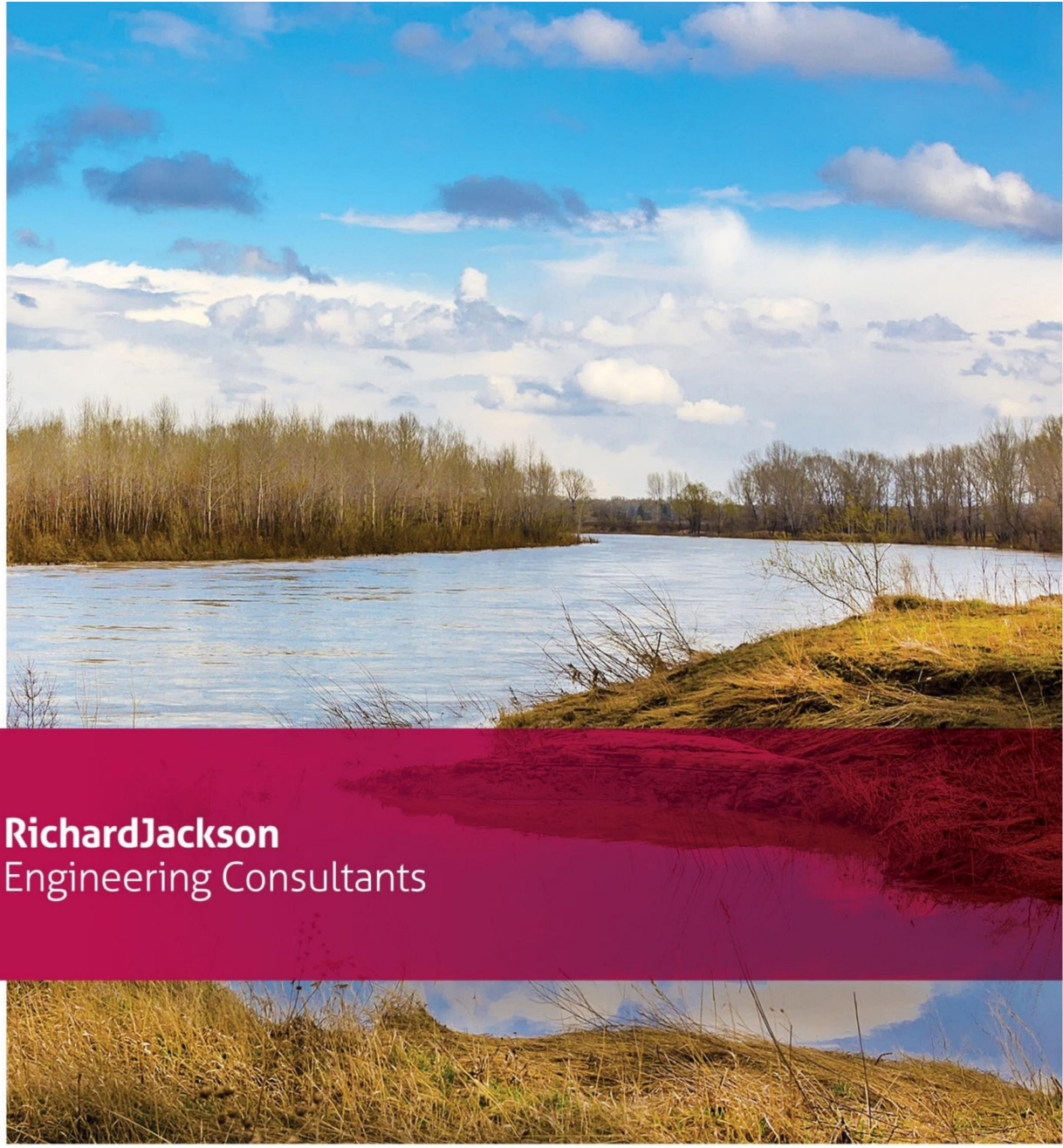


RichardJackson
Engineering Consultants

SITE SPECIFIC FLOOD RISK ASSESSMENT

1 PARK END ROAD, ROMFORD

No. 1 Park End Ltd

September 2026

Project no: 63926

RichardJackson
Engineering Consultants

Document Review Sheet: -

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Revision Status

Issue	Date	Description	Prepared	Checked	Approved
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1. Executive Summary

1.1. This Flood Risk Assessment supports the proposed three-storey residential development at 1 Park End Road, Romford. The site is wholly within Flood Zone 1, and the report concludes that the development is appropriate in flood-risk terms, that occupants should remain safe over its lifetime, and that the proposals can be delivered without increasing flood risk elsewhere, subject to the proposed drainage and level-control measures.

1.2. Flooding from rivers, the sea and nearby watercourses is low to very low: the site is outside mapped fluvial and tidal flood extents, with the River Rom and Blacks Brook approximately 0.4km and 0.6km away respectively.

1.3. Surface-water risk is low. Only marginal shallow flooding is mapped near the north-west boundary, with modelled depths below 0.15m through events up to the 0.1% AEP, including climate change. Runoff risk is low and will be managed through exceedance flow routing.

1.4. The risk of groundwater emergence is low to medium: clay-rich geology limits emergence, although prolonged rainfall remains a residual risk.

1.5. Sewer and artificial-source risk is low to medium: the wider RM1 area has recorded historic sewer flooding, although the report's source summary rates these sources as low.

1.6. The EA records that risk of flooding from reservoir in this area is unlikely.

1.7. The proposed drainage strategy will manage the development's 0.055 ha impermeable area using below-ground attenuation, controlled discharge to the combined sewer, rainwater butts/planters, permeable paving and AquaSwirl vortex separator proprietary treatment system. Calculations indicate that surface water can be contained on site without flooding offsite.

1.8. Finished floor levels should be at least 0.15 m above final ground levels, principally in response to historic sewer-flooding evidence, and the drainage system should be maintained by the landowner or appointed management company.

1.9. Residual risks comprise events exceeding the drainage design standard, blockage or system failure, groundwater emergence after sustained rainfall, and construction-phase flooding; these are addressed through exceedance routing, maintenance and a Construction Surface Water Management Plan. On this basis, the residual flood risk is acceptable for the proposed development.

2. Introduction

2.1. Richard Jackson Ltd has been appointed by Steve Margett on behalf of No. 1 Park End Limited to produce a Flood Risk Assessment (FRA), Surface Water Drainage Strategy (SWDS) and Foul Water Drainage Strategy (FWDS) in support of a full planning application for the proposed development st the site referenced later in this report.

2.2. The development site is identified as No.1 Park End Road, Romford, Essex hereafter referred to as "the site"

2.3. This assessment has been prepared in accordance with the new National Planning Policy Framework (NPPF) supported by the National Planning Practice Guidance (NPPG), the National Standards for Sustainable Drainage Systems (NSSD), Local Strategic Flood Risk Assessment (SFRA) and London Borough of Havering's guidance as the Lead Local Flood Authority (LLFA) for flood risk in Romford.

2.4. This assessment will also be directed by site-specific advice provided by the Environment Agency and guided by the industry standard CIRIA C753 (2015) SuDS Manual to address all sources of flood risk to the proposals on this development site.

2.5. The site lies completely within Flood Zone 1 defined as having a low probability of flooding which is less than a 1:1000 year (0.1%) annual probability of exceedance (AEP) from river or sea.

2.6. This report will demonstrate that the proposals can be suitably constructed to comply with the guidance noted above to ensure that flood risk will not increase as a result of the proposed development by providing a robust assessment of the current and future flood risk and to manage and dispose of surface water runoff in accordance with the adopted national surface water disposal hierarchy, to enable a determination at planning stage in terms of flood risk and surface water disposal.

2.7. In compiling this assessment, reliance has been placed on factual and anecdotal data obtained from third parties identified in this report. Richard Jackson Ltd (RJL) cannot be held liable for the scope of work or any omissions, misrepresentations, errors or inaccuracies with the information supplied. New information, revised practices or changes in legislation may necessitate the reinterpretation of this report in whole or in part.

3. Development Site and Location

3.1. The proposed development site is roughly rectangular in shape enclosing an overall site area of approximately 0.079ha and is located immediately to the southwest of Park End Road. The site is further bounded by the recently refurbished and extended Grade II listed building (St. Edward the Confessor) Catholic Church to the west, St Edwards Way (A118) to the south and a footpath to the east.

3.2. The postcode listed for the site is RM1 4AT with a National Grid Reference (NGR) at the approximately centre of the site being TQ 51331 89136.

3.3. A site location plan is provided at **Appendix A**.

3.4. A topographical survey undertaken by Texo DSI (Ref. TX1112_ParkEnd_T_01_R2) dated 14.01.2022 is presented at **Appendix B.** The survey indicates principal fall on the site is from the northeast to southwest with elevations of 21.18m AOD in the northern corner to 20.03m AOD in the southwest corner.

3.5. No watercourses have been observed on the topo within the vicinity of the site.

3.6. The land is completely greenfield as summarised in Table 2-1 below

Table 2-1: Summary of Existing Land Uses		
Land use	**Area (ha)**	**Percentage (%)**
Impermeable	0.00	0
Permeable	0.079	100
Totals	**0.079**	**100**

4. Development Proposals

4.1. It is proposed to construct a three-storey block of flats on the development site. External works and landscaping will be provided around the site.

4.2. This type of development is classified as "More Vulnerable" in accordance with Annex F (Table 2) the new NPPF.

4.3. The proposed architectural plans are provided within **Appendix C.**

4.4. The impermeable areas associated with the new development are summarised in Table 3-1 below.

Table 3-1: Summary of proposed Land use		
Use	**Area**	**Percentage (%)**
Roof Area	0.050	63.01
Paved Areas	0.005	6.85
Soft landscaping	0.024	30.14
Totals	**0.079**	**100.00**

4.5. An allowance for urban creep has not been added due to the nature of the construction. Given the tight sight constraints, it is also unlikely that any future extensions can be constructed on this site. The total impermeable area for hydraulic design is therefore 0.055ha.

5. Hydrology

5.1. There are no watercourses near to this site. the closest watercourses to this site are the River Rom, some 0.4km to the west of the site and Blacks Brook, some 0.6km to the southeast.

6. Hydrogeology

6.1. The Environment Agency Magic Maps[1] illustrated in Figure 5-1 below identifies the site to be in an area with medium to low groundwater vulnerability which is likely due to the clay soils which forms a barrier to groundwater emergence.

6.2. The site is not shown to be within a groundwater source protection zone (SPZ).

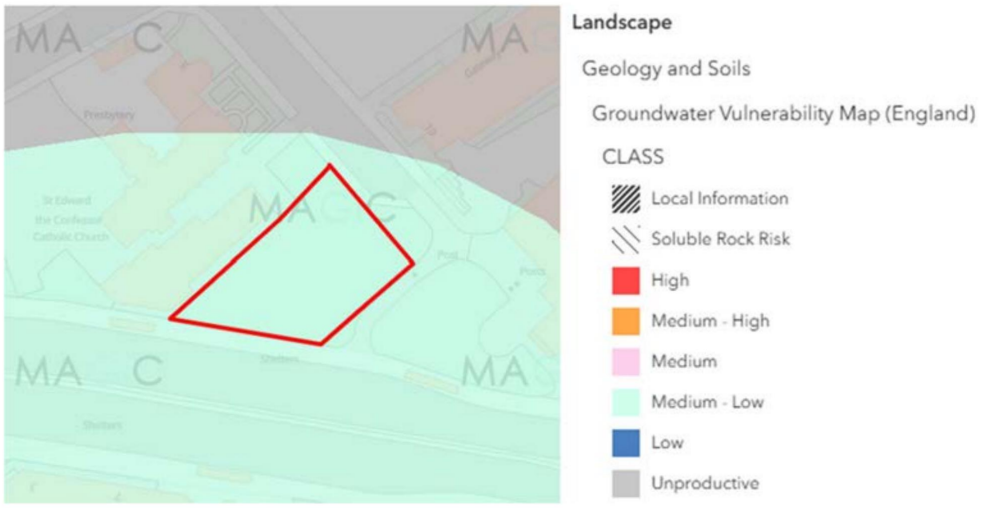


Fig. 5-1: Groundwater vulnerability mapping

6.3. Map 111 of the London Bough of Havering (LBH) SFRA (2016), show that the site has a low risk of groundwater emergence at a threshold >/= 25% but less than 50%. The SFRA notes that there is unlikely to be any significant change to groundwater flood risk in Havering due to the predominant clay soils.

6.4. Groundwater emergence and flood risk on this site remains low to medium.

7. Sequential Test

7.1. Policy F5(1) of the new NPPF cites that the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. It notes that, where the test applies, development proposals should not be located in areas at risk of flooding where alternative sites, appropriate for the development, are reasonably available in areas with lower flood risk of flooding.

7.2. Policy F5(2) cites that the sequential test should be used in areas known to be at risk now, or in the future, from any form of flooding. In this case policy F5(2)(b)(ii) refers "*where the site would be at risk of surface water flooding only, the proposed layout design, and mitigation measures would ensure that occupiers and users would remain safe from the current and*

[1] Magic Map Application

future surface water flood risk for the lifetime of the development without increasing flood risk elsewhere in accordance with policy F7"

7.3. In reference to policy F5 and F7, the NaFRA surface water flood maps indicate that the site is not affected by surface water flooding presently and in future with climate change is considered.

7.4. Table 6-1 below provides an observed overview of the likely sources of flooding to the site and outlines the measures necessary to ensure that the proposed dwellings are placed 'outside' the flood risk and ensures that the occupants will remain safe for the lifetime of the development.

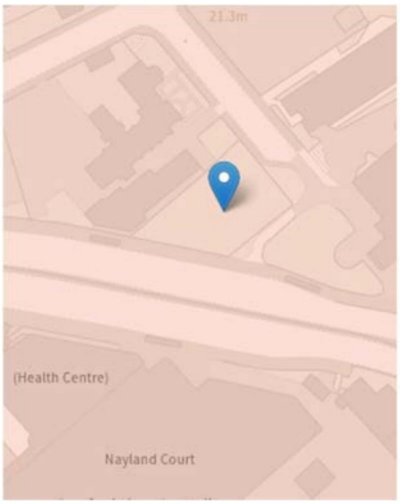
Table 6-1: Sources of Flooding

Source	Risk level	Action Required
Tidal	Low	None
Fluvial	Low	None
Watercourse	Low	None
Surface Water	Low	None
Groundwater	Low	None
Sewer	Low	None
Artificial	Low	None
Runoff	Low	Flow routing

7.5. All built parts of the development will be located completely outside the flood zone, and it is concluded that the sequential test is passed.

8. Climate Change

8.1. The Environment Agency defines climate change allowances that should be considered for various development proposals across the nation. The proposals fall into the appropriate vulnerability use which has already been highlighted in this report as "More Vulnerable". The site lies within the Rodin, Beam and Ingrebourne Management Catchment which shows the peak rainfall uplift for the 1% AEP central allowance as shown in **Figure 7-1** below.



1% annual exceedance rainfall event

Epoch

	Central allowance	Upper end allowance
2050s	20%	40%
2070s	25%	40%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

Fig. 7-1: Peak rainfall climate change allowance

8.2. The peak rainfall uplift is based on a design life of 100 years in accordance with the Flood Risk and Coastal Change Guidance.

9. Sources of Flooding

9.1. The Guidance for Flood Risk and Coastal Change advised how to take account of and address the risks associated with flooding and coastal change in the planning process to include flooding from any source now and in the future.

9.2. Such sources include rivers and the sea, direct rainfall on the ground surface, rising groundwater, overwhelmed sewers and drainage systems, reservoirs, canals and lakes and other artificial sources including interactions between these any of these different sources.

10. Site Specific Flood Risk

Groundwater Flood Risk

10.1. The 1:50,000 British Geological Survey (BGS) map indicates the site comprised a bedrock geology of the Thames Group (clay, silt and sand). The western half of the site is overlain by superficial deposits of Alluvium (clay and silt)

10.2. Groundwater flooding generally occurs following sustained periods of heavy rainfall which may cause the ground to become saturated and water levels with the ground to emerge at the surface. Groundwater tends to flow from elevated ground to lower levels, thus where shallow water table at the lower ground levels rise to the surface this can be exacerbated by additional groundwater flowing from the higher ground elevations.

10.3. As noted in Section 5 of this report, the cohesive nature of the clays forms an impermeable barrier, preventing groundwater emergence to the surface, thus, having a low groundwater susceptibility and low risk to the site.

Surface Water Flood Risk

10.4. Surface water flood risk (overland flows) occurs where intense or sustained periods of rainfall fail to soak into the ground over the duration of the rainfall event. This may cause localised flooding before it reaches the point of discharge either to a watercourse or offsite onto neighbouring areas where it is not being contained within the site area.

10.5. The Environment Agency's surface water mapping shown in **Figure 9-1** below and presented at **Appendix D**, show that the northwest boundary of the site is marginally affected by surface water flood risk up to the 1% AEP event, however, this is likely due to the watercourse along this edge and the local topographical low points in this location.

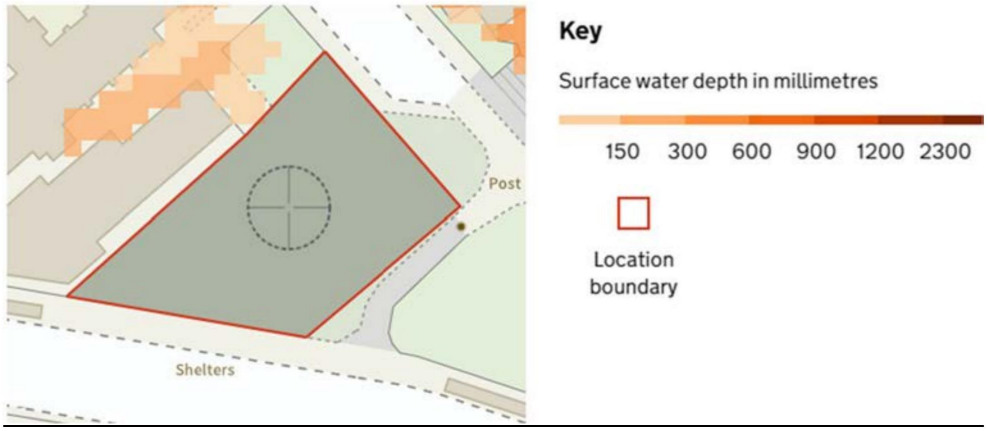


Fig. 9-1: EA Surface Water Flood Risk Mapping (100yr+CC)

10.6. The EA surface water mapping indicates that when climate change is considered for the future scenario, that, the flood levels will remain relatively at the same with depths remaining below 0.15m for all events up to and including the 0.1% AEP event.

10.7. The site is therefore assessed as having a low-risk probability of flooding from surface water in accordance with the mapping.

Fluvial Flood Risk

10.8. Flood zones refer to the probability of flooding from river or the sea ignoring the presence of any defences. The NPPF defines flood zones as follows:

- Flood Zone 1: Low Probability. Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
- Flood Zone 2: Medium Probability. Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)

- Flood Zone 3a: High Probability. Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)

- Flood Zone 3b: The Functional Floodplain. This zone comprises land where water from rivers or the sea must flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:

    - ❖ land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or

    - ❖ land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).

10.9. The EA's Flood map for planning for the present-day scenario and the fluvial climate change mapping presented at **Appendix E** shows the site to lies completely within Flood Zone 1.

10.10. As the site lies completely within Flood Zone 1, the likelihood of flooding from a river is low.

Tidal Flood Risk

10.11. The site is not at risk of tidal flooding, thus, the risk from this source is very low.

Reservoir Flooding

10.12. Reservoir flood prediction is based on a worst-case predicted scenario of a failure occurring when the reservoir is at capacity. Reservoirs are monitored by the EA in the UK and suggests that the risk of such an event is extremely unlikely (very low).

10.13. The EA flood mapping indicates that there is a risk of flooding from the Hanningfield Raw Water reservoir. According to the EA, an area is considered to be at risk if people's lives could be threatened in the event of a dam or reservoir failure. The EA posits that "there have been no loss of life due to a reservoir failing in the UK since 1925"

10.14. Reservoir flood is therefore considered to be very low.

Artificial Sources of Flooding

10.15. Flooding from artificial sources occurs when extreme rainfall events overwhelm urban storm water systems such also become blocked and or damaged over its lifetime causing surcharges upstream in the access points which then floods the surrounding areas.

10.16. A CCTV survey of the site was not available at the time of composing this report, however, the Thames Water wastewater map at **Appendix F** show that a foul water sewer is in Park Lane, north of the site.

10.17. Map 101 of the LBH SFRA indicates recorded outlines of historic flooding from sewers. The site lies within and area indicated to have been flooded in the past. The SFRA (Table 5-5) records that there have been 90 instances of flooding in the RM1 postcode area.

10.18. The frequency of these historic flood records indicates a low to medium risk of flooding to this development.

11. Surface Water Strategy & Management

11.1. The strategy to manage surface water flows will be in accordance with the National Standards for Sustainable Drainage Systems (SuDS) hierarchy. The new SuDS guidance dictates that capturing surface water at source is the foremost option to manage surface water runoff from developments, where rainwater harvesting is at the apex of the hierarchy

11.2. The drainage disposal hierarchy based on the National SuDS Standards follows:

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

11.3. Priorities 1 to 3 has been discounted given the geology encountered at the site and the absence of water features. Priority 4 or 5 will be adopted as there are no surface water sewers indicated on the Thames Water mapping. It is believed that the foul water sewer shown is a combined sewer.

11.4. Table 10-1 below considers the options for surface water re-use and disposal.

Table 10-1: Site Specific SuDS Hierarchy Assessment

Discharge	4 Pillars of SuDS	Comment
Rainwater butts/planters	Water quantity	Yes. Small-scale water re-use for planting
Green roofs	Quantity / Amenity / biodiversity	Not proposed for this development by the developer.
Rain gardens	Amenity / biodiversity	No. site constraints
Soakaway	Water quality/quantity	No. Geology not suitable.

Permeable paving	Water quality/quantity	Yes – but limited
Swales	Amenity / biodiversity / quality / quantity	No. Site too compact.
To watercourses	Quantity	No water features within the vicinity of the site.
Detention / Retention basins	Water quantity / biodiversity / Amenity	No. Site too compact
Surface water sewer	Water quantity	Not observed on the Thame Water mapping
Combined sewer	Water quantity	Yes.

11.5. The site runoff for the existing impermeable area has been calculated for the greenfield runoff rate based on the HR Wallingford online SuDS tool using the IH124 method.

11.6. The estimated greenfield runoff rate calculations are presented in **Appendix G** and is summarised below.

- 1:1 year (100%) 0.3 l/s
- 1:30 year (3.33%) 0.7 l/s
- 1:100 year (1%) 1.0 l/s

11.7. As the greenfield discharge rate for the site is quite low and increases the risk of blockage for such a small orifice required to regulate this flow rate, it is proposed to dispose of surface water at the 1% AEP+CC allowance.

11.8. The options for discharging surface water from the site is very limited as illustrated in Table 10-1. Attenuation will be provisioned within the proprietary tanked system below ground to support the rate of discharge.

11.9. The proposed supporting preliminary surface water storage calculations at **Appendix H** show that surface wate can be contained within the site without flooding.

11.10. The drainage strategy is provided at **Appendix I**

12. Finished Floor Levels

12.1. Risk of flooding to the proposed dwelling from all sources has been assessed to be low. However, the significance of the historic sewer flooding will need to be considered in the design with finished floor levels at a minimum of 0.15m above the final ground levels line with good practice.

13. Surface Water Quality

13.1. The surface water drainage systems should provide a sufficient level of water quality treatment to prevent the pollution of receiving waterbodies. Table 4.3 of the CIRIA SuDS Manual (2015) advocates the use of the 'simple index approach' to determine an appropriate level of pollution mitigation for development sites.

13.2. The proposed development has a combination of different land uses. Tables 12-1 and 12-2 below show the pollution hazard level for each land use and the treatment indices in accordance with Tables 26.2 and 26.3 of the SuDS Manual respectively.

Table 12-1: Pollution Hazard from Table 26.2 of C753				
Land Use	Pollution Hazard	TSS	Metals	Hydrocarbons
Roof	Low	0.3	0.3	0.05

Table 12-2 – Treatment Indices from Table 26.3 of C753			
Use	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
AquaSwirl	0.8	0.5	0.7

13.3. Table 12-2 assumes that a tanked permeable paving system will be constructed within the development and demonstrates that the pollution hazards can be mitigated using the permeable paving alone.

13.4. If permeable paving is not installed, then additional proprietary solution such as an AquaSwirl vortex separator will be required which provides significantly greater pollution mitigation indices than required.

13.5. The technical literature along with mitigation indices supplied by the manufacture if provided at **Appendix J.**

13.6. It is anticipated that a management company will be appointed by the proprietor/owner who will be responsible for the management of the drainage components installed as part of the development to include the access road.

13.7. A surface water maintenance schedule is provided at **Appendix K**, to assist with this management process, however, further detailed maintenance guidance is contained within the SuDS Manual. The maintenance of the drainage system will be the responsibility of the landowner.

14. Exception Test

14.1. Policy F6(1)(b) sets out that in addition to satisfying the sequential test, that table 3 within Annex F should be examined to determine if the exception test is satisfied demonstrating that the development would meet the criteria listed at F6(1)(b) to:

i. Provide wider sustainability benefits to the community that outweigh the flood risk;

ii. Be safe for its anticipated lifetime in accordance with policy F7; and iii.

iii. Not increase flood risk elsewhere and, where possible, reduce flood risk overall.

14.2. Table 13-1 below reproduces table 1 from Annex of the new NPPF and demonstrates that the proposals are suitable for this site based on the location of the occupied areas. Therefore, the exception test is not required.

Table 13-1: Flood risk and flood zone 'incompatibility'

Flood Zone	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception test required	✓	✓	✓
Zone 3a	Exception test required	×	Exception test required	✓	✓
Zone 3b	Exception test required	×	×	×	✓

Key: ✓ Development is appropriate (exception test not required)
× Development should not be permitted

15. Foul Water

15.1. The Thames Water wastewater sewer map at **Appendix F** shows a Ø225mm foul sewer (possibly combined sewer) within Park End Road flowing from the northwest north to the southeast.

15.2. It is anticipated that a gravity connection could be made to this sewer at Manhole 3102 subject to further investigations at the detailed design stage via a section 106 consent from the asset owner. The drawing provided at **Appendix I** illustrates the proposed foul water drainage strategy.

16. Users of the Development

16.1. The development site lies completely in Flood Zone 1 with a very low risk of flooding from river or sea. The site has a low-medium likelihood of groundwater emergence; however, it is proposed to raise the FFLs above the finished ground levels to mitigate this risk.

16.2. Based on the low level of flood risk to the site, it is concluded that the occupiers and users of the proposed development will remain safe for the lifetime of the development.

17. Flood Resilience and Flood Resistance

17.1. Flood resistance and resilient measures are not required, as the site is assessed to have a low chance of flooding from all sources now and in the future including when climate change allowance is considered.

18. Residual Risks

18.1. The residual risk is usually taken to refer to the portion of overall risk that remains once risk mitigation measures have been implemented.

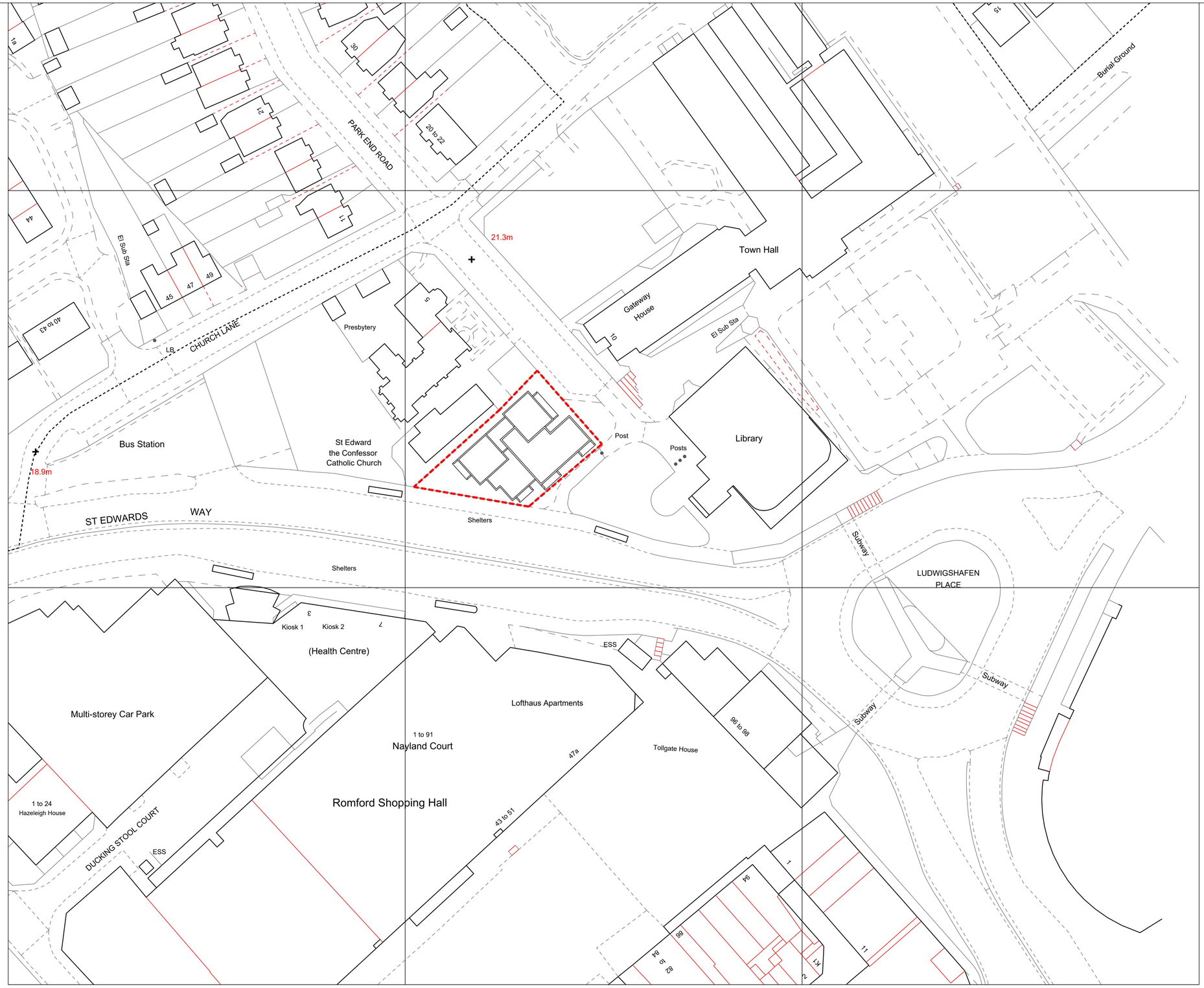
18.2. A surface water flood greater than the 1% AEP event could occur, which may exceed the capacity of the SuDS components and watercourse flows causing flooding to the site. Extreme surface water flood flow routes are shown in the drawing at **Appendix I**.

18.3. Flooding during an extreme event could occur during the construction phase of development. To minimise the impact of this and mitigate the risk, it is advised that a Construction Surface Water Management Plan (CSWMP) is to be provided.

Appendices

Appendix A

Site Location Plan



2 Site Block Plan Proposed

Scale: 1:500 @ A1

0 5m 10m 25m

Client:

1 PARK END LTD

Notes:
1. Do not scale from this drawing.
2. Site verify all dimensions and levels prior to construction.
3. Report all discrepancies to the Drawing Originator immediately.
4. This drawing is to be read in conjunction with all relevant documents and drawings.

Revisions

Rev	Date	Description	Drn	Chk'd

Drawing Originator

atelier - sm (architects)
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atelier - sm (architects) Ltd
Suite 10, Essex House, Station Lane, Upminster, RM14 2SJ
Tel: +44 (0)1708 988 295 Email: info@atelier-sm.co.uk

Drawing Status

OUTLINE PLANNING SUBMISSION

Project Name

No.1 PARK END ROAD, ROMFORD

Drawn by	Drawn Date	Checked by	Checked Date
ATELIER	Nov 2025	-	-

Scale

1:1250 @ A1

Title — Original drawing sheet is A1

SITE BLOCK PLAN PROPOSED

Discipline	Project	Subject	Area	Drawing Number	Revision
A	-24284-	OP	- [00] -	101	

Appendix B

Topographical Survey

TX1112_ParkEnd_T_01_R2

INDICATIVE ONLY

Control Schedule

Stn No.	Easting	Northing	Level
1	551307.250	189145.934	20.719
2	551288.116	189129.221	20.106
3	551260.632	189135.739	19.566
4	551259.860	189162.842	20.278
5	551281.008	189166.114	20.566
6	551297.180	189192.524	21.023
7	551337.876	189168.045	21.717
8	551360.285	189141.644	21.525
9	551335.752	189118.717	20.470
10	551320.450	189164.964	20.742
11	551311.078	189124.893	20.665
12	551336.050	189136.266	20.889

Station 2 has O.S. National Grid co-ordinates based on the National GPS network using Network RTK observations. All other stations are based on a plane grid with an origin at Station 2 and preserving the O.S. National Grid rotation but with O.S. scale factor removed.

CHURCH LANE
PARK END ROAD
ST EDWARDS WAY
Car Park
Gravel
Office Building
Romford Library
St Edward The Confessor Catholic Church
Church Hall
All Services Cut/Turned Off
Church Parish Social Club
Priest House
Garage
Outbuilding
Shed
Tarmac
Lawn
Grass
Concrete
Concrete Paving Slabs
Block Paving
Weeds
Gravelled Out Wall
Brick 1.3mh
Brick 1.7mh
Brick 0.9mh
Brick Wall 1.7mh
Crazy Paving
Flower / Shrub Border
Shrubs 1mh
Shrubs 2mh
Shrubs 2.5mh
Shrubs 1m
Shrubs 1mh
Shrubs & Flowers
Flower Bed
Concrete Ramp Up
Ramp Up
Steps Up
Step Up
Hoarding 2.3mh
Car Park Spaces
Bench
Litter Bin
Bus Stop
Bus Shelter
Bus Stop Lay-by
Pergola
Drain
Soil Pipe SVP
Soil Pipes
Gully
Manhole
Control Cabinet
Multiple Cables
Flag Staff
Shrine
Info Board
Bollards
Bicycle Racks
Civic Planting
Security Camera
Grasscrete
Back Planters (varying heights)
Cage Rd
Pine 1.9, 8, 22
Palm 0.3, 1, 5
Conifer 0.8, 2, 9
Conifer 1.2, 2, 9
Conifer 1.4, 2, 9
Maple 1.5, 4, 13
Maple 1.2, 4, 13
Oak 0.3, 2, 6
Ticket Machine
Boi
Bol
STN 1
STN 2
STN 3
STN 4
STN 5
STN 6
STN 7
STN 8
STN 9
STN 10
STN 11
STN 12
Assumed Alignment From Position in WM Unable To Locate
Electric Cable No Trace-Cut At Control Cabinet
4cm PVC Drain Pipe into Garden
1cm Metal Pipe-Unidentified
4cm Metal Pipe-Unidentified
Unidentified Overhead Cables
No Traces Obtainable From SCs
Assumed Electric Trace
Buried Electric Trace
WM-1" Pipe
WM-1cm Pipes, 0.45d Unable To Locate
Running Trap Cracked Cover
Flow Direction
Ramp Up
Drain Pipe
Soil Pipe SVP
Soil Pipes
Gully
Manhole
Control Cabinet
Multiple Cables
Flag Staff
Shrine
Info Board
Bollards
Bicycle Racks
Civic Planting
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Maple 1.5, 4, 13
Maple 1.2, 4, 13
Oak 0.3, 2, 6
Ticket Machine
Boi
Bol
STN 1
STN 2
STN 3
STN 4
STN 5
STN 6
STN 7
STN 8
STN 9
STN 10
STN 11
STN 12
Assumed Alignment From Position in WM Unable To Locate
Electric Cable No Trace-Cut At Control Cabinet
4cm PVC Drain Pipe into Garden
1cm Metal Pipe-Unidentified
4cm Metal Pipe-Unidentified
Unidentified Overhead Cables
No Traces Obtainable From SCs
Assumed Electric Trace
Buried Electric Trace
WM-1" Pipe
WM-1cm Pipes, 0.45d Unable To Locate
Running Trap Cracked Cover
Flow Direction
Ramp Up
Drain Pipe
Soil Pipe SVP
Soil Pipes
Gully
Manhole
Control Cabinet
Multiple Cables
Flag Staff
Shrine
Info Board
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Bicycle Racks
Civic Planting
Security Camera
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Cage Rd
Pine 1.9, 8, 22
Palm 0.3, 1, 5
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Conifer 1.2, 2, 9
Conifer 1.4, 2, 9
Maple 1.5, 4, 13
Maple 1.2, 4, 13
Oak 0.3, 2, 6
Ticket Machine
Boi
Bol
STN 1
STN 2
STN 3
STN 4
STN 5
STN 6
STN 7
STN 8
STN 9
STN 10
STN 11
STN 12
Assumed Alignment From Position in WM Unable To Locate
Electric Cable No Trace-Cut At Control Cabinet
4cm PVC Drain Pipe into Garden
1cm Metal Pipe-Unidentified
4cm Metal Pipe-Unidentified
Unidentified Overhead Cables
No Traces Obtainable From SCs
Assumed Electric Trace
Buried Electric Trace
WM-1" Pipe
WM-1cm Pipes, 0.45d Unable To Locate
Running Trap Cracked Cover
Flow Direction
Ramp Up
Drain Pipe
Soil Pipe SVP
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STN 12
Assumed Alignment From Position in WM Unable To Locate
Electric Cable No Trace-Cut At Control Cabinet
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No Traces Obtainable From SCs
Assumed Electric Trace
Buried Electric Trace
WM-1" Pipe
WM-1cm Pipes, 0.45d Unable To Locate
Running Trap Cracked Cover
Flow Direction

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STANDARD ABBREVIATIONS

CONTROL DATA
Survey stations — STN
Boundary posts — BP

LEVEL DATA
Spot levels +43.62
Contours — 43 —
Steep slopes

TREES

FEATURES
Fences shown thus
Walls shown thus
Hedges shown thus
Undefined Boundary
Gates

OVERHEAD CABLES
British Telecom
Electric

FENCE TYPES

B/W	Barbed wire	I/R	Iron railing
C/B	Close boarded	P/F	Picket fence
C/I	Corrugated iron	P/R	Post and rail
C/L	Chain link	P/W	Post and wire
C/P	Chestnut paling	W/F	Wooden fence
C/W	Chicken Wire		

1,4,7 Girth (Circumference) , spread (radius), height
Cmp Clump
Trees shown on this drawing have been identified to the best of the surveyors' ability. Where guaranteed identification of tree species may become important in the project design we would strongly recommend that the services of a specialist arboriculturist be employed. It should be noted that Randall Surveys LLP are not specialists in the field of tree identification.

Datum used : Newlyn. All units are metric.

ABBREVIATIONS

BB Beleisha beacon	CNT Could not trace
BD Back drop	CPL Coping level
BH Borehole	DC Drainage Channel
Bol Bollard	DK Drop kerb
BT British Telecom cover	EJB Elec. junction box
BTJB BT junction box	EOR End of record
CATV Cable TV cover	EOT End of trace
CDP Cable draw pit	EP Electricity pole
CL Cover level	ER Earth rod
CM Cable marker	FB Flower bed
CNF Could not find	FH Fire hydrant
CNL Could not lift	FL Floodlight
G Gulley	PM Parking meter	SVP Soil vent pipe
GV Gas valve	PS Paving slabs	TCB Telephone call box
IC Inspection cover	RC Rising cable	TCP Tactile paving
IL Invert level	RE Rodding eye	TL Traffic light
JB Junction box	Ret. Retaining	TP Telegraph pole
KO Kerb outlet	RS Road sign	TPL Top of pipe level
LP Lamp post	RWP Rainwater pipe	TS Traffic signal
MH Manhole	SC Stop cock	VP Vent pipe
Mkr Marker	SL Sump level	WL Weir level
NB Name board	SP Sign post	WO Washout
OF Outfall	ST Stand pipe	WM Water meter
PB Post box	SV Stop valve	WSC Water stop cock

STATIONS

STATION	TYPE	EASTING	NORTHING	LEVEL

NOTES

1. Station 2 has O.S. National Grid co-ordinates based on the National GPS network using network RTK observations. All other stations
2. Levels are related to the O.S. National GPS network.
3. Underground services have only been surveyed within the boundary shown as

Please Note that Texo has checked and amended the existing topographic drawing for this site carried out by Randall Surveys LLP in October 2021. No Utility information below the surface has been verified as it fell outside the scope of these commissioned works.

The Existing Code table and naming conventions have been replicated for these works.

See www.texodsi.co.uk for full terms and conditions of contract.

Due to the inherent instability of paper materials, drawings plotted on paper may be stretched and distorted - dimensions scaled from paper plots should therefore be treated with caution

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SHEET KEY

01

ISSUES & REVISIONS

Issue	Details	By	Date
R1	Drawing Issued by External Party	XX	01/10/2021
R2	Texo Updated Topographic Detail	NA	01/02/2022

Homes Partners Group Limited
3 Beatty House
Admirals Way
Canary Wharf, London
E14 9UF

Topogrpahic Survey
Park End Road
Romford, Essex
RM1 4AT

TEXO DSI
SURVEY AND INSPECTION

8 Stepfield Industrial Estate
Witham
Essex
CM8 3TH

Tel: +44 (0)1376 533 979
Fax: +44 (0)1376 515 946
Email: info@texodsi.co.uk
Web: www.texodsi.co.uk

SCALE 1:200 @ A1

DATE OF SURVEY 14th January 2022

TEXO REF: TX1112 CHECKED JM

DRAWING No. TX1112_ParkEnd_T_01_R2

Appendix C

Architectural Plans



Client:

1 PARK END LTD

Notes:
1. Do not scale from this drawing.
2. Site verify all dimensions and levels prior to construction.
3. Report all discrepancies to the Drawing Originator immediately.
4. This drawing is to be read in conjunction with all relevant documents and drawings.

Revisions

Rev	Date	Description	Drn	Chk'd

0 1m 2m 5m

NORTH

Drawing Originator

atelier - sm (architects)
CHARTERED ARCHITECTS & DESIGNERS
atelier - sm (architects) Ltd
Suite 10/11, Essex House, Station Lane, Upminster, RM14 2SJ
Tel: +44 (0)1708 988 295 Email: info@atelier-sm.co.uk

Drawing Status

PLANNING ISSUE

Project Name

No1. PARK END ROAD, ROMFORD

Drawn by	Drawn Date	Checked by	Checked Date
ATELIER	-	-	-

Scale

1:100 @ A1

Title — Original drawing sheet is A1

GENERAL ARANGEMENT GROUND FLOOR

Discipline	Project	Subject	Area	Drawing Number	Revision
A	-24284-	P	- 00 -	200	



Client:

1 PARK END LTD

Notes:
1. Do not scale from this drawing.
2. Site verify all dimensions and levels prior to construction.
3. Report all discrepancies to the Drawing Originator immediately.
4. This drawing is to be read in conjunction with all relevant documents and drawings.

Revisions

Rev	Date	Description	Drn	Chk'd

0 1m 2m 5m

North

Drawing Originator

atelier - sm (architects)
CHARTERED ARCHITECTS & DESIGNERS
atelier - sm (architects) Ltd
Suite 10/11, Essex House, Station Lane, Upminster, RM14 2SJ
Tel: +44 (0)1708 988 295 Email: info@atelier-sm.co.uk

Drawing Status

PLANNING ISSUE

Project Name

No.1. PARK END ROAD, ROMFORD

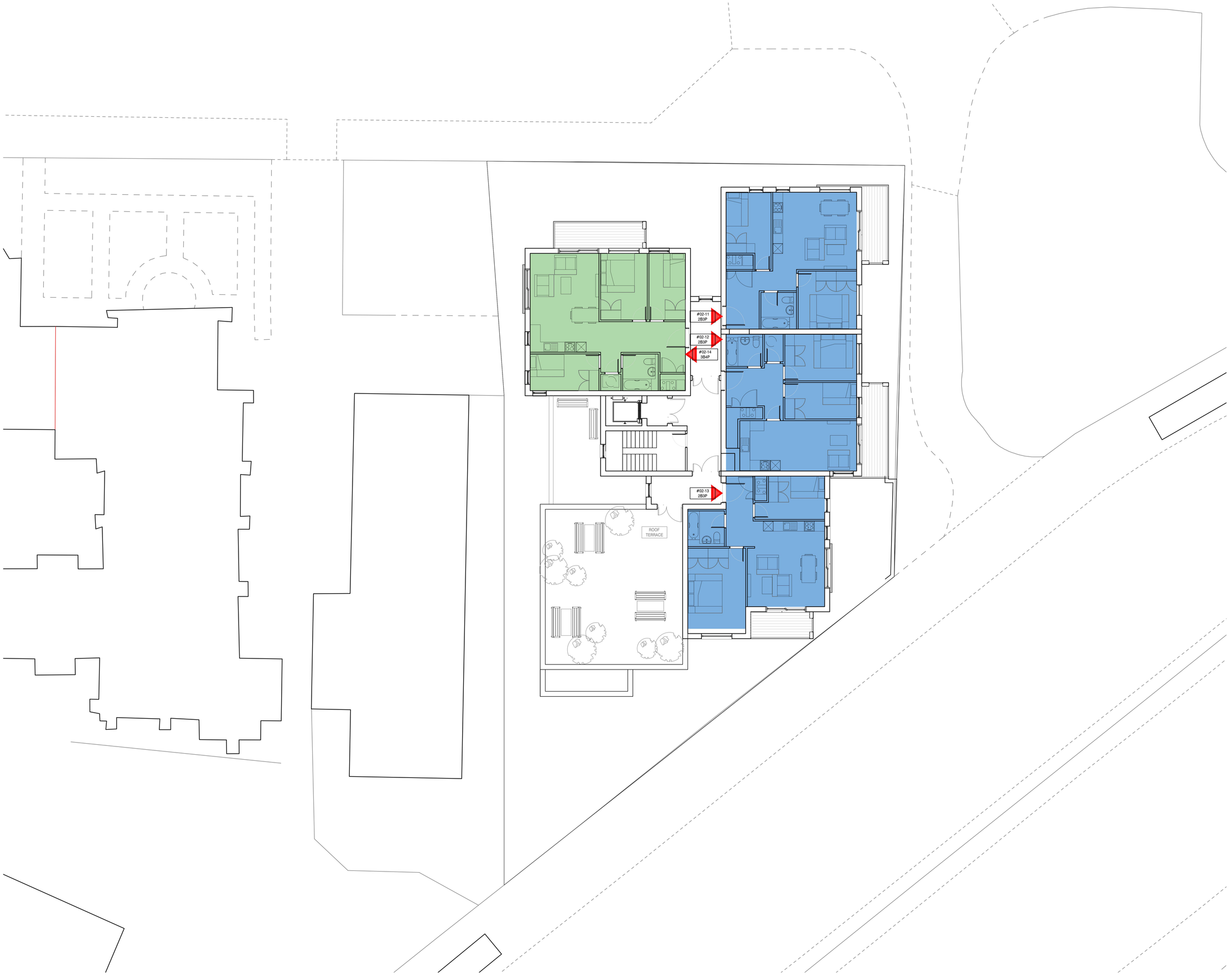
Drawn by	Drawn Date	Checked by	Checked Date
ATELIER	-	-	-

Scale
1:100 @ A1

Title — Original drawing sheet is A1

GENERAL ARANGEMENT
FIRST FLOOR

Discipline	Project	Subject	Area	Drawing Number	Revision
A	-24284-	P	- [01] -	201	



Client:

1 PARK END LTD

Notes:
1. Do not scale from this drawing.
2. Site verify all dimensions and levels prior to construction.
3. Report all discrepancies to the Drawing Originator immediately.
4. This drawing is to be read in conjunction with all relevant documents and drawings.

Revisions

Rev	Date	Description	Drn	Chk'd

0 1m 2m 5m

NORTH

Drawing Originator

atelier - sm (architects)
CHARTERED ARCHITECTS & DESIGNERS
atelier - sm (architects) Ltd
Suite 10/11, Essex House, Station Lane, Upminster, RM14 2SJ
Tel: +44 (0)1708 988 295 Email: info@atelier-sm.co.uk

Drawing Status

PLANNING ISSUE

Project Name

No.1. PARK END ROAD, ROMFORD

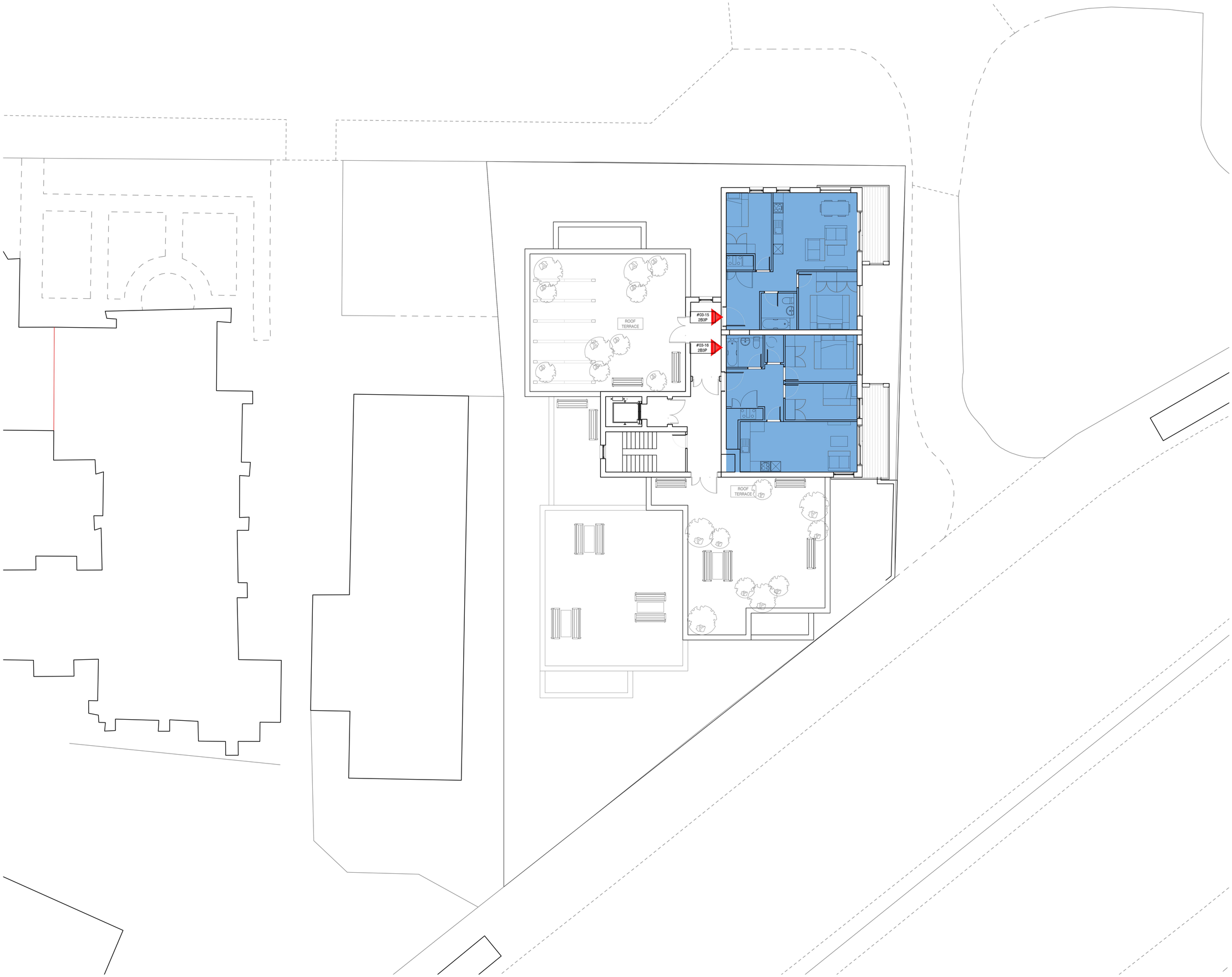
Drawn by	Drawn Date	Checked by	Checked Date
ATELIER	-	-	-

Scale
1:100 @ A1

Title — Original drawing sheet is A1

GENERAL ARANGEMENT SECOND FLOOR PLAN

Discipline	Project	Subject	Area	Drawing Number	Revision
A	-24284-	P	[02]	202	



Client:

1 PARK END LTD

Notes:
1. Do not scale from this drawing.
2. Site verify all dimensions and levels prior to construction.
3. Report all discrepancies to the Drawing Originator immediately.
4. This drawing is to be read in conjunction with all relevant documents and drawings.

Revisions

Rev	Date	Description	Drn	Chk'd

0 1m 2m 5m

Drawing Originator

atelier - sm (architects)
CHARTERED ARCHITECTS & DESIGNERS
atelier - sm (architects) Ltd
Suite 10/11, Essex House, Station Lane, Upminster, RM14 2SJ
Tel: +44 (0)1708 988 295 Email: info@atelier-sm.co.uk

Drawing Status

PLANNING ISSUE

Project Name

No.1. PARK END ROAD, ROMFORD

Drawn by	Drawn Date	Checked by	Checked Date
ATELIER	-	-	-

Scale
1:100 @ A1

Title Original drawing sheet is A1

GENERAL ARANGEMENT THIRD FLOOR PLAN

Discipline	Project	Subject	Area	Drawing Number	Revision
A	-24284-	P	[03]	203	



Client:

1 PARK END LTD

Notes:
1. Do not scale from this drawing.
2. Site verify all dimensions and levels prior to construction.
3. Report all discrepancies to the Drawing Originator immediately.
4. This drawing is to be read in conjunction with all relevant documents and drawings.

Revisions

Rev	Date	Description	Drn	Chk'd

0 1m 2m 5m

NORTH

Drawing Originator

atelier - sm (architects)
CHARTERED ARCHITECTS & DESIGNERS
atelier - sm (architects) Ltd
Suite 10/11, Essex House, Station Lane, Upminster, RM14 2SJ
Tel: +44 (0)1708 988 295 Email: info@atelier-sm.co.uk

Drawing Status

PLANNING ISSUE

Project Name

NO.1. PARK END ROAD, ROMFORD

Drawn by	Drawn Date	Checked by	Checked Date
ATELIER	-	-	-

Scale
1:100 @ A1

Title — Original drawing sheet is A1

GENERAL ARANGEMENT ROOF PLAN

Discipline	Project	Subject	Area	Drawing Number	Revision
A	-24284-	P	- [04] -	204	-

Appendix D

EA Surface Water Flood Risk Mapping

GOV·UK

Flood map for planning

Get data for your location

Add or edit a location boundary

Show

Datasets

Surface water

Show

Climate change

2061 to 2125

Show

Annual likelihood of flooding

1 in 100

Show

Depth in millimetres

All depths

Show

Map features

None selected

Show

Layer opacity

75



Appendix E

EA Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
63926	**551328/189134**	**11 September 2026 21:05**

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

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

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

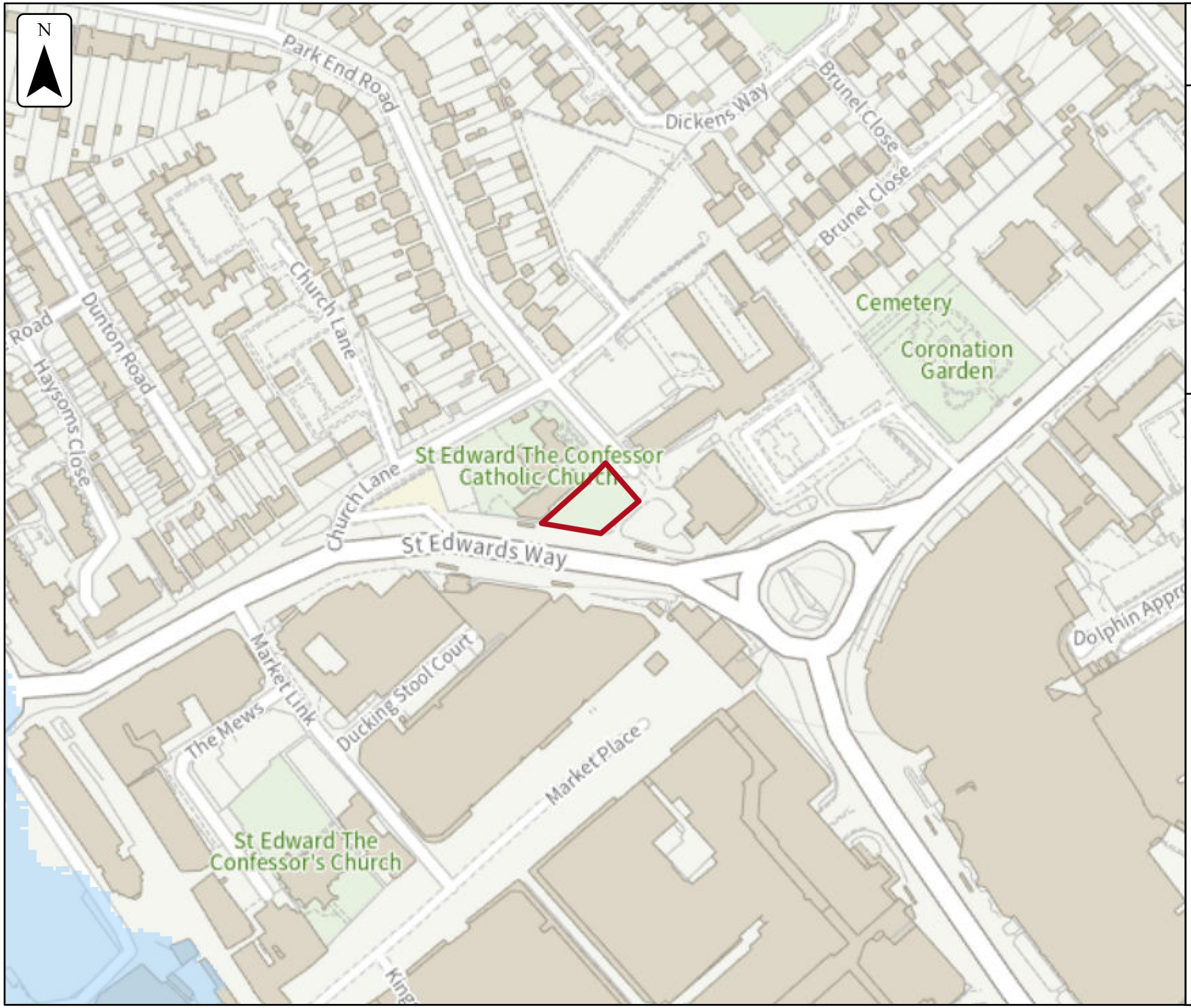
Notes

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

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

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

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2026 AC0000807064. https://flood-map-for-planning.service.gov.uk/os-terms



Environment Agency

Flood map for planning

Your reference
63926

Location (easting/northing)
551328/189134

Scale
1:2,500

Created
11 Sep 2026 21:05

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

0 20 40 60m

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Appendix F

Thames Water Wastewater Map

CommercialDW
Drainage & Water Enquiry

Thames Water Property Searches

NYLS Ltd
Audax Court
Audax Close
York
YO30 4RB

Search address supplied	1, Park End Road, Romford, RM1 4AT
Your reference	LK/1 RM1 4AT
Our reference	CDWS/CDWS Standard/2021_4551993
Received date	2 December 2021
Search date	20 December 2021

Keeping you up-to-date

Commercial Drainage and Water Enquiry

The Commercial Drainage and Water Enquiry is specifically designed for those purchasing or leasing land or commercial property.

With comprehensive information regarding water and sewerage services and infrastructure assets, combined with an appropriate guarantee for commercial property and land transactions, the Commercial Drainage and Water Enquiry mitigates risk and provides peace of mind for commercial property professionals and their advisers.

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

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

0800 009 4540

CON29DW COMMERCIAL DRAINAGE & WATER SEARCH

DRAINAGE + WATER SEARCHES NETWORK DWSN

CommercialDW
Drainage & Water Enquiry

Thames Water Property Searches

Question		Summary Answer
Maps		
1.1	Where relevant, please include a copy of an extract from the public sewer map.	Map Provided
1.2	Where relevant, please include a copy of an extract from the map of waterworks.	Map Provided
Drainage		
2.1	Does foul water from the property drain to a public sewer?	See Details
2.2	Does surface water from the property drain to a public sewer?	See Details
2.3	Is a surface water drainage charge payable?	See Details
2.4	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	No
2.4.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?	No
2.5	Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	See Details
2.5.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the 50metres of any buildings within the property?	No
2.6	Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
2.7	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	No
2.8	Is the building, which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?	Not At Risk
2.9	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	4.309 Kilometres
Water		
3.1	Is the property connected to mains water supply?	See Details
3.2	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	No
3.3	Is any water main or service pipe serving, or which is proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
3.4	Is the property at risk of receiving low water pressure or flow?	See Details
3.5	What is the classification of the water supply for the property?	See Details
3.6	Is there a meter installed at this property?	No
3.7	Please include details of the location of any water meter serving the property.	See Details

CommercialDW
Drainage & Water Enquiry

Thames Water Property Searches

Question		Summary Answer
Charging		
4.1.1	Who is responsible for providing the sewerage services for the property?	Thames Water
4.1.2	Who is responsible for providing the water services for the property?	Essex and Suffolk
4.2	Who bills the property for sewerage services?	See Details
4.3	Who bills the property for water services?	See Details
Trade Effluent		
5.1	Is there a consent, on this property, to discharge Trade Effluent under S118 of the Water Industry Act(1991) into the public sewerage system?	No
Wayleaves, Easements, Manhole Cover and Invert levels		
6.1	Is there a wayleave/easement agreement giving Thames Water the right to lay or maintain assets or right of access to pass through private land in order to reach the Company's assets?	No
6.2	On the copy extract from the public sewer map, please show manhole cover, depth and invert levels where the information is available.	See Details

Search address supplied: 1, Park End Road, Romford, RM1 4AT

Any new owner or occupier will need to contact Thames Water on 0800 316 9800 or log onto our website www.thameswater.co.uk and complete our online form to change the water and drainage services bills to their name.

The following records were searched in compiling this report: - the map of public sewers, the map of waterworks, water and sewer billing records, adoption of public sewer records, building over public sewer records, the register of properties subject to internal foul flooding, the register of properties subject to poor water pressure and the drinking water register.
Thames Water Utilities Ltd (TWUL) holds all of these.

TWUL, trading as Property Searches, are responsible in respect of the following:-

(i) any negligent or incorrect entry in the records searched

(ii) any negligent or incorrect interpretation of the records searched

(iii) any negligent or incorrect recording of that interpretation in the search report

(iv) and compensation payments

Maps

1.1 Where relevant, please include a copy of an extract from the public sewer map.

A copy of an extract of the public sewer map is included, showing the public sewers, disposal mains and lateral drains in the vicinity of the property.

1.2 Where relevant, please include a copy of an extract from the map of waterworks.

A copy of an extract from the map of waterworks is included in which the location of the property is identified.

Drainage

2.1 Does foul water from the property drain to a public sewer?

The enquiry appears to relate to a plot of land or a recently built property. It is recommended that drainage proposals are checked with the developer.

2.2 Does surface water from the property drain to a public sewer?

Records indicate that this enquiry relates to a plot of land or a recently built property. It is recommended that the drainage proposals are checked with the developer. If the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Developer.

2.3 Is a surface water drainage charge payable?

This enquiry appears to relate to a plot of land or a recently built property. It is recommended that charging proposals are checked with the developer. If the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Developer.

2.4 Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundary of the property?

The public sewer map indicates that there are no public sewers, disposal mains or lateral drains within the boundaries of the property. However, from the 1st October 2011 there may be lateral drains and/or public sewers which are not recorded on the public sewer map but which may prevent or restrict development of the property.

2.4.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?

The public sewer map included indicates that there is no public pumping station within the boundaries of the property.

2.5 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

The public sewer map indicates that there are no public sewers within 30.48 metres (100 feet) of any buildings within the property.
However, from the 1st October 2011 many private sewers were transferred into public ownership and may not be recorded on the public sewer map and it is our professional opinion that if the property is connected to a foul sewer it is likely that there will be a public sewer within 30.48 metres (100 feet) of any buildings within the property.

2.5.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?

The public sewer map included indicates that there is no public pumping station within 50 metres of any buildings within the property.

2.6 Are any sewers or lateral drains serving, or which are proposed to serve, the property the subject of an existing adoption agreement or an application for such an agreement?

Records confirm that Foul sewers serving the development, of which the property forms part are not the subject of an existing adoption agreement or an application for such an agreement.

The Surface Water sewer(s) and/or Surface Water lateral drain(s) are not the subject of an adoption agreement.

2.7 Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?

There are no records in relation to any approval or consultation about plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain. However, the sewerage undertaker might not be aware of a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain.

2.8 Is the building which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?

The property is not recorded as being at risk of internal flooding due to overloaded public sewers.

From the 1st October 2011 most private sewers, disposal mains and lateral drains were transferred into public ownership It is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which the sewerage undertaker is not aware of. For further information it is recommended that enquiries are made of the vendor.

2.9 Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.

The nearest sewage treatment works is ROMFORD RD(CHIGWELL)STW (PRIVATE) which is 4.309 kilometres to the north west of the property.

Water

3.1 Is the property connected to mains water supply?

The enquiry appears to relate to a plot of land or a recently built property. It is recommended that the water proposals are checked with the developer.

3.2 Are there any water mains, resource mains or discharge pipes within the boundary of the property?

The map of waterworks does not indicate any water mains, resource mains or discharge pipes within the boundaries of the property.

3.3 Is any water main or service pipe serving, or which is proposed to serve, the property the subject of an existing adoption agreement or an application for such an agreement?

Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreement.

3.4 Is the property at risk of receiving low water pressure or flow?

Records confirm that the property is not recorded on a register kept by the water undertaker as being at risk of receiving low water pressure or flow.

3.5 What is the classification of the water supply for the property?

The water supplied to the property has an average water hardness of 130mg/l calcium which is defined as Hard to Very Hard by Essex and Suffolk Water.

3.6 Is there a meter installed at this property?

Records indicate that there is no meter installed at this property.

3.7 Please include details of the location of any water meter serving the property.

This enquiry appears to relate to a plot of land or a recently built property. It is recommended that drainage proposals are checked with the developer.

Charging

4.1.1 – Who is responsible for providing the sewerage services for the property?

Thames Water Utilities Limited, Clearwater Court, Reading, RG1 8DB is the sewerage undertaker for the area.

4.1.2 – Who is responsible for providing the water services for the property?

Essex and Suffolk Water, PO Box 292, Durham, DH1 9TX is the water undertaker for the area.

4.2 Who bills the property for sewerage services?

If you wish to know who bills the sewerage services for this property then you will need to contact the current owner. For a list of all potential retailers of sewerage services for the property please visit www.open-water.org.uk

4.3 Who bills the property for water services?

If you wish to know who bills the water services for this property then you will need to contact the current owner. For a list of all potential retailers of water services for the property please visit www.open-water.org.uk

Trade Effluent

5.1 Is there a consent, on this property, to discharge Trade Effluent under S118 of the water Industry act (1991) into the public sewerage systems?

No.

Wayleaves, Easements, Manhole Cover and Invert levels

6.1 Is there a wayleave/easement agreement giving Thames water the right to lay or maintain assets or right of access to pass through private land in order to reach the Company's assets?

No.

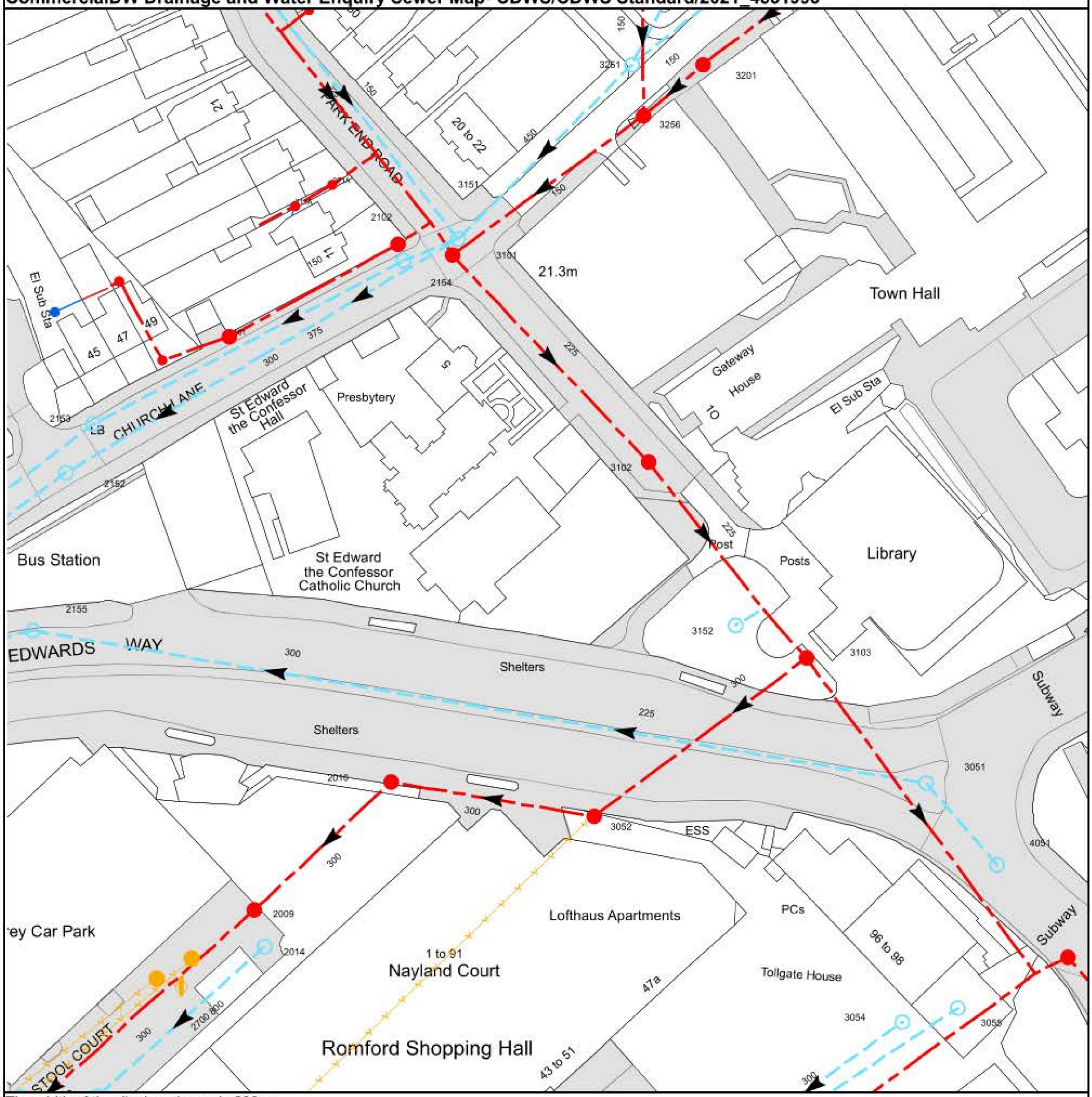
6.2 On the copy extract from the public sewer map, please show manhole cover, depth, and invert levels where the information is available.

Details of any manhole cover and invert levels applicable to this site are enclosed.

Payment for this Search

A charge will be added to your suppliers account.

CommercialDW Drainage and Water Enquiry Sewer Map- CDWS/CDWS Standard/2021_4551993



The width of the displayed area is 200m

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

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

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3054	18.89	17.02
3055	19.01	16.01
4002	20.83	14.17
4051	20.83	19.09
3051	n/a	n/a
3103	21.37	17.26
3152	21.32	19.93
2009	16.7	15.27
2014	n/a	n/a
2010	19.92	15.45
3052	20.25	16.58
2155	18.96	16.94
2152	19.69	17.63
3102	21.51	18.81
2153	19.87	17.57
21YZ	n/a	n/a
2101	20.34	20.06
21ZS	n/a	n/a
21ZQ	n/a	n/a
2154	20.93	18.67
3101	21.13	19.48
2102	21.03	19.85
3151	21.14	18.96
211A	n/a	n/a
221C	n/a	n/a
221A	n/a	n/a
3251	20.02	19.07
3256	21.92	20.4
3201	22.43	20.56

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.

Con29DW Commercial Drainage and Water 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

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

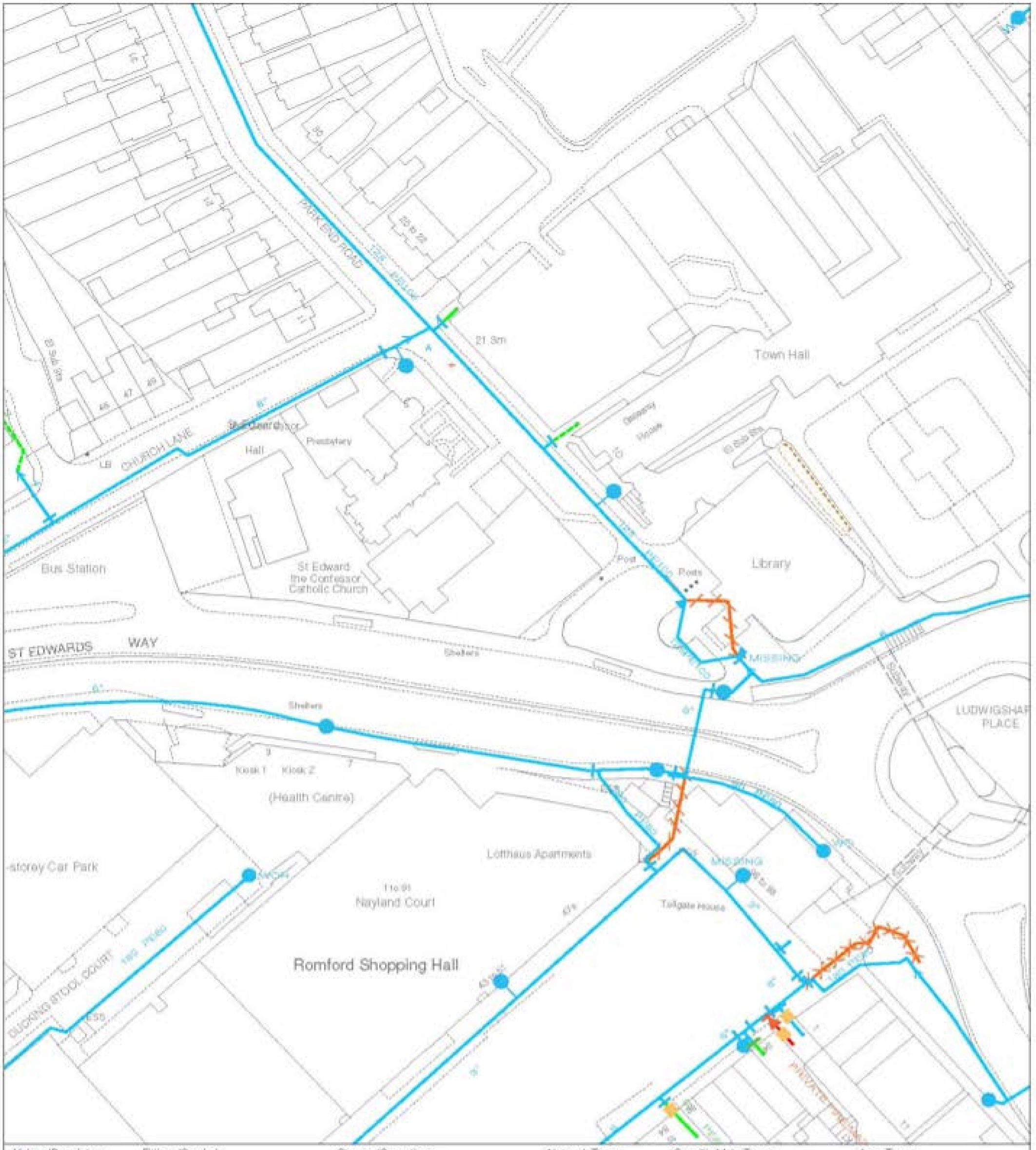
Ducts or Crossings

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

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.
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.

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4W, DX 151280 Slough 13
T 0800 009 4540 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk



ESSEX&SUFFOLK WATER *living water*

User : LANGP

Date : 20/12/2021

Title : 4551993

Map Sheet : TQ5189SW

Centre Point : 551331,189135

The material contained on this plot has been reproduced from an Ordnance Survey map with permission of the controller of H.M.S.O. Crown Copyright Reserved. Licence No. 100022460.
The information shown on this plan should be regarded as approximate and is intended for guidance only. Private connections are not shown but their presence should be anticipated. WARNING... Where indicated on the plan there could be abandoned asbestos cement materials or shards of pipe. If excavating in the vicinity of these abandoned asbestos cement materials, the appropriate Health & Safety precautions should be taken. Essex & Suffolk Water accepts no liability in respect of claims, costs, losses or other liabilities which arise as the result of the presence of asbestos pipes or any failure to take adequate precautions. Emergency Telephone Number: 0345 782 0999

10 m

For your guidance:

- Thames Water Property Searches Complaints Procedure:
  - Thames Water Property Searches offers a robust complaints procedure. Complaints can be made by telephone, in writing, by email (searches@thameswater.co.uk) or through our website (www.thameswater-propertysearches.co.uk)

As a minimum standard Thames Water Property Searches will:

- endeavour to resolve any contact or complaint at the time of receipt. If this isn't possible, we will advise of timescales;
- investigate and research the matter in detail to identify the issue raised (in some cases third party consultation will be required);
- provide a response to the customer within 10 working days of receipt of the complaint;
- provide compensation, if no response or acknowledgment that we are investigating the case is given within 10 working days of receipt of the complaint;
- keep you informed of the progress and, depending on the scale of investigation required, update with new timescales as necessary;
- provide an amended search, free of charge, if required;
- provide a refund if we find your complaint to be justified; take the necessary action within our power to put things right.

If you want us to liaise with a third party on your behalf, just let us know.

If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager, for resolution, who will respond again within 5 working days.

If you remain dissatisfied with our final response you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk

Question 1.1

For your guidance:

- The Water Industry Act 1991 defines Public Sewers as those which Thames Water have responsibility for. Other assets and rivers, watercourses, ponds, culverts or highway drains may be shown for information purposes only.
- 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.
- Assets other than public sewers may be shown on the copy extract, for information.

Question 1.2

For your guidance:

- The "water mains" in this context are those, which are vested in and maintainable by the water company under statute.
- Assets other than public water mains may be shown on the plan, for information only.
- Water companies are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- 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.

Question 2.1

For your guidance:

- Water companies are not responsible for any private drains that connect the property to the public sewerage system and do not hold details of these. The property owner will normally have sole responsibility for private drains serving the property. These may pass through land outside the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- If foul water does not drain to the public sewerage system, the property may have private facilities in the form of a cesspit, septic tank or other type of treatment plant.
- An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 2.2

For your guidance:

- Sewerage Undertakers are not responsible for any private drains that connect the property to the public sewerage system, and do not hold details of these.
- The property owner will normally have sole responsibility for private drains serving the property. These private drains may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- In some cases, 'Sewerage Undertakers' records do not distinguish between foul and surface water connections to the public sewerage system.
- At the time of privatisation in 1989, Sewerage Undertakers were sold with poorly-kept records of sewerage infrastructure. The records did not always show which properties were connected for surface water drainage purposes. Accordingly, billing records have been used to provide an answer for this element of the drainage and water search.
- Due to the potential inadequacy of 'Sewerage Undertakers' infrastructure records with respect to surface water drainage, it is the customer's responsibility to inform the Sewerage Undertaker that they do not receive the surface water drainage service. If on inspection, the buyer finds that surface water from the property does not drain to a public sewer, then the property may be eligible for a rebate of the surface water drainage charge. If you wish to know who bills the sewerage services for this property then you will need to contact the current owner. For a list of all potential retailers of sewerage services for the property please visit www.open-water.org.uk.
- If surface water from the property does not drain to the public sewerage system, the property may have private facilities in the form of a soakaway or private connection to a watercourse.
- An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 2.3

For your guidance:

- If surface water from the property drains to a public sewer, then a surface water drainage charge is payable.
- Where a surface water drainage charge is currently included in the property's water and sewerage bill but, on inspection, the buyer finds that surface water from the property does not drain to a public sewer, then the property may be eligible for a rebate of the surface water drainage charge. If you wish to know who bills the sewerage services for this property then you will need to contact the current owner. For a list of all potential retailers of sewerage services for the property please visit www.open-water.org.uk.

Question 2.4

For your guidance:

- Thames Water has a statutory right of access to carry out work on its assets. Employees of Thames Water or its contractors may, therefore, need to enter the property to carry out work.
- Please note if the property was constructed after 1st July 2011 any sewers and/or lateral drain within the boundary of the property are the responsibility of the householder.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public sewer running within the boundary of the property may restrict further development. The Company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the Company, or its contractors, needing to enter the property to carry out work.
- 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.

Question 2.4.1

For your guidance:

- Private pumping stations installed before 1st July 2011 will be transferred into the ownership of the sewerage undertaker.
- From the 1st October 2016 private pumping stations which serve more than one property have been transferred into public ownership but may not be recorded on the public sewer map.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public pumping station within the boundary of the property may restrict further development. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work.
- 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.

Question 2.5

For your guidance:

- This is because there are no buildings from which to measure the distance to any public sewers.
- The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- 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.

Question 2.5.1

For your guidance:

- Private pumping stations installed before 1st July 2011 will be transferred into the ownership of the sewerage undertaker.
- From the 1st October 2016 private pumping stations which serve more than one property have been transferred into public ownership but may not be recorded on the public sewer map.
- The presence of a public pumping station within 50 metres of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- 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.

Question 2.6

For your guidance:

- Any sewers and/or lateral drains within the boundary of the property are not the subject of an adoption agreement and remain the responsibility of the householder. Adoptable sewers are normally those situated in the public highway.
- This enquiry is of interest to purchasers who will want to know whether or not the property will be linked to a public sewer.
- Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.
- Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991 and meeting the requirements of 'Sewers for Adoption' 6th Edition.

Question 2.7

For your guidance:

- From the 1st October 2011 most private sewers, disposal mains and lateral drains were transferred into public ownership and the sewerage undertaker may not have been approved or consulted about any plans to erect a building or extension on the property over or in the vicinity of these.
- Buildings or extensions erected over a sewer in contravention of building controls may have to be removed or altered.

Question 2.8

For your guidance:

- For reporting purposes buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- "Internal flooding" from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- "At Risk" properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company's reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water Utilities Ltd on Tel: 0800 316 9800 or website www.thameswater.co.uk

Question 2.9

For your guidance:

- The nearest sewage treatment works will not always be the sewage treatment works serving the catchment within which the property is situated.
- The sewerage undertaker's records were inspected to determine the nearest sewage treatment works.
- It should be noted that there may be a private sewage treatment works closer than the one detailed above that has not been identified.
- As a responsible utility operator, Thames Water Utilities Ltd seeks to manage the impact of odour from operational sewage works on the surrounding area. This is done in accordance with the Code of Practice on Odour Nuisance from Sewage Treatment Works issued via the Department of Environment, Food and Rural Affairs (DEFRA). This Code recognises that odour from sewage treatment works can have a detrimental impact on the quality of the local environment for those living close to works. However DEFRA also recognises that sewage treatment works provide important services to communities and are essential for maintaining standards in water quality and protecting aquatic based environments. For more information visit www.thameswater.co.uk

Question 3.1

For your guidance:

- The Company does not keep details of private supplies. The situation should be checked with the current owner of the property.

Question 3.2

For your guidance:

- The boundary of the property has been determined by reference to the plan supplied. Where a plan was not supplied, the Ordnance Survey Record was used. If the Water undertaker mentioned in Question 4.1.2 is not Thames Water Utilities Ltd the boundary of the property has been determined by the Ordnance Survey.
- The presence of a public water main within the boundary of the property may restrict further development within it. Water companies have a statutory right of access to carry out work on their assets, subject to notice. This may result in employees of the Company, or its contractors, needing to enter the property to carry out work.

Question 3.3

For your guidance:

- This enquiry is of interest to purchasers who will want to know whether or not the property will be linked to the mains water supply.

Question 3.4

For your guidance:

- "Low water pressure" means water pressure below the regulatory reference level, which is the minimum pressure when demand on the system is not abnormal.
- Water Companies are required to include in the Regulatory Register that is presented annually to the Director General of Water Services, properties receiving pressure below the reference level, provided that allowable exclusions do not apply (i.e. events which can cause pressure to temporarily fall below the reference level)
- The reference level of service is a flow of 9 litres/minute at a pressure of 10metres / head on the customer's side of the outside stop valve (osv). The reference level of service must be applied on the customer's side of a meter or any other company fittings that are on the customer's side of the main stop tap. The reference level applies to a single property. Where more than one property is served by a common service pipe, the flow assumed in the reference level must be appropriately increased to take account of the total number of properties served. For two properties, a flow of 18 litres/minute at a pressure of 10metres/head on the customers' side of the osv is appropriate. For three or more properties the appropriate flow should be calculated from the standard loadings provided in BS806-3 or the Institute of Plumbing handbook.
- **Allowable exclusions** The Company is required to include in the Regulatory Register properties receiving pressure below the reference level, provided that allowable exclusions listed below do not apply.
- **Abnormal demand:** This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand, which are normally expected. Companies should exclude from the reported figures properties which are affected by low pressure only on those days with the highest peak demands. During the report year companies may exclude, for each property, up to five days of low pressure caused by peak demand.
- **Planned maintenance:** Companies should not report low pressures caused by planned maintenance. It is not intended that companies identify the number of properties affected in each instance. However, companies must maintain sufficiently accurate records to verify that low-pressure incidents that are excluded because of planned maintenance are actually caused by maintenance.
- **One-off incidents:** This exclusion covers a number of causes of low pressure; mains bursts; failures of company equipment (such as pressure reducing valves or booster pumps); firefighting; and action by a third party. However, if problems of this type affect a property frequently, they cannot be classed as one-off events and further investigation will be required before they can be excluded.
- **Low-pressure incidents of short duration:** Properties affected by low pressure, which only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded from the reported figures.
- Please contact your water undertaker mentioned in Question 4.1.2 if you require further information on water pressure.

Question 3.5

For your guidance:

- Water hardness can be expressed in various indices for example the hardness settings for dishwashers are commonly expressed in Clark's degrees, but check with the manufacturer as there are also other units. The following table shows the normal ranges of hardness.

Hardness Category	Calcium (mg/l)	Calcium Carbonate (mg/l)	English Clarke degrees	French degrees	General/ German degrees
Soft	0 to 20	0 to 50	0 to 3.5	0 to 5	0 to 2.8
Moderately Soft	21 to 40	51 to 100	3.6 to 7	6 to 10	2.9 to 5.6
Slightly hard	41 to 60	101 to 150	8 to 10.5	11 to 15	5.7 to 8.4
Moderately hard	61 to 80	151 to 200	10.6 to 14	16 to 20	8.5 to 11.2
Hard	81 to 120	201 to 300	15 to 21	21 to 30	11.3 to 16.8
Very hard	Over 120	Over 300	Over 21	Over 30	Over 16.8

- Please contact your water undertaker mentioned in Question 4.1.2 if you require further information on water hardness.

Question 3.6

For your guidance:

- The Water Industry Act 1991 Section 150, The Water Resale Order 2001 provides protection for people who buy their water or sewerage services from a person or company instead of directly from a water or sewerage company. Details are available from the Office of Water Services (OFWAT) website is www.ofwat.gov.uk.
- The Company may install a meter at the premises where a buyer makes a change of use of the property or where the buyer uses water for:
  - Watering the garden other than by hand (this includes the use of sprinklers).
  - Automatically replenishing a pond or swimming pool with a capacity greater than 10,000 litres.
  - A bath with a capacity in excess of 230 litres.
  - A reverse osmosis unit Where a meter does not serve the property and the customer wishes to consider this method of charging, they should contact the current owner if they wish to know who bills the sewerage and water services for this property. For a list of all potential retailers of sewerage and water services for the property please visit www.open-water.org.uk.

Question 3.7

For your guidance:

- Where a meter does not serve the property and the customer wishes to consider this method of charging, they should contact the current owner if they wish to know who bills the water services for this property. For a list of all potential retailers of water services for the property please visit www.open-water.org.uk.

Question 5.1

For your guidance:

- If a Trade effluent consent applies to the premises which are the subject of this search, it is for the applicant to satisfy itself as to the suitability of the consent for its client's requirements. The occupier of any trade premises in the area of a sewerage undertaker may discharge any trade effluent proceeding from those premises into the undertaker's public sewers if he does so with the undertaker's consent. If, in the case of any trade premises, any trade effluent is discharged without such consent or other authorisation, the occupier of the premises shall be guilty of an offence.
- Please note any existing consent is dependent on the business being carried out at the property and will not transfer automatically upon change of ownership.
- For further information regarding Trade Effluent consents please contact: Trade Effluent Control, Crossness STW, Belvedere Road, Abbey Wood London SE2 9AQ.

Question 6.1

For your guidance:

- This question relates only to private agreements between the water company acting in a private capacity and a landowner. Such contracts may often be part of a conveyance or land transfer, or a deed of grant of easement.
- If there is no formal easement, then a sewer or water main may have been constructed following the service of notice under the provisions of the Public Health Act 1936, Water Act 1945,Water Act 1989 or Water Industry Act 1991 as applicable. The company does not hold copies of these notices. However, in the absence of evidence to the contrary there is a legal presumption that all matters were properly dealt with. All rights and obligations relating to sewers and water mains are now covered by the Water Industry Act 1991. Where rights exist at the boundary of the property, but we are not sure of the exact correlation, we will answer "Yes" to this question. A documentary right can exist even if the physical asset itself has not yet been laid, or has been moved, or removed. Likewise the position of the right and of the asset may differ.
- You may also find that an asset is protected both with contractual rights and statutory rights. Please consult your solicitor as to why this may happen, and its effects.
- We refer to "defined" assets for the following reasons: Often a contract may give the water company an expressed right to install and maintain assets within an area but without stating the exact position or route of such assets. Also, the law may imply rights where none have been mentioned specifically in a related contract, such as a conveyance. Finally, rights may come into being through long use. In any of these cases the rights are undefined, and although the water company may need to rely on them from time to time, as we cannot map the rights accurately, we will answer "no" to this question.
- Information obtainable from physical inspection (including Trial Bore Holes) overrides information contained in the report.
- Any error in answering this question is not to be regarded as a waiver of the water company's rights or title, or an agreement or representation that the water company is prepared to vary or discharge any of its rights or title.

CommercialDW Drainage and Water Enquiry Terms and Conditions

Customer and Clients are asked to note these terms, which govern the basis on which this CommercialDW Drainage & Water Enquiry is supplied

Definitions

'Client' means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property.
'Company' means a water service company or their data service provider producing the Report.
'Customer' means the person, company, firm or other legal body placing the Order, either on their own behalf as Client, or, as an agent for a Client.
'Order' means any request completed by the Customer requesting the Report.
'Property' means the address or location supplied by the Customer in the Order.
'Report' means the drainage and/or water report prepared by The Company in respect of the Property.
'Thames Water" means Thames Water Utilities Limited registered in England and Wales under number 2366661 whose registered office is at Clearwater Court, Vastern Road, Reading, Berks, RG1 8DB;

Agreement

1 Thames Water agrees to supply the Report to the Customer and the Client subject to these terms. The scope and limitations of the Report are described in paragraph 2 of these terms. Where the Customer is acting as an agent for the Client then the Customer shall be responsible for bringing these terms to the attention of the Client. The Customer and Client agree that the placing of an Order for a Report indicates their acceptance of these terms.

The Report

2. Whilst Thames Water will use reasonable care and skill in producing the Report, it is provided to the Customer and the Client on the basis that they acknowledge and agree to the following:-

2.1 The information contained in the Report can change on a regular basis so Thames Water cannot be responsible to the Customer and the Client for any change in the information contained in the Report after the date on which the Report was produced and sent to the Client.

2.2 The Report does not give details about the actual state or condition of the Property nor should it be used or taken to indicate or exclude actual suitability or unsuitability of the Property for any particular purpose, or relied upon for determining saleability or value, or used as substitute for any physical investigation or inspection. Further advice and information from appropriate experts and professionals should always be obtained.

2.3 The information contained in the Report is based upon the accuracy, completeness and legibility of the address and other information supplied by the Customer or Client.

2.4 The Report provides information as to the location and connection of existing services and should not be relied on for any other purpose. The Report may contain opinions or general advice to the Customer and the Client and Thames Water cannot ensure that any such opinion or general advice is accurate, complete or valid and accepts no liability therefore.

2.5 The position and depth of apparatus shown on any maps attached to the Report are approximate, and are furnished as a general guide only, and no warranty as to its correctness is given or implied. The exact positions and depths should be obtained by excavation trial holes and the maps must not be relied on in the event of excavation or other works made in the vicinity of apparatus shown on any maps.

Liability

3 Thames Water shall not be liable to the Client for any failure, defect or non-performance of its obligations arising from any failure of, or defect in any machine, processing system or transmission link or anything beyond Thames Water's reasonable control or the acts or omissions of any party for whom Thames Water are not responsible.

3.1 Where the Customer sells this report to a Client (other than in the case of a bona fide legal adviser recharging the cost of the Report as a disbursement) Thames Water shall not in any circumstances (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) be liable for any loss or damage whatsoever and the Customer shall indemnify Thames Water in respect of any claim by the Client.

3.2 Where a report is requested for an address falling within a geographical area where Thames Water and another Company separately provide Water and Sewerage Services, then it shall be deemed that liability for the information given by Thames Water or the Company as the case may be will remain with Thames Water or the Company as the case may be in respect of the accuracy of the information supplied. Where Thames Water is supplying information which has been provided to it by another Company for the purposes outlined in this agreement Thames Water will therefore not be liable in any way for the accuracy of that information and will supply that information as agent for the Company from which the information was obtained.

3.3 Except in respect of death or personal injury caused by negligence, or as expressly provided in these Terms:

3.3.1 The entire liability of Thames Water or the Company as the case may be in respect of all causes of action arising under or in connection with the Report (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) shall not exceed £2,000,000 (two million pounds); and

3.3.2 Thames Water shall not in any circumstances (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) be liable for any loss of profit, loss of goodwill, loss of reputation, loss of business or any indirect, special or consequential loss, damage or other claims, costs or expenses;

Copyright and Confidentiality

4. The Customer and the Client acknowledge that the Report is confidential and is intended for the personal use of the Client. The copyright and any other intellectual property rights in the Report shall remain the property of Thames Water or the Company as the case may be. No intellectual or other property rights are transferred or licensed to the Customer or the Client except to the extent expressly provided

4.1 The Customer or Client is entitled to make copies of the Report but is not permitted to copy any maps contained in, or attached to the Report

4.2 The maps contained in the Report are protected by Crown Copyright and must not be used for any purpose outside the context of the Report.

4.3 The Customer and Client agree (in respect of both the original and any copies made) to respect and not to alter any trademark, copyright notice or other property marking which appears on the Report.

Payment

5. Unless otherwise stated all prices are inclusive of VAT. The Customer shall pay for the price of the Report specified by Thames Water, without any set off, deduction or counterclaim.

5.1 Unless payment has been received in advance, Customers shall be invoiced for the agreed fee once their request has been processed. Any such invoice must be paid within 14 days. Where the Customer has an account with Thames Water, payment terms will be as agreed with Thames Water.

5.2 No payment shall be deemed to have been received until Thames Water has received cleared funds.

5.3 If the Customer fails to pay Thames Water any sum due Thames Water shall be entitled but not obliged to charge the Customer interest on the sum from the due date for payment at the annual rate of 2% above the base lending rate from time to time of Natwest Bank, accruing on a daily basis until payment is made. Thames Water reserves the right to claim interest under the Late Payment of Commercial Debts (Interest) Act 1998.

5.4 Thames Water reserves the right to increase fees on reasonable prior written notice at any time.

Cancellations or Alterations

6. Once an Order is placed, Thames Water shall not be under any obligation to accept any request to cancel that Order and payment for the Order shall still be due upon completion of the Report. In cases where an error has been made in the original Order (e.g. the Customer has supplied an incorrect address), the Customer will need to place a second Order, detailing the correct information, and shall be liable to pay a second charge in accordance with clause 5 above.

Delivery

7. On receiving your order the reports will be posted to you within 10 working days from receipt.

7.1 Delivery is subject to local post conditions and regulations. All items should arrive within 12 working days, but Thames Water cannot be held responsible should delays be caused by local post conditions, postal strikes or other causes beyond the control of Thames Water.

General

8. If any provision of these terms is or becomes invalid or unenforceable, it will be taken to be removed from the rest of these terms to the extent that it is invalid or unenforceable. No other provision of these terms shall be affected.

8.1 These terms shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts.

8.2 Nothing in this notice shall in any way restrict the Customer or Clients statutory or any other rights of access to the information contained in the Report.

These Terms & Conditions are available in larger print for those with impaired vision.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of TWUL until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. TWUL does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL's terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at TWUL's discretion for increased administration costs.

A copy of TWUL's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800.

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the goods or services covered by this invoice falls under the regulation of the Water Industry Act 1991, and you remain dissatisfied you can refer your complaint to CC Water on 0845 039 2837 (it will cost you the same as a local call) or write to them at 11 Belgrave Road, London SW1V 1RB.

Ways to pay your bill

By Post – Cheque only, made payable to 'Thames Water Utilities Ltd' writing your Thames Water account number on the back. Please fill in the payment slip below and send it with your cheque to Thames Water Utilities Ltd., PO Box 223, Swindon SN38 2TW	**By BACS Payment** direct to our bank on account number 90478703, sort code 60-00-01 may be made. A remittance advice must be sent to Thames Water Utilities Ltd., PO Box 223, Swindon SN38 2TW. Or fax to 01793 424599 or email: cashoperations@thameswater.co.uk	**Telephone Banking** By calling your bank and quoting your invoice number and the Thames Water`s bank account number 90478703 and sort code 60-00-01	**By Swift Transfer** You may make your payment via SWIFT by quoting **NWBKGB2L** together with our bank account number 90478703, sort code 60-00-01 and invoice number

Appendix G

Estimated Greenfield Runoff Calculations

Greenfield runoff rate estimation tool

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

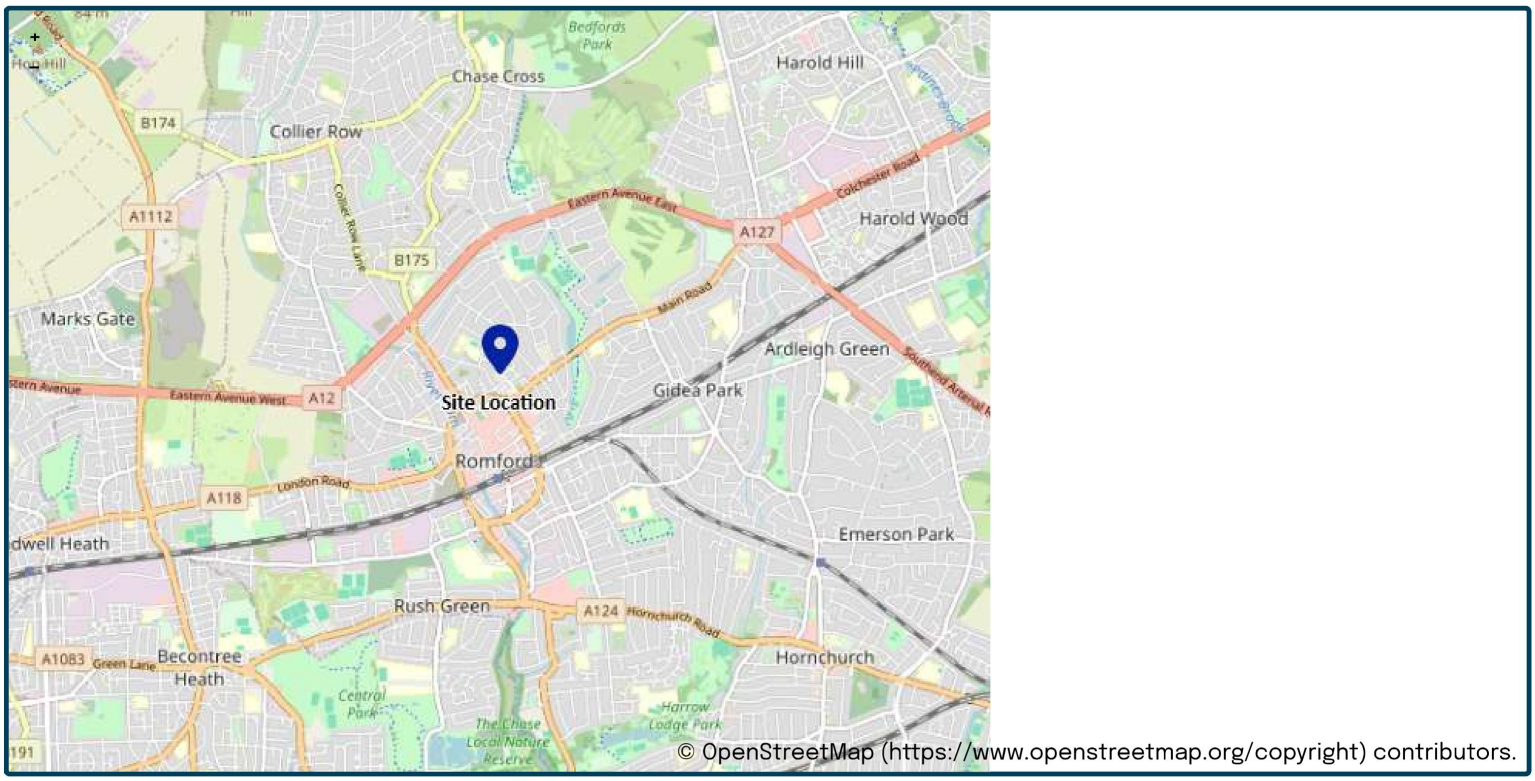
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	15/09/2026
Calculated by	S. ALLEN
Reference	63926
Model version	2.2.3

Location

Site name	1 Park Lane
Site location	Romford



Site easting (British National Grid)	551338
Site northing (British National Grid)	189134

Site details

Total site area (ha)	.079 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	575 mm		575
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		4
SPR	0.47		
QBar (IH124) (l/s)	0.3 l/s		

Growth curve factors

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

Results

Method	IH124
Flow rate 1 year (l/s)	0.3 l/s
Flow rate 2 year (l/s)	0.3 l/s
Flow rate 10 years (l/s)	0.5 l/s
Flow rate 30 years (l/s)	0.7 l/s
Flow rate 100 years (l/s)	1.0 l/s
Flow rate 200 years (l/s)	1.1 l/s

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

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Appendix H

Preliminary Surface Water Storage Calculations

Simulation Settings

Rainfall Methodology	FSR	Winter CV	1.000	Check Discharge Rate(s)	✓
Rainfall Events	Singular	Analysis Speed	Normal	1 year (l/s)	0.3
FSR Region	England and Wales	Skip Steady State	x	30 year (l/s)	0.7
M5-60 (mm)	20.000	Drain Down Time (mins)	1440	100 year (l/s)	1.0
Ratio-R	0.400	Additional Storage (m³/ha)	0.0	Check Discharge Volume	✓
Summer CV	1.000	Starting Level (m)		100 year 360 minute (m³)	20

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

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

Pre-development Discharge Rate

Site Makeup	Greenfield	SPR	0.47	Betterment (%)	0
Greenfield Method	IH124	Region	6	QBar	0.3
Positively Drained Area (ha)	0.079	Growth Factor 1 year	0.85	Q 1 year (l/s)	
SAAR (mm)	575	Growth Factor 30 year	1.95	Q 30 year (l/s)	
Soil Index	4	Growth Factor 100 year	2.48	Q 100 year (l/s)	

Pre-development Discharge Volume

Site Makeup	Greenfield	SPR	0.47	Storm Duration (mins)	360
Greenfield Method	FSR/FEH	CWI	86.667	Betterment (%)	0
Positively Drained Area (ha)	0.079	Return Period (years)	100	PR	0.414
Soil Index	4	Climate Change (%)	0	Runoff Volume (m³)	20

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
STORAGE	0.055	21.000	1200	551337.444	189146.476	1.300	19.700

Node STORAGE Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	19.700	Product Number	CTL-SHE-0045-1000-1200-1000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	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)	19.700
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	292

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	27.0	0.0	0.400	27.0	0.0	0.800	27.0	0.0
0.200	27.0	0.0	0.600	27.0	0.0	0.801	0.0	0.0

Node STORAGE Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	20.420
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.35	Time to half empty (mins)	116

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Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	75.0	0.0	0.300	75.0	0.0	0.500	75.0	0.0
0.150	75.0	0.0	0.450	75.0	0.0	0.501	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	109.521	30.991	1 year 7200 minute summer	1.609	0.410
1 year 15 minute winter	76.857	30.991	1 year 7200 minute winter	1.038	0.410
1 year 30 minute summer	71.439	20.215	1 year 8640 minute summer	1.409	0.359
1 year 30 minute winter	50.133	20.215	1 year 8640 minute winter	0.910	0.359
1 year 60 minute summer	48.435	12.800	1 year 10080 minute summer	1.260	0.322
1 year 60 minute winter	32.179	12.800	1 year 10080 minute winter	0.813	0.322
1 year 120 minute summer	30.053	7.942	30 year 15 minute summer	268.706	76.035
1 year 120 minute winter	19.966	7.942	30 year 15 minute winter	188.566	76.035
1 year 180 minute summer	23.233	5.979	30 year 30 minute summer	174.929	49.499
1 year 180 minute winter	15.102	5.979	30 year 30 minute winter	122.757	49.499
1 year 240 minute summer	18.475	4.882	30 year 60 minute summer	116.589	30.811
1 year 240 minute winter	12.274	4.882	30 year 60 minute winter	77.459	30.811
1 year 360 minute summer	14.169	3.646	30 year 120 minute summer	70.438	18.615
1 year 360 minute winter	9.210	3.646	30 year 120 minute winter	46.797	18.615
1 year 480 minute summer	11.185	2.956	30 year 180 minute summer	53.298	13.715
1 year 480 minute winter	7.431	2.956	30 year 180 minute winter	34.645	13.715
1 year 600 minute summer	9.182	2.511	30 year 240 minute summer	41.604	10.995
1 year 600 minute winter	6.274	2.511	30 year 240 minute winter	27.641	10.995
1 year 720 minute summer	8.203	2.199	30 year 360 minute summer	31.221	8.034
1 year 720 minute winter	5.513	2.199	30 year 360 minute winter	20.295	8.034
1 year 960 minute summer	6.768	1.782	30 year 480 minute summer	24.324	6.428
1 year 960 minute winter	4.483	1.782	30 year 480 minute winter	16.160	6.428
1 year 1440 minute summer	4.949	1.326	30 year 600 minute summer	19.756	5.404
1 year 1440 minute winter	3.326	1.326	30 year 600 minute winter	13.498	5.404
1 year 2160 minute summer	3.574	0.988	30 year 720 minute summer	17.490	4.687
1 year 2160 minute winter	2.462	0.988	30 year 720 minute winter	11.754	4.687
1 year 2880 minute summer	2.986	0.800	30 year 960 minute summer	14.215	3.743
1 year 2880 minute winter	2.007	0.800	30 year 960 minute winter	9.416	3.743
1 year 4320 minute summer	2.276	0.595	30 year 1440 minute summer	10.161	2.723
1 year 4320 minute winter	1.499	0.595	30 year 1440 minute winter	6.829	2.723
1 year 5760 minute summer	1.885	0.483	30 year 2160 minute summer	7.160	1.979
1 year 5760 minute winter	1.220	0.483	30 year 2160 minute winter	4.933	1.979

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 2880 minute summer	5.883	1.577
30 year 2880 minute winter	3.953	1.577
30 year 4320 minute summer	4.374	1.143
30 year 4320 minute winter	2.880	1.143
30 year 5760 minute summer	3.554	0.910
30 year 5760 minute winter	2.301	0.910
30 year 7200 minute summer	2.987	0.762
30 year 7200 minute winter	1.928	0.762
30 year 8640 minute summer	2.583	0.659
30 year 8640 minute winter	1.667	0.659
30 year 10080 minute summer	2.284	0.583
30 year 10080 minute winter	1.474	0.583
100 year +40% CC 15 minute summer	488.233	138.153
100 year +40% CC 15 minute winter	342.620	138.153
100 year +40% CC 30 minute summer	320.551	90.705
100 year +40% CC 30 minute winter	224.948	90.705
100 year +40% CC 60 minute summer	214.603	56.713
100 year +40% CC 60 minute winter	142.577	56.713
100 year +40% CC 120 minute summer	129.587	34.246
100 year +40% CC 120 minute winter	86.094	34.246
100 year +40% CC 180 minute summer	97.729	25.149
100 year +40% CC 180 minute winter	63.526	25.149
100 year +40% CC 240 minute summer	75.977	20.078
100 year +40% CC 240 minute winter	50.477	20.078
100 year +40% CC 360 minute summer	56.677	14.585
100 year +40% CC 360 minute winter	36.841	14.585
100 year +40% CC 480 minute summer	43.979	11.622
100 year +40% CC 480 minute winter	29.219	11.622
100 year +40% CC 600 minute summer	35.604	9.738
100 year +40% CC 600 minute winter	24.327	9.738
100 year +40% CC 720 minute summer	31.433	8.424
100 year +40% CC 720 minute winter	21.125	8.424
100 year +40% CC 960 minute summer	25.432	6.697
100 year +40% CC 960 minute winter	16.847	6.697
100 year +40% CC 1440 minute summer	18.055	4.839
100 year +40% CC 1440 minute winter	12.134	4.839
100 year +40% CC 2160 minute summer	12.630	3.490
100 year +40% CC 2160 minute winter	8.702	3.490
100 year +40% CC 2880 minute summer	10.319	2.766
100 year +40% CC 2880 minute winter	6.935	2.766
100 year +40% CC 4320 minute summer	7.609	1.989
100 year +40% CC 4320 minute winter	5.011	1.989
100 year +40% CC 5760 minute summer	6.145	1.573
100 year +40% CC 5760 minute winter	3.978	1.573
100 year +40% CC 7200 minute summer	5.137	1.311
100 year +40% CC 7200 minute winter	3.316	1.311
100 year +40% CC 8640 minute summer	4.424	1.129
100 year +40% CC 8640 minute winter	2.855	1.129
100 year +40% CC 10080 minute summer	3.897	0.994
100 year +40% CC 10080 minute winter	2.515	0.994

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Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	STORAGE	90	19.908	0.208	4.4	5.5574	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
120 minute summer	STORAGE	Hydro-Brake®	0.7	8.8

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	STORAGE	176	20.310	0.610	5.2	16.3344	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	STORAGE	Hydro-Brake®	0.7	22.6

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	STORAGE	232	20.866	1.166	7.7	33.5708	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	STORAGE	Hydro-Brake®	1.0	44.2

Water Quality (TSS)

Node	Treatment	Effectiveness	SuDS Component	Mitigation TSS	Cumulative TSS
STORAGE	Depth/Area	1.0	Pond	0.700	
	Depth/Area	1.0	Pond	0.700	0.000

Water Quality (Metals)

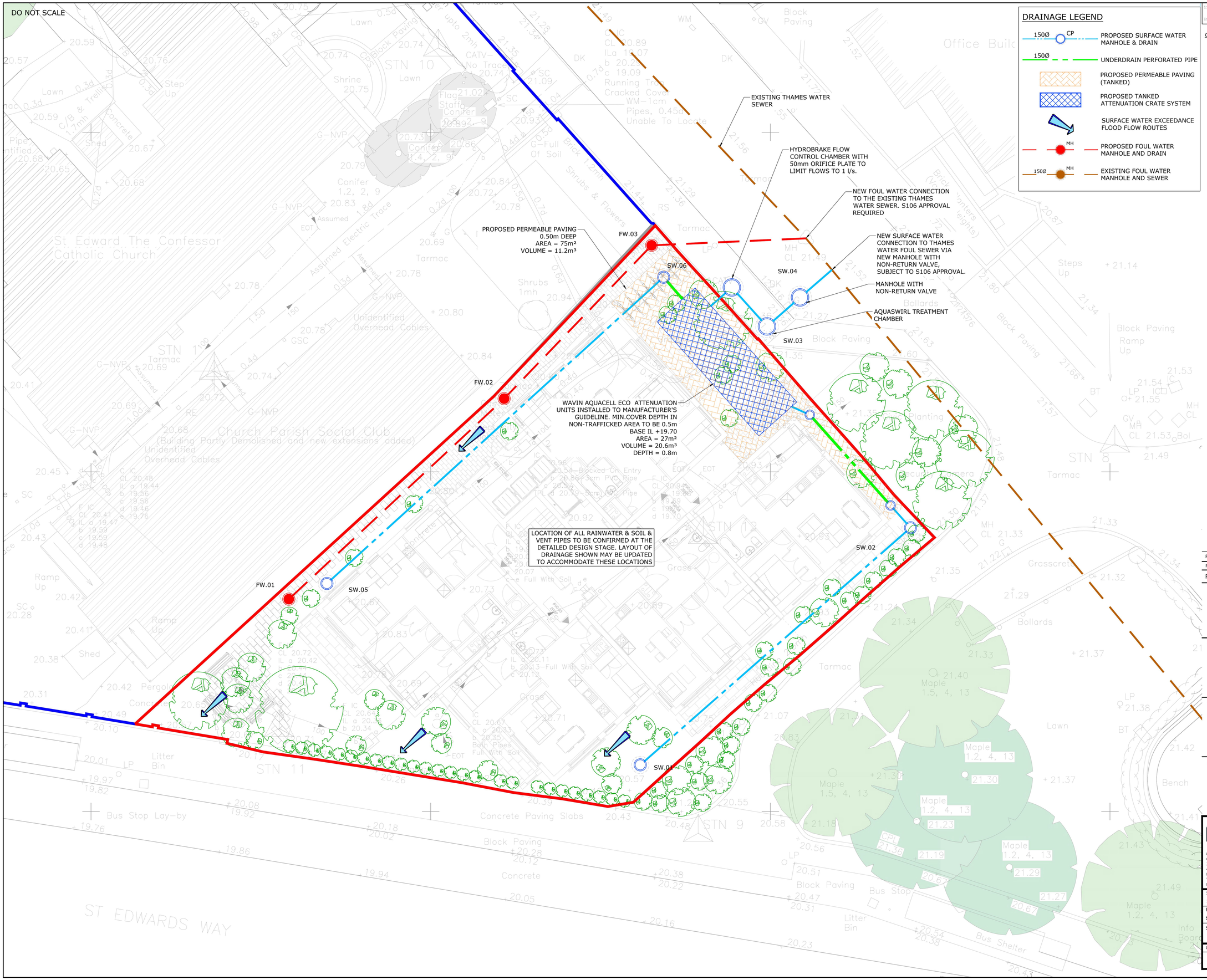
Node	Treatment	Effectiveness	SuDS Component	Mitigation Metals	Cumulative Metals
STORAGE	Depth/Area	1.0	Pond	0.700	
	Depth/Area	1.0	Pond	0.700	0.000

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Appendix I

Foul & Surface Water Drainage Strategy

DO NOT SCALE



DRAINAGE LEGEND

- 150Ø CP — PROPOSED SURFACE WATER MANHOLE & DRAIN
- 150Ø — UNDERDRAIN PERFORATED PIPE
- PROPOSED PERMEABLE PAVING (TANKED)
- PROPOSED TANKED ATTENUATION CRATE SYSTEM
- SURFACE WATER EXCEEDANCE FLOOD FLOW ROUTES
- MH — PROPOSED FOUL WATER MANHOLE AND DRAIN
- 150Ø MH — EXISTING FOUL WATER MANHOLE AND SEWER

1:100 0 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATION AND RELATED DRAWINGS ISSUED BY THE ENGINEER AND OTHER CONSULTANT'S DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING. WORK TO FIGURED DIMENSION ONLY WHERE SHOWN.
3. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN MILLIMETRES (mm)
4. ALL DIMENSIONS, LEVELS AND SURVEY CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO UNDERTAKING THE WORKS.
5. NO DEVIATION FROM ANY DETAILS WHERE SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PRIOR PERMISSION FROM THE ENGINEER.
6. BACKFILL SHOULD BE PLACED IN LAYERS NOT EXCEEDING 300mm (UNCOMPACTED THICKNESS), EACH LAYER BEING WELL-COMPACTED. MECHANICAL COMPACTION EQUIPMENT SHOULD NOT BE USED UNTIL THERE IS A MINIMUM OF 450mm OF COMPACTED MATERIAL ABOVE THE CROWN OF THE PIPE.
7. THESE DRAINAGE PROPOSALS ARE BASED ON THE GROUND FLOOR PLAN PRODUCED BY ATELIER-SM ARCHITECTS, REF: A-24284-P-00-200.
8. THIS DRAWING IS BASED ON THE TOPOGRAPHICAL SURVEY PRODUCED BY TEXO DSI, REF: TX1112_ParkEnd_T_01_R2, DATED 14/01/2022.
9. THE SURFACE WATER INFORMATION SHOWN ON THIS PLAN IS SUBJECT TO FURTHER HYDRAULIC MODELING DURING THE DETAIL DESIGN STAGE TO ESTABLISH THE PEAK WATER LEVELS ASSOCIATED WITH THE 1% AEP + CC RAINFALL EVENT.
10. ALL MANHOLES, PIPE SIZES, LEVELS AND GRADIENTS SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND SUBJECT TO DETAILED MODELING.

ONLY DRAWINGS MARKED 'A4 - AUTHORISED & ACCEPTED FOR CONSTRUCTION' ARE TO BE USED FOR CONSTRUCTION. DRAWINGS WITH OTHER STATUS CODES (e.g. S0, S1) ARE FOR INFORMATION OR COORDINATION ONLY AND ARE NOT APPROVED FOR CONSTRUCTION. IF THE CONTRACTOR BUILDS FROM PRELIMINARY DRAWINGS, THEY DO SO AT THEIR OWN RISK, AND NO LIABILITY WILL BE ACCEPTED BY RJL FOR RESULTING ERRORS.

REV	DATE	DESCRIPTION	DRAWN	CHKD
P01	16.09.26	PRELIMINARY ISSUE	SJA	LJG

REVISIONS

This drawing is to be read in conjunction with all other Engineer's drawings and all other project information. Any discrepancy between the Engineer's drawings and other project information is to be reported to the Engineer immediately.

Project

1 PARK END ROAD

Title

FOUL & SURFACE WATER DRAINAGE STRATEGY

Client

STEVE MARGETT

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Scale	Drawn	Date	RJL Project No :
1:100 @ A1	SJA	11/09/26	63926
Project Manager	Checked	Approved	Security Code
SJA	LJG	LJG	ST4

Status S2 — Suitability Description: FOR INFORMATION (PRELIMINARY)

Drawing Number							Revision
63926	RJL	00	XX	DR	C	1000	P01

A1

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Appendix J

AquaSwirl Literature & Mitigation Indices

SDS
Water Infrastructure Systems

SDS Aqua-Swirl™

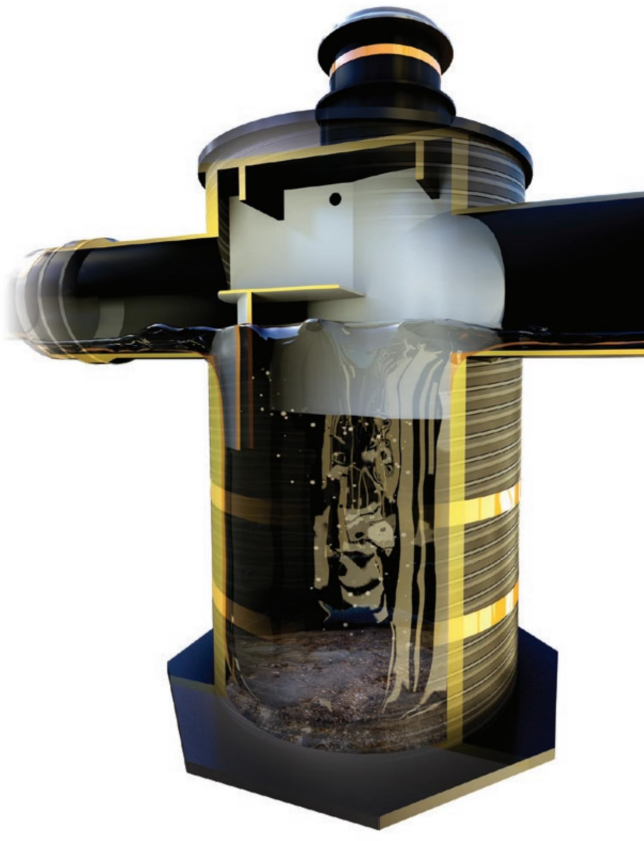
Hydrodynamic Vortex Separator

SDS Aqua-Swirl™ is a custom engineered, flow through water quality device that utilises hydrodynamic separation technology to maximise the removal of sediment, debris and free floating oil within surface water runoff.

SYMBiotIC™

When connected to a SDS SYMBiotIC™ system, SDS Aqua-Swirl™ provides real time data on a broad range of key operating factors such as pollutant loads and silt capture level.

- *BBA HAPAS approved*
- *HDPE plastic construction*
- *No moving parts*
- *Sealed baffle*
- *Large debris storage chamber*
- *Lifting supports*
- *Compact dimensions*
- *Available in 9 different sizes*
- *Bespoke sizing available*



SDS Aqua-Swirl™ is sized according to water quality treatment flow rates which are based on the initial movement of pollutants into the storm drainage system. This flow rate typically represents approximately 90% to 95% of the total pollutants in the runoff volume.

The treatment flow rate of the SDS Aqua-Swirl™ system is engineered to meet or exceed the local water quality treatment criteria and form an intrinsic part of the SuDS solution train.

sdslimited.com

SDS Ltd, Clearwater House, Castlemills, Biddisham, Somerset, BS26 2RE

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Features	Benefits
Available with performance monitoring via SDS SYMBiotIC™.	Provides bespoke suite of operating data, such as silt levels and pollutants, viewable via a secure web portal dashboard with live notifications via email and text.
BBA HAPAS certified.	Approved for installation under roads and pavements; adoptable by the Highways Agency.
Manufactured from HDPE high strength plastic Weholite.	Offers a durable, light weight and low cost alternative to concrete. Easy and quick to install resulting in substantial cost savings.
Specialised sealed baffle.	Delivers the most effective performance of any vortex separator.
Internal bypass with pollution retention.	Able to treat localised rain and larger storm events while retaining captured pollutants.
NJDEP verified performance.	Verification accepted by UK Government environmental regulators (as cited in the CIRIA C753 SuDS Manual).
Single swirl chamber.	Simplifies inspection and maintenance facilities with no special equipment required.
Compact dimensions.	Reduces ground excavation and product installation costs.
Small footprint design.	Can be retro-fitted with minimal disruption to existing infrastructure utilities or surface features, extending the ability to meet new regulations.
Certified installation lifting supports.	Easy installation without the need for large, expensive cranes.
Suitable for use during site construction programme.	Can be put into operation prior to completion of the site build, with the inclusion of a planned maintenance schedule.
Available in 9 different standard sizes and also bespoke.	Provides greater design flexibility and assists the removal of sediments at a greater rate than comparable systems.

SPECIFICATIONS

SDS Aqua-Swirl™ Model No.	Maximum ID pipe connection (mm) BYP[1]	Chamber Internal Diameter (mm)	Water Quality Treatment Flow Rate NJDEP (l/s) Fine	Water Quality Treatment Flow Rate (l/s) OK110 Coarse	Oil/debris storage capacity litres	Sediment storage capacity m^3	Aqua-Swirl™ Weight kg
AS-2	375	750	16	30	136	0.3	300
AS-3	500	1050	31	53	416	0.6	700
AS-4	600	1200	40	77	644	0.8	1000
AS-5	750	1500	63	120	1382	1.3	1100
AS-6	900	1800	91	173	1439	1.8	1400
AS-7	1050	2100	123	235	1987	2.5	1700
AS-8	1200	2400	161	307	2612	3.3	2200
AS-9	1350	2800	220	418	3596	4.4	2600
AS-10	1500	3000	252	480	4164	5.1	3100

[1]BYP (Internal Bypass) provides full treatment of the first flush of water while the peak design storm is diverted and channelled through the main conveyance pipe.

Notes:
Details of pollution mitigation indices, head loss and CAD details, standard drawings and Installation Guides available upon request.
The sediment storage capacity has been calculated in accordance with the relevant test protocol and is not a physical maximum; any additional sediment capacity required is achieved with bespoke deeper units.
For assistance in design and specific sizing using historical rainfall data, please contact SDS.

A-S DS/0819

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SDS Limited mitigation indices for stormwater treatment devices November 2018

The pollution mitigation indices are as follows:

Device	Total suspended solids mitigation index	Total metals mitigation index	Soluble metals mitigation index[1]	Hydrocarbons[3]
Aqua-swirl™ vortex grit separator	0.8 (0.5 on trunk roads and motorways where the suspended solids level is very high)	0.5[4]	The Aquaswirl™ is not designed to remove soluble pollutants	0.7[3]
Aqua-filter™ stormwater filtration unit	0.8	0.8	0.6	0.7[3]
Aqua-swirl™ and Aqua-filter™ in sequence	1.2[2]	0.9	0.6	1.0[2,3]
Aqua-Xchange™	0.8 when installed as a layer in a filter drain	0.9	1.0	0.6 when installed as a layer in a filter drain

These indices can only be assumed when the treatment device is properly sized for the anticipated rate of runoff and the level of pollution in the runoff is not unusually high.

[1] When drainage schemes are designed for road developments in accordance with the Design Manual for Roads and Bridges, the mitigation index for soluble metals is required because particulate metals are considered separately in the total suspended solids assessment

[2] When designing in accordance with the SuDS Manual (Ciria C753), when two devices are used in sequence to target the same pollutant, half of the mitigation index of the second component should be allowed in the calculation.

[3] The test procedures applied to manufactured treatment devices do not include measurement of hydrocarbon removal. Therefore, we have estimated that the Aqua-swirl™ removes free-phase hydrocarbons by flotation, and also removes hydrocarbons that are adhered to suspended solids. However, hydrocarbons are known to preferentially adhere to the smaller particles so the Aqua-filter™ will also remove a high proportion of those hydrocarbons as it is more effective at removing smaller suspended particles.

[4] Where metals are present in the runoff in particulate form, particularly from vehicle emissions, the Aqua-swirl™ will effectively remove those particles in admixture with other suspended solids.

Appendix K

Drainage Maintenance & Management Schedule

RichardJackson Engineering Consultants

SUDS Feature	Regular Maintenance Activity	Frequency	Occasional Maintenance Activity	Frequency	Responsibility
Pipes and Manholes	• Visual inspection to check for debris and blockages. • Clean inlets and outlets	Monthly or as required	• Cleaning/jetting to remove sediment build-up • Remove litter and debris • Check for pipework degradation and structural condition	Annually or as required	Owner/Maintenance company
Gullies	• Visual inspection to check for debris and blockages	Monthly or as required	• Cleaning/jetting to remove sediment build-up • Remove litter and debris • Check for pipework degradation and structural condition	Annually or as required	Owner/Maintenance company
Control Structures	• Inspect control structures for blockages to inlets/outlets and remove blockage if found	Monthly or as required	• Maintenance in accordance with manufacturers recommendations	Annually or as required	Owner/Maintenance Company
Permeable Paving and attenuation structures	• Visual Inspection • Regular checks for organic debris • Monitor for standing water after heavy or sustained periods of rainfall • Clean inlets/outlets, manholes, silt pit and associated pipework to attenuation structure	Monthly or as required	• Remove debris and sweep away from surface • Remove organic growth from between joints • Clean clogged joints if ponding occur using a mechanical sweeper or vacuum to remove any detritus. Remediate joints with similar jointing sand to the original.	Annually or as required	Owner/Maintenance Company
Headwalls & outlet	• Visual inspection to ensure outlets are free from debris and blockages		• Inspect for signs of erosion around the base and repair as necessary. • Check outlets for blockages and remove any build-up • Prune vegetation and trim any trees to prevent obstruction of water flow	Annually or as required	Owner/Maintenance Company

NOTE:

All maintenance activities must be documented to ensure the long-term functionality of the drainage system. This is to be recorded on the construction & inspection drainage checklist provided or similar version developed by the owner/maintenance company. Health & safety must always be paramount if access arrangement to one or more of these structures is required during the maintenance process. Only qualified and competent persons are to undertake such tasks if required.

Title:	DRAINAGE MAINTENANCE SCHEDULE
Project:	1 Park End Road
Client:	1 Park End Limited
Project No.:	63926



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