoptable	S8	1350	Manhole	Adoptable
2.001	S8	1350	Manhole	Adoptable	S9	1350	Manhole	Adoptable
2.002	S9	1350	Manhole	Adoptable	S10	1350	Manhole	Adoptable
2.003	S10	1350	Manhole	Adoptable	S11	1350	Manhole	Adoptable
2.004	S11	1350	Manhole	Adoptable	S12	1350	Manhole	Adoptable
1.006	S12	1350	Manhole	Adoptable	S13	1350	Manhole	Adoptable
1.007	S13	1350	Manhole	Adoptable	S21 FC	1350	Manhole	Adoptable
3.000	S14	1350	Manhole	Adoptable	S16	1350	Manhole	Adoptable
4.000	S15	1350	Manhole	Adoptable	S16	1350	Manhole	Adoptable
3.001	S16	1350	Manhole	Adoptable	S17	2100	Manhole	Adoptable
3.002	S17	2100	Manhole	Adoptable	S18	2100	Manhole	Adoptable
3.003	S18	2100	Manhole	Adoptable	S19	1350	Manhole	Adoptable
3.004	S19	1350	Manhole	Adoptable	S20	1350	Manhole	Adoptable
3.005	S20	1350	Manhole	Adoptable	S21 FC	1350	Manhole	Adoptable
1.008	S21 FC	1350	Manhole	Adoptable	EX	1200	Manhole	Adoptable
5.000	S22	1350	Manhole	Adoptable	S23	1350	Manhole	Adoptable
5.001	S23	1350	Manhole	Adoptable	S24	2100	Manhole	Adoptable
5.002	S24	2100	Manhole	Adoptable	S25	2100	Manhole	Adoptable
5.003	S25	2100	Manhole	Adoptable	S26	1350	Manhole	Adoptable

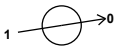
Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

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)
5.004	35.793	357.9	450	Circular	35.013	33.130	1.433	35.031	33.030	1.551
5.005	52.890	364.8	450	Circular	35.031	33.030	1.551	35.052	32.885	1.717
5.006	24.523	544.9	600	Circular	35.052	32.735	1.717	35.053	32.690	1.763
6.000	26.314	114.4	300	Circular	35.187	34.330	0.557	35.169	34.100	0.769
6.001	36.661	101.8	300	Circular	35.169	34.100	0.769	35.007	33.740	0.967
6.002	43.215	98.2	300	Circular	35.007	33.740	0.967	34.743	33.300	1.143
6.003	34.733	347.3	450	Circular	34.743	33.150	1.143	34.990	33.050	1.490
6.004	8.328	39.7	450	Circular	34.990	33.050	1.490	35.053	32.840	1.763
5.007	32.461	541.0	600	Circular	35.053	32.690	1.763	34.895	32.630	1.665
5.008	8.258	103.2	150	Circular	34.895	32.630	2.115	34.700	32.550	2.000
5.009	6.262	89.5	150	Circular	34.700	32.550	2.000	34.475	32.480	1.845

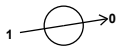
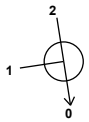
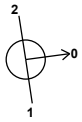
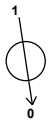
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
5.004	S26	1350	Manhole	Adoptable	S27	1350	Manhole	Adoptable
5.005	S27	1350	Manhole	Adoptable	S28	1500	Manhole	Adoptable
5.006	S28	1500	Manhole	Adoptable	S34	1350	Manhole	Adoptable
6.000	S29	1350	Manhole	Adoptable	S30	1350	Manhole	Adoptable
6.001	S30	1350	Manhole	Adoptable	S31	1350	Manhole	Adoptable
6.002	S31	1350	Manhole	Adoptable	S32	1350	Manhole	Adoptable
6.003	S32	1350	Manhole	Adoptable	S33	1350	Manhole	Adoptable
6.004	S33	1350	Manhole	Adoptable	S34	1350	Manhole	Adoptable
5.007	S34	1350	Manhole	Adoptable	S35 FC	1500	Manhole	Adoptable
5.008	S35 FC	1500	Manhole	Adoptable	S36	1200	Manhole	Adoptable
5.009	S36	1200	Manhole	Adoptable	EX MH75	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	507755.766	180291.242	35.387	1.087	1350		0	1.000	34.300	300
S2	507752.101	180316.391	35.212	1.212	1350	1	1.000	34.000	300
							0	1.001	34.000	300
S3	507782.454	180321.123	35.224	1.674	1350	1	1.001	33.700	300
							0	1.002	33.550	450
S4	507813.369	180325.943	35.213	1.893	1350	1	1.002	33.320	450
							0	1.003	33.320	450
S5	507817.701	180299.357	35.229	1.999	1200	1	1.003	33.230	450
							0	1.004	33.230	450

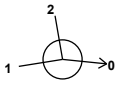
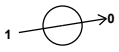
Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S6	507842.316	180303.018	35.037	1.882	1350	1	1.004	33.155	450
									
						0	1.005	33.155	450
S7	507761.340	180258.306	35.388	0.908	1350				
						0	2.000	34.480	300
S8	507764.525	180237.415	35.214	0.934	1350	1	2.000	34.280	300
									
						0	2.001	34.280	300
S9	507803.307	180243.494	35.228	1.428	1350	1	2.001	33.950	300
									
						0	2.002	33.800	450
S10	507841.528	180249.534	35.200	1.730	1350		1	2.002	33.470	450
							0	2.003	33.470	450
S11	507837.663	180274.971	35.225	1.875	1350	1	2.003	33.350	450
									
						0	2.004	33.350	450
S12	507846.496	180276.291	35.283	2.203	1350		1	2.004	33.080	450
							2	1.005	33.080	450
							0	1.006	33.080	450
S13	507850.441	180250.923	35.253	2.243	1350		1	1.006	33.010	450
							0	1.007	33.010	450
S14	507733.593	180286.937	35.239	1.209	1350				
						0	3.000	34.030	300
S15	507738.957	180251.912	35.216	1.226	1350				
						0	4.000	33.990	300
S16	507736.935	180265.464	35.221	1.301	1350		1	4.000	33.920	300
							2	3.000	33.920	300
							0	3.001	33.920	300
S17	507751.233	180267.378	34.541	1.081	2100	1	3.001	33.610	300
									
						0	3.002	33.460	450
S18	507752.013	180262.226	34.541	1.181	2100		1	3.002	33.360	450
							0	3.003	33.360	450

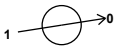
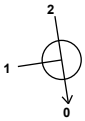
Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S19	507755.724	180238.017	35.241	1.951	1350	 1 0	3.003 3.004	33.290 33.290	450 450
S20	507757.508	180226.399	34.902	1.752	1350	 1 0	3.004 3.005	33.255 33.150	450 600
S21 FC	507852.070	180241.488	34.862	1.892	1350	 1 2 0	3.005 1.007 1.008	32.970 32.970 32.970	600 450 150
EX	507859.950	180240.690	34.814	1.924	1200	 1	1.008	32.890	150
EX MH75	507867.741	180162.629	34.475	1.995	1200	 1	5.009	32.480	150
S22	507743.338	180167.996	35.050	1.310	1350	 0	5.000	33.740	300
S23	507740.243	180187.120	35.056	1.406	1350	 1 0	5.000 5.001	33.650 33.650	300 300
S24	507758.482	180189.825	34.146	0.886	2100	 1 0	5.001 5.002	33.410 33.260	300 450
S25	507756.637	180200.475	34.145	0.985	2100	 1 0	5.002 5.003	33.160 33.160	450 450
S26	507759.493	180209.091	35.013	1.883	1350	 1 0	5.003 5.004	33.130 33.130	450 450
S27	507794.838	180214.735	35.031	2.001	1350	 1 0	5.004 5.005	33.030 33.030	450 450
S28	507847.066	180223.078	35.052	2.317	1500	 1 0	5.005 5.006	32.885 32.735	450 600
S29	507764.634	180176.906	35.187	0.857	1350	 0	6.000	34.330	300

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S30	507768.888	180150.938	35.169	1.069	1350		1	6.000	34.100	300
							0	6.001	34.100	300
S31	507805.110	180156.595	35.007	1.267	1350		1	6.001	33.740	300
							0	6.002	33.740	300
S32	507847.807	180163.264	34.743	1.593	1350		1	6.002	33.300	300
							0	6.003	33.150	450
S33	507842.576	180197.601	34.990	1.940	1350		1	6.003	33.050	450
							0	6.004	33.050	450
S34	507850.811	180198.843	35.053	2.363	1350		1	6.004	32.840	450
							2	5.006	32.690	600
							0	5.007	32.690	600
S35 FC	507855.769	180166.763	34.895	2.265	1500		1	5.007	32.630	600
							0	5.008	32.630	150
S36	507863.981	180167.637	34.700	2.150	1200		1	5.008	32.550	150
							0	5.009	32.550	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	35	0	0
100	40	0	0

Node S21 FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	32.970	Product Number	CTL-SHE-0090-3800-1200-3800
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	3.8	Min Node Diameter (mm)	1200

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Node S35 FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	32.630	Product Number	CTL-SHE-0087-3500-1100-3500
Design Depth (m)	1.100	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.5	Min Node Diameter (mm)	1200

Node S6 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	34.620	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	15.000	Inf Depth (m)	
Porosity	0.30	Length (m)	24.000		

Node S12 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	34.620	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	13.400	Inf Depth (m)	
Porosity	0.30	Length (m)	30.000		

Node S12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	33.080
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	703.0	703.0	1.200	703.0	815.8	1.201	0.0	815.8

Node S19 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	33.290
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	304.0	304.0	0.800	304.0	353.4	0.801	0.0	353.4

Node S20 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	34.300	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	7.500	Inf Depth (m)	
Porosity	0.30	Length (m)	110.000		

Node S28 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	34.570	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	14.000	Inf Depth (m)	
Porosity	0.30	Length (m)	27.000		

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Node S34 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	32.690
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	668.0	668.0	1.200	668.0	777.9	1.201	0.0	777.9

Node S34 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	34.570	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	15.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	34.363	0.063	11.6	0.0903	0.0000	OK
15 minute summer	S2	11	34.069	0.069	12.5	0.0990	0.0000	OK
15 minute summer	S3	11	33.639	0.089	23.6	0.1270	0.0000	OK
15 minute summer	S4	11	33.431	0.111	23.6	0.1587	0.0000	OK
15 minute summer	S5	11	33.355	0.125	27.3	0.1410	0.0000	OK
15 minute summer	S6	11	33.326	0.171	30.1	0.2441	0.0000	OK
15 minute summer	S7	10	34.549	0.069	12.1	0.0993	0.0000	OK
15 minute summer	S8	11	34.350	0.070	12.0	0.0999	0.0000	OK
15 minute summer	S9	11	33.882	0.082	22.4	0.1179	0.0000	OK
15 minute summer	S10	11	33.578	0.108	26.1	0.1542	0.0000	OK
15 minute summer	S11	10	33.472	0.122	25.8	0.1744	0.0000	OK
480 minute summer	S12	392	33.252	0.172	20.4	115.2090	0.0000	OK
480 minute summer	S13	392	33.252	0.242	4.1	0.3465	0.0000	OK
15 minute summer	S14	10	34.103	0.073	9.7	0.1040	0.0000	OK
15 minute summer	S15	10	34.054	0.064	7.4	0.0915	0.0000	OK
15 minute summer	S16	11	33.988	0.068	16.9	0.0970	0.0000	OK
15 minute summer	S17	11	33.662	0.202	22.7	0.6996	0.0000	OK
15 minute winter	S18	10	33.625	0.265	51.6	0.9170	0.0000	OK
240 minute summer	S19	144	33.345	0.055	9.2	16.0262	0.0000	OK
480 minute summer	S20	392	33.252	0.102	8.5	0.1462	0.0000	OK
480 minute summer	S21 FC	392	33.252	0.282	8.4	0.4037	0.0000	SURCHARGED
480 minute summer	EX	392	32.936	0.046	3.7	0.0000	0.0000	OK
600 minute summer	EX MH75	420	32.522	0.042	3.2	0.0000	0.0000	OK
15 minute summer	S22	10	33.811	0.071	8.9	0.1018	0.0000	OK
15 minute summer	S23	11	33.714	0.064	12.1	0.0917	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	11.5	1.016	0.095	0.2897	
15 minute summer	S2	1.001	S3	12.4	1.029	0.113	0.3697	
15 minute summer	S3	1.002	S4	23.6	0.911	0.085	0.8191	
15 minute summer	S4	1.003	S5	23.7	0.726	0.127	0.8893	
15 minute summer	S5	1.004	S6	27.0	0.658	0.153	1.1294	
15 minute summer	S6	1.005	S12	33.5	1.525	0.198	0.7632	
15 minute summer	S7	2.000	S8	12.0	0.998	0.111	0.2578	
15 minute summer	S8	2.001	S9	11.8	0.965	0.116	0.4806	
15 minute summer	S9	2.002	S10	22.5	0.945	0.075	0.9461	
15 minute summer	S10	2.003	S11	25.8	1.006	0.117	0.7915	
15 minute summer	S11	2.004	S12	28.2	2.437	0.050	0.1575	
480 minute summer	S12	1.006	S13	-3.9	0.127	-0.023	1.8309	
480 minute summer	S13	1.007	S21 FC	-4.1	-0.067	-0.020	0.9167	
15 minute summer	S14	3.000	S16	9.6	0.768	0.122	0.2717	
15 minute summer	S15	4.000	S16	7.3	0.641	0.092	0.1564	
15 minute summer	S16	3.001	S17	16.8	1.460	0.103	0.1657	
15 minute summer	S17	3.002	S18	27.5	0.828	0.061	0.4178	
15 minute winter	S18	3.003	S19	36.6	1.529	0.213	1.1912	
240 minute summer	S19	3.004	S20	5.4	0.533	0.031	0.1187	
480 minute summer	S20	3.005	S21 FC	8.4	0.198	0.028	7.7506	
480 minute summer	S21 FC	1.008	EX	3.7	0.773	0.206	0.0378	122.9
15 minute summer	S22	5.000	S23	8.8	0.742	0.117	0.2298	
15 minute summer	S23	5.001	S24	12.0	1.118	0.094	0.1974	

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S24	10	33.336	0.076	17.1	0.2645	0.0000	OK
15 minute summer	S25	11	33.265	0.105	17.1	0.3649	0.0000	OK
15 minute summer	S26	11	33.246	0.116	24.2	0.1655	0.0000	OK
15 minute summer	S27	12	33.164	0.134	33.3	0.1922	0.0000	OK
15 minute summer	S28	11	32.893	0.158	35.6	0.2793	0.0000	OK
15 minute summer	S29	10	34.372	0.042	4.5	0.0600	0.0000	OK
15 minute summer	S30	11	34.166	0.066	12.0	0.0941	0.0000	OK
15 minute summer	S31	11	33.829	0.089	21.0	0.1270	0.0000	OK
15 minute summer	S32	11	33.267	0.117	25.1	0.1672	0.0000	OK
15 minute summer	S33	11	33.123	0.073	25.0	0.1039	0.0000	OK
600 minute summer	S34	420	32.833	0.143	15.4	90.6826	0.0000	OK
600 minute summer	S35 FC	420	32.832	0.202	3.2	0.3577	0.0000	SURCHARGED
600 minute summer	S36	420	32.594	0.044	3.2	0.0502	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S24	5.002	S25	17.1	0.764	0.055	0.2476	
15 minute summer	S25	5.003	S26	17.1	0.572	0.093	0.2739	
15 minute summer	S26	5.004	S27	24.3	0.691	0.143	1.2597	
15 minute summer	S27	5.005	S28	31.5	0.853	0.187	1.9538	
15 minute summer	S28	5.006	S34	36.8	1.473	0.126	0.7516	
15 minute summer	S29	6.000	S30	4.4	0.519	0.043	0.2275	
15 minute summer	S30	6.001	S31	11.8	0.836	0.107	0.5278	
15 minute summer	S31	6.002	S32	20.7	1.210	0.184	0.7386	
15 minute summer	S32	6.003	S33	25.0	1.033	0.145	0.8535	
15 minute summer	S33	6.004	S34	24.7	1.601	0.048	0.1290	
600 minute summer	S34	5.007	S35 FC	3.2	0.103	0.011	2.1859	
600 minute summer	S35 FC	5.008	S36	3.2	0.724	0.183	0.0365	
600 minute summer	S36	5.009	EX MH75	3.2	0.767	0.171	0.0262	110.0

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	34.493	0.193	79.7	0.2761	0.0000	OK
15 minute summer	S2	10	34.213	0.213	86.2	0.3044	0.0000	OK
720 minute winter	S3	720	33.861	0.311	12.0	0.4447	0.0000	OK
720 minute winter	S4	720	33.861	0.541	12.0	0.7739	0.0000	SURCHARGED
720 minute winter	S5	720	33.861	0.631	13.3	0.7135	0.0000	SURCHARGED
720 minute winter	S6	720	33.861	0.706	14.8	1.0101	0.0000	SURCHARGED
15 minute summer	S7	10	34.699	0.219	83.0	0.3133	0.0000	OK
15 minute summer	S8	11	34.494	0.214	82.4	0.3056	0.0000	OK
15 minute summer	S9	10	34.050	0.250	156.1	0.3577	0.0000	OK
720 minute winter	S10	720	33.861	0.391	13.4	0.5593	0.0000	OK
720 minute winter	S11	720	33.861	0.511	38.2	0.7310	0.0000	SURCHARGED
720 minute winter	S12	720	33.861	0.781	64.2	522.6154	0.0000	SURCHARGED
720 minute winter	S13	720	33.861	0.851	7.4	1.2176	0.0000	SURCHARGED
15 minute summer	S14	10	34.262	0.232	66.7	0.3325	0.0000	OK
15 minute summer	S15	10	34.195	0.205	50.4	0.2927	0.0000	OK
15 minute summer	S16	10	34.136	0.216	116.0	0.3084	0.0000	OK
720 minute winter	S17	720	33.861	0.401	29.7	1.3877	0.0000	OK
720 minute winter	S18	720	33.861	0.501	31.9	1.7361	0.0000	SURCHARGED
720 minute winter	S19	720	33.861	0.571	16.0	165.6687	0.0000	SURCHARGED
720 minute winter	S20	720	33.861	0.711	13.8	1.0172	0.0000	SURCHARGED
720 minute winter	S21 FC	720	33.861	0.891	12.5	1.2748	0.0000	SURCHARGED
30 minute winter	EX	18	32.937	0.047	3.8	0.0000	0.0000	OK
240 minute winter	EX MH75	120	32.524	0.044	3.5	0.0000	0.0000	OK
15 minute summer	S22	10	33.961	0.221	61.3	0.3168	0.0000	OK
15 minute summer	S23	11	33.846	0.196	83.5	0.2807	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	79.1	1.563	0.655	1.2872	
15 minute summer	S2	1.001	S3	85.0	1.670	0.774	1.5628	
720 minute winter	S3	1.002	S4	12.0	0.731	0.043	4.3056	
720 minute winter	S4	1.003	S5	11.4	0.551	0.061	4.2680	
720 minute winter	S5	1.004	S6	12.9	0.493	0.073	3.9430	
720 minute winter	S6	1.005	S12	14.6	0.687	0.086	4.2862	
15 minute summer	S7	2.000	S8	82.4	1.525	0.762	1.1480	
15 minute summer	S8	2.001	S9	81.4	1.572	0.799	2.0312	
15 minute summer	S9	2.002	S10	155.1	1.498	0.520	4.0250	
720 minute winter	S10	2.003	S11	17.7	0.943	0.080	3.9190	
720 minute winter	S11	2.004	S12	46.2	1.251	0.082	1.4151	
720 minute winter	S12	1.006	S13	-7.0	0.097	-0.042	4.0677	
720 minute winter	S13	1.007	S21 FC	-7.4	-0.057	-0.035	1.5171	
15 minute summer	S14	3.000	S16	66.0	1.170	0.838	1.2249	
15 minute summer	S15	4.000	S16	50.0	0.950	0.631	0.7218	
15 minute summer	S16	3.001	S17	114.6	2.312	0.702	0.7155	
720 minute winter	S17	3.002	S18	31.9	0.785	0.071	0.8012	
720 minute winter	S18	3.003	S19	13.6	0.632	0.079	3.8806	
720 minute winter	S19	3.004	S20	6.9	0.548	0.039	1.8623	
720 minute winter	S20	3.005	S21 FC	12.5	0.193	0.042	26.9729	
720 minute winter	S21 FC	1.008	EX	3.8	0.779	0.213	0.0386	176.7
15 minute summer	S22	5.000	S23	60.7	1.162	0.805	1.0116	
15 minute summer	S23	5.001	S24	82.6	1.812	0.651	0.9933	

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S24	11	33.644	0.384	118.3	1.3299	0.0000	OK
15 minute summer	S25	11	33.627	0.467	111.5	1.6160	0.0000	SURCHARGED
15 minute summer	S26	11	33.605	0.475	155.8	0.6791	0.0000	SURCHARGED
15 minute summer	S27	11	33.499	0.469	213.1	0.6711	0.0000	SURCHARGED
600 minute winter	S28	600	33.432	0.697	22.9	1.2314	0.0000	SURCHARGED
15 minute summer	S29	11	34.452	0.122	31.1	0.1749	0.0000	OK
15 minute summer	S30	11	34.460	0.360	83.1	0.5153	0.0000	SURCHARGED
15 minute summer	S31	11	34.269	0.529	137.8	0.7563	0.0000	SURCHARGED
15 minute summer	S32	11	33.466	0.316	162.5	0.4520	0.0000	OK
600 minute winter	S33	600	33.432	0.382	42.7	0.5467	0.0000	OK
600 minute winter	S34	600	33.432	0.742	63.2	471.8579	0.0000	SURCHARGED
600 minute winter	S35 FC	600	33.432	0.802	13.8	1.4169	0.0000	SURCHARGED
240 minute winter	S36	120	32.597	0.047	3.5	0.0527	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S24	5.002	S25	111.5	0.984	0.359	1.6349	
15 minute summer	S25	5.003	S26	112.5	0.745	0.608	1.4382	
15 minute summer	S26	5.004	S27	154.0	1.002	0.906	5.6712	
15 minute summer	S27	5.005	S28	210.0	1.428	1.248	7.4127	
600 minute winter	S28	5.006	S34	21.7	0.681	0.074	6.9076	
15 minute summer	S29	6.000	S30	31.4	0.843	0.302	1.2812	
15 minute summer	S30	6.001	S31	77.1	1.263	0.700	2.5816	
15 minute summer	S31	6.002	S32	132.6	1.884	1.183	2.9749	
15 minute summer	S32	6.003	S33	161.1	1.668	0.934	3.3391	
600 minute winter	S33	6.004	S34	45.6	1.249	0.089	1.2571	
600 minute winter	S34	5.007	S35 FC	13.8	0.113	0.047	9.1435	
600 minute winter	S35 FC	5.008	S36	3.5	0.740	0.201	0.0391	
240 minute winter	S36	5.009	EX MH75	3.5	0.785	0.187	0.0280	77.7

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	11	34.866	0.566	107.0	0.8106	0.0000	SURCHARGED
15 minute summer	S2	11	34.591	0.591	110.6	0.8462	0.0000	SURCHARGED
15 minute summer	S3	11	34.211	0.661	212.0	0.9458	0.0000	SURCHARGED
720 minute winter	S4	720	34.192	0.872	16.3	1.2480	0.0000	SURCHARGED
720 minute winter	S5	720	34.192	0.962	17.8	1.0882	0.0000	SURCHARGED
720 minute winter	S6	720	34.192	1.037	20.7	1.4842	0.0000	SURCHARGED
15 minute summer	S7	11	34.859	0.379	111.5	0.5418	0.0000	SURCHARGED
15 minute summer	S8	11	34.601	0.321	108.9	0.4597	0.0000	SURCHARGED
720 minute winter	S9	720	34.192	0.392	15.5	0.5611	0.0000	OK
720 minute winter	S10	720	34.192	0.722	18.1	1.0334	0.0000	SURCHARGED
720 minute winter	S11	720	34.192	0.842	33.4	1.2051	0.0000	SURCHARGED
720 minute winter	S12	720	34.192	1.112	80.8	744.3517	0.0000	SURCHARGED
720 minute winter	S13	720	34.192	1.182	7.7	1.6916	0.0000	SURCHARGED
15 minute summer	S14	11	34.424	0.394	89.5	0.5638	0.0000	SURCHARGED
15 minute summer	S15	11	34.322	0.332	67.7	0.4749	0.0000	SURCHARGED
15 minute summer	S16	11	34.252	0.332	154.3	0.4755	0.0000	SURCHARGED
720 minute winter	S17	720	34.192	0.732	31.4	2.5356	0.0000	SURCHARGED
720 minute winter	S18	720	34.192	0.832	18.0	2.8821	0.0000	SURCHARGED
720 minute winter	S19	720	34.192	0.902	22.6	232.4752	0.0000	SURCHARGED
720 minute winter	S20	720	34.192	1.042	14.3	1.4912	0.0000	SURCHARGED
720 minute winter	S21 FC	720	34.192	1.222	12.9	1.7488	0.0000	SURCHARGED
120 minute winter	EX	54	32.937	0.047	3.8	0.0000	0.0000	OK
180 minute winter	EX MH75	84	32.524	0.044	3.5	0.0000	0.0000	OK
15 minute summer	S22	11	34.390	0.650	82.3	0.9301	0.0000	SURCHARGED
15 minute summer	S23	11	34.263	0.613	106.9	0.8767	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	101.6	1.625	0.841	1.7897	
15 minute summer	S2	1.001	S3	110.3	1.738	1.004	2.1633	
15 minute summer	S3	1.002	S4	211.6	1.335	0.764	4.9574	
720 minute winter	S4	1.003	S5	15.3	0.535	0.082	4.2680	
720 minute winter	S5	1.004	S6	18.2	0.471	0.103	3.9430	
720 minute winter	S6	1.005	S12	19.9	0.740	0.117	4.2862	
15 minute summer	S7	2.000	S8	108.9	1.583	1.008	1.4881	
15 minute summer	S8	2.001	S9	106.3	1.614	1.044	2.6218	
720 minute winter	S9	2.002	S10	15.5	0.820	0.052	5.9015	
720 minute winter	S10	2.003	S11	23.5	0.965	0.107	4.0766	
720 minute winter	S11	2.004	S12	55.0	1.294	0.098	1.4151	
720 minute winter	S12	1.006	S13	-7.3	0.092	-0.044	4.0677	
720 minute winter	S13	1.007	S21 FC	-7.7	-0.058	-0.037	1.5171	
15 minute summer	S14	3.000	S16	88.5	1.257	1.124	1.5304	
15 minute summer	S15	4.000	S16	65.8	0.986	0.831	0.9649	
15 minute summer	S16	3.001	S17	150.7	2.402	0.923	0.9146	
720 minute winter	S17	3.002	S18	18.0	0.808	0.040	0.8256	
720 minute winter	S18	3.003	S19	18.0	0.670	0.105	3.8806	
720 minute winter	S19	3.004	S20	7.0	0.550	0.040	1.8623	
720 minute winter	S20	3.005	S21 FC	12.9	0.190	0.044	26.9729	
720 minute winter	S21 FC	1.008	EX	3.8	0.779	0.213	0.0386	193.3
15 minute summer	S22	5.000	S23	77.3	1.199	1.024	1.3642	
15 minute summer	S23	5.001	S24	105.0	1.802	0.828	1.2984	

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S24	11	34.033	0.773	150.7	2.6785	0.0000	FLOOD RISK
15 minute summer	S25	11	33.988	0.828	147.6	2.8669	0.0000	FLOOD RISK
15 minute summer	S26	11	33.947	0.817	209.9	1.1690	0.0000	SURCHARGED
15 minute summer	S27	11	33.748	0.718	291.4	1.0270	0.0000	SURCHARGED
720 minute winter	S28	705	33.736	1.001	25.3	1.7684	0.0000	SURCHARGED
15 minute summer	S29	11	35.187	0.857	41.8	1.2264	0.7526	FLOOD
15 minute summer	S30	11	35.166	1.066	102.4	1.5258	0.0000	FLOOD RISK
15 minute summer	S31	11	34.836	1.096	176.6	1.5688	0.0000	FLOOD RISK
720 minute winter	S32	705	33.736	0.586	17.4	0.8383	0.0000	SURCHARGED
720 minute winter	S33	705	33.736	0.686	40.9	0.9814	0.0000	SURCHARGED
720 minute winter	S34	705	33.736	1.046	64.6	665.1714	0.0000	SURCHARGED
720 minute winter	S35 FC	705	33.736	1.106	14.1	1.9540	0.0000	SURCHARGED
180 minute winter	S36	84	32.597	0.047	3.5	0.0527	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S24	5.002	S25	147.6	0.993	0.475	1.7126	
15 minute summer	S25	5.003	S26	150.9	0.952	0.816	1.4382	
15 minute summer	S26	5.004	S27	208.6	1.317	1.228	5.6712	
15 minute summer	S27	5.005	S28	288.4	1.838	1.713	7.9271	
720 minute winter	S28	5.006	S34	23.1	0.687	0.079	6.9076	
15 minute summer	S29	6.000	S30	38.0	0.845	0.366	1.8530	
15 minute summer	S30	6.001	S31	98.8	1.403	0.897	2.5816	
15 minute summer	S31	6.002	S32	177.3	2.519	1.582	3.0124	
720 minute winter	S32	6.003	S33	18.9	0.933	0.110	5.5032	
720 minute winter	S33	6.004	S34	23.2	1.206	0.045	1.3195	
720 minute winter	S34	5.007	S35 FC	-16.4	0.117	-0.056	9.1435	
720 minute winter	S35 FC	5.008	S36	3.5	0.740	0.200	0.0391	
180 minute winter	S36	5.009	EX MH75	3.5	0.785	0.187	0.0280	73.3

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

APPENDIX D

THAMES WATER DRAINAGE RECORDS

Asset Location Search

Property Searches

Howard Ward Associates Ltd
HOWARD WARD ASSOCIATES, BREWER
RADCLIFFE ON TRENT
NG12 2FF

Search address supplied

Axis Security Services Ltd
The Maintenance Base
Furzeground Way
Uxbridge
UB11 1HU

Your reference P25124

Our reference ALS/ALS Standard/2025_5194796

Search date 15 July 2025

Keeping you up-to-date

Notification of price changes

We're changing our report prices from 4th June 2025. The price will increase by 3.5% based on Retail Price Index (RPI).

Find our new prices on our website thameswater.co.uk/property-searches

Any Questions? We're happy to talk through the changes with you – give our Property Searches team a call on 0800 009 4540 .

Thames Water Utilities Ltd
Property Searches,
Clearwater Court, Vastern Road, Reading RG1 8DB

property.searches@thameswater.co.uk
thameswater.co.uk/propertysearches

0800 009 4540

Asset Location Search

Property Searches

Search address supplied: Axis Security Services Ltd, The Maintenance Base, Furzeground Way, Uxbridge, UB11 1HU

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

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

Thames Water Utilities Ltd
Property Searches
Clearwater Court
Vastern Road
Reading
RG1 8DB

Email: property.searches@thameswater.co.uk
Web: thameswater.co.uk/propertysearches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority. Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners. The public sewer map relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus. The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

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

Clean Water Services

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

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd

Asset Location Search

Property Searches

Tamblin Way
Hatfield
AL10 9EZ
Tel: 0845 7823333

For your guidance:

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

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. You can do this by emailing customer.feedback@thameswater.co.uk with the email subject header 'Enquiry – TWOSA', along with details of the request.

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

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

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

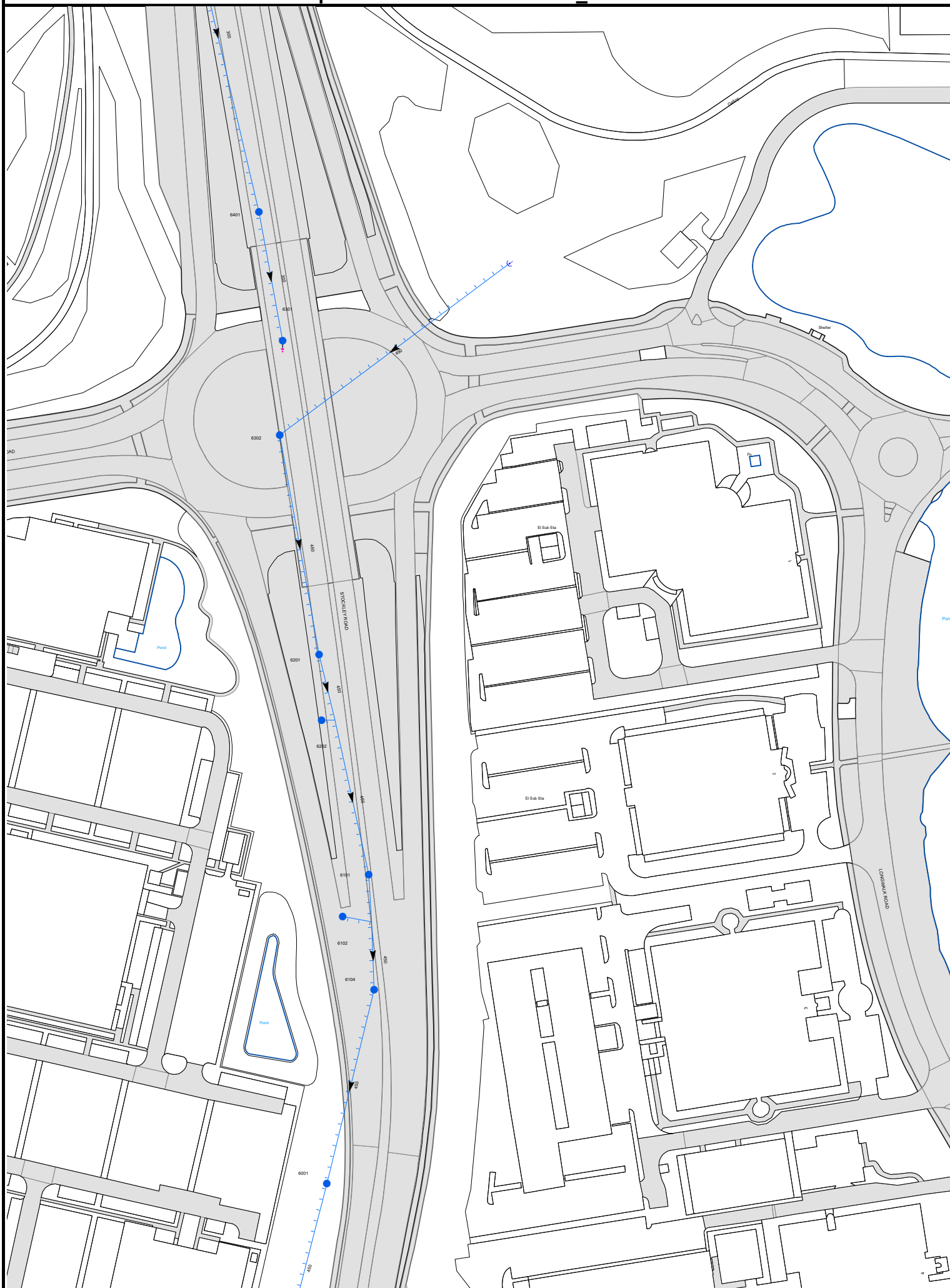
Clean Water queries

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

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

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

Asset Location Search Sewer Map - ALS/ALS Standard/2025_5194796



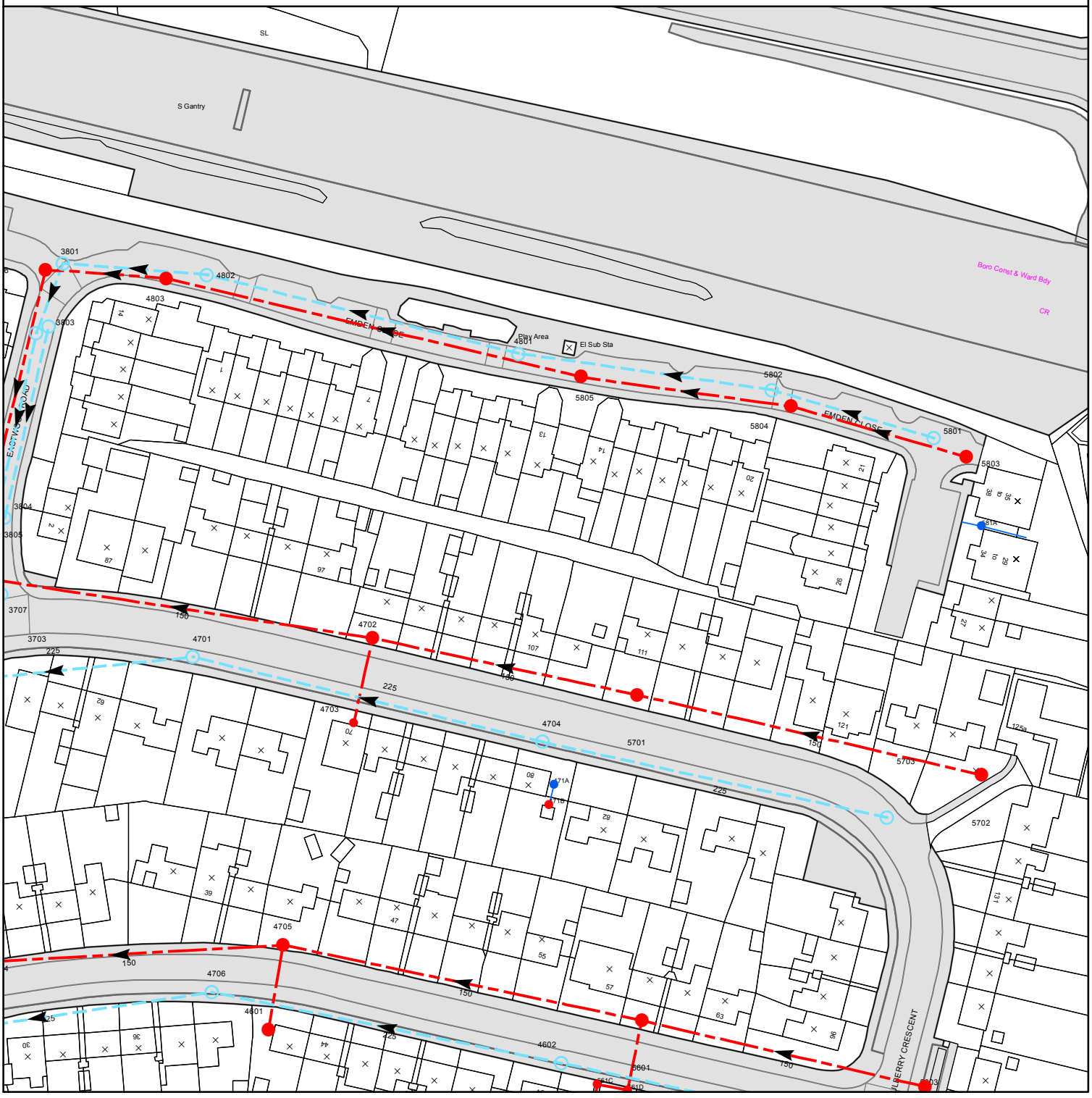
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey i

Manhole Reference	Manhole Cover Level	Manhole Inve
6001	n/a	n/a
6104	n/a	n/a
6102	n/a	n/a
6101	n/a	n/a
6202	n/a	n/a
6201	n/a	n/a
6302	n/a	n/a
6301	35.4	34.48
6401	35.85	35.05

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

Based on the Ordnance Survey Map (2024) with the sanction of the Controller of H.M Stationery Office, License Number AC0000849556 Crown Copyright Reserved.

ALS/ALS Standard/2025_5194796



0 5 10 20 30 40
Meters

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 before any works are undertaken. Crown copyright Reserved

Scale:	1:1160
Width:	230m
Printed By:	tlove
Print Date:	16/07/2025
Map Centre:	507496,179799
Grid Reference:	TQ0779NW

Comments:

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

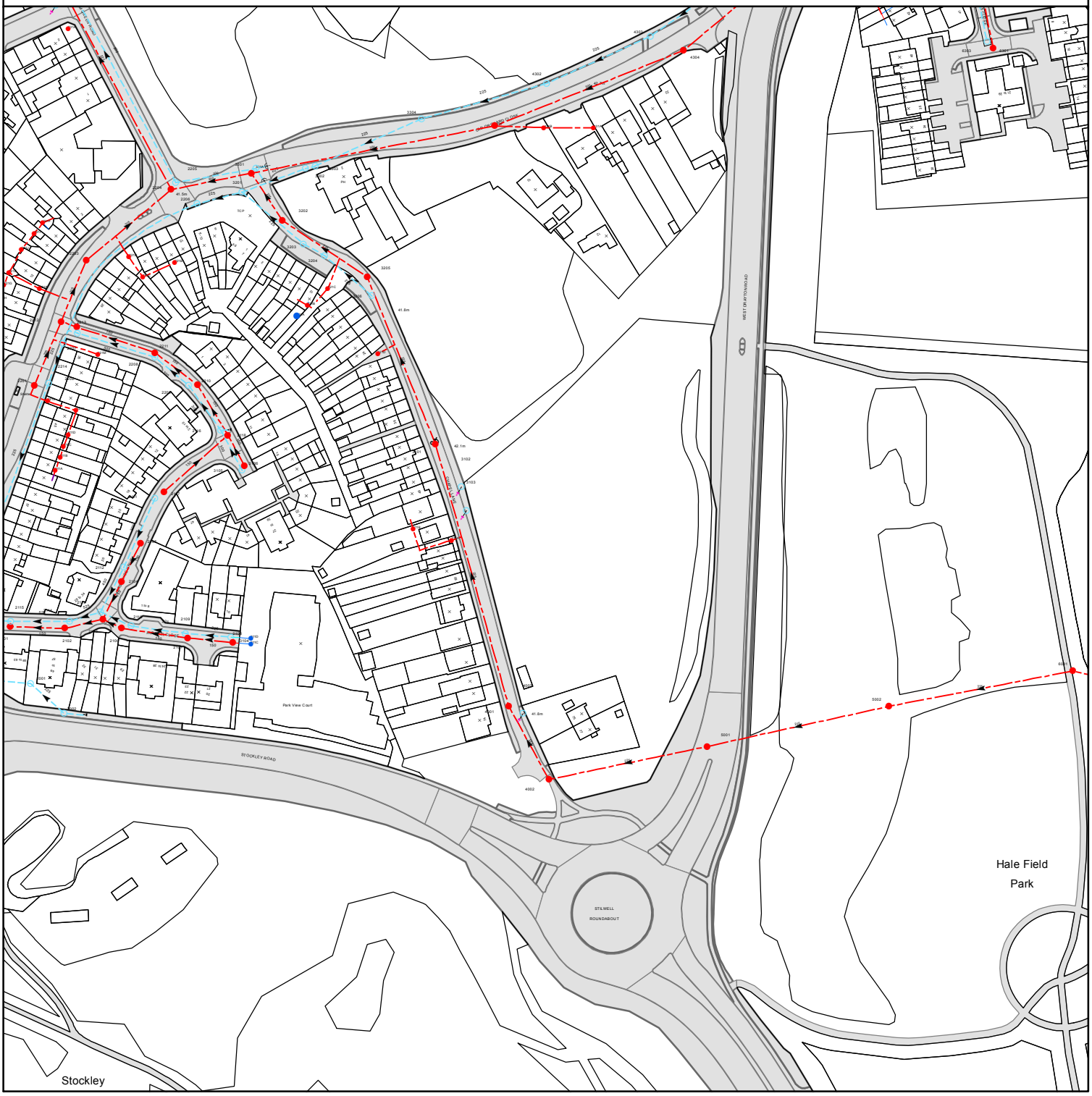
REFERENCE	COVER LEVEL	INVERT LEVEL
4801		
3802		
4701	31.56	29.47
4706	31.29	29.35
4705	31.5	29.35
3801		
4702	31.88	29.83
5702	32.2	30.48
5801		
5804		
4704	31.9	29.94
5805		
5601	32.24	29.89
471B		
561C		
581A		

REFERENCE	COVER LEVEL	INVERT LEVEL
3804		
3806		
4802		
4601	31.48	29.84
5703	32.18	30.06
4803		
5803		
5602	32.69	30.23
5802		
3803		
4602	32.27	30.15
5701	31.97	29.95
4703	31.87	29.99
471A		
561D		

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 before any works are undertaken. Crown copyright Reserved

Based on the Ordnance Survey Map (2024) with the sanction of the Controller of H.M Stationery Office, License Number AC0000849556 Crown Copyright Reserved.

ALS/ALS Standard/2025_5194796



0 12.5 25 50 75 100
Meters

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 before any works are undertaken. Crown copyright Reserved

Scale:	1:2321
Width:	460m
Printed By:	tlove
Print Date:	16/07/2025
Map Centre:	507433,181143
Grid Reference:	TQ0781SW

Comments:

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

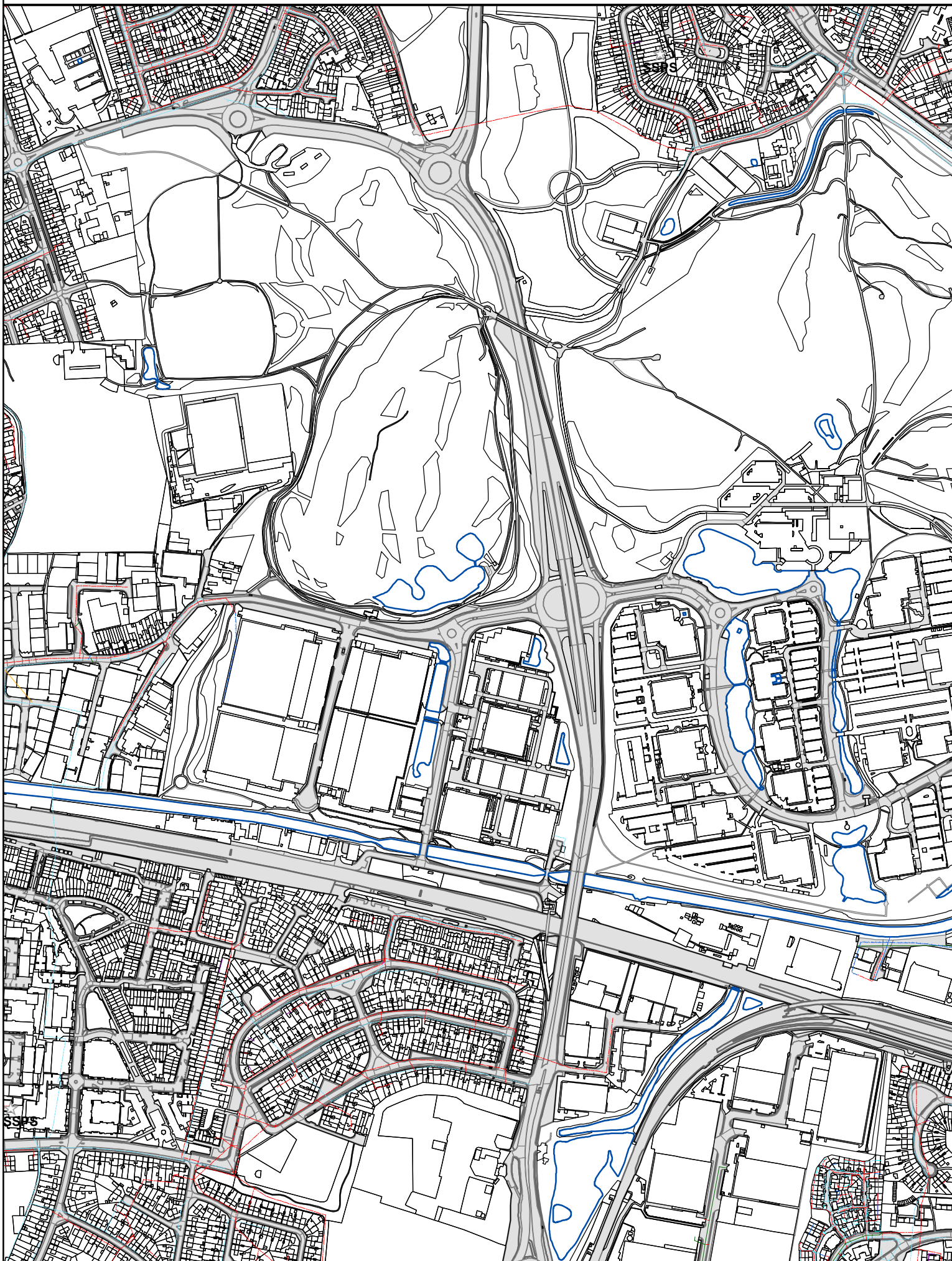
REFERENCE	COVER LEVEL	INVERT LEVEL
231A		
3105	40.67	39.58
3104	20	18.3
6303	44	42.32
2114	39.19	37.22
2207	40.18	39.16
3203	41.65	40.63
3303	41.95	40.66
2103	39.46	37.84
6301	44.1	41.8
2109	40.25	37.62
2001	39.32	37.41
4302		
2201	39.73	38.13
2101	38.84	36.99
2214	40.04	39.07
2102	39.19	37.49
2208	40.5	39.46
3205	41.85	36.94
2118	40.58	38.51
4303		
3201	41.47	40.36
4003		
2209	40.61	39.49
2210	40.61	38.29
2106	39.76	38.05
2112	39.7	37.39
3204	41.73	40.77
2212	40.19	37.59
3301	41.53	36.72
221A		
221F		
221I		
211B		
211D		
221L		
431B		
221J		
321B		
221C		
221M		
311A		
321D		
321C		
311C		

REFERENCE	COVER LEVEL	INVERT LEVEL
2205		
2108	19.99	17.6
4001		
3304		
2213	40.17	37.82
2203	40.6	37.17
3302	41.95	41.18
2117	40.19	38.87
2113	39.43	37.26
2105	39.92	38.43
3103		
2116	40.55	39.54
4002		
2110	39.86	37.48
2115	38.81	37.14
2002	39.84	38.93
3102		
3101		
3206		
3202	41.6	36.83
4304	43.09	38.45
3106	40.65	38.67
2107	40.24	38.26
2206	41.25	40.27
5002	42.53	38.33
2104	39.63	38.22
2202	39.8	38.82
2211	40.48	38.09
6001	42.85	38.53
2111	40.17	37.72
221E		
221G		
211A		
211C		
221K		
431A		
4301	42.47	38.21
321A		
221B		
221D		
311B		
2204	41.29	36.61
5001	42.25	38.07
331A		
311D		

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 before any works are undertaken. Crown copyright Reserved

Based on the Ordnance Survey Map (2024) with the sanction of the Controller of H.M Stationery Office, License Number AC0000849556 Crown Copyright Reserved.

ALS/ALS Standard/2025_519



ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
041N	30.835	29.087
141B	30.863	28.4
141J		
041P		
041S		
041U		
141O		
141Q		
042W		
043E		
141V		
042Y		
042Z		
043R		
043T		
141Z		
043C		
142A		
141N		
142D		
142F		
131I		
041W		
141W		
141Y		
043G		
043K		
043M		
043O		
043Q		
042A		
042C		
042E		
042R		
042T		
131J		
142J		
043V		
043X		
042N		
043Z		
044B		
044D		
042Q		
131K		
031T		
031V		
031X		
131M		
031Y		
044K		
032B		
044F		
044L		
044N		
032D		
131O		
042K		
042L		

REFERENCE	COVER
141F	30.796
141E	30.728
041O	
041R	
041T	
041V	
141P	
141S	
043A	
141U	
042X	
141T	
141M	
043S	
043U	
043B	
043D	
142B	
142C	
142E	
142G	
041Y	
041Z	
141X	
043F	
043I	
043L	
043N	
043P	
041X	
042B	
042D	
042F	
042S	
042U	
142H	
142K	
043W	
043Y	
042O	
044A	
044C	
042P	
044J	
031S	
031U	
031W	
131L	
131N	
031Z	
032A	
044E	
032C	
044M	
044O	
044G	
042J	
042G	
042H	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
031A	31.005	28.939
041F	31.16	29.265
142N		
131Q		
131S		
142P		
032F		
142L		
032H		
032I		
032K		
032L		
142Q		
131U		
032O		
021C		
2507	29.88	28.24
351D		
2304	31.46	29.04
2202	30.99	28.98
8604		
2203		
2601	32.67	31.14
7302	31.54	29.62
4801		
4203	32.18	30.8
1811		
3702		
8602	29.61	29.18
3201	31.74	28.83
8303	28.67	27.67
0406	29.14	26.54
0201	30	27.07
0107	42.46	41.86
3105	40.67	39.58
2701	29.9	27.98
2501	28.78	27.48
2505	29.62	27.89
5119	41.76	40.64
6120	41.15	39.63
3209	42.39	41.6
1106	38.59	37.29
2108	19.99	17.6
7213	40.49	38.91
2204		
6301	35.4	34.48
0501	29.27	28
9002		
7212	40.51	38.94
0301		30.1
2114	39.19	37.22
2207	40.18	39.16
3118	42.16	41.72
3603	30.96	29.16
3705	30.89	28.89
6133	41	39.79
8502		
3134	42.33	41.84
4202	42.7	42.17

REFERENCE	COVER
031J	30.888
142M	
131P	
131R	
142O	
032E	
044H	
032G	
044I	
032J	
044P	
032M	
131T	
032N	
033E	
032T	
2506	29.68
331A	
2702	32.35
8605	29.59
5601	
2302	31.4
2602	32.36
7305	31.56
4802	
1506	29.23
1810	
3302	31.75
1309	30.38
3202	31.74
6604	32.36
0408	29.58
3701	
6101	
1504	28.47
2502	28.62
5603	32.79
5605	
5012	41.74
3113	42.22
1105	38.62
1108	38.43
3104	20
4001	
6302	
0402	29.75
0807	
7501	
2102	41.81
0003	
2213	40.17
2009	42.31
3117	42.16
3704	31.07
3702	31.85
6235	40.99
8901	31.7
4008	42.41
8004	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
8402	28.97	26.93
8701	29.72	29.26
8607		
6902	31.29	29.4
4401	32.64	31.2
9401	29.25	28.08
4701	33.09	30.44
7304	31.43	29.13
3203	31.76	29.79
3303	31.86	31.09
3703	31.46	29.5
3707		
3802		
2604	29.22	28.19
2704		28.12
6901		
6404	31.42	29.94
1705		
4701	31.56	29.47
4802		
4601	31.48	29.84
5606	31.8	31.09
5703	32.18	30.06
6301	31.72	30.09
6804		
2405	32.04	29.96
2603	31.98	30.8
6701		
2103	39.46	37.84
8302	28.87	28.01
2301	30.21	27.93
9306	29.53	25.94
9305	29.62	26.06
2113	39.43	37.26
8202	28.89	26.46
8401	29.12	27.56
7203	30.92	27.46
2203	31.36	26.01
2602	30.11	28.35
0202	29.76	28.39
0303	30.34	28.65
4803		
2703	32.31	31.22
5404	32.54	30.75
5401	33.16	31.13
0404	29.59	26.66
1602	31.53	29.57
3704		
6202	31.27	28.03
6201	31.24	28.62
7703	32.58	31.2
8501	29.02	28.11
8403	29.12	27.59
9201	29.36	25.77
2504	29.42	28.07
7204	30.94	29.01
2206		
4501	32.8	30.88
1602		

REFERENCE	COVER
8503	29.63
8606	
8603	29.19
7402	31.69
6902	29.83
9404	29.16
1701	29.36
7303	31.45
3503	32.74
3807	
3805	
3804	
3806	
2302	30.52
2303	30.43
5602	
0409	30.01
1603	29.09
4607	31.66
4706	31.29
4705	31.5
5605	33.34
1201	29.56
6403	31.89
6801	
2506	32.25
2504	32.49
3402	32.82
7901	31.8
2706	
9204	29.47
9302	29.35
1101	38.12
3801	
8504	29.71
8502	28.59
2703	30.22
2705	
6603	32.36
0302	30.32
4603	31.53
2505	32.37
3301	31.74
5402	32.77
0405	29.83
3601	30.46
1311	30.44
4702	
5901	34.45
7704	32.61
8201	28.68
8301	29.09
9301	29.12
9501	29.09
7903	32.52
5603	
2204	
1702	29.57
1303	30.2

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
3905		
0002	35.71	34.22
0201	37.05	35.55
3112	42.4	41.88
4216	42.69	42.14
4122	42.55	42.03
4002		
6501	38.37	37.52
8001	32.25	31
5118	41.78	40.65
6131	41.04	39.88
8205	43.06	42.38
6106	40.92	39.73
6209	41.03	39.34
2105	41.99	41.22
3126	42.18	41.76
3220	42.47	41.71
3135	42.33	41.84
6132	41.01	39.83
1204	38.5	37.02
2110	39.86	37.48
5105	41.83	40.69
6234	40.98	39.52
7703	39.78	37.3
8902	31.47	30.77
0203	37.1	35.69
2115	38.81	37.14
2002	39.84	38.93
3101	42.15	41.67
3119	42.15	41.72
6701		
8803	32.15	29.18
0303	32.13	30.3
3102		
4124	42.49	42.01
3123	42.22	41.75
8003		
5120	41.75	40.62
5607	38.66	37.79
5212	41.59	40.39
6134	40.99	39.74
6237	41	39.4
0108	42.65	41.84
7208	40.47	39.07
0211	31	29.36
2502	32.19	30.77
5202	31.96	29.55
5302	32.14	29.97
3114	42.21	41.81
1102	38.12	36.28
4209	42.26	41.51
5207	41.79	40.78
6104		
7101	40.5	39.13
9103	42.89	42.25
5303	31.99	31.13
5305	31.92	30.3
5701	32.64	28.81
7201	31.09	28.26

REFERENCE	COVER
4123	42.51
0202	37.06
2001	39.32
3225	42.27
4801	40.97
2116	40.55
6601	36.74
8402	
5013	41.72
5127	41.69
2201	39.73
8003	41.58
6104	40.97
2104	41.88
3008	42.4
3127	42.2
3105	42.38
9101	42.72
9204	43.34
1003	38.39
4210	42.19
6401	35.85
8004	41.63
7102	43.4
0208	31.21
2101	38.84
2214	40.04
2102	39.19
3106	
7802	40.28
8802	
9301	
0305	32.19
6102	
4215	
3007	42.47
8801	30.33
5125	41.74
5003	41.66
5004	
6804	40.79
8101	
7207	40.48
0204	30.97
2301	31.28
2501	32.11
2007	42.36
5201	32.2
3228	42.17
3003	41.65
2208	40.5
8002	
6103	41.26
9004	42.22
1103	42.5
5702	
5703	
7701	32.65
7301	31.56

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
9205	29.8	26.73
0407	29.19	26.41
7601	32.56	31.24
0304	30.13	27.85
2402	31.6	29.41
2201	31.08	28.31
9003	29.83	28.73
5802		
1809		
1606	29.31	28.09
3803		
1202	29.3	28.19
2201	30.33	29.31
1708		27.72
1601	29.37	28.15
4704	31.9	29.94
4602	32.27	30.15
2404	32.19	30.21
2305	31.48	29.43
7602	32.36	30.86
1402	31.06	29.26
1404	31.09	28.07
5609	31.69	30.19
5701	31.97	29.95
5306	31.69	30.23
4005	41.88	40.79
4010	42.53	42.13
4107	41.99	41.12
5102	41.88	40.89
6005	41.42	40.47
4103	42.2	41.59
5006	41.57	40.98
5115	41.85	40.8
0202	30.79	29.81
1002	38.81	
1110	38.66	37.01
3106	40.65	38.67
5110	41.85	40.95
6903	41.44	40.18
6012	41.13	40.25
6222	41.66	40
6116	41.2	39.84
6138	40.89	39.49
6139	40.87	39.47
6147	40.49	39.39
8604		
9201	36.54	35.07
9102	30.55	29.44
9206	30.64	28.86
6121	41.09	39.59
6904	41.28	39.99
6122		
9102	42.61	42
2101	41.91	41.19
4126	42.36	41.96
2209	40.61	39.49
5705	40.38	39.66
5602	39.4	38.6
5116	41.85	40.74

REFERENCE	COVER
0301	29.8
2508	29.85
0401	29.2
0403	29.75
2401	31.65
4201	32.04
4302	32.32
2205	
1301	30.01
1201	29.62
6304	31.57
2702	29.87
1405	
1306	29.95
1707	
4604	32.46
5607	32.82
2503	32.23
7605	32.44
1703	29.51
1308	31.13
5608	33.59
5805	
5601	32.24
5501	
4009	42.53
4207	42.32
5104	
5225	
6221	41.72
5114	41.79
5224	41.98
0109	
0207	30.67
1001	38.74
1112	
4003	
5221	42
6901	41.46
6115	41.17
6013	41.12
5216	41.48
6001	33.12
6604	39.72
4127	42.35
9103	30.62
9302	
9207	30.54
5126	41.75
6701	40.08
6004	41.01
8204	43.3
1003	42.4
2115	
2107	40.24
5130	41.88
5131	41.9
5016	41.57
5226	41.84

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
7105	40.46	39.26
8401	29.87	28.6
0103	36.7	35.38
2104	39.63	38.22
0302	31.72	30.46
5011	41.9	41
7104	40.48	39.22
8805	31.25	30.43
5703	40.52	37.95
5124	41.72	40.51
2202	39.8	38.82
7210		
3208	42.12	41.28
5123	41.7	40.53
8001		
7103		
3128	42.19	41.79
3218	42.45	41.74
5009	41.9	41.09
5010	41.91	41.06
5017		
6002	33.44	31.41
6009	41.2	40.36
6902	41.49	40.59
6233	40.83	39.4
3005	42.6	42.26
3137	42.3	41.8
0109	42.78	41.9
1006	42.4	41.97
2005	42.07	41.48
3120	42.19	41.67
3136	42.31	41.82
5007		
5021		
7103	42.69	40.98
6603	39.74	37.59
6601	39.54	37.22
6205		
6219	41.83	40.11
3103	41.68	40.88
3004	42.61	42.38
3130	42.21	41.83
4208	42.27	41.59
6001	41.23	40.37
6231	40.85	39.32
6230		
7902	40.53	38.17
3124	42.2	41.74
4011	42.59	42.19
4012		
0113	42.88	42.34
5802	41.11	40.54
5137	42	40.31
6125	41.98	40.28
331C		
531H		
931A		
931C		
521D		

REFERENCE	COVER
1102	42.45
0203	30.99
2106	39.76
2112	39.7
5601	40.02
5209	42.01
0205	
8201	29.96
5129	41.85
6501	38.39
6137	40.97
3116	42.18
2207	42.17
5706	39.91
8102	42.91
9104	30.4
3219	42.47
4205	42.31
5005	42.17
7001	42.43
5112	41.81
6218	41.85
6112	41.29
6007	41.54
7106	40.47
3131	42.21
3215	42.54
1002	
1005	42.39
2210	42.17
3132	42.4
5219	41.98
5135	41.99
5136	41.94
6145	40.45
6803	41.14
6110	41.29
6111	41.29
2004	41.99
3104	42.16
3217	42.34
3216	42.3
8105	42.73
6123	41.89
3129	42.22
6107	40.75
3902	40.36
3006	42.52
4701	41.03
5111	41.8
6232	40.84
5901	41.17
5023	41.23
331B	
921I	
531J	
261D	
521C	
421E	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
6238	40.93	39.36
3226	42.16	41.66
8101	29.65	28.2
9202	30.45	28.17
5213	41.52	40.34
0102	42.91	41.85
0101	42.7	41.85
0103	42.77	41.84
0110	42.65	41.73
011B	42.76	39.86
011C	42.7	39.37
001A	42.4	39.07
101B	42.49	38.93
391A	41.93	38.76
391C	41.4	38.64
231B		
0104	42.65	41.69
2011	42.15	40.66
4802	41.18	38.15
0112	42.74	41.16
3801		
3903	41.45	38.71
6101	41.22	40.2
6201		
1804		
1304	30.09	29.1
5604		
2003	41.82	40.99
7202	31.08	27.82
1302	30.3	29.08
1004	42.46	41.38
9205	43.43	42.73
3705		
5008	41.93	41.15
9405	29.1	27.71
571C		
7801	40.36	38.06
6802	41.43	40.58
5128	41.78	40.58
0001	42.52	39.66
7104	42.71	41.59
011C		
3221	42.46	41.7
5022	41.25	40.29
431G		
1701		
561A		
8002		
3602	30.65	28.49
971G		
241F		
911A		
032V		
032X		
032Z		
033B		
131V		
033T		
033U		

REFERENCE	COVER
9003	
2212	40.19
4502	32.92
7209	40.46
2605	29.53
0204	42.92
0105	42.67
0203	
011A	42.83
121C	42.95
011D	42.64
101A	42.1
291A	42.3
391B	41.62
2403	31.9
1104	
1001	
3802	
0106	42.6
3901	
0111	42.67
0115	42.67
6006	41.56
4206	42.05
2803	
6236	41
3304	32.07
4013	
1307	30.96
2406	31.94
2401	29.19
6008	
4014	
6001	42.85
3111	42.34
0001	35.7
2303	31.5
7001	40.96
2109	
4703	31.87
7101	44.38
5019	41.35
6210	40.84
5211	41.71
1702	32.61
1705	32.66
1304	34.9
241E	
3604	31.36
631B	
841A	
032U	
032W	
032Y	
033A	
033C	
033S	
033F	
033V	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
034V		
034X		
034Z		
035B		
821B		
721A		
921C		
721E		
721F		
821E		
821F		
921D		
921F		
921H		
821I		
831D		
801C		
531I		
531F		
541H		
351E		
0107		
5801		
5604	31.99	30.39
6239	40.99	39.28
4703	40.85	38.4
5208	41.92	40.96
6124		
7401	35.8	31.74
5702	40.23	37.81
7107	40.48	39.34
9106		
5014	41.67	40.76
5222	41.99	40.99
9002	30.07	28.83
6801	41.38	40.02
641A		
211B		
971B		
971D		
971F		
1605	28.88	27.43
161B		
471A		
011A		
121A		
531A		
911B		
141B		
231A		
801E		
801B		
6807		
691B		
261B		
941A		
941B		
211B		
211D		

REFERENCE	COVER
034W	
034Y	
035A	
035C	
821C	
721B	
721D	
821D	
721G	
721H	
821G	
921E	
921G	
821H	
821J	
801D	
631A	
531K	
541G	
521B	
0108	
2601	30.25
4301	32.55
5604	39.63
2001	42.95
5210	41.6
4129	42.33
1401	31.6
2110	
6303	31.68
2209	42.14
6014	
6001	
8103	
2111	40.17
651A	
561B	
971A	
971C	
971E	
2603	29.44
161A	
471B	
811B	
011B	
521A	
741E	
381A	
811A	
751B	
801F	
6805	
6906	
261C	
261A	
041A	
211A	
211C	
221K	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
911D		
321A		
021C		
021D		
6602	39.67	37.72
721D		
921D		
871A		
921F		
021C		
021B		
151A	29.33	26.774
3801		
781A		
571A		
141A	29.184	26.471
361C		
351A		
351C		
541D		
491A		
591A		
321A		
321C		
4202	31.96	29.78
151A		
141D		
221M		
621D		
011E		
541S		
321F		
9403	29.14	27.95
941C		
0209	31.29	30.55
111A		
931E		
631D		
121B		
631E		
3241	42.22	41.6
641H		
801I		
781B		
701A		
181A		
601B		
421D		
421B		
531M		
531N		
621G		
431I		
431K		
711O		
711R		
712E		
701O		
701Y		

REFERENCE	COVER
911E	
021B	
211C	
211A	
721C	
721E	
911C	
921E	
601A	
431E	
021D	
081A	
5708	
541A	
161C	
361B	
361D	
351B	
541B	
541E	
491B	
5215	41.46
321B	
321D	
0304	
671C	
141E	
241D	
011D	
711A	
321E	
321G	
9402	29
531B	
0205	31.51
931D	
931B	
121D	
121C	
931A	
321H	
811F	
311B	
311A	
221A	
541I	
601C	
421A	
421C	
531O	
621A	
431H	
431J	
702W	
711P	
711Z	
712Q	
701X	
701Z	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
722A		
271B		
271D		
722E		
271E		
715G		
715I		
715L		
715Q		
715S		
722F		
715X		
6015		
6143	40.45	39.56
721D		
6017		
711B		
701E		
722L		
715Z		
6127	41.1	40.05
6003	40.8	39.98
6105	41.08	40.11
6019	40.52	39.74
6108	40.45	39.52
6141	40.48	39.66
716I		
722N		
716A		
716C		
716K		
716M		
703P		
701M		
701Q		
701S		
701U		
702G		
711W		
712D		
703L		
721G		
711H		
711J		
711M		
702C		
702L		
703T		
703V		
703X		
711X		
701H		
714U		
711N		
702E		
713S		
711E		
712H		
702U		

REFERENCE	COVER
722B	
271C	
271F	
722D	
271A	
715H	
715J	
715P	
715R	
715T	
715W	
6129	41.04
6130	41.01
6016	40.71
721E	
711A	
711C	
722K	
715Y	
711G	
6128	41.06
6126	41.17
6018	40.53
6140	40.49
6144	40.46
6142	40.45
716J	
722O	
716B	
716D	
716L	
716N	
703Q	
701P	
701R	
701T	
702F	
711Q	
713O	
712M	
701I	
721H	
711I	
711K	
701J	
702J	
703R	
703U	
703W	
703A	
703F	
702N	
713Q	
703G	
702V	
714D	
712G	
712I	
701D	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
716P		
601E		
713A		
713C		
713E		
713H		
713J		
721J		
721M		
713L		
721P		
703N		
713M		
713V		
611A		
371B		
241G		
911F		
911H		
241C		
5107	42.09	41.43
131A		
4017		
4136	42.12	41.49
4134	42.16	41.55
4105		
4137	42.07	41.41
4133	42.2	41.56
5109	42.05	41.34
5101	42.08	41.19
4112	41.98	41.47
4104	42.19	41.61
4119	42.4	42.05
4132		
4106	42.37	42.11
451E		
451G		
451H		
451A		
1703	32.57	30.85
1704	32.65	30.61
921B		
981A		
281A		
551B		
1103	38.29	36.67
111D		
201A		
541F		
691C		
041B		
481B		
3701	32.33	31.48
531C		
281B		
741G		
6302	31.59	29.76
741B		
4130	42.34	41.87

REFERENCE	COVER
704D	
712Z	
713B	
713D	
713F	
713I	
713K	
721K	
721N	
721O	
721Q	
703O	
713U	
713W	
371A	
8701	
241H	
911G	
911I	
751C	
5108	42.05
4114	
4109	42
4108	42.28
4111	41.95
4110	41.98
4116	42.23
4135	42.16
4113	42.02
4016	
4117	42.26
5103	41.9
4118	42.33
4131	
4115	42.23
451F	
351A	
011J	
731B	
1801	32.61
731A	
851A	
981B	
541J	
541K	
111C	
321D	
201B	
6806	
691A	
481A	
481C	
2701	32.6
431F	
741A	
2208	42.11
631H	
641I	
631I	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
531E		
671D		
731O		
8005	41.53	39.16
731G		
731I		
731K		
111E		
631G		
581A		
9304	29.6	26.12
771A		
771B		
821B		
821D		
8003	31.74	29.4
641E		
851E		
851C		
221C		
034N		
721F		
711L		
721I		
921B	31.1	29.502
131C	30.2	28.052
131A	30.075	27.892
921A	31.65	29.161
831A		
1301	30.27	27.87
5121	41.74	40.59
031O	30.5	28.272
721G		
731C		
261E		
731E		
151B		
391D		
381D		
901A		
691E		
251B		
601F		
011F		
711C		
571D		
471A		
011L		
581C		
081D		
081B		
311C		
691G		
691I		
021G		
781C		
771D		
931B	30.61	28.96
041C		

REFERENCE	COVER
351C	
671E	
811D	
731F	
731H	
731J	
731L	
531U	
531G	
9303	29.75
031A	
741D	
821A	
821C	
8901	29.71
221B	
641G	
851D	
851B	
033D	
715B	
701W	
711F	
841B	
031E	30.525
021A	31.225
031L	30.3
821A	
831B	
831C	
5122	41.74
721F	
351B	
361E	
731D	
411A	
021B	
011E	
241I	
691D	
691F	
791A	
601G	
711B	
581A	
851A	
121M	
581B	
581D	
081A	
081C	
311D	
691H	
021F	
801J	
771C	
921A	30.55
821A	
041D	

ALS/ALS Standard/2025_5194796

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
441C		
111F		
191A		
231H		
231E		
231F		
701A		
401C		
401B		
401A		
921I		
001A		
481E	31.42	30.91
481F	33.15	31.64
921C		
921D		

REFERENCE	COVER
111G	
821B	
131Y	
231I	
231G	
701B	
591D	
401D	
501A	
911B	
921J	
481A	33
481B	33.1
481D	33.09
911B	

cation Search - Sewer Key

aintained by Thames Water)

y waste water from domestic and

ed to convey surface water (e.g. ks) to rivers or watercourses.

o convey both waste water and trial sources to a treatment works.

- Sludge Sewer
- Surface Trunk Sewer
- Foul Rising Main
- Combined Rising Main
- Thames Water Proposed
- Gallery

d maintained by Thames Water)

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

Sewer Fittings

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

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

Operational Controls

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

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

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

- Inlet
- Outfall
- Undefined End

Other Symbols

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

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

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

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

e Datum Newlyn.

mains) indicate the direction of flow.
in the past, this information has not been recorded.

5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters.
Text next to a manhole indicates the manhole reference number and should not be taken as a measurement.
If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

HISTORIC AS BUILT FOUL WATER DRAINAGE
FOR INFORMATION ONLY
PREPARED BY ARUP



A1
AP 4m

A1.1 Building
For Details Refer Drg. No. AA 811 A1.1/1032 and AA 811 A1.1/2001

MH No	COVER LEVEL	INVERT LEVEL	CO-ORDINATES NORTHING	EASTING	Dimensions Off Building Grid
A1.1F1	34.40	33.40	180 292.55	507 953.75	8M of Grid D, 2.23E of Grid 2
A1.1F2	32.40	30.93	180 278.10	507 957.55	7.55 of Grid F, 2.23E of Grid 2
A1.1F2a	32.31	30.81	180 270.52	507 957.5	7.55 of Grid F, 9.55E of Grid 4
A1.1F3		31.843	180 275.00	507 995.8	7.55 of Grid F, 7.5E of Grid 8
A1.1F4		32.751	180 302.00	507 995.0	7.55N of Grid A, 1.5E of Grid 4
A1.1F5		32.228	180 301.70	507 967.5	7.5N of Grid A, 7.5E of Grid 8
A1.1F6		31.76	180 339.60	508 014.0	7.5N of Grid J, 28m Chainage 28m from MH A1.1F5
A1.1F7		31.61	180 370.50	508 022.2	12m Chainage from MH 13

A1.2 Building
For Details Refer Drg. No. AA 811 A1.2/1032 and AA 811 A1.2/2001

A1.2F1	34.03	32.03	180 262.30	507 959.5	4.27N of Grid B, 4.9E of Grid 4
A1.2F2		32.52	180 255.70	507 957.60	7.5N of Grid D, 4.9E of Grid 4
A1.2F3		32.05	180 242.00	507 981.4	7.5N of Grid A, 7.5E of Grid 8
A1.2F4		31.76	180 268.20	508 006.1	3.4N of, and 12.5E of MH A1.2F3
A1.2F5	34.03	33.03	180 291.60	507 966.6	4.99N of Grid 4, 9.9E of Grid 4
A1.2F6a		31.006	180 270.10	508 058.6	Chainage 61m from MH F11
A1.2F6b		31.355	180 268.80	508 017.8	Chainage 21m from MH A1.2F6a
A1.2F7		31.72	180 189.40	507 988.7	7.5 S of Grid H, 4.9E of Grid 4
A1.2F8		31.25	180 199.30	507 993.69	7.5S of Grid H, 7.5E of Grid 8
A1.2F9		30.72	180 199.50	508 039.30	Chainage 30m from MH A1.2F8
A1.2F10		30.56	180 192.70	508 046.40	Chainage 7m from MH F8

A1.3 Building
For Details Refer Drg. No. AA 811 A1.3/1032 and AA 811 A1.3/1001

A1.3F2		33.15	180 227.10	507 864.00	6.0 N of Grid A, 10E of Grid 7
A1.3F3		33.28	180 231.00	507 856.42	6.0 N of Grid A, 4.25E of Grid 3
A1.3F3a		32.11	180 217.80	507 786.60	6.0 N of Grid A, 4.5E of Grid 1
A1.3F4	34.15	33.15	180 195.10	507 890.20	5.33N of Grid E, 4.25E of Grid 3
A1.3F5		30.776, Back Drop Inv 29.68	180 171.30	507 864.00	6.05 of Grid H, 7.0E of Grid 7
A1.3F6a		33.075	180 195.80	507 848.00	8.425N of Grid G, 7.0E of Grid 7
A1.3F7		31.42	180 264.80	507 815.70	6.05 of Grid H, 4.65E of Grid 3
A1.3F7a		32.31	180 305.10	507 782.50	6.0N of Grid G, 5.5E of Grid 1
A1.3F7b		32.79	180 328.60	507 786.80	Ch. on Invert Tee from MH A1.3F7a
A1.3F10		30.80	180 195.10	507 787.40	N of Grid F, 7.5E of Grid 4
A1.3F8		31.95	180 161.20	507 763.30	6.05 of Grid H, 5.5N of Grid 3
A1.3F8	34.15	33.15	180 190.20	507 830.50	6.0N of Grid F, 5.45E of Grid 3

Main Manholes
For Details Refer Drg. No. S108,S109,S102, S103 + 2401/S1,S2,S3

MH Type	MH No	COVER LEVEL	INVERT LEVEL	CO-ORDINATES NORTHING	EASTING	Remarks / Dimensions Off Building Grids
	F1	33.22	31.55/28.64/28.53	180 075.780N	507 992.250E	For Details of MH F1 Refer to Drg 2401/S3
A	F2	33.28	28.76/28.74	180 091.190 N	507 826.803E	
A	F3	33.49	28.94/28.92	180 095.11 N	508 160.36E	
B	F4	33.80	29.83/29.01	180 029.36	508 066.55	
A	F5	33.98	29.91/29.49	180 159.99	508 062.49	
A	F6	34.19	29.74/29.72	180 096.53	508 053.19	
B	F7	34.36	29.97/29.83	180 136.06	508 064.56	
A	F8	34.66	30.22/30.19	180 126.30	508 086.30	
B	F9	34.76	30.33/30.31	180 201.01	508 094.39	
A	F10	34.85	30.51/30.49	180 242.92	508 044.12	
B	F11	34.92	30.68/30.66	180 271.11	508 044.80	
A	F12	35.03	30.85/30.83	180 301.22	508 044.61	
A	F13	35.18	31.00/31.00	180 330.52	508 034.00	
C	F14	33.46	29.27/28.70	180 006.183	507 985.20	Also Ref. F14
A	F15	33.60	28.88/28.86	180 018.69	507 961.80	
A	F16	33.38	29.09/29.00	180 038.32	507 937.77	
A	F17	34.00	29.29/29.27	180 066.23	507 910.09	
A	F18	34.20	29.49/29.46	180 095.80	507 893.94	
A	F19	34.42	29.70/29.68	180 133.44	507 881.38	
A	F20	34.60	29.99/29.97	180 167.00	507 876.50	
A	F21	34.70	30.23/30.21	180 203.20	507 870.50	
A	F21A	34.75	30.40/30.44	180 234.00	507 869.40	
A	F22	34.80	30.64/30.62	180 254.60	507 877.45	
D	F23	34.98	30.90	180 292.80	507 873.60	
E	F24	33.63	29.20	180 032.56	508 078.83	MH F24 Has Two No Inlets For Details Refer Type E, Drg. No 2401/S3
F	F25	34.20	30.37	180 134.66	508 086.56	
F	F26	34.40	30.74	180 209.01	508 078.39	
F	F27	34.30	31.09	180 272.11	508 079.89	
F	F28	35.40	32.35	180 382.00	508 078.00	

Rising Pumping Main Manholes
For Details Refer Drg. No. 2401/S1 and S5

1A	33.65	32.15	180	468.00	508 123.00	Chainage 127m from Foul Pump Station
1	34.10	32.21	180	425.00	508 204.00	Ch. 91m from MH 1A
2	34.86	32.86	180	250.00	508 357.00	Ch. 57m from MH 1
3	33.50	32.40	180	247.00	508 335.00	Ch. 105m from MH 2
3A	35.00	33.95	180	163.00	508 290.50	Ch. 13m from MH 3

Arena Building
For Details Refer Drg. No AA811/C/6880.1 & AA811/C/6883

B1A	35.20+	33.20+	180	388.409	508 031.154	2.6N of Grid E, 4.45E of Grid 15
F2	35.00+	33.71	180	468.359	508 029.244	MH on Grid D,12
F3	35.65+	33.96	180	486.969	508 106.230	on Grid D, 0.113 East of Grid 15
F4	35.70	33.65	180	587.385	508 070.344	3.67 North of Grid F, 7.98 East of Grid 12
HLF1	35.90	34.23	180	379.959	508 000.345	2.9N of Grid H, on Grid 16
HLF2	34.80+	At 34 Back Drop Inv 33.81	180	340.799	508 000.345	3.6 North of Grid H, on Grid 16
HLF3		At 34	180	324.959	508 000.345	2.65N of and N, on Grid 16

ALSO REFER TO ARENA CRECHE FOUL MHs CF1, CF2, CF3, CF4 AT BOTTOM OF DRAWING

B1 Building
For Details Refer Drg. No AA869/B14 9036

FMH1	35.50	34.255	180	398.00	508 379.50	6.5N of Grid L, 4.5E of Grid 12
FMH2	35.50	33.885	180	395.00	508 355.00	6.5 N of Grid L, 3.0E of Grid 9
FMH3	35.50	33.675	180	392.00	508 353.00	6.5N, of Grid L, 4.5N of Grid 7
FMH4	35.50	33.175	180	388.00	508 329.40	6.5N of Grid L, 10.5W of Grid 5
FMH5	35.50	32.856	180	374.00	508 320.60	8.2N of Grid L, 10.2W of Grid 3
FMH6	35.50	34.225	180	392.00	508 376.40	6.5N of Grid H, 6.5E of Grid 11
FMH7	35.50	34.006	180	388.20	508 359.20	6.5N of Grid H, 1.9E of Grid 9

B2 Building
For Details Refer Drg. No 17339/M/01 and 02

B2F1	34.33	33.48	180	102.500	508 164.500	1.0N of Grid B, 7.25E of Grid 7
B2F2	34.37	33.3	180	103.200	508 162.700	3.0E of Grid B, 1.75E of Grid 8
B2F3	34.30	32.88	180	107.900	508 172.000	2.1N of Grid B, 8.9E of Grid 11
B2F4	34.15	33.40	180	147.000	508 167.000	6.0N of Grid M, 2.3E of Grid 13
B2F5	34.15	33.15	180	149.700	508 151.500	6.0N of Grid M, 5.9E of Grid 9
B2F6	34.90	34.47 Back Drop Inl 34.39	180	135.500	508 106.000	6.0N of Grid M, 8.5W of Grid 3
B2F6	34.30	33.72	180	092.300	508 113.200	4.5N of Grid D, 2.925E of Grid 3
B2F9	34.33	33.67	180	097.800	508 132.500	1.325 N of Grid B, 2.925E of Grid 3
B2F10	34.95	33.46	180	096.300	508 102.450	1.325 N of Grid B, 8.7W of Grid 5
B2F11	34.95	33.36	180	102.700	508 121.500	2.4N of Grid B, 8.1W of Grid 3
B2F12	34.95	33.20	180	152.500	508 100.000	12.5 N of Grid M, 8.1W of Grid 3

B3 Building
For Details Refer Drg. No. 17542 P3100and 3107

FMH1	32.90	31.89 Back Drop Inv 31.50	179	003.000	508 002.00	7.65 of Grid D, 7.2E of Grid E
FMH8	32.95	32.28	179	007.00	508 027.00	3.05 of Grid D, 4.5W of Grid G
FMH2	32.90	31.39	179	989.0	507 973.00	7.05 of Grid 9, 4.5E of Grid B
FMH36	32.90	32.5 Back Drop	179	016.80	507 977.00	1.85 of Grid 9, On Grid C
FMH3	32.936	31.175	179	011.20	507 961.80	2.55 of Grid 9, 8.0E of Grid A
FMH4	32.936	30.95	179	021.00	507 940.80	4.5N of Grid 9, 7.1W of Grid A
FMH5	32.936	29.93	179	987.80	507 940.80	4.0N of Grid 7, 7.1W of Grid A
FMH6	32.936	29.805	179	989.60	507 953.80	4.0N of Grid 8, 2.2E of Grid A
FMH7	32.936	29.52	179	991.80	507 967.40	4.0N of Grid 1, 2.1E of Grid C
FMH32	32.955	31.526	179	976.20	507 976.40	3.7N of Grid 3, 6.5E of Grid C
FMH34	32.936	31.892	179	977.20	507 996.00	3.7N of Grid 3, 3.9E of Grid C
FMH35	32.936	30.136	179	980.00	508 032.00	3.7N of Grid 3, 3.5W of Grid 2

A2.1 Building
For Details Refer Drg. No. AA 811 A2.1/1032

A2.1F1		32.93	180	164.00	507 980.80
A2.1F2		33.13	180	102.40	507 981.75
A2.1F3		31.39 Back Drop Inv 32.96	180	090.60	507 988.80
A2.1F4		31.196	180	069.50	507 992.20
A2.1F5		30.096	180	069.60	508 012.00
A2.1F7		31.03	180	121.20	508 002.80
A2.1F8		32.30	180	168.80	508 003.30

A2.2 Building
For Details Refer Drg. No AA/8720A2201001/AA872/3005+3003

MH No.	Cover Lev.	Invert Level	Northing	Easting	Dimensions off Building Grid
A2.2F1	36.300	29.80 Back Drop Inl. 32.00	180 130.30	507 871.70	6.6N of Grid C, 4.6E of Grid 10
A2.2F2	34.30	32.33 Back Drop Inl. 30.725	180 117.60	507 856.80	3.0N of Grid D, 6.6E of Grid 10
A2.2F3	34.30	32.80	180 115.40	507 846.40	3.0N of Grid D, 6.3E of Grid 8
A2.2F4	34.30	32.89	180 113.80	507 835.20	3.0N of Grid D, 5.3E of Grid 6
A2.2F5	34.30	33.035	180 110.80	507 817.50	3.0N of Grid D, 2.4E of Grid 4
A2.2F6	34.30	33.030	180 110.80	507 812.00	3.0N of Grid D, 5.4E of Grid A
A2.2F7	34.445	33.300	180 105.20	507 799.40	1.8N of Grid D, 5.5M of Grid 1

A2.3 Building
For Details Refer to Drg. AA 811/A2.3/1001

MH No.	Cover Lev.	Invert Level	Northing	Easting	Dimensions
A2.3F1	33.6	31.6	180 079.55	507 926.00	4.5N of Grid
A2.3F2	33.45	31.75	180 079.00	507 950.80	4.5N of Grid
A2.3F3	33.3	31.83	180 077.30	507 966.15	4.5N of Grid
A2.3F4	33.45	31.875	180 076.70	507 966.50	6.9N of Grid
A2.3F5	32.50	32.000	180 090.80	507 980.20	3.6N of Grid
A2.3F6	32.47	31.340	180 052.40	508 020.00	925M of Grid
A2.3F7	33.53	31.65	180 059.40	508 018.90	7.2E N of Gr
A2.3F8	33.60	30.925	180 027.40	508 024.20	6.05 of Grid
A2.3F9	33.56	29.715	180 022.50	508 025.80	1.05 of Grid
A2.3F10	33.20	31.67 Inv into Chamber 84	180 022.40	507 988.60	5.65 of Grid

B6 Building
For Details Refer Drg. No. 16460/P01 16460/P02

MH No	Cover Lev	Invert Level	Northing	Easting	Dimensions Off Building Grid
B6F1	32.45	29.70	179 958.50	508 182.50	8.9N of Grid L, 6.0E of Grid Q
B6F2	32.45	29.33	179 987.10	508 179.00	4.9N of Grid L, 5.6E of Grid Q
B6F3		30.23	179 991.80	508 152.60	9.4N of Grid T, 8.0E of Grid Q
B6F4	32.55	29.92	179 986.00	508 122.90	4.4N of Grid K, 4.25N of Grid A
B6F5		30.04	179 982.30	508 113.00	38m NW, Chainage from B6F4
B6F6		29.70	180 004.70	508 119.00	Chainage 20.5, Angle 116.5° from B6F5

Arena Creche Building
For Details Refer Drg. No 917/59/A01 Design Build Drg No 88028/110

MH No	Cover Lev	Invert Level	Northing	Easting	Dimensions Off Building Grid
CF1	35.95	34.55	180 422.75	507 992.36	On Grid H, 6.00 W of Grid 17
CF2	35.95	34.805	180 422.75	507 980.24	On Grid H, 5.3 W of Grid 17
CF3	36.95	34.93	180 422.75	507 982.16	On Grid H, 4.6 W of Grid 18
CF4	36.05	36.05	180 417.95	507 979.44	4.4 N of Grid F, 8W of Grid 18

NOTE-CO ORDINATES SHOWN FOR AS BUILT MANHOLE POSITIONS, INTERNAL AND EXTERNAL TO BUILDINGS ARE APPROXIMATE FOR ACCURATE VALUES OF MH POSITIONS REFER TO DIMENSIONS TAKEN OFF BUILDING GRIDS ON RELEVANT LARGE SCALE FOUL DRAINAGE DRAWINGS

Job Title: STOCKLEY PARK HEATHROW PHASE 1(EAST)

Drawing Title: AS BUILT FOUL WATER DRAINAGE

ARUP — Ove Arup & Partners

Scale: 1/1250 — Date: Sept'98 — Drawn: — Passed:

Job No: 10762 — Drawing No: 2401/S104 — Rev:

APPENDIX E

TOPOGRAPHICAL SURVEY REF: 250702-SP-2D-PAS128

PREPARED BY ADE MAPPING DATED 28/07/2025



GENERAL NOTES

This drawing and information contained within is issued in confidence and is the copyright of Adex Mapping Ltd. The topographical information or base mapping has been supplied by a Third Party, Adex Mapping Ltd is not liable for any inaccuracies contained therein. Disclosure of this information to Third Parties and unauthorized copying or replication of this data without approval is forbidden.

The data presented in this drawing have been collected using a combination of the following: consultation of utility asset information, visual survey & inspection of manholes and inspection chambers; electromagnetic location techniques; ground penetrating radar, and, where applicable, trial hole excavations. These techniques have been deployed in accordance with the BSI PAS128 Specification for Underground Utility Detection, Verification and Location using the search methodologies indicated below.

Unless otherwise stated, all utilities shown on this plan have been surveyed using approved detectors and the connections between inspection chambers, if unable to be detected, are generally assumed to be direct unless there are indications to the contrary. The detection confidence for each utility segment is depicted in line with the PAS128 scheme outlined below. Information depicted as QL-C or QL-D cannot be guaranteed as it is based on historic utility records which can be inaccurate and incomplete.

The utility routes depicted may reflect the routes of multiple cables or pipes. It is not always possible to differentiate between buried construction features, utilities and other subsurface linear features therefore it is possible that some features shown are not utility related, and due to the limitations of electromagnetic techniques all utility identifications should be treated with caution and verified prior to use during design/building works.

If the location or depth of utilities and features is of particular importance to a project then it is recommended that discussions are held with Adex Mapping Ltd regarding any possible limitations or anomalies.

Please note that not all buried pipes, cables and ducts can be detected and mapped in consideration of their depth, location, material type, geology and proximity to other utilities. Even an appropriate and professionally executed survey may not be able to achieve a 100% detection rate. Where an area of utilities is likely to affect client project requirements, it is strongly recommended that a PAS128 Quality Level A verification survey is carried out

No utility mapping survey can be considered a 100% accurate depiction of the sub-surface environment, and the use of these drawings does not remove the requirement for the use of safe digging techniques at all times, in line with the requirements of HSG47 and current CDM regulations.

SURVEY REPORT

GENERAL
All accessible manholes were lifted, detailed and traced using EML The survey area was scanned using EML passive modes. GPR scanning and post processing was completed as per Type B-M1P specification. Many areas were found to be heavily vegetated, as such services could not be traced through. No access was given to any building to confirm/trace incoming services.

DRAINAGE
All manhole covers were lifted where possible with pipe sizes and main outlet invert depths recorded and connections proved to source or destination by resonance or dye testing. Where necessary, a transmitting probe was inserted into the pipe and the route traced electronically. Chambers have been plotted to scale where significantly larger than the cover.

WATER
Electronic connections were made to all water surface features and pipes traced where possible. Non-metallic mains and services have been plotted from ground penetrating radar, trench scars, verbal information or record drawings, where possible. Pipe sizes were measured at access points or taken from records.

GAS
Electronic connections were made to all gas surface features and pipes traced where possible. Non-metallic mains and services have been plotted from ground penetrating radar, trench scars, verbal information or record drawings, where possible. Pipe sizes were measured at access points or taken from records.

ELECTRICITY
Electricity cables have been traced from access points such as cable risers, cable pits and other electrical features such as lamp posts. The identification of electricity cables is made by association with the feature it was traced from or taken by correlating the traced services with the record drawing. Multiple HV and LV cables are known to cross the survey area, annotation of assumed voltage is made from records drawings alone and cannot be guaranteed.

TELECOM
Inspection covers were lifted with details recorded and duct routes traced where possible. Many duct routes are rented/shared by multiple asset owners.

CAUTIONARY NOTES
Electromagnetic location and ground penetrating radar techniques have been used in the location of underground services. The results are not infallible and trial excavations must be carried out to confirm service identification, positions and particularly depths. Although all reasonable effort has been made in searching available record drawings, the completeness of the underground services information cannot be guaranteed.

SUB-SURFACE KEY

- COMBINED HEATING AND POWER
- DISTRICT HEATING
- DRAINAGE COMBINED *
- DRAINAGE FOUL*
- DRAINAGE SURFACE*
- DRAINAGE UNIDENTIFIED*
- [* FLOW DIRECTION DENOTED BY ARROW (+) or (+) IF KNOWN]
- ELECTRIC
- ELECTRIC LV
- ELECTRIC HV
- ELECTRIC STREET LIGHTING
- GAS
- OIL/FUEL PIPELINE
- STREET FURNITURE CABLES
- TELECOMS
- TELECOMS - FIBRE OPTIC
- TELECOMS - BT
- TELECOMS - VIRGIN MEDIA
- TRAFFIC CONTROL
- WATER
- UNIDENTIFIED UTILITY
- UNIDENTIFIED CABLES
- UNIDENTIFIED EMPTY DUCT
- GPR LINEAR FEATURE
- GPR AREA ANOMALY
- GPR AREA ANOMALY - REBAR
- CHAMBER EXTENTS
- MULTIPLE DUCT TRACE - ASSUMED SPREAD
- MEASURED DEPTH BGL TO PIP/CABLE/DUCT — d0.6
- INVERT LEVEL OF PIPE (TO DS DATUM) — IL 12.34
- COVER LEVEL OF INSPECTION CHAMBER (TO DS DATUM) — CL 78.90
- DIAMETER OF PIPE/DUCT IN MILLIMETERS — 150Ø
- [BGL - BELOW GROUND LEVEL]
- AREA UNABLE TO BE SURVEYED DUE TO SURFACE OBSTRUCTIONS, VEGETATION OR LACK OF ACCESS
- TRENCH SCAR / SURFACE SCAR
- EXTENT OF SURVEY - BOUNDARY

SCHEME LEVEL SURVEY

UTILITY CONFIDENCE LEVELS (Listed from High to Low)

(A)	HORIZONTAL AND VERTICAL POSITION VERIFIED VISUALLY (Accuracy: Horizontal ±20mm; Vertical±50mm)
(B1P)	HORIZONTAL AND VERTICAL POSITION DETECTED BY MULTIPLE METHODS WITH POST PROCESSING OF GPR DATA (Estimated Accuracy: ±150mm OR ±15% of detected depth)
(B1)	HORIZONTAL AND VERTICAL POSITION DETECTED BY MULTIPLE METHODS (Estimated Accuracy: ±150mm OR ±15% of detected depth)
(B2P)	HORIZONTAL AND VERTICAL POSITION DETECTED VIA POST-PROCESSED GPR (Estimated Accuracy: ±250mm OR ±40% of detected depth)
(B2)	HORIZONTAL AND VERTICAL POSITION DETECTED BY A SINGLE METHOD (Estimated Accuracy: ±250mm OR ±40% of detected depth)
(B3P)	HORIZONTAL POSITION DETECTED VIA POST-PROCESSED GPR (Estimated Accuracy: ±500mm in the Horizontal - Depth is undefined)
(B3)	HORIZONTAL POSITION DETECTED BY A SINGLE METHOD (Estimated Accuracy: ±500mm in the Horizontal - Depth is undefined)
(B4)	A UTILITY SEGMENT WHICH IS SUSPECTED TO EXIST BUT HAS NOT BEEN DETECTED AND IS THEREFORE SHOWN AS AN ASSUMED ROUTE (Estimated Accuracy is undefined - Depth is undefined)
(C)	ROUTE TRANSCRIBED FROM UTILITY ASSET PLANS AND CORRELATED TO VISUAL INDICATORS AND SURFACE FEATURES (Accuracy Undefined)
(D)	ROUTE TRANSCRIBED FROM UTILITY ASSET PLANS (Accuracy Undefined)

PAS128 SURVEY METHODOLOGY
LOCATION PLAN



Rev	Date	Description	Check

ADEX MAPPING

Client
POINT2
SURVEYORS
LTD

Site
STOCKLEY_PARK
HAYES

Title
STOCKLEY_PARK-2D-PAS128-TYPE-B

ABBREVIATIONS

AR	ASSUMED ROUTE	BS	BUS STOP	CP	CABLE PIT	EOT	END OF TRACE	Lck	LOCK GATE
AV	AIR VALVE	BTIC	BRITISH TELECOM CHAMBER	CpL	COPING LEVEL	EOR	END OF RECORD INFO	Ld	LADDER
BB	BELISHA BEACON	CaE	CATENARY LEVEL	Cpw	CAPSTAN	ER	EARTH ROD	LH	LAMP HOLE
Bd	BACKDROP DEPTH	CATV	CABLE TV COVER	Cpst	CAMERA POST	ESw	EMERGENCY SHOWER	LP	LAMP POST
BL	BED LEVEL	CB	CONTROL BOX	Cr	CROSSING POINT	Ew	ELECTRICAL SUPPLY POINT	MB	MARKER BOARD
BH	BOREHOLE	CBh	CONVEYOR BELT	CuP	CULVERT PIPE	Exw	ELECTRICAL SWITCH	MgP	MOORING POST
BHoh	BASEMENT HATCH COVER	CC	CGAL CHUTE	CWM	CABLE WINDING MACHINERY	FB	FOOTBRIDGE	mh	METERS HIGH
Brh	LITTER / GRIT SALT BIN	CGrd	CATTLE GRID	d	DEPTH	FH	FIRE HYDRANT	Mmy	MACHINERY
BLK	BLOCKED	CHL	CHANNEL LEVEL	Dt	DUCTILE IRON	FL	FLOOR LEVEL	MH	MANHOLE
BP	BOLLARD	Chy	CHIMNEY	DJ	DUCT DEPTH	FO	FIBRE OPTIC	MK	MARKER POST
BP	BOUNDARY POST	CI	CAST IRON	DJU	DISUSED	GY	GULLY	MKdS	MARKER POST (ELECTRIC)
		CICP	CONCRETE INSPECTION COVER	Dv	DRAIN VALVE	HP	HYDRANT	MKgS	MARKER POST (GAS)
		COG	CABLE ON GROUND	(e)	EMPTY	Lby	LIFEBOUY	MKoS	MARKER POST (RAILWAY)

MkgT	MARKER POST (TELECOM)	OHT	OVERHEAD CABLE (TELECOM)	Pva	PENSTOCK	SA	SURVEY ABANDONED	SS	STILE
MkW	MARKER POST (WATER)	OP	OUTLET PIPE	PV	PUMPPIPE (VERTICAL)	SD	SUMP DEPTH	Sk	STRUCTURE TOP LEVEL
MP	MILE POST	P	POST	PVC	POLYVINYL CHLORIDE	SW	SHELTER (BUS / TRAM)	Stp	STUMP (TREE)
NFI	NO FURTHER INFORMATION	Pb	PARK BENCH	Pyr	PYLON	SI	SPUN IRON	StP	STAND PIPE
NPI	NO PIPE INFO	PC	PIPE CHAMBER	Rm	RAIN METER	SP	SPOT HEIGHT	SWP	STAY POST
NSV	NO SERVICE VISIBLE	PD	PIPE DEPTH	RE	RODDING EYE	SLd	SLT DEPTH (TOP)	SWW	STAY WIRE
OSA	OUTSIDE SURVEY AREA	PE	POLYETHYLENE	RG	RAIN GAUGE	SM	SIGNALS MERGE	SV	STOP VALVE
OSBM	O.S BENCH MARK	PF	PITCH FIBER	RMP	RESERVOIR MONITORING PNT	SL	SIGNAL LOST	SVP	SOIL VENT PIPE
OGP	OVERGROUND PIPE	PI	PILE	RP	REFLECTOR POST	SP	SIGN POST	SM	SIGNALS MERGE
OHCu	OH CABLE (UNIDENTIFIED)	Pk	MOVEMENT DETECTOR	RS	ROAD SIGN	SPS	SHEET PILING	SN	SWANNECK
OHE	OVERHEAD CABLE (ELECTRIC)	PmH	PLANT MOTOR DRIVE	RSP	RAILWAY SIGNAL POST	Spr	SPRING	TCB	TELEPHONE CALL BOX
OHT	OVERHEAD CABLE (TELECOM)	PmP	PUMP WATER PIPE	RWP	RAIN WATER PIPE	SPP	SPRINKLING POINT	TCC	TELECOMS CHAMBER COVER
OHP	OVERHEAD PIPE	PR	PIPE RISER	S	SPREAD	ST	STEEL	TRF	TAKEN FROM RECORDS

TH	THRESHOLD LEVEL	VR	VAPOUR RECOVERY	FENCE TYPES:					
TL	TRAFFIC LIGHT	VS	VENTILATION SHAFT	AMF	ARMCO	PCF	POST & CHAIN		
TP	TELEGRAPH POLE	VW	VALVE / SLUICE WHEEL	BWF	BARBED WIRE	PIF	POST & IRON RAIL		
Tpt	TRIAL PIT	WB	WEIGHBRIDGE	CBF	CLOSE BOARDED	PRF	POST & RAIL		
TS	TANK	WC	WATER COURSE	CLF	CHAIN LINK / IRON	SPF	SPIKED FENCE		
UTA	UNABLE TO FIND	WM	WATER METER	CPF	CHAIN LINK	STF	STEEL PALISADE		
UTGA	UNABLE TO GAIN ACCESS	WO	WASH OUT VALVE	CHP	CHESTNUT PALING	WMF	WIRE MESH		
UTL	UNABLE TO LIFT	WI	WEIR	IRF	IRON RAILING				
UTR	UNABLE TO ROD	Wrs	WEIR LEVEL	IWF	INTERWOVEN				
UTS	UNABLE TO SURVEY	WP	WEIR PLATE (TOP)						
UTT	UNABLE TO TRACE	WWP	WASTE WATER PIPE						
VC	VENT COLUMN								
VP	VENT PIPE								

DUCT FORMATION

1W:	1 WAY DUCT SINGLE DUCT
2W:	2 WAY DUCT FLAT
2W 1/2	2 WAY DUCT: 1 WIDE, 2 DEEP
4W 2/2	4 WAY DUCT: 2 WIDE, 2 DEEP
6W 3/2	6 WAY DUCT: 3 WIDE, 2 DEEP
12W 4/3	12 WAY DUCT: 4 WIDE, 3 DEEP

NB: TO BE ADAPTED TO FOR EACH CHAMBER

PAS128 SURVEY METHODOLOGY KEY

THIS SURVEY HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE PAS128 SPECIFICATION FOR UNDERGROUND UTILITY DETECTION, VERIFICATION & LOCATION. THE SPECIFICATION ALLOWS FOR A RANGE OF TECHNIQUES AND METHODS OF VARYING INTENSITY TO BE DEPLOYED. THE COLOUR CODED SCHEME INDICATES WHERE DIFFERENT SURVEY METHODOLOGIES HAVE BEEN USED ON SITE, AND THE LIST BELOW IDENTIFIES EQUIPMENT USED TO OBTAIN THE SURVEY RESULTS.

ELECTROMAGNETIC DETECTION	GROUND PENETRATING RADAR	TOTAL STATION	GPS/GNSS
Radio Detection RD8000 & TX-10	GSSI/SIR-3/PROCEQ	LEICA TS10	Trimble SP80

MAP - EML SEARCH TRANSECT AT 2m INTERVALS 5 - TRACED AT 0.5m INTERVALS GPR SURVEY GRID AT 0.5m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.

MP - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.

M2P - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 2m INTERVALS. GPR SURVEY GRID AT 2m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.

M1P - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY. AS APPROPRIATE. POST PROCESSING OF GPR DATA.

M4 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS. GPR MARK-UP ON SITE.

M3 - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS. GPR MARK-UP ON SITE.

M2 - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 2m INTERVALS. GPR SURVEY GRID AT 2m INTERVALS. GPR MARK-UP ON SITE.

M1 - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY. AS APPROPRIATE. GPR MARK-UP ON SITE.

Survey by	VW	Drawn by	AK
Check by	AR	Date	28/07/2025
Scale	NTS [A0 Sheet]	DWG Reference/number*	250702-SP-2D-PAS128
Project/Job No	250702	Status	FINAL
		Revision	-

APPENDIX F
BGS BOREHOLE LOG

British Geological Survey

BGS ID: 576541 : BGS Reference: TQ08SE208
British National Grid (27700) : 507660,180300

Norwest Holst Soil Engineering Ltd.

Borehole No. 12

BOREHOLE LOG

Contract No. F4297
Location. Yiewsley Bypass.
Client. London Borough of Hillingdon.
Method of Boring. Percussion.
Diameter of Borehole. 150mm
TQ08SE 208
0166, 8080

Sheet 1 of 1
Chainage
Ground Level 35.430 m.A.O.D.
Date 26.4.79 & 27.4.79

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
MADEGROUND: Dark grey sand and clay fill with pockets of brown clay, contains many roots some gravel and the occasional piece of clinker and tile.		1.75	33.68		0.50 1.10 1.75		
Very dense light brown angular to sub-rounded fine flint GRAVEL and coarse SAND with occasional pockets of clay.		3.00	32.43		C 1.85 2.35 C	80 88	
Firm orange brown mottled sandy CLAY with fine flint gravel.		4.00	31.43	150mm to 4.00	3.50		26/4
Very dense light brown angular to sub-rounded coarse SAND and fine flint GRAVEL.		7.20	28.23		4.50 C 5.50 C 6.50 C	82 66 69	
Large boulder obstruction		7.50	27.93				
Firm to stiff orange brown mottled silty CLAY with occasional fine gravel.		7.80	27.63		7.60		
Stiff blue grey fissured silty CLAY with silt dustings along fissures. (London Clay)		10.00	25.43		9.00		27/4

Type of Sample

S.P.T. Undisturbed
C.P.T. Vane
Jar Water
Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Water sample taken for chemical test.
Hand dug to 1.5m Electricity cable located at 0.45m below surface.
Standpipe installed to 8.5m
Water levels: 30.4.79 1.85m
2.5.79 1.78m
15.5.79 1.84m
Water added during penetration of gravel.

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

APPENDIX G

LONDON SUSTAINABLE DRAINAGE PROFORMA FOR 1 & 2 LONGWALK, STOCKLEY PARK, UXBRIDGE

HILLINGDON LONDON

GREATER LONDON AUTHORITY

LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	1 & 2 Longwalk Road/Thames River/Planning
Address & post code	1 Longwalk Road, Hayes, Uxbridge UB11 1DB; 2 Longwalk Road, Hayes, Uxbridge UB11 1BA
OS Grid ref. (Easting, Northing)	E 507810
	N 180237
LPA reference (if applicable)	
Brief description of proposed work	The proposed development involves the demolition of the current office buildings and the redevelopment of Plots 1 and 2 with two new commercial warehouse units.
Total site Area	25300 m^2
Total existing impervious area	19183 m^2
Total proposed impervious area	17871 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	Low to medium risk
Existing drainage connection type and location	Private drainage system, discharging into a existing balancing ponds
Designer Name	Michelly Santana
Designer Position	Senior Engineer
Designer Company	Howard Ward Associates Ltd

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	Lynch Hill Gravel Member-Sand and gravel
Bedrock geology classification	London Clay Formation-Clay, silt and sand
Site infiltration rate	m/s
Depth to groundwater level	1.78 and 1.85 m below ground level
Is infiltration feasible?	No

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use		N
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	Y	Y
6 discharge rainwater to a surface water sewer/drain	N	N
7 discharge rainwater to the combined sewer.	N	N

2c. Proposed Discharge Details

Proposed discharge location	Existing balancing ponds
Has the owner/regulator of the discharge location been consulted?	To be agreed

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	7.3			
1 in 1	6.2			
1 in 30	16.9			
1 in 100	23.4			
1 in 100 + CC				7.3
Climate change allowance used		40%		
3b. Principal Method of Flow Control				

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	4022	2490	224.1
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	1675		1808.14
Total	**5697**	**2490**	**2032.24**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Page 4 -Section4 and Page 14 - section 8
Drainage hierarchy (2b)	Page 14 - section 8
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	TBC
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Appendix C of this report
Proposed SuDS measures & specifications (3b)	Page 15-17 - section 8

4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	See appendix A of the report
Detailed drainage design drawings, including exceedance flow routes	
Detailed landscaping plans	
Maintenance strategy	Section 9 of this report
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Page 15-17 - section 8
b) biodiversity?	
c) amenity?	