

Wellington Road Wokingham

Flood Risk Assessment and Drainage Strategy Report

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Date	Revision	Notes/Amendments/Issue Purpose
May 2025	1	Draft Planning Issue
July 2025	2	Revised with Architect's Comments

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Acronyms	
AOD	Above Ordnance Datum
CIRIA	Construction Industry Research and Information Association
DCG	Design and Construction Guidance
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
FRA	Flood Risk Assessment
LLFA	Lead Local Flood Authority
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
SFRA	Strategic Flood Risk Assessment
SWMP	Surface Water Management Plan
WBC	Wokingham Borough Council

1 Introduction

Price & Myers have been commissioned to undertake a Flood Risk Assessment (FRA) and Drainage Strategy for the proposed development on land adjacent to Wellington Road and Station Road, Wokingham.

The National Planning Policy Framework (NPPF) states that an appropriate FRA will be required for all development proposals of 1 hectare (ha) or greater in Flood Zone 1 and for any development within Flood Zones 2 or 3. The proposed development is less than 1 ha in size with EA's Flood Map for Planning showing the site to be in Flood Zone 1.

This report will outline the proposed drainage strategy for the site including a detailed SuDS assessment.

1.1 Relevant Policy

This FRA has been carried out in accordance with the NPPF and the accompanying Planning Practice Guidance (PPG) "Flood Risk and Coastal Change". This FRA also incorporates advice and guidance from the Environment Agency (EA), the Wokingham Council SuDS Strategy (Jan 2017), Wokingham Borough Council SFRA (May 2023) and CIRIA documents.

The surface water drainage strategy is in accordance with:

- the Department for Environment, Food and Rural Affairs (DEFRA) "Non-Statutory Technical Standards for Sustainable Drainage Systems".
- the Lead Local Flood Authority (LLFA), Wokingham Council, guidance document on SuDS/Drainage: "Wokingham SuDS Strategy – Guidance on the use of sustainable drainage systems" (Jan 2017).
- Building Regulations Part H.

2 Site Description and Location

The site is located approximately 100m south of Wokingham train station and 500m west of Wokingham Town Centre, with location shown in Figure 2.1. The postcode for the site is RG40 2AH with approximate Ordnance Survey coordinates 480651 (E), 168600 (N)

The site is approximately 0.24 hectares (ha) in size and comprises almost entirely of undeveloped land, with exception to an access road along the east extent adjoining Park Road to the south and a small amount of public footway at the northern extent of the site. The surrounding area consists generally of residential buildings with three road frontages adjoining boundaries of the site, Station Road adjoining to the north, Wellington Road to the west and Park Road to the South as shown in Figure 2.2.

The Site Topographical Survey is provided in Appendix A which shows levels generally falling from south to north, varying from 58.20mAOD (metres above Ordnance Datum) at the northern extent of the site and around 60.40mAOD where the site access/frontage adjoins Park Road to the south.

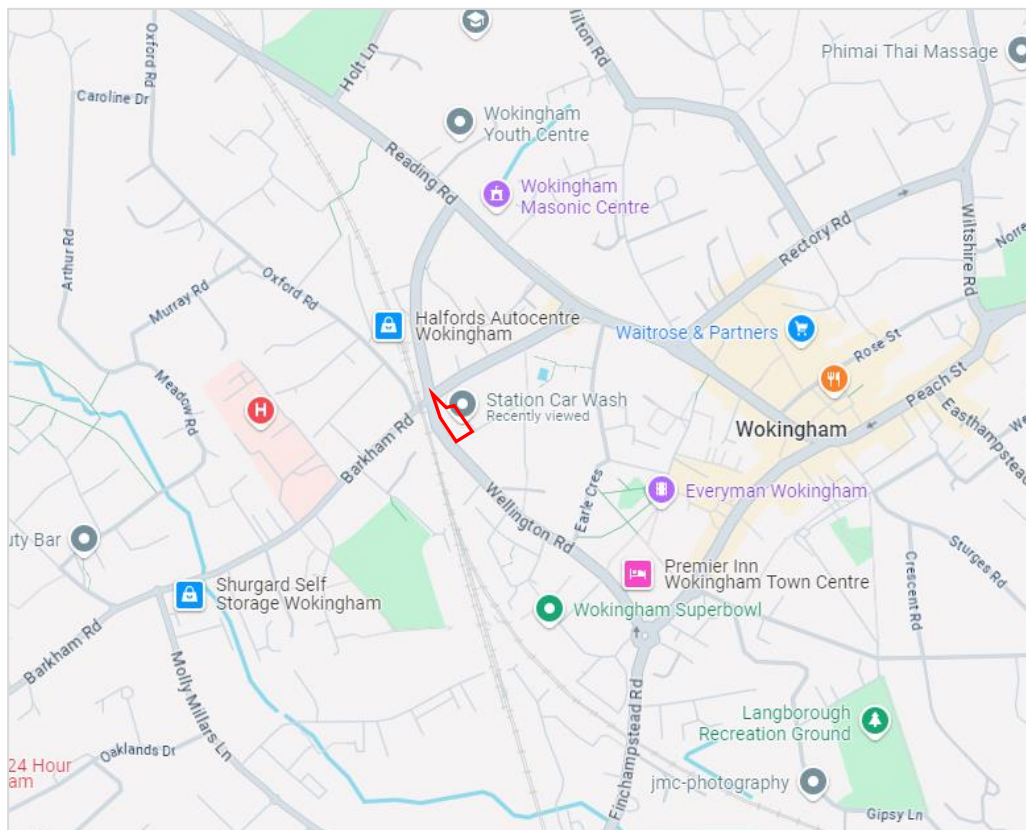


Figure 2.1: Site Location (Google maps, 2025).



Figure 2.2: Existing Site Location with boundary extents (Kendall Kingscott).

2.1 Existing Drainage

The Thames Water (TW) Asset Plan for the surrounding site area is provided below in Figure 2.3, and can be seen in full in Appendix G. This shows there to be both foul and surface water public sewers in all roads adjacent to the site with none shown to be crossing the site boundary.

A site CCTV drainage survey had not been undertaken at the time of writing this report. However, the undeveloped nature of the site alongside review of topographical survey information suggests there to be minimal below ground drainage serving the site area.

The topographic survey (Appendix A) shows there to be a private suspected foul drain serving the car wash, and it is assumed also serving other properties to the north and east. This outfalls to the Park Road foul sewer. The condition of this drainage within the site boundary can be confirmed through CCTV Survey. A blocked gully was also noted within the car wash premises.



Figure 2.3: Thames Water public sewer asset plan. Site boundary shown in pink.

A channel drain and associated surface water drain were also noted at the northern end of the existing car park (the rear of 'Station Furniture'). The outfall of this drain is suspected – from Google Maps imaging as seen in Figure 2.4 – to be freely draining into the existing undeveloped land. This will have to be demolished/reconnected as part of the external car park works.



Figure 2.4: Existing surface water drainage outfalling into undeveloped land on-site.

3 Development Proposal

The development proposal comprises a full planning application to provide 21no. Class C3 units, including related ancillary functions, amenity space, landscaping, car and cycle parking and refuse storage. The residential units are 100% social housing. Development proposal plans are provided in Appendix B, an extract of which is shown in Figure 3.1.



Figure 3.1: Proposed Site Elevations (Kendall Kingscott: April 2025)

4 Flood Risk Assessment

4.1 Flood Risk from Watercourses

The EA's flood map for planning, provided below in Figure 4.1, shows that the site is located in Flood Zone 1 and is not at risk of flooding from watercourses. Developments in this flood zone do not have any restrictions, provided they do not increase the risk of flooding elsewhere.

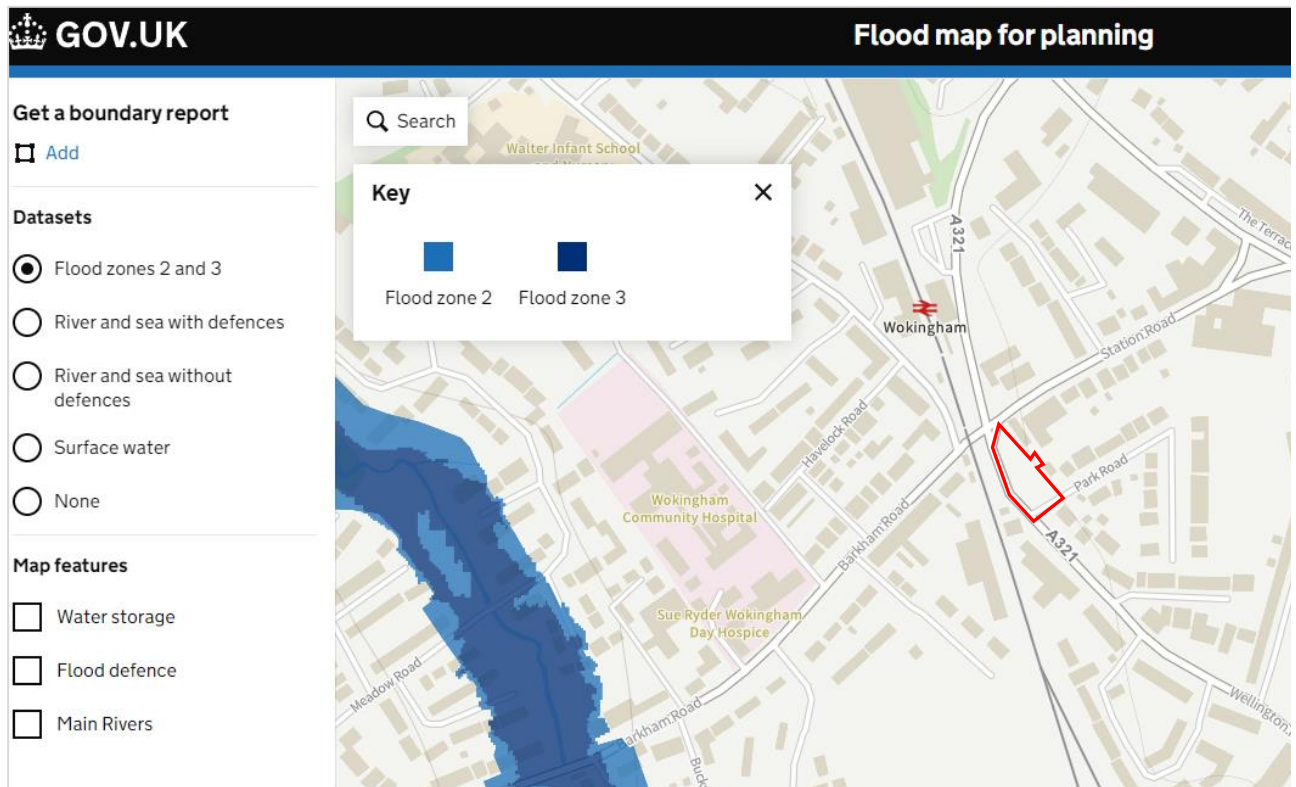


Figure 4.1: from EA Flood Map for Planning.

4.2 Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when intense rainfall is unable to soak into the ground or enter a drainage system due to blockages or the capacity of the system being exceeded. Overland flows can also be generated by burst water mains, failed dams and any failure in a system storing or transferring water. The EA's indicative Surface Water Flooding Map, Figure 4.2, shows that the site is at low risk of surface water flooding.

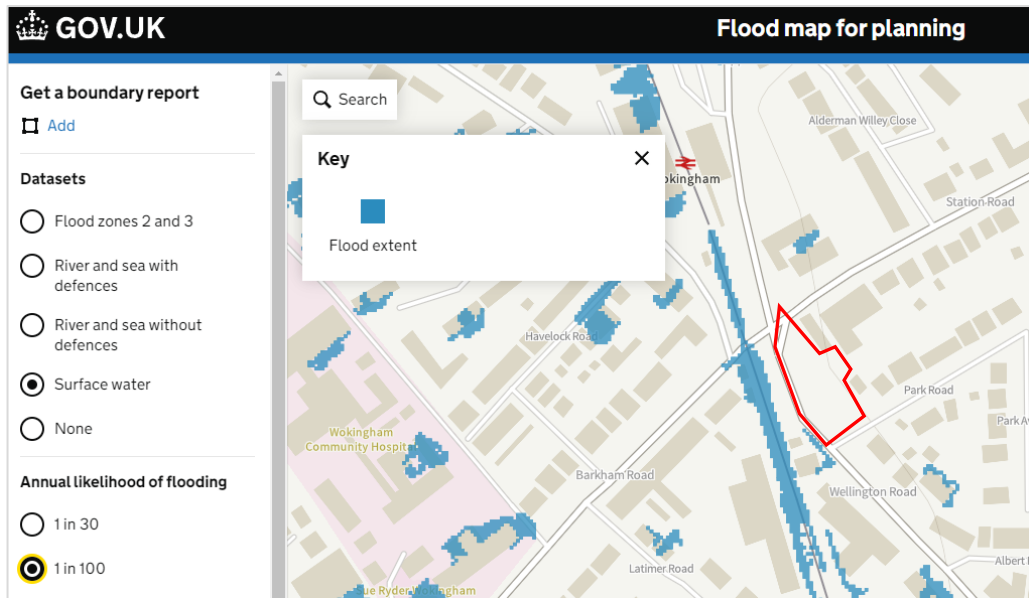


Figure 4.2: Surface Water Flood Risk Map (Harrow flood maps)

4.3 Flood Risk from Reservoirs

The EA provides information on flood risk from reservoirs. The map showing the maximum extent of flooding from reservoirs was updated in 2021 and now shows the combined effects of flooding from reservoirs and rivers. Figure 4.3 shows that the site is not at risk of reservoir flooding when river levels are normal.

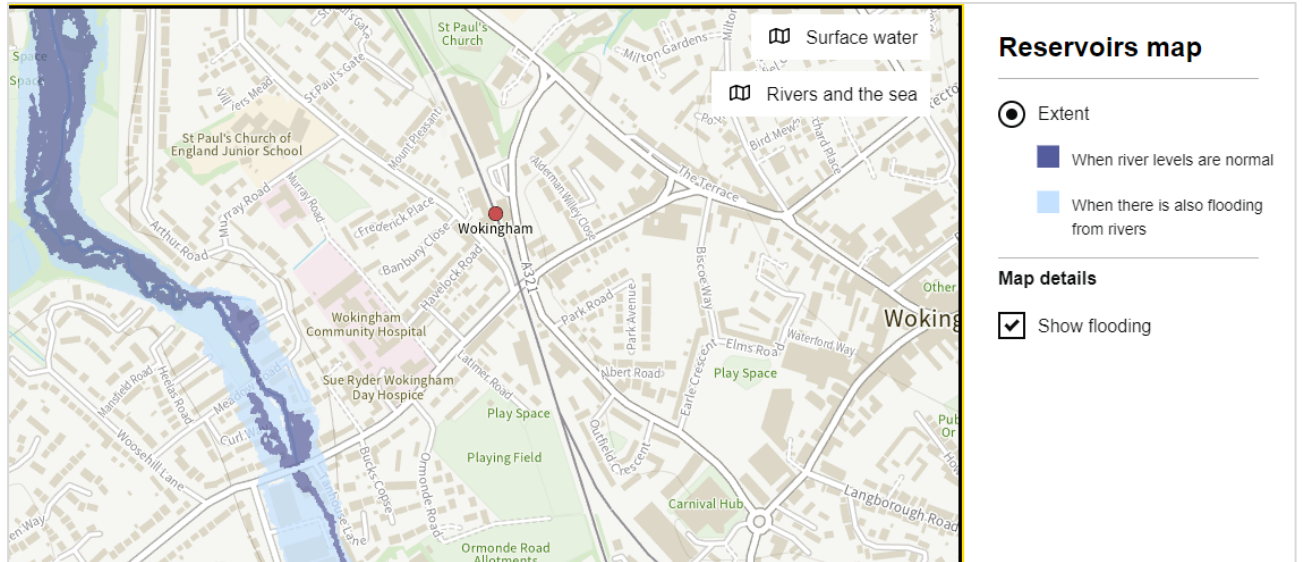


Figure 4.3: Risk of Reservoir Flooding Map (EA flood risk Maps)

5 Surface Water Run-off Assessment

5.1 Existing Run-off

The total site area is 2,380m² or 0.238ha; of this approximately 900m² or 0.09ha is currently impermeable. As described in Section 2.1, site levels dictate that the site's surface water run-off currently drains into the surrounding surface water public sewers.

The existing peak run-off rate for surface water discharging to this sewer for various design storm events was calculated using the modified rational method as shown below:

$$Q_{x_{ex}} = 2.78 \times A \times i$$

Where 'x' is the return period in years, 'A' is the catchment area in ha and 'i' is the rainfall intensity in mm/hr provided by the FEH method.

$$\begin{aligned} Q_{1_{ex}} &= 2.78 \times 0.09 \times 23.92 &= 5.98 \text{ l/s} \\ Q_{30_{ex}} &= 2.78 \times 0.09 \times 87.92 &= 22.00 \text{ l/s} \\ Q_{100_{ex}} &= 2.78 \times 0.09 \times 112.96 &= 28.26 \text{ l/s} \end{aligned}$$

5.2 Design Criteria

The Defra Non-Statutory Technical Standards for sustainable drainage systems (NSTS) requires that the drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur:

- on any part of the site in a 1 in 30-year rainfall event;
- in any part of a building (including basement) or in any utility plant susceptible to water, in a 1 in 100-year rainfall event.

The current EA guidance on ensuring that new development does not increase flood risk elsewhere gives values for climate change allowance on rainfall intensity based on the expected lifetime of the building and the location of the site. For development with a lifetime beyond the year 2100, the "upper end" allowance must be used for the 2070s epoch, which covers the period 2061 to 2125. The upper end allowance for the 2070s epoch in the Loddon and tributaries Management Catchment is 40%. This allowance has been applied to the rainfall intensity to carry out the drainage design.

5.3 Surface Water SuDS Strategy

Wokingham SuDS Strategy Guidance states that developments should ensure that surface water runoff is managed as close to its source as possible utilising sustainable methods (SuDS). There should also be a preference for green over grey infrastructure.

5.3.1 Rainwater Used as a Resource (e.g., Rainwater Harvesting)

Rainwater harvesting promotes the storage and re-use of rainwater collected from roofs and hard surfaced areas. This type of system contributes to the reduction of runoff rates and volumes within a development.

The capacity of rainwater harvesting systems to attenuate rainwater depends on the water use within the building. If there is no activity in the building or other water use and the harvester is full, no attenuation will be provided during a subsequent storm event. In the worst-case scenario, the rainwater harvester will provide no attenuation. Rainwater harvesting in the form of water butts for landscape irrigation purposes have been considered for various locations around the proposed building.

5.3.2 Rainwater Infiltration to Ground at or Close to Source

Infiltration techniques were considered for surface water discharge of the proposed development. However, British Standards require soakaways to be positioned a minimum of 5m away from any building. The proposed building footprint takes up the majority of the site area. Therefore, this requirement cannot feasibly be met. However, permeable paving is proposed for external footpaths and the proposed six new parking spaces at the side and rear of the development. Permeable pavements are very effective at removing a wide range of pollutants from surface water runoff as they are either retained on the surface or flushed into the granular subbase or soil strata below where they become trapped and are degraded over time.

5.3.3 Rainwater Attenuation in Green Infrastructure Features

Green roof:

A green roof area is proposed for a portion of the proposed new building as part of the development proposals. Green roofs serve as a rainwater buffer, reducing surface water run-off rates for smaller storm events. Other sustainability benefits include boosting thermal performance of the building, improving surface water discharge quality and promoting biodiversity by means of creating wildlife habitat.

5.4 Proposed Discharge Rates and Attenuation Volume

As infiltration techniques for surface water discharge are not feasible, and there are no watercourses within the vicinity of the site, it is proposed that surface water run-off from the development be discharged to the public sewer network at a restricted rate in line with Wokingham guidance. Wokingham SuDS Guidance states that surface water discharge from a new development site should be limited to as close as practicable to the greenfield run-off rate.

The greenfield run-off rate for the site was calculated based on the FEH method and using the UKSuDS design tools. Results from this are provided in Appendix C and show a 1 in 1-year and 'Qbar' greenfield run-off rate of 0.79l/s and 0.93 l/s respectively.

It is not practical to restrict the discharge to such a low flow rate. The joint DEFRA/EA R&D rainfall runoff management for developments Report-SC030219 states that “a practicable minimum limit on the discharge rate from a flow attenuation device is often a compromise between attenuating to a satisfactorily low flow rate while keeping the risk of blockage to an acceptable level. This limit is set at 5 l/s, using an appropriate vortex or other flow control device”.

Manufacturers have improved flow control devices since the DEFRA/EA report was published, permitting flows lower than 5 l/sec through their devices without increasing the flood risk from blockages. However, a self-cleansing velocity of 0.7 l/s must be maintained in pipes and all pipes sizes should meet the Building Regulations Part H which require a minimum pipe size of 75mm for surface water drainage. This indicates that peak flow rates lower than 2.5 l/s will either fail to meet BS EN 752-4 and/or the Building Regulations Part H requirements. This, in turn could increase the flood risk from blockages for the proposed development.

It is therefore proposed that surface water discharge from the site is limited to a maximum rate of 2.5l/s using a Vortex Flow Control device with a minimum orifice diameter of 75mm. This discharge rate would be the limit for all events up to and including the 1 in 100-year storm with 40% allowance for climate change.

Causeway Flow hydraulic modelling calculations – provided in Appendix D – show that an attenuation volume of 71m³ is required to achieve this restricted runoff rate without flooding the site for all rainfall events up to and including the 1 in 100-year storm with 40% allowance for climate change. It is proposed that this attenuation volume will be provided using an attenuation tank within the landscaped area at the north of the site, discharging to the surface water public sewer in Station Road as shown on the drainage strategy sketch in Appendix E.

5.5 Water Quality

SuDS have the potential to provide water quality benefits to runoff entering the environment. The SuDS Manual states that SuDS should be designed to treat runoff to reduce the risk of environmental pollution. Chapter 26 of The SuDS Manual sets out the ‘simple index approach’ to water quality risk management. This approach has been used to quantify the benefits of the proposed SuDS scheme on water quality.

Step 1 of the simple index approach is to identify the pollution hazard indices for the proposed land use. The proposed residential development is considered to have a ‘Low’ pollution hazard level and Table 5.1 below shows the associated pollution hazard indices:

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs	Low	0.3	0.2	0.05
Individual property driveways, residential car parks, low traffic roads and non-residential car parking with infrequent change	Low	0.5	0.4	0.4

Table 5.1: Pollution Hazard Indices, taken from Table 26.2 of The SuDS Manual (CIRIA, 2015)

Step 2 of the simple index approach is to select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index. The principal destination of the runoff is to surface water sewer, but small amounts of infiltration may occur from unlined permeable paving components. Therefore, the surface water pollution mitigation indices should be used for the main surface water discharge, and the groundwater pollution mitigation indices used for the discharge to groundwater, as shown in Table 5.2 below.

The indicative surface water pollution mitigation indices for a green roof and permeable paving are shown in Table 5.2 below:

Type of SuDS Component	TSS	Metals	Hydrocarbons
Permeable Pavement	0.7	0.6	0.7
Green Roof	0.4	0.3	0.3

Table 5.2 Surface Water Pollution Mitigation Indices, taken from Table 26.3 of The SuDS Manual

Provided that the mitigation indices of the treatment techniques are greater than or equal to the hazard indices for the proposed development then there should be no reduction in the overall water quality within the receiving watercourse or groundwater body. Therefore, the incorporation of a green roof and permeable paving will provide suitable prevention from pollution to surface water.

5.6 Summary of SuDS Measures

Below is a summary of all SuDS features for the proposed development, outlining the intended area to be used.

This should be read in conjunction with the SuDS drainage plan is provided in Appendix E.

SUDS Method	Area Used on site:	Comment:
Rainwater Harvesting	Water butts positioned at various locations around the proposed building	Final locations subject to coordination with Architects proposals.
Permeable Paving	Site car parking bays and footpaths	Permeable paving will be used for attenuation purposes and will be unlined to allow partial infiltration.
Green Roof	Section of proposed roof area.	Refer to Architects plans for extent of proposed green roof
Attenuation Tank	Within the landscaped space at the north extent of the site	Site space constraints mean that the required attenuation volume can't be provided within permeable paving alone. Therefore, it is proposed that an attenuation tank be used to help provide the required attenuation volume.

Table 5.3 Summary of SuDS Methods Used on Site.

6 Surface Water Maintenance Strategy

The successful implementation and operation of a SuDS system depends on a robust and clear maintenance strategy being implemented. The following measures should form part of the site's proposed management plan. SuDS features on site will be maintained by the site owner and will form part of the overall maintenance regime for the site.

SuDS Element	Maintenance		
	Activity	Required Action	Typical Frequency
Green Roofs	Monitoring / Inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems, membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms
		Inspect soil substrate for evidence of erosion channels and identify any sediment sources	
		Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	
		Inspect underside of roof for evidence of leakage	
	Regular Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Half yearly and annually or as required
		During establishment i.e. year one, replace dead plants as required	Monthly -but usually responsibility of manufacturer
		Post establishment, replace dead plants where > 5% of coverage	Annually in autumn
		Remove fallen leaves and debris from deciduous plant foliage	Half yearly or as required
		Remove nuisance and invasive vegetation, including weeds	
		Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and not allowed to accumulate	
	Remedial Actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required
		If drain inlet has settled, cracked or moved, investigate and repair as appropriate	
Permeable Paving	Monitoring / Inspections	Initial inspection	Monthly for three months after installation

SuDS Element	Maintenance		
	Activity	Required Action	Typical Frequency
		Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first six months
		Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
		Monitor inspection chambers	Annually
	Regular Maintenance	Brushing and vacuuming -standard cosmetic sweep over whole surface	Once a year after autumn leaf fall
		Rubbish and litter removal	As required
	Remedial Actions	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, and replace lost jointing material	
		Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required
Attenuation Tank	Monitoring / Inspections	Inspect all inlets, outlets, vents, overflows and control structures to ensure they are working as they should	Annually or after severe storms
		Inspect and identify any elements that are not operating correctly.	Monthly for three months, then half yearly or as required.
	Regular Maintenance	Remove sediments / debris from catch pits / gullies and control structures	Annually, after severe storms or as required
	Remedial Actions	Repair inlets, outlets, vents, overflows and control structures.	As required

Table 6.1 SuDS Maintenance Strategy as taken from The SuDS Manual

Effective SuDS design must assess all foreseeable risks during construction and maintenance. These must be mitigated during the detailed design stages where effective design will aim to avoid, reduce and mitigate risks.

This process will also require input from the principal contractor who will ensure the construction of SuDS components are carried out in a safe and sustainable manner.

7 Exceedance Routes and Overland Flows

Surface water exceedance and overland flows occur when intense rainfall is unable to either soak into the ground or enter a drainage system due to blockages or the capacity of the system being exceeded. Although drainage systems are currently designed for extreme storm events, it is not economical or sustainable to build large, oversized drainage networks for all types of extreme rainfall or scenarios. As a result, there will be occasions when surface water runoff will exceed the capacity of drains as outlined in CIRA 635 document 'Designing for exceedance in urban drainage – good practice':

"It is inevitable that as a result of extreme rainfall the capacities of sewers, covered watercourses and other drainage systems will be exceeded on occasion. Periods of exceedance occur when the rate of surface runoff exceeds the drainage system inlet capacity, when the pipe system becomes overloaded, or when the outfall becomes restricted due to flood levels in the receiving water."

Designing for exceedance aims to divert and control flood flows along routes where the risk of property flooding and the risk to health and safety is minimised and can be managed.

The following sections assess the overland flow routes for the existing and developed site. Proposed mitigation measures, where required, are then developed which will be incorporated into development proposals. These will route water away from vulnerable areas, avoid creating hazards to end users and also not increase flood risk on or off site.

7.1 Proposed Site Exceedance and Overland Flow Routes and Mitigation Measures

The proposed SuDS have been designed so that there is no flooding within the site for up to and including the 1 in 100-year rainfall event, which is in line with current Design and Construction Guidance (DCG) for sewers offered for adoption and Wokingham Borough Council guidance. During extreme storm periods, e.g. higher than the 1 in 100-year + 40% rainfall event, surface water sewers may surcharge and cause localised flooding at low points within the site.

Exceedance surface water flow routes in this scenario are shown in Appendix F of this report, where surface water overland flows are shown to be directed away from buildings towards soft landscaping areas. This is in line with Wokingham Borough Council's Local Standards Policy S9, which states:

"The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in exceedance routes that minimise the risk to people and property."

The surface water drainage has been designed so that any surcharge and exceedance flows are routed towards the soft landscape border. The proposed surface water drain (see Appendix E) has been run externally in the soft landscaping, and the attenuation tank is located at the site's low point.

8 Foul Water Assessment

As outlined in Section 2.1, the site is undeveloped and therefore has no existing foul below ground drainage associated to it, with the exception of the private foul drainage serving the car wash that runs through the east of the site. It is proposed that a new foul water drainage network will be constructed to serve the proposed site buildings with new direct connection to the public sewer.

A Pre-development enquiry will be carried out to confirm there is capacity within Thames Water sewer network and a Section 106 application will need to be made for consent to connect to the public sewer.

9 Conclusions

- Development proposals involve a full planning application to provide 21no. Class C3 units, including related ancillary functions, amenity space, landscaping, car and cycle parking and refuse storage.
- The EA's information shows that the site is located in Flood Zone 1. Development proposals and mitigation measures also mean the site is at low risk of flooding from all other sources. Therefore, the proposed development has an acceptable flood risk within the terms and requirements of the NPPF.
- Infiltration techniques were considered for surface water discharge of the proposed development. However, British Standards require soakaways to be positioned a minimum of 5m away from any building. The proposed building footprint takes up the majority of the site area. Therefore, this requirement cannot feasibly be met. It is therefore proposed that surface water be attenuated using a combination of permeable paving and a cellular attenuation tank with restricted discharge from the site of 2.5l/s to the Thames Water surface water sewer. This discharge rate will be the limit for all events up to and including the 1 in 100-year rainfall plus 40% climate change allowance.
- Rainwater butts and a green roof are also proposed, which provide additional water use, amenity and biodiversity benefits.
- A water quality assessment for surface water discharge in line with CIRIA guidance shows that the Pollution Hazard Level for the site is 'Low'. Proposed SuDS features such as green roofs and permeable paving will provide suitable prevention from pollution for water discharged into the ground.
- The site's levels will channel exceedance and overland flows away from the thresholds and into the buffer areas of soft landscaping and proposed permeable paving.
- A new foul water drainage network will be constructed to serve the site with a new direct connection to the foul water public sewer.

Appendix A

Topographical Survey

The Station Tap
PH

Station
Fishbar

China
Garden

Station
Furniture

AREA OUTSIDE
OF PLANNING
APPLICATION

Station
Car
Wash

10

8

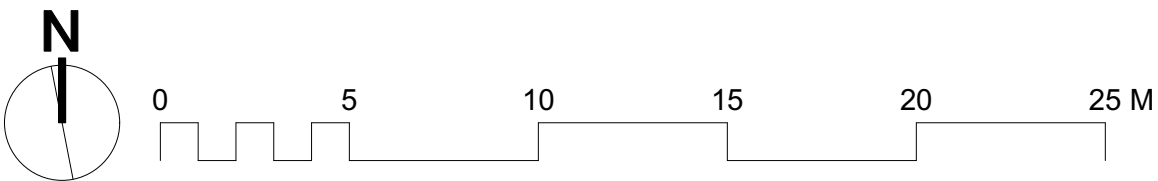
4

1A

3

Queens Gate
Retirement Village

SURVEY STATIONS			
Name	Easting	Northing	Height
STN1	480650.096	166544.441	58.388
STN2	480650.959	166580.641	59.704
STN3	480654.637	166594.287	60.089
STN4	480650.633	166572.949	60.214



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Client
Wokingham Borough Council

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1:200 ISO A1 210806 Wellington Road.vwx

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Rev Date By Ap Note

Drawing Title
Existing Site TOPO

Project Number Drawing Number Revision

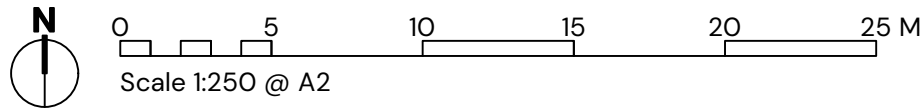
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Appendix B

Development Proposal Plans



PO2	27/05/2025	AS	LB	Site plan updated to reflect landscape plan.
PO1	24/03/2025	AS	LB	Disabled space moved and paths adjusted.

Rev Date By Ap Note



Glentworth Court, Lime Kiln Close,
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Project Wellington Road
Client Wokingham Borough Council

Date 06/04/2025 Purpose/Status PLANNING
Scale 1:250 Drawn AS Checked LB Paper Size ISO A2
Filename 210806 Wellington Road Planning Master 2.vwx

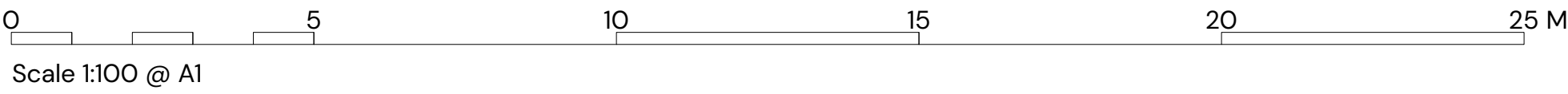
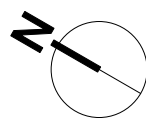
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Scheme Schedule:

Type/No.	N°	Size	Comments
1B1P Flat	18	50.6-67m ²	
1B2P Flat WC	1	60m ²	
2B4P Flat	2	78.1sqm	
TOTAL		21 dwellings	
Parking	4 visitor spaces, 2 blue badge spaces		
Cycle Parking	22 spaces		
Site area - 0.14h		Density - 150 d/h	



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Wellington Road

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Purpose/Status
PLANNING
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AS
Checked
LB
Paper Size
ISO A1

P02 27/05/2025 AS LB Accommodation schedule updated. Site plan updated to reflect landscape plan.
P01 24/04/2025 AS LB Flat plans adjusted to improve daylight and sunlight.
Rev Date By Ap Note

Drawing Title
Proposed Ground Floor Plan

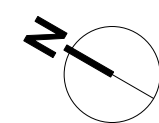
Project Number/Drawing Number
210806-1200

Check all dimensions and levels on site

Revision
P02

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0 5 10 15 20 25 M
Scale 1:100 @ A1



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Wellington Road

Client
Wokingham Borough Council

Date
06/04/2025
Scale
1:100
Filename
210806-1201
Master 2.vwx

Purpose/Status
PLANNING
Drawn
AS
Checked
LB
Paper Size
ISO A1

Drawing Title
Proposed First Floor Plan

Project Number/Drawing Number
210806-1201

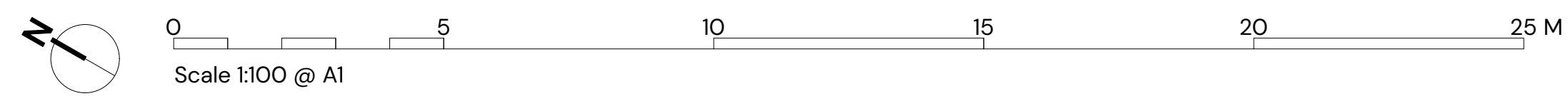
Check all dimensions and levels on site

P02 27/05/2025 AS LB Labels updated.
P01 24/04/2025 AS LB Flat plans adjusted to improve daylight and sunlight.
Rev Date By Ap Note

Revision
P02

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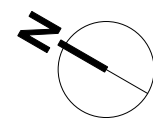
Date	Purpose/Status		
06/04/2025	PLANNING		
Scale	Drawn	Checked	Paper Size
1:100	AS	LB	ISO A1
Filename			
210806 Wellington Road Planning			
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Drawing Title	Proposed Second Floor Plan
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P01 24/04/2025 AS LB Flat plans adjusted to improve daylight and sunlight.
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Paper Size
ISO A1

P03 17/07/2024 HR LB Change of Brief
Rev Date By Ap Note

Drawing Title
Proposed Roof Plan

Project Number/Drawing Number
210806-1203
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Revision
P03
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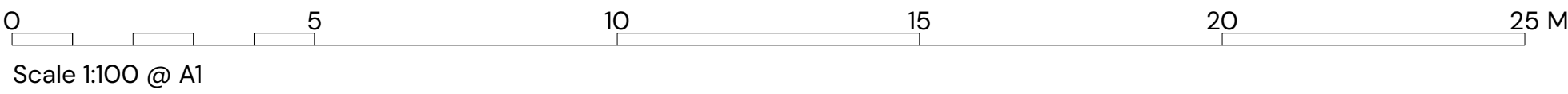
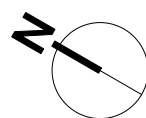
Proposed North Elevation

1: 100 @ A1



Proposed West Elevation

1: 100 @ A1



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Client
Wokingham Borough Council

Date
06/04/2025
Scale
1:100
Filename
210806 Wellington Road Planning
Master 2.vwx

Purpose/Status
PLANNING
Drawn
AS
Checked
LB
Paper Size
ISO A1

Rev Date By Ap Note

Drawing Title
Proposed Elevations

Project Number/Drawing Number
210806-1300
Check all dimensions and levels on site

Revision

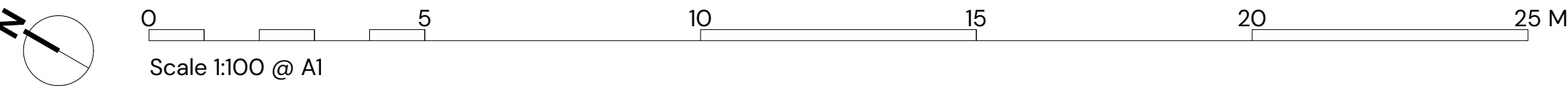
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Proposed South Elevation
1: 100 @ A1



Proposed East Elevation
1: 100 @ A1



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Client
Wokingham Borough Council

Date
06/04/2025
Scale
1:100
Filename
210806 Wellington Road Planning
Master 2.vwx

Purpose/Status
PLANNING
Drawn
AS
Checked
LB
Paper Size
ISO A1

P01 02/06/2025 AS LB Rear elevation windows amended.
Rev Date By Ap Note

Drawing Title
Proposed Elevations

Project Number/Drawing Number
210806-1301
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Appendix C

Greenfield Run-off Calculations

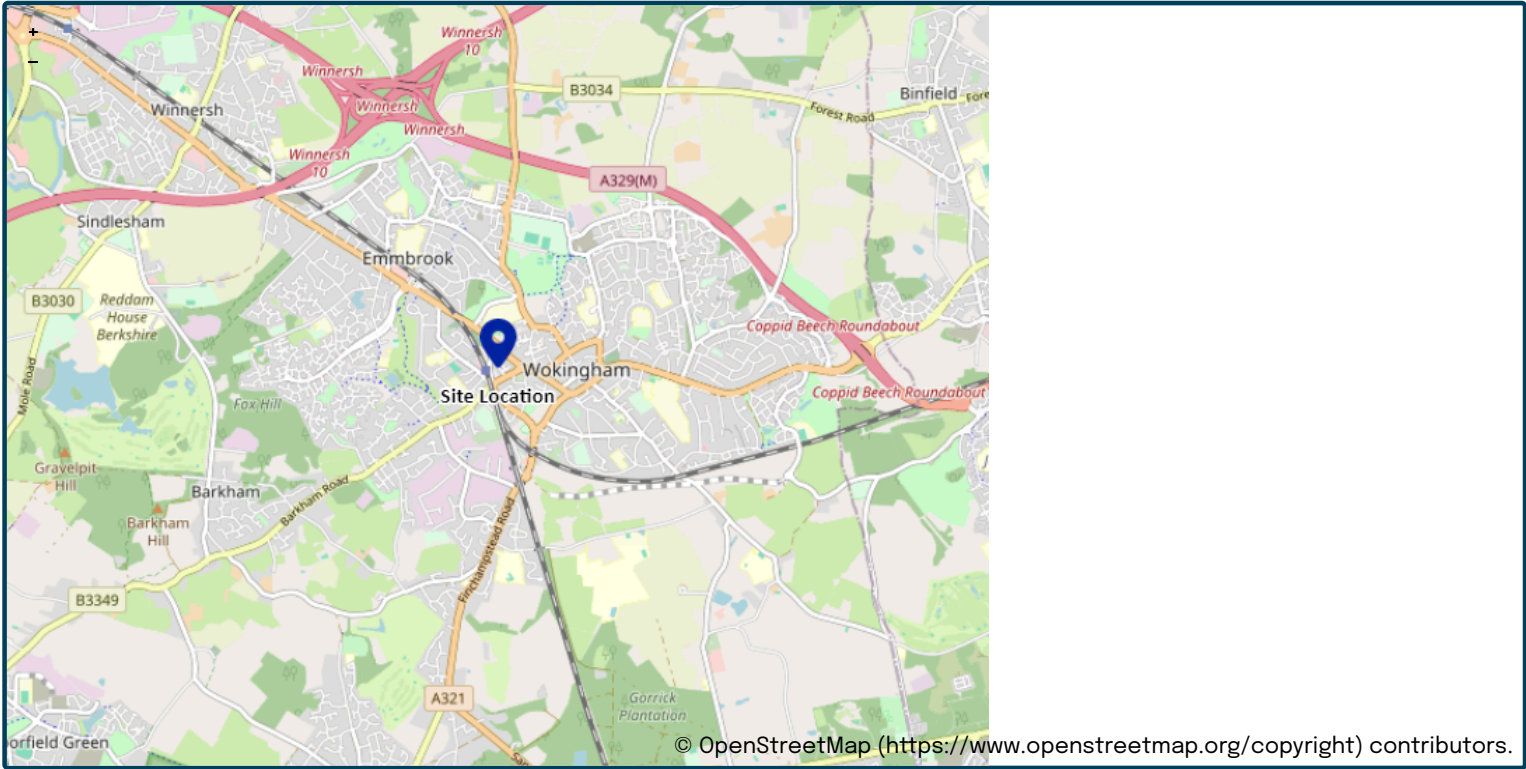
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). 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	09/05/2025
Calculated by	Toby Lloyd
Reference	31883 Wellington Rd
Model version	2.0.0

Location

Site name	Wellington Road
Site location	Wokingham



Site easting	480661
Site northing	168575

Site details

Total site area (ha)	0.238	ha
----------------------	------------------------------------	----

Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	657	mm	657
How should SPR be derived?	Estimate using BFI		
BFIHOST	0.418		
SPR	0.442		
QBar (IH124) (l/s)	0.93	l/s	

Growth curve factors

	<u>My value</u>		<u>Map value</u>
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	IH124	
Flow rate 1 year (l/s)	0.79	l/s
Flow rate 2 year (l/s)	0.82	l/s
Flow rate 10 years (l/s)	1.5	l/s
Flow rate 30 years (l/s)	2.1	l/s
Flow rate 100 years (l/s)	3	l/s
Flow rate 200 years (l/s)	3.5	l/s

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.0.0) developed by HR Wallingford and available at [uksuds.com](https://www.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) (<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.

Appendix D

Causeway Flow Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	40	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	0.900
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Storage	0.112	5.00	58.500	0.000	0.000	1.700

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	10.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

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

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

Node Storage Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	56.700	Product Number	CTL-SHE-0075-2500-1000-2500
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.5	Min Node Diameter (mm)	1200

Node Storage Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	56.800
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	74.7	0.0	1.000	74.7	0.0	1.001	0.0	0.0

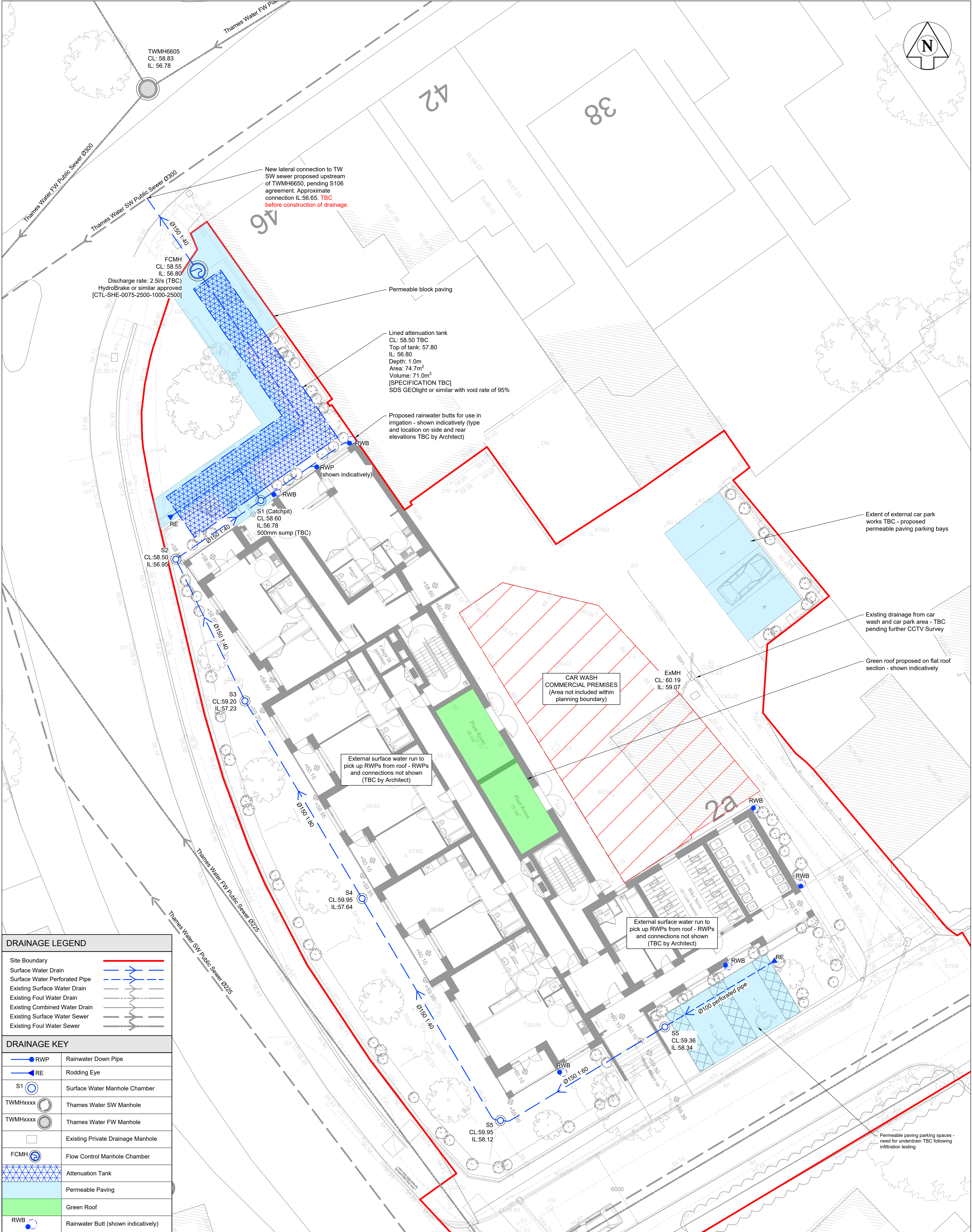


Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	Storage	176	57.793	0.993	22.2	71.1867	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
180 minute winter	Storage	Hydro-Brake®	2.6	58.1				

Appendix E

SuDS Strategy Plan



DRAINAGE LEGEND	
Site Boundary	—
Surface Water Perforated Pipe	—
Existing Surface Water Drain	—
Existing Foul Water Drain	—
Existing Combined Water Drain	—
Existing Surface Water Sewer	—
Existing Foul Water Sewer	—

DRAINAGE KEY	
	Rainwater Down Pipe
	Rodding Eye
	Surface Water Manhole Chamber
	Thames Water SW Manhole
	Thames Water FW Manhole
	Existing Private Drainage Manhole
	Flow Control Manhole Chamber
	Attenuation Tank
	Permeable Paving
	Green Roof
	Rainwater Butt (shown indicatively)

- NOTES
1. **Co-ordination:** Read this drawing in conjunction with all relevant Architect's, Engineer's and specialist's drawings and specifications

2. **Scale:** Do not scale from this drawing, use written dimensions only. All dimensions are in millimetres and levels in metres. To check the drawing has been printed at the intended scale this bar should be 50mm long at A1 or 25mm long at A3.

3. **Health & Safety:** All specific drawing notes are to be read in conjunction with the Project Health & Safety Issues: Construction Stage document.

P01.03	21.05.25	TL	JL	Amended for SuDS Strategy - for review
P01.02	13.05.25	TL	JL	Draft for Landscape Arch review
P01.01	16.04.25	TL	JL	Draft WIP
Rev	Date	Drn.	Eng.	Amendment

WELLINGTON ROAD
WOKINGHAM

BELOW GROUND
DRAINAGE LAYOUT

Status
WORK IN PROGRESS
NOT FOR CONSTRUCTION

Drawn	TL	Eng.	JL
Scales	1:125 at A1	1:250 at A3	
Drawing No.	31883 / 6000	Rev.	P01.03

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London Nottingham Oxford Manchester Bristol

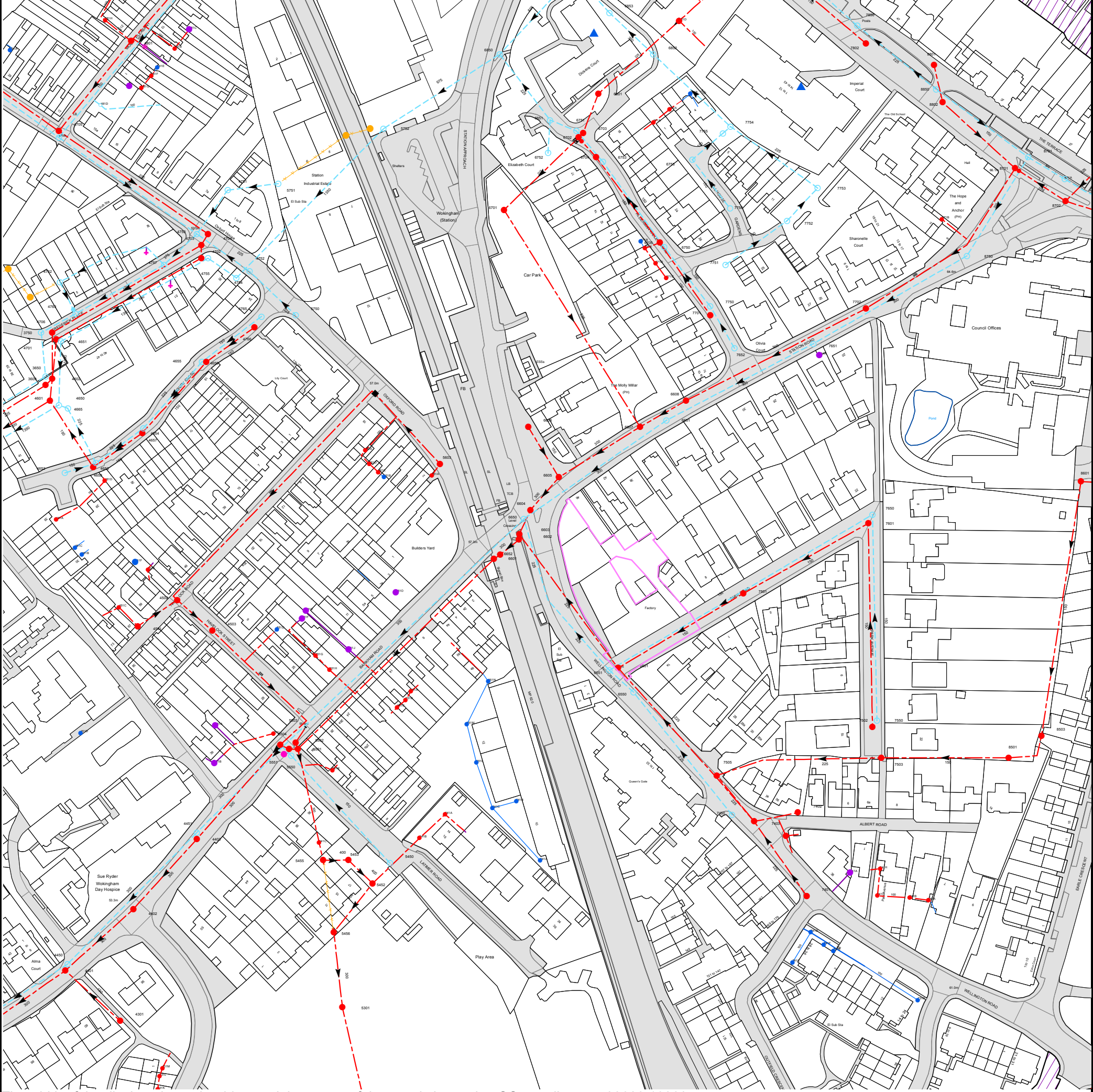
Consulting Engineers
020 7631 5128
mail@pricemyers.com
www.pricemyers.com

Appendix F

Exceedance Flow Path Plan

Appendix G

Thames Water Asset Map



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 480628,168607
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
6850	57.58	54.62
6853	57.92	56.29
6852	59.66	58.01
681D	n/a	n/a
7850	62.94	61.92
7802	n/a	n/a
8801	66.16	63.76
6701	59.48	57
6752	n/a	n/a
6851	59.19	56.94
6751	59.92	58.34
6702	60.03	57.31
6703	60.03	57.32
6704	60.66	59.64
6801	60.71	57.47
6753	60.74	59.42
671B	n/a	n/a
671A	n/a	n/a
6705	61.71	60.41
6750	61.71	60.14
681A	n/a	n/a
681B	n/a	n/a
6755	n/a	n/a
7755	n/a	n/a
7756	n/a	n/a
7754	62.45	59.75
7752	63.06	61.23
7753	63.81	61.16
8850	65.19	64.09
871B	n/a	n/a
8802	65.44	63.75
8750	65.02	63.68
8701	66.24	63.19
8751	66.4	65.15
4702	53.29	51.07
4703	52.799	51.19
4704	52.96	51.66
4753	52.82	50.74
4751	53.75	52.26
5751	n/a	n/a
4750	55.21	53.81
4705	55.27	52.19
5752	57.01	50.96
481D	n/a	n/a
481G	n/a	n/a
481A	n/a	n/a
481F	n/a	n/a
481E	n/a	n/a
381A	n/a	n/a
481B	n/a	n/a
4801	57.19	55.69
481C	n/a	n/a
481H	n/a	n/a
871A	n/a	n/a
8702	67.03	65.2
8601	66.79	65.78
8703	69.37	67.96
4754	53.8	49.66
4752	53.67	51.57
4766	54.49	52.66
4765	54.49	52.8
5750	55.1	53.33
561E	n/a	n/a
561D	n/a	n/a
561C	n/a	n/a
561B	n/a	n/a
551O	n/a	n/a
561A	n/a	n/a
5603	n/a	n/a
6601	57.22	56.05
6652	n/a	n/a
6602	57.51	56.25
6603	57.54	56.46
6650	57.98	56.09
6606	58	57.07
6604	58.11	56.54
6605	58.83	56.78
6607	59.94	56.79
6651	58.58	57.71
6608	60.59	59.07
7750	62.16	61.05
7701	62.19	60.99
7751	62.56	61.77
7652	62.07	61.32
7501	61.3	59.53
7651	62.49	61.23
761A	n/a	n/a
7702	63.46	61.37
7601	63.25	60.28
7650	63.24	57.61
451C	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
4502	56.45	54.8
451E	n/a	n/a
451F	n/a	n/a
461B	n/a	n/a
461C	n/a	n/a
461A	n/a	n/a
461D	n/a	n/a
4652	53.21	52
4658	53.36	51.7
4653	53.37	51.84
4657	53.8	52.17
4654	53.82	52.26
4665	52.58	49.98
4650	52.55	48.99
4601	52.5	50.13
3609	51.9	49.99
4602	51.92	50.03
3650	51.82	49.48
4656	54.24	52.5
4655	54.23	52.5
4651	51.92	49.15
4701	51.82	50.4
4706	51.81	50.23
3750	51.75	50.92
4763	n/a	49.93
4762	n/a	50.5
4757	n/a	n/a
4755	53.2	49.65
4403	53.63	51.61
541B	n/a	n/a
4451	n/a	n/a
541A	n/a	n/a
551K	n/a	n/a
451B	n/a	n/a
5550	55.07	53.78
5551	n/a	n/a
5503	55	53.67
5501	55.174	54.314
5504	54.97	52.7
5502	55.03	54.38
551I	n/a	n/a
451D	n/a	n/a
451A	n/a	n/a
551M	n/a	n/a
551C	n/a	n/a
551B	n/a	n/a
551A	n/a	n/a
551H	n/a	n/a
551G	n/a	n/a
551J	n/a	n/a
4503	56.41	54.59
551D	n/a	n/a
4501	56.43	55.28
551F	n/a	n/a
551E	n/a	n/a
551L	n/a	n/a
551N	n/a	n/a
641C	n/a	n/a
641B	n/a	n/a
641A	n/a	n/a
6551	58.65	56.91
6501	58.64	57.49
6550	n/a	n/a
7505	n/a	n/a
7450	61.8	60.52
7403	59.47	57.77
7451	n/a	n/a
7402	60.75	59.84
7401	59.96	59.33
741A	n/a	n/a
7502	62.55	61.33
7550	62.64	61.6
7503	62.25	61
741B	n/a	n/a
841A	n/a	n/a
8501	64.04	62.54
8503	64.63	62.85
431K	n/a	n/a
431L	n/a	n/a
431M	n/a	n/a
4301	54.1	51.87
5301	n/a	n/a
4401	52.75	50.65
4450	52.58	51.03
5456	n/a	53.47
4402	53.13	51.2
5452	n/a	53.52
5450	n/a	n/a
5455	n/a	53.63
5453	n/a	53.55
541C	n/a	n/a
741C	n/a	n/a
741D	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
741F	n/a	n/a
741E	n/a	n/a
731D	n/a	n/a
8301	60.42	59.02
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.