

Flood Risk Assessment and Sustainable Urban Drainage Strategy Report

Reading Police Station

Issue P04 – 30 April 2026

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Prepared For: S2 Estates

FLOOD RISK ASSESSMENT AND SUSTAINABLE URBAN DRAINAGE STRATEGY REPORT

READING POLICE STATION

Quality Assurance Page

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Executive Summary

Meinhardt have undertaken this Flood Risk Assessment (FRA) and prepared the Sustainable Drainage Strategy report on behalf of S2 Estates to support the detailed planning application for Reading Police station (The Proposed Development / Site).

The Site comprises an area of circa 0.63 hectares (ha) and is located at 53 Castle St, Reading RG1 7TH. The Site grid reference is SU711731. The OS Grid Reference for the approximate centre of the Site is National Grid Reference 471213, 173158.

The full planning application for the demolition of the existing building and the erection of a residential-led mixed use development comprising Use Class C3 residential units, with Use Class E and Sui Generis on the ground floor and with some elements at lower ground floor, plus public realm, hard and soft landscaping, access and servicing arrangements, cycle parking, and other associated works.

The proposed development comprises two new buildings at the ground floor podium level with public realm areas between two buildings linking to Cusden Walk. The lower ground floor area comprises car park, cycle store, Police Room, refuse areas and utilities plant areas.

This FRA investigates flood risk on site and in the area and outlines the mitigation measures proposed to ensure the sustainable and safe development of the Site in line with the requirements of the National Planning Policy Framework (NPPF), Environment Agency's (EA) Climate Change allowances guidance and Standing Advice, and the Flood Risk and Coastal Change Planning Practice Guidance (PPG).

The Site is located in Flood Zone 1 where the probability of river or sea flooding is less than 0.1% (1 in 1000) chance in any given year. Therefore, the probability of tidal or fluvial flooding is assessed as negligible.

Available baseline information taken from the Environment Agency's Surface Water flood map indicates that within the Site there are areas which are at very low risk of surface water flooding. The localised water logging areas are due to lower level car parking areas under the ground floor podium. A surface water drainage strategy has been designed in line with the most recent EA Climate Change Guidance to consider and manage the impact of a 1:100 year plus climate change rainfall event and is presented within this report. The surface water drainage strategy considers surface water runoff management: the solutions proposed ensure that for the 100 years rainfall event with 40% climate change in the rainfall intensities, will be accommodated within the Site and therefore prevent potential exceedance flows off-site.

The proposed drainage strategy incorporates sustainable drainage systems (SuDS) features in the form of green roofs, permeable paving and localised raingardens / tree pits at podium level. The Site's surface water will be attenuated and runoff rates will be restricted in accordance with Thames Water's recommendations following on their pre-planning enquiry response and in line with Reading Borough Council's requirements for the brownfield sites before discharging into the public surface water drainage network.

Other potential sources of flooding have been investigated and have been deemed negligible.

1 Introduction

1.1 Project Brief

Meinhardt have been appointed by S2 Estates to undertake this Flood Risk Assessment (FRA) and Drainage Strategy to accompany the full planning permission for the demolition of the existing building and the erection of a residential-led mixed use development comprising Use Class C3 residential units, with Use Class E and Sui Generis on the ground floor and with some elements at lower ground floor, plus public realm, hard and soft landscaping, access and servicing arrangements, cycle parking, and other associated works (hereafter referred to as the 'Proposed Development' / Site) located at 53 Castle St, Reading, RG1 7TH. This report relates solely to the above Site and should not be used for any other reasons other than for which the report was originally prepared.

1.2 Assessment Methodology

The below methodology has been carried out to investigate flood risk on Site and in the surrounding area and to identify suitable mitigation measures required to ensure the sustainability and safety of the Proposed Development over its lifetime.

The report has been produced in line with the requirements of the NPPF, the Environment Agency (EA) Standing Advice, Reading Borough Council (RBC) as the LLFA as well as through consultation with Thames Water (TW).

The following documents and policies have been reviewed to inform this report:

- RBC – Strategic Flood Risk Assessment (SFRA) – Level 1 (November 2024);
- RBC – Strategic Flood Risk Assessment (SFRA) – Level 2 (May 2025);
- Terrain Surveys – Topographical Survey by Plowman Craven (January 2022);
- Thames Water Asset Records (March 2026) & Pre-Planning Enquiry (April 2026);
- British Geological Society (BGS) Online Viewer, 1:50,000 Bedrock and Superficial deposits;
- DEFRA's online Magic Map; and
- EA – Flood risk assessments; climate change allowances;
- EA – Preparing a flood risk assessment; standing advice;
- GOV.UK's Planning Practice Guidance: Flood Risk and Coastal Change; and
- GOV.UK's online Long-Term Flood Maps.

The local policies discussed in Section 2 have also been considered to inform this assessment.

Meinhardt does not guarantee that the advice provided by this report will guarantee the availability of flood insurance. The insurance industry carry out their own assessments to properties in terms of determining the insurability for flood risk. Those intending to undertake development in areas which may be at risk of flooding are advised to contact their insurers or the Association of British Insurers (ABI) to seek further guidance prior to commencement.

Although this report was prepared using the degree of skill and care ordinarily exercised by engineers practicing under similar circumstances, please note that Meinhardt cannot take responsibility for errors in the information provided by third parties.

2 Planning Policy and Guidance

The below policy and guidance are considered relevant to this FRA and Drainage Strategy and have been used to inform this assessment.

2.1 National and Regional Policy

National Planning Policy Framework

The National Planning Policy Framework (NPPF) was updated and published in December 2024 (with minor amendments made in February 2025) with the aim of protecting the environment and to promote sustainable growth. There is an overarching objective to strive towards sustainable development and ensuring that this is a key element in every proposal.

The following paragraphs from the NPPF are considered relevant to this assessment:

Paragraph 170: Requires that “Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere”.

Paragraph 181: Explains that “When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk-assessment.”

Paragraph 182: Recommends that “Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:

- a) take account of advice from the lead local flood authority.
- b) have appropriate proposed minimum operational standards.
- c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.

Reading Borough Local Plan (2019)

According to EN18: Flooding and sustainable drainage systems, Development will be directed to areas at lowest risk of flooding in the first instance, following the Sequential and Exceptions Test set out in the NPPF, and taking into account the effects of climate change. It will consider flooding from all sources, including fluvial, surface water, groundwater and sewer flooding. Where development in areas at risk of flooding is necessary, it will not reduce the capacity of the flood plain to store floodwater, impede the flow of floodwater or in any way increase the risks to life and property arising from flooding. Wherever possible, development should be designed to reduce flood risk, both on- and off-site.

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

Sustainable-Design-and-Construction-SPD (December 2019)

Section 6 under Water Management, encourages as per the local plan for all major developments to incorporate SuDS features to help reduce surface water runoff and promote bio-diversity.

Climate Change Guidance

The EA guidance “Flood risk assessments: climate change allowances” was issued in 2016 (last updated 27th May 2022) and provides the most recent information on expected changes in rainfall, river flows and sea levels as a consequence of climate change.

Sea level allowances by river basin district for each epoch is provided in Table 2 of the guidance document.

The guidance provides peak river flow allowances by management catchments, the sub-catchments of the river basin districts. The peak flows are based on percentiles, a percentile is a measure used to describe the proportion of possible scenarios that fall below an allowance level (e.g. a 50% percentile means that the allowance has 50% chances of not being exceeded).

The most recent update to the guidance, updates the Peak Rainfall Allowances, which takes into account UKCP Local 2.2km projections and supporting research FUTURE-DRAINAGE. These are also now provided by management catchments instead of at a national scale and an online “Peak Rainfall Allowances Map” is now provided. Peak rainfall allowances are provided for 1% annual exceedance probability (AEP) events and for 3.3% AEP events.

The guidance states how to apply peak rainfall allowances has changed, using the central allowance for development with a lifetime up to 2100 and the upper end allowance for development with a lifetime from 2100 to 2125. Residential development to have a minimum lifetime of a 100 years, whilst commercial a minimum of 60 years.

The following approach should be used for drainage design:

- Development with a lifetime beyond 2100 - Design your development so that for the upper end allowance in the 1% annual exceedance probability event:
 - There is no increase in flood risk elsewhere
 - Your development will be safe from surface water flooding
- Development with a lifetime of between 2061 and 2100 - For development with a lifetime between 2061 and 2100 take the same approach but use the central allowance for the 2070s epoch (2061 to 2125).
- Development with a lifetime up to 2060 - For development with a lifetime up to 2060, take the same approach but use the central allowance for the 2050s epoch (2022 to 2060).

Exceptions:

In some locations the allowance for the 2050s epoch is higher than that for the 2070s epoch. If so, and development has a lifetime beyond 2061, use the higher of the two allowances.

3 Existing Site

3.1 Site Location and Description

The Site is located at 53 Castle St, Reading RG1 7TH. The existing site lies to the south of the Hexagon and existing green space and just northeast of the Inner Distribution Road (IDR). The site can be accessible for pedestrian and emergency vehicles only via Castle street and Cusden walk. The vehicular access is via the access road leading to the lower ground floor car park, off Castle Street. OS Grid Reference for the approximate centre of the Site is National Grid Reference 471213, 173158.

The Site comprises an area of circa 0.63 hectares (ha). The Site currently consists of Reading Police station formed of one property taking up most of the site. Refer to Figure 3-1 for an indicative Site location plan.



Figure 3-1: Indicative Site Location Plan

3.2 Topography

Based on the topographical survey that was carried out by Plowman Craven in January 2022, the levels along the ground floor podium are generally consistent on site from approximately 46.0m AOD to 45.0m AOD. The lower ground floor car park levels are in the region of 39.5m AOD to 40.0m AOD, with some local low spots picking up drainage gullies. Refer to **Appendix A** for the Topographical Survey.

3.3 Existing Drainage

According to Thames Water Asset Records, the foul water and the surface water from the site drains into a public sewer via a short length of private drainage network.

A CCTV drainage survey will be carried out at the post planning stage to determine the existing drainage network on site. The existing building has been secured by a locked fencing due to security reasons and hence the access is restricted to complete the drainage survey. The access is being sorted by the Client to conclude the survey. Thames Water (TW) sewer records (**Appendix B**) have been obtained. The TW records show that the area is served by a separate public foul and surface water networks. The TW asset records are summarised below:

3.3.1 Public Sewers

- Surface water sewer network that runs to the west of the Site (manhole reference 1250) and connects into 825mm diameter surface water sewer in A329.

- 300mm diameter foul sewer that runs to the west of the Site (manhole reference 201) and connects into 300mm diameter foul sewer in A329.

3.4 Existing Watercourses, Waterbodies and Flood Defences

The River Thames is located approximately 1km northeast of the Site.

Holly Brook tributary is located approximately 80m southeast of the Site.

The River Kennet is located approximately 230m southeast of the site.

There are no known artificial watercourses in the vicinity of the Site.

The Flood plain associated with the above-mentioned Rivers have no flood defences in and around the Reading area.

3.5 Geological Setting

Phase 1 Desk Study has been undertaken by A-Squared Studio in July 2025, Ref 3533-A2S-XX-XX-RP-Y-0001-01.

Table 1 provides a summary of British Geological Survey (BGS) online maps. In addition, publicly available BGS boreholes, SU77SW110(1) at 0-10m below the site and SU77SW111(2.1/2) at 10-30m.

Table 1: Geological Distribution

Geological Unit/Stratum	Typical Depth to Top Of Stata (m bgl)
Made Ground – Various anthropological deposits, preliminary consisting of clayey sand with brick, stones and flint.	Up to 2m
Superficial Deposits – Taplow Gravel Member- Sand and gravel. These sedimentary deposits are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting). • Minimum Age (Years):126,000 • Minimum Period: Quaternary • Maximum Age (Years):362,000 • Maximum Period: Quaternary	1.0m to 7.0m
Bedrock – Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated)- Chalk. These sedimentary rocks are shallow-marine in origin. They are biogenic and detrital, generally comprising carbonate material (coccoliths), forming distinctive beds of chalk. • Minimum Age (Years):72,100,000 • Minimum Period: Cretaceous • Maximum Age (Years):89,800,000 • Maximum Period: Cretaceous	>6m

A review of the publicly available BGS borehole, SU77SW111, located near the site did not identify any water strikes with 5.00m bql, which is the maximum depth all 3 boreholes near the site.

 British Geological Survey
 BGS ID: 428262; BGS Reference: SU773SW10
 British National Grid (27700): 471170, 173140

 British Geological Survey
 BGS ID: 428263; BGS Reference: SU773W11
 British National Grid (27700): 471200, 173150

Contract Name		READING POLICE DIVISION HEADQUARTERS		Borehole No. 1	
Method of boring 200 mm		Shell and Auger		Ground level 42.111 m OD Start Finish 17.5, 71 17.5, 71	
Date program	Depth meters	Rate cm	Depth (m)	Reduced level (m OD)	Description of Strata
17.5.					
	0-9		0.40	43.70	Chalk with flints and bricks
	9-30		1.80	44.50	Clayey sand with bricks and stones
	30-32				
	32-35				
	35-36				
	36-26			4.70	Medium dense to dense flint gravel with a little brown sand
	26-21				
			6.50	39.80	
	21-13				
	13-24			5.70	Fairly hard closely fissured chalk with occasional flints
	24-10		10.10	16.10	
					Bottom of borehole

Notes: 1. Yellow streak, 2. Blowing water seal, 3. --- Coating 4000, --- Borehole depth.

Temperatures 1. Limited 2. --- 3. --- 4. ---

Infract						Borehole No. P2
Name						Sheet 1 of 2
READING POLICE DIVISION HEADQUARTERS						
Method of boring				Ground level 57.138 m OD		
Diameter 200 mm				Start 12.9.71 Finish 15.2.71		
Daily penetration (mm)	Interval (m)	No. of cuts	Depth (m)	Penetration time (in 30 s)	Thickness (m)	Description of Strata
12.5,	N-9	2			1.20	Made ground (clayey sand with bricks and stones)
	N-27	2	1.20	64.34		
13.5,	N-42	2				
	N-57	2			4.50	Medium dense (fint gravel with some brown sand
	N-21	2				
	N-15	2	5.70	39.84		
	N-32	2				
14.5, 16.5,	A	2				
	N-19	2				
17.5, 19.5,	A	2				
	N-36	2				Fairly hard closely fissured chert with occasional flints
	N	2				
						Continued.....
Notes H = Heavy strike, S = Bearing water level, --- = Cassing depth, - - - - - = Borehole depth						
Terrasearch Limited Report No. 02/000 Economic & Social						

 British Geological Survey

BGS ID: 428263 : BGS Reference: SU77SW111
British National Grid (27700) : 471200,173150

Contract Name				READING POLICE DIVISIONAL HEADQUARTERS		Borehole No. ⁸²	
Method of boring				Ground level		Sheet 2 of 2	
Diameter				Start Finish			
Drill program	Water level	Neutrals level	Bar graph	Estimated water up (G.S.)	Estimated water down	Description of Strata	
			J				
		N=23	B				
			J				
			U				
			J				
13.3		N=37	J		14.20	Fairly hard closely fissured chalk with occasional flints	
			U				
			J				
		N=104	J				
			N	10.00	11.34		
			V			Bottom of borehole	

Notes: 1. Water mark, 2. Boring water mark, --- casing mark, --- borings mark.
 3. Screen Chiselling through large flints
 16.45 m of water level observation taking installed.

Terence & Co. Limited Report No. 1277/89 Approved: S. Khan

Figure 3-2 : BGS Boreholes SU77SW110 & SU77SW111 Data Log

4 Proposed Development

4.1 Proposed Development Description

Full planning permission for the demolition of the existing building and the erection of a residential-led mixed use development comprising Use Class C3 residential units, with Use Class E on the ground floor and with some elements at lower ground floor, plus public realm, hard and soft landscaping, access and servicing arrangements, cycle parking, and other associated works.

The proposed development comprises two new buildings at the podium level with public realm areas between two buildings linking to Cusden Walk. The lower ground floor area comprises car park, cycle store, Police Room, refuse areas and utilities plant areas.

Refer to **Appendix C** for the proposed development layouts.

4.2 Vulnerability Classification

According to Annex 3 of the NPPF the Proposed Development will have uses which range between 'less vulnerable' and 'more vulnerable'.

The Site is in Flood Zone 1 and has low risk of fluvial, tidal and surface water flooding. However, 'more vulnerable' usages are located on the ground floor level.

4.3 Sequential and Exception Tests

As stated in the NPPF, a sequential risk-based approach to determine the suitability of land for development in flood risk areas should be applied at all stages of the planning process giving precedence to low flood risk areas wherever possible.

Since the Site is in Flood Zone 1 the development is considered appropriate and automatically meets the requirements of the sequential test.

4.4 Impact of Climate change on the Proposed Development

The typical lifespan for a residential development is 100 years. Climate change allowances have been considered based on this lifespan.

As the Site is located within Flood Zone 1 where the probability of fluvial and tidal flooding is lower than 0.1% in any year, fluvial and tidal flooding is not expected to become a significant issue when the impact of climate change is taken into account.

The impact of climate change on surface water runoff at the Site in the surrounding areas could present a higher risk however the Drainage Strategy produced as part of this report has been designed to accommodate surface runoff during all events up to and including the 100 years plus a 40% climate change allowance.

Based on the EA's climate change allowance guidance, the attenuation requirements for the proposed drainage strategy will be determined using the central estimates but will be modelled with a freeboard that can accommodate the upper end estimates to prevent / minimise potential exceedance flows off-site, subject to topography of the Site. This approach will minimise surface water flood risk on and off-site, compared to existing.

5 Flood Risk

5.1 Relevant Maps and Data

Online UK Government Flood Maps have been used to identify flood risk from fluvial, tidal, surface water, and artificial sources.

The LLFA's SFRAs have also been reviewed, and relevant maps are included in **Appendix D**.

5.2 Tidal and Fluvial Flooding

Based on the governments Flood Risk for Planning mapping, the Site is located in Flood Zone 1 where the probability of river or sea flooding is less than 0.1% (1 in 1000) chance in any given year. The Site is located approximately 1km south the River Thames and approximately 80m north of Holly Brook tributary and 239m north of the river Kennet.

Based on the information available, the probability of fluvial and tidal flooding can be assessed as **negligible**.

5.3 Surface Water Flooding

The GOV.UK Long Term Flood Risk Maps provide a general indication of areas that may be at risk of surface water flooding. The maps take a broad account of underground drainage and localized topography which are likely to cause flooding. The map identifies that there is at a very low risk of surface water flooding across the majority of the Site, refer to Figure 5-1.

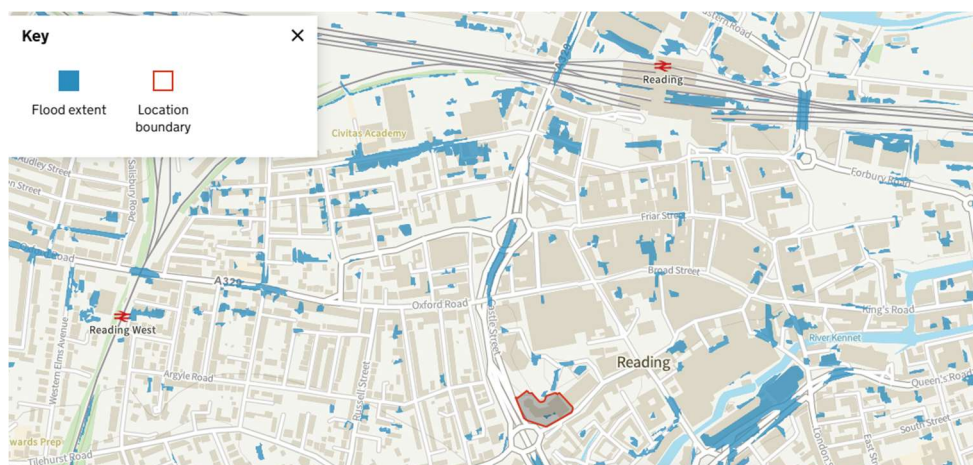


Figure 5-1 - Government Pluvial Flood Mapping

Based on the available information and topographic survey data, surface water flooding within the Site doesn't form part of any overland surface water flood route external to the site and solely originates within the site due to lower ground floor arrangement and associated localised topography. The proposed ground levels and drainage arrangement would deal with any on-plot surface water drainage making sure that the overland flood path will remain same as existing arrangement. The surface water flood risk can be considered as **negligible**.

5.4 Artificial Sources of Flooding

Since spring 2009 all reservoirs, under the 1975 Reservoir Act, require the development of a Flood Plan and associated inundation mapping along with governing their maintenance and management. According to Reservoir Flood Map in Reading Borough Level 1 SFRA, the Site falls outside of Reservoir Wet Day Scenario.

As such the risk of flooding from a reservoir is low and is being managed on a strategic level under the 1975 Reservoir Act.

Based on the available information, the probability of flooding from artificial sources can be assessed as **negligible**.

5.5 Groundwater Flooding

Groundwater flooding is caused by the emergence of water originating from sub-surface permeable strata. In a groundwater flooding event, water levels rise sufficiently to intersect the surface and inundate low lying land.

Data available from historical BGS boreholes indicates that the groundwater table is present at levels ranging from approximately 39.5m AOD via BGS borehole SU77SW108 to 34.0m AOD via BGS borehole SU77SW691.

Localised perched water may also be present associated with the Made Ground.

Groundwater flood risk falls within moderate to high considering high risk within 50m of the Site. It has been recommended to obtain groundwater monitoring data of at least six months of winter months from October to March as part of the Site Investigation works at the post planning stage.

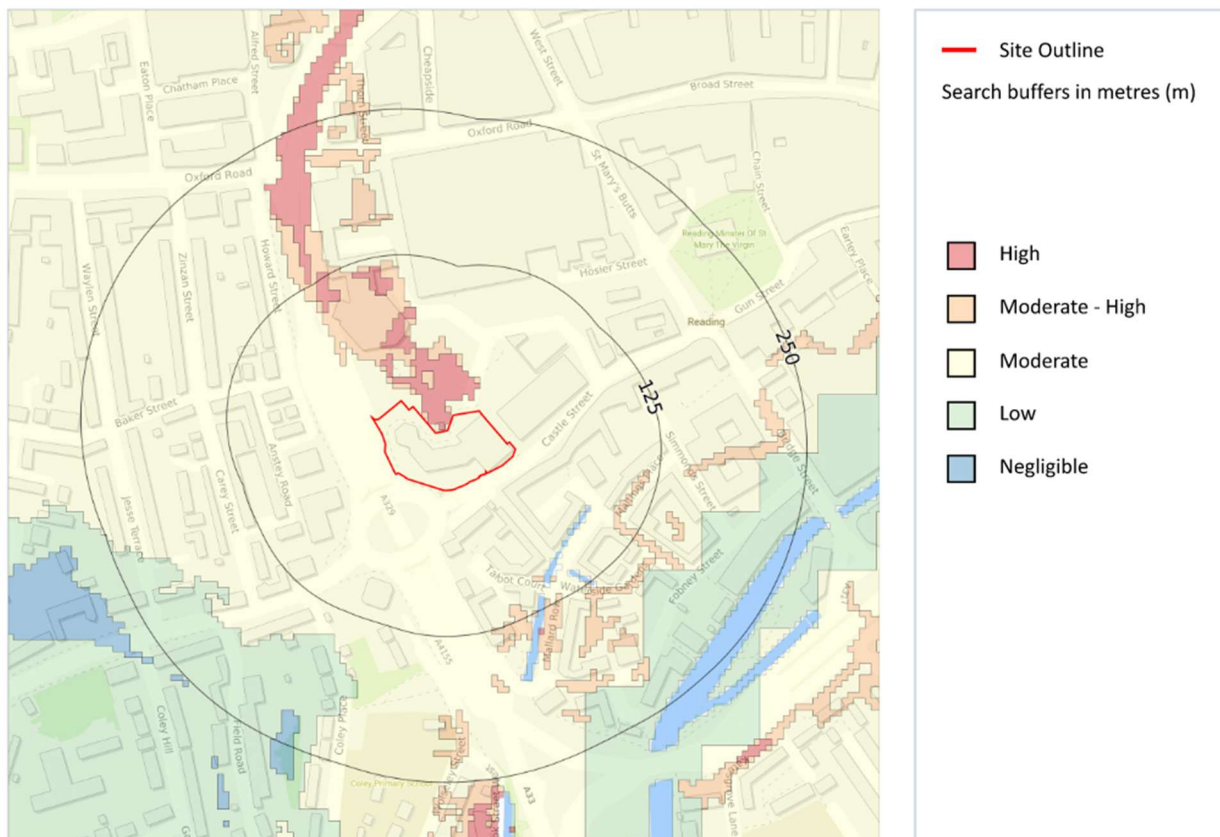


Figure 5-2: Groundwater Flood Map

The Site is not identified as being located within a groundwater Source Protection Zone (SPZ) and there are no SPZs recorded within 500m of the Site.

5.6 Sewers Flooding

The risk of flooding to the Site from overloaded sewers and surrounding drainage is based on the capacity of the network, operational / maintenance of the network and topography in the vicinity of the Site. When sewer flooding occurs sewage can be released back out of the drainage network through the top of manholes, drains or low-lying fittings such as toilets and showers.

RBC's Level 1 SFRA indicates total 14 sewer flooding incidents within RG1 postcode.

Based on the information available the probability of sewer flooding impacting the Site cannot be excluded. However, given no specific flooding issues have been recorded at the Site, Thames Water's continual upgrades to the local network to adapt for future capacity and betterment to the proposed discharge rates from the Site, the risk of sewer flooding on site can be assessed as **low**.

5.7 Flood Risk Mitigation Measures

As discussed in the previous sections there are not significant sources of flooding, therefore the only element to allow for as part of the scheme design going forward is surface water generated on site. This is mitigated through the robust Drainage Strategy, with attenuation provided to cater for the 1:100 year + 40% climate change event. The management of surface water runoff is discussed in the proposed Drainage Strategy below.

The lower ground floor slab would require adequate waterproofing by specialist to mitigate risk of groundwater damage internal to the building.

6 Drainage Strategy

6.1 Sustainable Surface Water Drainage Strategy

The proposed surface water has been designed in accordance with best practice and guidance to ensure that surface water is managed effectively to limit the risk off-site as well as on site.

The drainage strategy has been based on RBC's SFRA Level 1 and drainage hierarchy contained in Approved Document Part H of the Building Regulations states that surface water runoff from a Site shall discharge to one of the following in order of priority:

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

The use of rainwater harvesting has been explored and deemed unsuitable for this scheme due to use of green roofs, PV panels and relatively smaller roof catchment areas. In addition, given the building height, a considerable amount of pumping energy would be required for distribution which would impact the sustainability credentials of the scheme and thus the viability of such a system.

Given the moderate to high risk of groundwater flooding in the vicinity of the Site that would impact on the performance of the infiltration device and spatial constraints that require infiltration devices to be a minimum of 5m away from building structures / foundations, the use of infiltration type SuDS features is not viable for the Site.

Green roofs (sedum blankets) are considered suitable and have been incorporated within the site layout where feasible in conjunction with other amenity roof areas.

The use of impermeably lined permeable paving within the podium slab at ground floor level with shallow geo-cellular attenuation crates (blue roof concept) along with localised raingardens / tree pits / planting have been considered. Surface water runoff will be stored in the geo-cellular crates and porous sub-base for gradual release to the sewer network. The remaining attenuation will be provided into below ground geo-cellular attenuation tanks below the lower ground floor car park slab.

As described previously there are no local watercourses within proximity of the Site therefore the option to discharge into local watercourses is not considered suitable.

Due to the site constraints and relatively small development footprint, it is not feasible to provide the required rainwater attenuation on site to meet greenfield runoff rates. RBC's SFRA Level 1, Section 3.4, acknowledges that the redevelopment on brownfield sites presents less risk than new development on greenfield land. RBC's SFRA Level 1, Sections 4.1 and 5.2.5, suggests to provide betterment in the proposed surface water runoff from the new development on the brownfield site (previously developed site). Thames Water's pre-planning enquiry response, dated 21st April 2026, suggests restricting the peak surface water runoff to 4 l/s. The proposed surface water drainage strategy acknowledges the limited capacity in the public sewer and proposes to restrict the peak surface water runoff from the Site to 4 l/s up to 1 in 100-year storm events equivalent including 40% allowance in the rainfall intensities due to the climate change. Please refer to **Appendix B** for Thames Water's capacity confirmation letter and **Appendix E** for extracts of SFRA Level 1 clauses referring to providing betterment for brownfield sites / previously developed sites.

The brownfield rates have been calculated using Modified Rational Method and FSR rainfall intensities, as per Wallingsford Volume 4, that gives very conservative results, which have been used in the calculations of the proposed restricted discharge rate. The preliminary hydraulic modelling of the existing drainage

network has also been undertaken, and results are provided in the Table 2 below for comparison. The proposed restricted discharge rate of 4 l/s will provide significant betterment compared to existing brownfield runoff rates and meets requirement of RBC's SFRA Leve 1. Please refer to Table 3.

Please refer to drainage strategy drawing in **Appendix F**. The drainage strategy will need to be developed at the detailed design stage.

6.1.1 Surface Water Modelling

When undertaking the modelling for the surface water drainage strategy the following assumptions were made:

- Causeway Flow software has been used for quick storage estimates and hydraulic modelling;
- FEH rainfall data has been used when determining existing runoff rates;
- HR Wallingford's Greenfield Runoff Rate Estimation Tool (www.uksuds.com) was used to determine the proposed greenfield runoff rates;
- Modified Ration Method as per HR Wallingford's Volume 4 has been used to calculate the brownfield runoff rates;
- CV values are set at 0.9 (90%) for hardstanding areas (roads/roofs) and soft landscaping within Causeway Flow, for conservative measures at this stage, at the detailed design this figure will be reviewed in consultation with the LLFA;
- The impermeable area of the Site is taken as 0.573 ha (5730m²); (At this stage, green roofs have been considered as 100% impermeable roof for conservative approach)
- The proposed drainage network has been designed for the 1 in 100 year storm event plus 40% allowance to the rainfall intensities due to climate change;

All surface water drainage options outlined in this report adhere to these principles.

Modelling results are available in **Appendix G**.

6.1.2 Existing Surface Water Network Results

The existing area draining to the surface water network is 0.573 ha out of circa 0.63 ha site area. The existing discharge rates from the Site were determined using the Modified Rational Method ($Q = 2.78 \times A$ (ha) $\times i$ (mm/hr)) based on HR Wallingford's Volume 4 for the Site. Results are summarised in Table 2 below.

Table 2: Exiting Surface Water Discharge Rates using FSR Rainfall Intensities

Return Period (years)	Existing Surface Water Discharge Rates (l/s) HR Wallingford's Volume 4	Existing Surface Water Discharge Rates (l/s) Hydraulic Modelling Simulation results
1 in 1	19.60	50.00
1 in 2	24.80	63.50
1 in 30	47.10	120.90
1 in 100	62.10	158.80
1 in 100 + 40% Climate Change	N/A	N/A

6.1.3 Proposed Surface Water Network Results

The proposed surface water discharge rates will be restricted to 4 l/s in accordance with Thames Water's capacity confirmation. The proposed surface water discharge rates are shown in **Table 3** below.

Table 3: Proposed Surface Water Discharge Rates

Return Period (years)	Proposed Surface Water Discharge Rates (l/s)	Betterment in Surface Water Discharge Rates compared to Existing Rates (%)
1 in 2	4.0	93.70%
1 in 30		96.69%
1 in 100		97.48%
1 in 100 + 40%		>97.48%

Given the spatial constraints on site, the above discharge rates are deemed the lowest the site can reasonably discharge as there is limited available land take to cater for more attenuation on site. Majority of existing trees are to be retained at the frontage of the site which prevents the use of below ground storage.

As part of the Proposed Development, a quick storage estimate tool has been used in the hydraulic software Flow to determine the required amount of attenuation to accommodate the 1:100 year +40%cc storm event and to ensure that as a whole the Site's discharge rate does not exceed the rates listed above. This Storage estimate has been confirmed with a hydraulic model using Causeway flow where 140m³ has been designed for the podium level and circa 247 m³ for below ground attenuation storage below the basement slab. The results of this modelling are provided within **Appendix G**, and attenuation requirements for each catchment area are summarised in **Table 4** below.

Table 4: Proposed Attenuation Requirements

Catchment Area (ha)	Attenuation Device	Total Drainage Area (Ha)	Max Allowable Discharge Rate (l/s)	Estimated Attenuation Required for 1:100yr+40% CC (m ³)	Plan Area Required (m ²)
5730m ²	Permeable Paving + Cellular Crates	5730m ²	4.0	389.5 (within podium slab build-up and below basement slab)	circa 800

Although the above strategy identifies the general principles of surface water drainage management at the Site, assumptions and design solutions proposed will need to be re-assessed at the detailed design stage and any necessary approvals sought.

6.2 Offsite Effects & Proposed Connection Point

The surface water drainage strategy demonstrates that the drainage network at the Site is designed to accommodate runoff during all events up to and including the 100 year plus 40% climate change allowance and therefore prevents potential exceedance flows off-site, refer to **Appendix E** for the exceedance flow routes plan.

Thames Water's pre-planning enquiry response confirmed sufficient capacity to accommodate peak surface water runoff of 4 l/s.

The proposed connection point would be into the existing private surface water network that runs to the north of the building and discharges into Thames Water's surface water sewer to northwest of the Site. Thames Water's Asset Maps & Pre-Planning Enquiry response are included within **Appendix B**.

A partial drainage survey data indicates that the existing drainage in the proximity to the Site is circa 2m deep indicating that a gravity network would be feasible. A CCTV drainage survey will be carried out at the post planning stage to validate the route of the existing drainage network and associated condition of the drainage.

The development will not cause effects elsewhere in terms of fluvial and tidal flood risk due to its location within Flood Zone 1.

6.3 Long Term Storage

Long-term storage aims to address the additional volume of runoff from extreme events caused by the development when compared to pre-development runoff volume. The post-development runoff volume will remain less than the pre-development runoff volume. Calculations are shown in **Appendix G** below. Hydraulic calculations showing the outcome of the pre and post development runoff volume, derived using 1 in 100-year 6-hour storm duration, are included in **Appendix G**.

Table 5: Runoff Volume Comparison – Pre & Post Development

Pre-Development Runoff Volume	Post-Development Runoff Volume
426.1 m ³	120.6 m ³
Post-Development Runoff Volume < Pre-Development Runoff Volume	

6.4 Water Quality

The pollution hazard level of surface water runoff from the development is classified as 'low' according to Table 26.2 of the CIRIA SuDS Manualⁱ. Table 26.3 of the SuDS Manual provides indicative SuDS mitigation indices for Total Suspended Solids (TSS), metals and hydrocarbons for a range of SuDS devices. The pollution hazard indices for the development are compared against the mitigation indices of the proposed SuDS devices in below Tables 5 and 6.

Appropriate treatment would be incorporated into the drainage system to ensure that the quality of water discharged is acceptable. This would be achieved through the incorporation of a variety of SuDS features such as permeable paving, swale, filter trenches and detention basins. The pollution hazard and proposed mitigation indices, based on the CIRIA SuDS manual, are set out in Table 5 below, this confirms that the quality of water discharged from the Site would be appropriate.

All the catchments would benefit from the different treatment mechanisms outlined in the tables below. The pollution control measures will include one or more of the following for each catchment and have been selected for this Site to provide sufficient level of treatment in accordance with CIRIA guidelines. Pre-treatment will be provided with gullies and catchpit manholes to remove silt and prolong the life of the pollution control treatment media.

The following SuDS features have been incorporated within the development proposal;

- Permeable block paving for public realm areas
- Green roofs

The suitability of the treatment systems is quantified in accordance with the Simplified Index Approach described in CIRIA 753, as below;

- Total SuDS Mitigation Index $\geq$ Pollution Hazards Index (for each contaminant type)
- Total SuDS Mitigation Index = First Stage Mitigation Index + 0.5 (Second Stage Mitigation Index)

Comparing the pollution hazard indices in Table 6 with the mitigation indices in Table 7 and applying the following formula, it can be seen in Table 8 that the suggested treatment systems will be sufficient to mitigate the likely pollution from each catchment areas.

Table 6: Pollution Hazard Indices

Catchment Type	Pollution Hazard Level	Requirements for Discharge to Surface Waters	Pollution Hazard Indices		
			Suspended Solids	Metals	Hydro-Carbons
Residential Roof	Low	Simple Index Approach	0.2	0.2	0.05
Public Realm (incl Flint Street)	Low	Simple Index Approach	0.5	0.4	0.4

The above Table 6 shows the pollution hazard indices for each proposed catchment type that need to be mitigated.

Table 7: Pollution Mitigation Indices

Catchment Type	Pollution Hazard Indices		
	Suspended Solids	Metals	Hydro-Carbons
Permeable Paving	0.7	0.6	0.7
Green Roof	0.8	0.8	0.8

The above Table 7 shows the pollution mitigation indices offered by each SuDS feature.

Table 8: Total SuDS Mitigation Indices (Green = Treatment criteria is met)

Catchment Type	Pollution Hazard Level	Treatment	Pollution Hazard Indices					
			Suspended Solids		Metals		Hydro-Carbons	
			Required	Provided	Required	Provided	Required	Provided
Residential Roof	Low	Green roofs	0.2	0.5	0.2	0.5	0.05	0.6
Public Realm (Incl Flint Street)	Low	Permeable Paving	0.5	0.7	0.4	0.6	0.4	0.7

The above Table 8 confirms that each of the proposed catchment will be treated to achieve the required pollution mitigation indices in accordance with CIRIA SuDS manual.

6.5 Foul Water Drainage Strategy

Thames Water's Pre-Planning Enquiry response confirmed sufficient capacity in their foul sewer to accommodate an unrestricted foul water discharge from the proposed development. Refer to **Appendix B**.

The proposed connection point would be into the existing private foul water network that runs to the north of the building and discharges into Thames Water's foul water sewer to northwest of the Site. A CCTV and drainage survey will be carried out at the post planning stage to validate the route of the existing drainage network and associated condition of the drainage.

Refer to Drainage Strategy Drawing in **Appendix E** for an indicative connection location.

The proposed foul water flows will be discharged at an unrestricted rate and most likely via a gravity outfall from the Site.

The private on plot foul drainage network will be further developed during detailed design stages. The proposed foul water drainage strategy for the site involves the MEP engineer's coordination of the superstructure drainage up until it enters the below-ground drainage network.

6.5.1 Existing Foul Water Discharge Rate

The current site was used by five storey + basement Police Station building, covering circa 15383 sqm GIA. To estimate a total number of occupancy within the existing building, one people occupancy per 4 sqm area has been assumed, and each person uses 90 litres per day as per British Water's Code of Practice guidance. This is in line with the standard practice guidance and for estimation purpose only. Therefore, the existing peak foul water rates on site have been calculated as being:

$$= 15383 \text{ sqm} / 4 = 3845 \text{ people} \times 90 \text{ litres per day} = 346,050 \text{ litres per day} = 24 \text{ l/s}$$

6.5.2 Proposed Foul Water Discharge Rate

The residential scheme will provide 205 apartments. Based on DCG guidance of 0.05 l/s peak flow per dwelling, the peak foul water flow rate will equate to 10.25 l/s.

There will be circa 1500 sqm GIA for non-residential usage. As summarised in section 6.4.1, one people occupancy per 4 sqm area has been assumed, and each person uses 90 litres per day. Therefore, the peak foul water rates for non-resi have been calculated as being:

$$= 1500 \text{ sqm} / 4 = 375 \text{ people} \times 90 \text{ litres per day} = 33,750 \text{ litres per day.}$$

$$= 2.35 \text{ l/s}$$

The total peak flow from the proposed development would be 12.6 l/s.

7 Drainage Maintenance and Management strategy

The Drainage Maintenance and Management Strategy (**Table 9**) has been produced based on the information provided within the SUDS Manual; it is expected that the maintenance for the entire scheme will be under the management of 'the developer', in which a suitably qualified maintenance specialist will undertake the work.

Table 9: Proposed Drainage Maintenance Strategy

Drainage Feature	Regular Maintenance	Occasional Maintenance	Monitoring
Drainage Channels/Gullies	Inspections will include gratings; covers including their locking bolts; sumps and sump buckets; exposed concrete surround and adjacent surfacing. Check for accumulation of debris and silt and cleaned as necessary Gratings, frames and all associated locking parts to be checked for damage. Exposed concrete and adjacent surfacing to be checked for cracking and general damage. Check condition of inlet and outlet pipes, flow controls, baffles and isolation structures	Channel cleaning will be by flushing with water or high-pressure jetting (no boiling water or cleaning agent will be used). All silt buckets and sumps will be cleaned out replaced back into the units ensuring they are correctly fitted. All channel surfaces and joints will be checked and repaired as necessary. Repair/rehabilitation of inlets, outlet, overflows and vents, as required.	Inspect every 4 months or after large storm.
Catchpit Manholes/Inspection Chambers	Check for accumulation of debris and silt and cleaned as necessary. Covers and frames to be checked for damage. Exposed concrete and adjacent surfacing to be checked for cracking and general damage. Check condition of inlet and outlet pipes, flow controls, baffles and isolation structures	Clean as necessary. All manhole and inspection chamber covers and frames to be replaced as necessary. Repair exposed concrete and surfacing as necessary Repair/rehabilitation of inlets, outlet, overflows and vents, as required.	Inspect every 6 months or after large storm.
Geo-Cellular Attenuation Tank and Blue Roof	Inspection chambers will be checked every 6 months for the accumulation of debris and silt and cleaned as necessary. Remove debris from the catchment surface where it may cause risk to performance (monthly).	As per manufacturer's recommendations	Inspect every 6 months or after large storm.
Green Roofs	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes, integrity of waterproofing and structural stability.	Replace dead plants as required Remove invasive and nuisance vegetation including weeds.	Inspected every 6 months or after large storm.

	Inspect drain inlets to ensure unrestricted runoff from the drainage layer. Remove debris and litter to prevent clogging of inlet drains and inference with plant growth.		
Pervious Pavement	Brushing and vacuuming three times/year at the end of winter, mid-summer, after autumn leaf fall, or as required on site-specific observations of clogging or manufacturer recommendation	Stabilise and mow contributing and adjacent areas, as required Removal of weed, as required Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving, as required Remedial work to any depressions rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, as required Rehabilitation of surface and upper sub-structure, as required	Initial inspection, monthly for 3 months after installation. Inspect for evidence of poor operation and/or weed growth/ Of required take remedial action, 3 monthly, 48hrs after large storms Inspect silt accumulation rates and establish appropriate brushing frequencies, annually Monitor inspection chambers, annually

8 Conclusion

This Flood Risk Assessment (FRA) and Sustainable Drainage Strategy has been prepared on behalf of S2 Estates to support the detailed planning application for the:

The Proposed Development is for the demolition of the existing building and the erection of a residential-led mixed use development comprising Use Class C3 residential units, with Use Class E on the ground floor and with some elements at lower ground floor, plus public realm, hard and soft landscaping, access and servicing arrangements, cycle parking, and other associated works.

The proposed development comprises two new buildings at the ground floor podium level with public realm areas between two buildings linking to Cusden Walk. The lower ground floor area comprises car park, cycle store, Police Room, refuse areas and utilities plant areas.

The EA and the online GOV.UK Flood Map for Planning identify that the Site is located in Flood Zone 1 where the probability of river or sea flooding is less than 0.1% (1 in 1000) chance in any given year. Meaning that the probability of tidal or fluvial flooding can therefore be assessed as negligible.

Other potential sources of flooding have been investigated and are deemed negligible to low. The groundwater flood risk falls within moderate to high around the vicinity of the Site i.e outside of the site boundary, based on desktop study analysis and it is recommended to carry out groundwater monitoring during winter months from October to March at the post planning stage. The lower ground floor slab would require adequate waterproofing by specialist to mitigate risk of groundwater damage internal to the building. The groundwater flood risk impact to the development itself is low considering residential units are at higher level and the direction of the groundwater flow most likely towards northern elevation, in the direction of external ground levels. The risk of the groundwater to the basement to be reviewed following on the detailed SI and could be lowered by incorporating waterproofing membrane to the underside of the ground floor slab, if required, in the detailed design.

The proposed surface water drainage strategy reduces runoff rates as far as practically possible, meeting guidelines given in RBC's SFRA Level 1 for brownfield sites and in accordance with Thames Water's capacity check confirmation via a pre-planning enquiry. The proposed surface water discharge rates remain close to greenfield runoff rates. The on-site attenuation will be provided to restrict the surface water runoff up to 1 in 100-years storm events including 40% allowance in the rainfall intensities due to the climate change. The attenuation will be provided through the use of geo-cellular storage within the proposed podium at ground floor level (blue roofs) and below the ground floor slab. The proposed drainage strategy provides significant betterment compared to the existing drainage arrangement and reduces the risk of downstream surface water flooding. The incorporation of SuDS features such as permeable paving and green roofs provide water quality treatment to the surface water runoff prior to discharging off-site into Thames Water's public sewers.

A partial drainage survey data indicates that the existing drainage in the proximity to the Site is circa 2m deep indicating that a gravity network would be feasible. A CCTV and drainage survey of the existing drainage network will be carried out at the post planning stage.

Thames Water confirmed via a pre-planning application, that their public foul sewer has sufficient capacity to accommodate an unrestricted gravity discharge from the proposed development.

It can be concluded that the development itself is at low risk of flooding from all sources. Any residual risk of groundwater flooding will be managed via the detailed design. The proposed surface water drainage strategy includes climate change allowance and reduces surface water runoff rate compared to existing brownfield site and hence, minimising risk of flooding on and off-site. The surface water runoff improves water quality in accordance with CIRIA SuDS guidelines. A detailed drainage maintenance plan will be prepared as part of the detailed design which will further mitigate risk of drainage failure and reduce risk of flooding on and off-site.

Appendix A – Topographical Survey

Appendix B – Thames Water Asset Mapping & Pre-Planning Enquiry Response

Meinhardt
10 ALDERSGATE STREET,
LONDON
EC1A 4HJ

Search address supplied Thames Valley Police
Castle Street
Reading
RG1 7TH

Your reference Tatiana Patten

Our reference ALS/ALS Standard/2026_5294862

Search date 2 March 2026

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

Search address supplied: Thames Valley Police, Castle Street, Reading, RG1 7TH

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.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies. For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.



For your guidance:

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

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

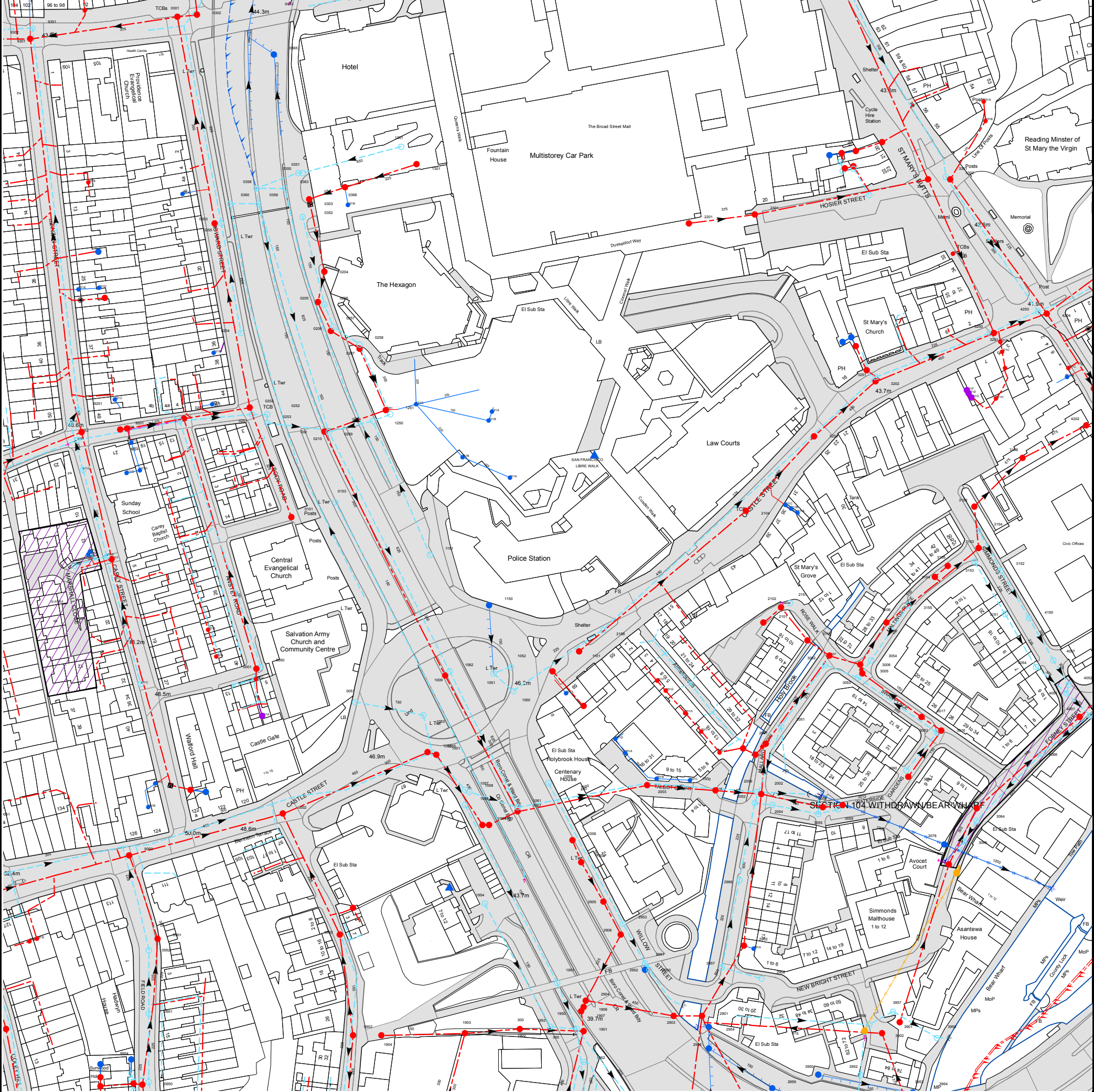
Clean Water queries

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/2026 5294862



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 471184,173152
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map (2024) with the Sanction of the controller of H.M. Stationery Office, License no. AC0000849556 Crown Copyright Reserved.

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
211A	n/a	n/a
211B	n/a	n/a
211C	n/a	n/a
931C	n/a	n/a
0301	43.98	40.93
0302	43.97	41.01
0453	36.96	36.16
1351	n/a	n/a
1301	39.58	38.98
33MD	n/a	n/a
33MJ	n/a	n/a
33MN	n/a	n/a
33ML	n/a	n/a
33MF	n/a	n/a
33MC	n/a	n/a
33LN	n/a	n/a
331A	n/a	n/a
9301	43.87	n/a
9351	43.81	42.63
931B	n/a	n/a
92MN	n/a	n/a
031A	n/a	n/a
0203	44.71	n/a
0255	44.65	43.44
0360	n/a	n/a
0358	n/a	n/a
0359	n/a	n/a
0365	n/a	n/a
3250	42.27	n/a
3201	42.25	n/a
321B	n/a	n/a
321C	n/a	n/a
32LE	n/a	n/a
4250	41.63	n/a
4204	41.47	n/a
421C	n/a	n/a
921A	46.52	45.225
9251	46.36	45.135
921E	n/a	n/a
921D	n/a	n/a
92LM	n/a	n/a
921C	n/a	n/a
0250	46.15	44.53
0201	46.12	43.07
021A	n/a	n/a
021B	n/a	n/a
0254	45.27	44.22
0202	45.78	42.82
0251	45.78	44.4
0253	45.86	n/a
0252	45.81	44.22
321H	n/a	n/a
3152	n/a	n/a
3108	39.77	35.77
421A	n/a	n/a
4202	39.85	35.7
421B	n/a	n/a
0363	n/a	n/a
0101	46.09	43.51
0350	39.09	37.13
0351	39.05	37.25
0352	39.43	38.01
0303	39.59	38.65
0205	39.83	38.42
0210	n/a	n/a
0204	39.7	n/a
0256	39.82	37.6
0259	n/a	n/a
0206	40.06	38.44
0257	40.02	37.61
0153	n/a	n/a
0366	n/a	n/a
031B	n/a	n/a
0258	40	37.38
0207	40.56	38.35
1250	40.74	36.97
1201	42.7	38.27
1251	42.79	37
121C	n/a	n/a
1151	45.43	44.3
111B	n/a	n/a
121B	n/a	n/a
1150	46.37	45.12
121A	n/a	n/a
2102	41.08	39.33
3155	39.34	37.75
2151	41.09	39.42
3104	39.59	37.9
3105	39.7	38.04
3153	39.8	37.76
3103	39.67	35.77

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3154	n/a	n/a
2104	44.88	40.66
3109	39.81	35.76
111A	n/a	n/a
3203	44.23	40.1
321G	n/a	n/a
321D	n/a	n/a
321F	n/a	n/a
3202	43.85	39.65
3251	43.75	n/a
32LJ	n/a	n/a
32LM	n/a	n/a
32ME	n/a	n/a
32LN	n/a	n/a
321A	n/a	n/a
2201	n/a	n/a
2301	44.13	40.62
33ME	n/a	n/a
3302	43.15	39.99
3301	43.25	39.88
3351	43.13	41.43
33MH	n/a	n/a
33MM	n/a	n/a
011A	n/a	n/a
011B	n/a	n/a
911E	n/a	n/a
911F	47.4	45.775
911D	47.15	46.01
911K	n/a	n/a
911L	n/a	n/a
911G	n/a	n/a
911H	n/a	n/a
911C	n/a	n/a
911I	n/a	n/a
9151	46.57	44.71
9202	46.48	43.44
9201	46.32	43.34
921B	n/a	n/a
101A	n/a	n/a
1101	45.48	41.83
10ND	n/a	n/a
2158	45.55	43.79
201D	n/a	n/a
201A	n/a	n/a
2003	40.03	36.45
201B	n/a	n/a
201F	n/a	n/a
201G	n/a	n/a
201H	n/a	n/a
201C	n/a	n/a
201I	n/a	n/a
201E	n/a	n/a
201J	n/a	n/a
2060	n/a	n/a
2052	38.79	37.06
2061	n/a	n/a
2056	38.89	35.55
2002	38.85	36.04
2101	40.96	39.46
2001	39.03	36
2054	38.76	37.06
2051	38.94	37.13
3111	40.31	39.16
3052	39.35	37.15
3107	39.47	35.85
3012	38.73	37.44
3053	39.09	37.16
3006	39.12	35.9
3005	39.12	37.04
3054	39.12	37.41
3106	39.22	35.97
9003	50.89	47.82
901C	n/a	n/a
001B	n/a	n/a
001C	n/a	n/a
00KL	n/a	n/a
00KM	n/a	n/a
001D	n/a	n/a
0001	47.66	44.82
0050	47.61	46.57
001A	n/a	n/a
0002	48.33	45.4
0902	51.67	48.36
09MD	n/a	n/a
0903	50.67	48.82
0051	47.28	45.99
1904	50.16	47.57
1053	47.02	45.47
1002	46.71	n/a
1055	46.71	n/a
1001	46.73	n/a
1009	n/a	n/a
1062	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
1056	45.96	45.02
1057	46.18	42.13
1903	43.34	39.77
1058	46.13	n/a
1004	45.23	41.78
1954	41.28	40.3
1003	45.12	n/a
1051	46.33	44.53
1052	46.08	45.12
1050	45.98	n/a
1007	n/a	n/a
1061	n/a	n/a
1902	41.59	38.34
1059	45.18	44.2
1953	39.59	38.44
10MN	n/a	n/a
3957	38.79	n/a
3901	n/a	n/a
3060	38.96	37.41
3014	38.92	37.59
3017	38.89	37.29
3063	38.82	37.37
3958	n/a	n/a
3016	38.85	37.36
3078	n/a	n/a
3020	38.77	37.12
3065	38.84	36.98
3064	38.74	37.08
3019	38.69	36.98
3151	39.74	37.63
4150	n/a	n/a
4054	39.66	37.45
4066	38.64	n/a
4057	39.61	36.9
4051	39.04	36.63
4052	39.12	n/a
4001	38.81	36.81
4050	38.84	n/a
99LH	n/a	n/a
99LL	n/a	n/a
9954	n/a	n/a
99LK	n/a	n/a
0950	52.85	51.46
99LF	n/a	n/a
99LM	n/a	n/a
99LD	n/a	n/a
99MH	n/a	n/a
99LE	n/a	n/a
0951	52.91	51.76
0952	52.24	50.56
0901	52.09	48.33
2956	n/a	n/a
3902	n/a	n/a
1901	39.52	36.69
1950	39.44	38.26
2954	39.51	38.28
3956	n/a	n/a
2901	39.61	36.29
2903	n/a	n/a
1907	n/a	n/a
1906	n/a	n/a
2904	n/a	n/a
1951	40.8	39.54
2958	38.79	37.49
2950	39.74	38.01
2952	39.73	38.36
2957	38.81	37.27
2951	39.64	38.53
2902	38.73	36.28
2906	n/a	n/a
2953	39.29	38.55
2905	n/a	n/a
2966	n/a	n/a
1005	42.55	37.86
1006	43.33	38.09
3055	38.69	36.89
3059	38.69	37.17
3008	38.74	37.26
331B	n/a	n/a
291A	n/a	n/a
3953	38.19	37.58
2959	41.31	40.17
3952	n/a	n/a
3950	38.83	38.05
1952	39.11	37.64
9901	57.35	n/a
991A	n/a	n/a
991B	n/a	n/a
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.		



Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

	Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
	Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
	Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
	Storm Sewer
	Sludge Sewer
	Foul Trunk Sewer
	Surface Trunk Sewer
	Combined Trunk Sewer
	Foul Rising Main
	Surface Water Rising Main
	Combined Rising Main
	Vacuum
	Thames Water Proposed
	Vent Pipe
	Gallery

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

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

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

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

	Air Valve		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

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

	Ancillary		Drop Pipe
	Control Valve		Weir

End Items

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

	Inlet		Outfall
	Undefined End		

Other Symbols

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

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

Areas

Lines denoting areas of underground surveys, etc.

	Agreement
	Chamber
	Operational Site

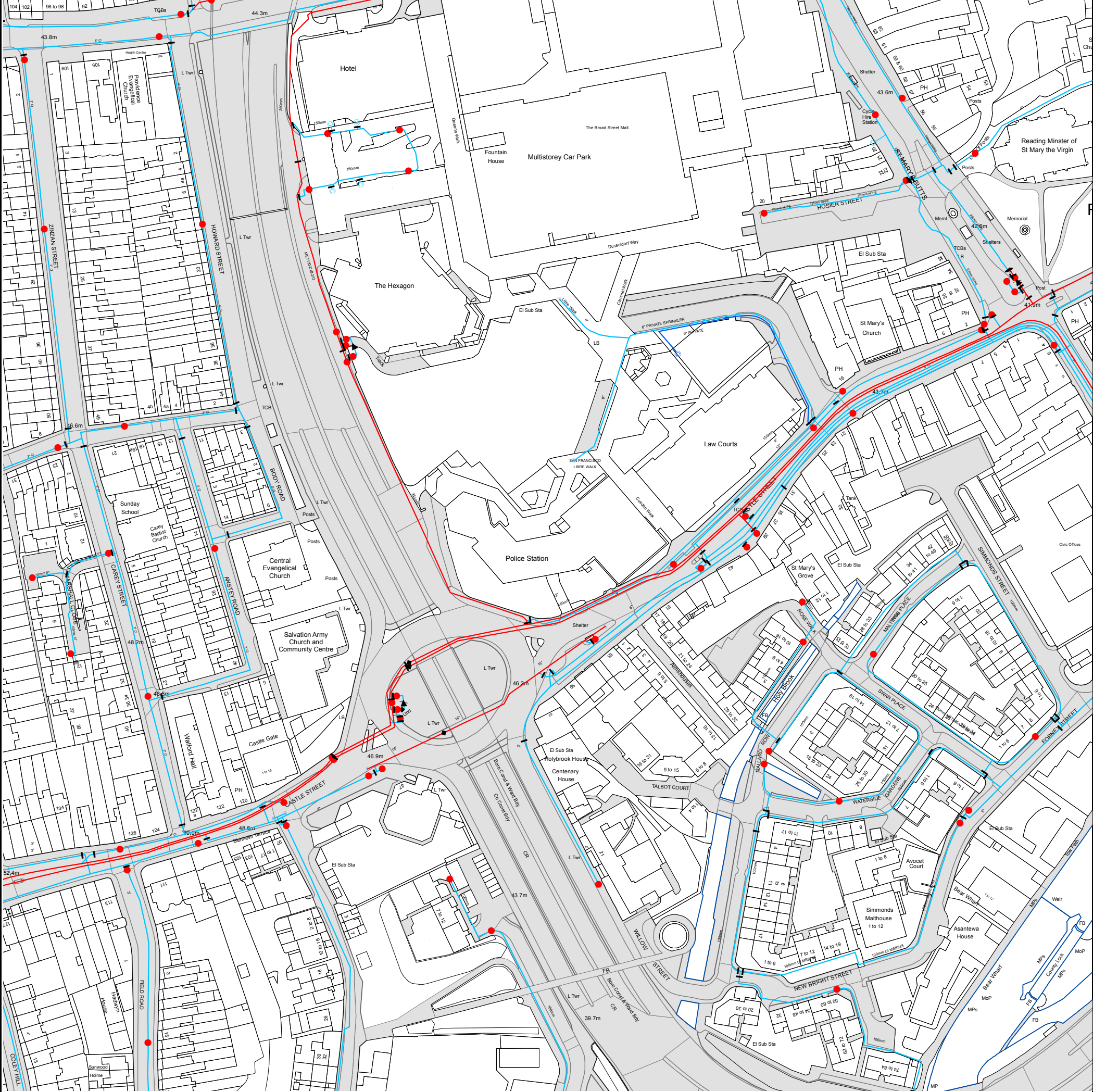
Ducts or Crossings

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

5) 'na' or '0' on a manhole indicates that data is unavailable.

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

Asset Location Search Water Map - ALS/ALS Standard/2026 5294862



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 471184, 173152.

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

Based on the Ordnance Survey Map (2024) with the Sanction of the controller of H.M. Stationery Office, License no. AC0000849556 Crown Copyright Reserved.



Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

- 4"** **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- 16"** **Trunk Main:** A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
- 3" SUPPLY** **Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.
- 3" FIRE** **Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
- 3" METERED** **Metered Pipe:** A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.
- Transmission Tunnel:** A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
- Proposed Main:** A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

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

Valves

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

Hydrants

- Single Hydrant

Meters

- Meter

End Items

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

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

Operational Sites

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

Other Symbols

- Data Logger
- Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

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

- Other Water Company Main:** Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
- Private Main:** Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.



Sujal Parikh

MEINHARDT (UK) LTD
ONE LONDON WALL
LONDON
EC2Y 5EA



21 April 2026

Pre-planning enquiry: Confirmation of sufficient capacity

Site Address: Reading Police Station, 53, Castle Street, Reading, RG1 7HT

Dear Sujal

Thank you for providing information on your development at the above site, consisting of the below:

- Existing: Brownfield site (0.6ha), Police Station (offices - 15,383.82 SQM)
- Proposed: 205 new flats
- Drainage proposal is for Foul Water to discharge via gravity indirectly via a private network into existing Thames Water FW MH SU71731201. Surface Water to discharge via gravity indirectly via a private network into existing Thames Water SW MH SU71731250 at a discharge rate of 19.6 l/s (impermeable area of 5790 SQM)

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

Foul Water

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

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

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

Surface Water

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

National SuDS Standards, Standard 1.2: Runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

priority 1: collected for non-potable use

priority 2: infiltrated to ground

priority 3: discharged to an above ground surface water body

priority 4: discharged to a surface water sewer, or another piped surface water drainage system

priority 5: discharged to a combined sewer

Note 1: priority 1 is the highest priority and priority 5 is the lowest.

Note 2: for the purposes of this standard, a combined sewer is a sewer intended to receive both foul sewage and surface runoff and does not include a sewer intended to receive only foul sewage, even if it has the capacity to accommodate additional flows or has an element of surface water in it already.

Where connection to the public sewerage network is required to manage surface water flows we will accept these flows at a discharge rate in line with the National SuDS Standards or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and if the flows are restricted to a total of 4 l/s connected to manhole SU71731250 then Thames Water would not have any objections to the proposal.

Capacity at STW?

The receiving network is served by Reading (Manor Farm) STW and there is a known performance issue which may cause the EA to object to the development. *A more detailed assessment will be carried out when the LPA consult our Development Control team, and we may require a planning condition to allow us time to upgrade the STW. Please visit our website for updates on the site-specific upgrades.

What happens next?

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

If you have any further questions, please contact us.

Yours sincerely,

Abdul Afzal

Adoptions & Pre-Planning Engineer
Developer Services

Appendix C – Development Plans

Notes

Do not scale from this drawing.
All contractors must visit the site and be responsible for taking and checking dimensions.
All construction information should be taken from figured dimensions only.
Any discrepancies between drawings, specifications and site conditions must be brought to the attention of the supervising officer.
This drawing & the works depicted are the copyright of JTP.

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- Key
- Basement Car Park
 - Car Park Vent
 - Cold Water Tank Room
 - Comms Room
 - Cycle Store (Non Resi)
 - Cycle Store (Residential)
 - Generator
 - HHP3 Sprinkler & Wet Riser
 - Life Safety Switchroom
 - Low Temperature Hot Water Plant Room
 - Police Room
 - Protected Lobby
 - Refuse
 - Refuse (Non Resi)
 - Residential Parcel Room
 - Risers
 - Smoke Shaft
 - Sprinkler Tank (Residential)
 - Ventilated Common Corridor
 - Ventilated Evacuation Lobby
 - Building footprint above
 - Shaft above - Lift/Stair does not provide access to basement
 - Indicative column locations

P1 24.04.26 Planning Submission JTP DJF

Rev	Date	Description	Drawn	Chkd
-----	------	-------------	-------	------

Drawing Status

PLANNING

Client

S2 Estates

jtp

JTP Studios, Unit 5
The Rum Warehouse
Pennington Street
London, E1W 2AP
+44 (0) 20 7017 1780
www.jtp.co.uk

Project

Reading Police Station

Drawing Title

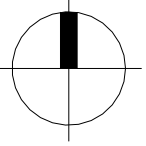
Proposed Sitewide - Basement Plan

Scale @A1 1 : 200 Job Ref. 01962

Drawing No. SP_01 Revision. P1

Scale Bar

0 2 4 6 8 10 m



Indicative Ground Cut

Notes

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- Key
- Community
 - Convenience Food Store
 - Final Exit Route
 - Final Exit Route (Non-Resi)
 - Lobby
 - Non-resi
 - Protected Lobby
 - Residential Amenity
 - Residential Low Voltage Switchroom
 - Retail Low Voltage Switchroom
 - Risers
 - Service Corridor
 - Smoke Shaft
 - Substation
 - Ventilated Common Corridor
 - Ventilated Evacuation Lobby

P1 24.04.26 Planning Submission JTP DJF

Rev	Date	Description	Drawn	Chkd
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Drawing Status

PLANNING

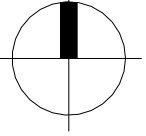
Client
S2 Estates



Project
Reading Police Station

Drawing Title
Proposed Sitewide - Ground Floor Plan

Scale @A1 1 : 200 Job Ref. 01962
Drawing No. SP_02 Revision. P1
Scale Bar 0 2 4 6 8 10 m





Notes

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Note:

Refer to Energy Strategy for indicative layouts of roof level PV Arrays

P1 24.04.26 Planning Submission JTP DJF

Rev	Date	Description	Drawn	Chkd
-----	------	-------------	-------	------

Drawing Status

PLANNING

Client

S2 Estates

jtp

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Pennington Street
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www.jtp.co.uk

Project

Reading Police Station

Drawing Title

Proposed Sitewide - Roof Plan

Scale @A1 1 : 200 Job Ref. 01962

Drawing No. SP_22 Revision. P1

Scale Bar 0 2 4 6 8 10 m

Appendix D – Relevant Maps and Data