

Sustainable Drainage Assessment

Discharge to Watercourse

The proposed Sustainable Drainage Scheme (SuDS) strategy is comprised of a rainwater harvesting butt and detention basin to attenuate surface water runoff during the 1 in 100 plus 40% climate change event.

Surface water will be discharged into the Fray's River, subject to the necessary approvals from the Environment Agency and confirmation of a suitable discharge route.

Report prepared for

ET Planning

Site Address

**Land adjacent to 38 Benbow Way
Cowley
Uxbridge
UB8 2EY**

Date

04/09/2026

Site Area

2,280 m²

Grid Reference

505020, 181800

Report Status

FINAL

Report Reference

93099R1



 **SuDSmart Plus**

Version Control

Report Version	Date	Report Author	Report Checker	Report Reviewer
93099R1	04/09/2026	Annabel Elleray Senior Hydrogeology Consultant	Toby Kay Project Consultant	Bob Sargent Associate

1. Executive summary

This report assesses the feasibility of a range of Sustainable Drainage Scheme (SuDS) options in support of the Site development process. A SuDS strategy is proposed to ensure surface water runoff can be managed effectively over the lifetime of the development.

SuDS suitability

Risk	Issue	Result
Runoff destination feasibility	Priority 1: rainwater collected for non-potable use	Yes
	Priority 2: infiltration to ground	Low*
	Priority 3: discharge to an above ground surface water body	High
	Priority 4: discharge to surface water sewer	Low
	Priority 5: discharge to combined sewer	Low
Flooding	What is the river (fluvial) and/or tidal flood risk at the Site?	Very Low
	What is the surface water (pluvial) flood risk at the Site?	Very Low to Medium
	What is the groundwater flood risk at the Site?	Moderate
Pollution	Is the groundwater a protected resource?	No
	Is the surface water feature a protected resource?	No

*Whilst SD50 screening data suggests there is a Moderate infiltration potential across the Site, further analysis suggests the infiltration potential is likely to be constrained by the presence of shallow groundwater.

Summary of existing and proposed development

Until recently, the Site comprised generally undeveloped land. An access track and storage area was present in the north-eastern corner of the Site, with several buildings located along the eastern and western boundaries.

Development proposals comprise the construction of a new single-storey dwelling at the Site, as well as the conversion of an existing outbuilding to form a potting shed. It is assumed that all other features of the Site will be retained. Site plans and drawings are provided in Appendix A.

The dwelling is understood to have been partially been built, with this report supporting a part-retrospective application for the development.

National Standard 1: Runoff Destinations

Priority 1: collection for non-potable use

In line with DEFRA's national guidance, the potential for the collection of rainwater for non-potable use across the proposed development has been considered.

Rainwater harvesting butts are proposed at the base of the downpipes of the development in order to provide rainwater re-use potential at the Site, as well as to provide biodiversity and amenity benefits. Captured water will be used to water vegetation and ensure their long-term viability as sustainable amenity features. Due to the limited storage capacity and requirement to retain captured rainwater for non-potable use, the volume of runoff which could be attenuated has not been considered within the report.

Priority 2: infiltration to ground

GeoSmart's SuDS Infiltration Potential (SD50) map indicates that the Site has a Moderate potential for infiltration, primarily due to the anticipated variable permeability of the underlying geology (Alluvium). However, shallow groundwater is likely to be a concern at the Site, with LiDAR elevation data suggesting the water table could be c. 1 to 1.5 m from the ground surface. Infiltration to ground is therefore unlikely to be feasible.

Priority 3: discharge to above ground surface water body

Ordnance Survey (OS) mapping indicates that surface water features (primary and secondary channels associated with the Fray's River) are located c. 25 m west and south of the Site. Given these channels are located within close proximity of the Site, discharging runoff into a surface watercourse is deemed feasible; the exact discharge destination should be confirmed following determination of the most appropriate route for pipework.

Priority 4: discharge to surface water sewer

The asset location plan included in Appendix C confirms that there are no public surface water sewers within the vicinity of the Site that could feasibly be discharged to. As such, discharge to surface water sewer is not considered to be feasible.

Priority 5: discharge to combined sewer

The asset location plan included in Appendix C confirms that there are no public combined sewers within the vicinity of the Site that could feasibly be discharged to. As such, discharge to combined sewer is not considered to be feasible.

Runoff rate and attenuation requirements

Discharging off-Site requires 8.75 m³ of attenuation to be provided to ensure there is no flooding within the development in all storm events up to and including the 1 in 100 year including a 40% allowance for climate change. This volume is subject to the discharge rate being restricted to 1 l/s (as close to the Greenfield 1 in 1 year rate as possible, without increasing the potential for blockages).

Proposed SuDS strategy

SuDS features comprised of a rainwater harvesting butt and detention basin are proposed to attenuate a minimum of 9.00 m³ of surface water runoff. The SuDS features would provide amenity, biodiversity and water quality benefits (interception and filtration) prior to discharge into the Fray's River.

The proposed SuDS strategy would ensure surface water runoff is stored on-Site in SuDS features for the 1 in 100 year event including a 40% allowance for climate change and will not cause flooding to the proposed development in accordance with DEFRA's national standards for SuDS (2025).

Amenity and biodiversity

The inclusion of a detention basin would provide biodiversity and amenity benefits to the proposed development, providing an area where native vegetation can be planted. The rainwater harvesting butts will capture water that can be used to maintain vegetation and ensure their long-term viability as amenity features.

SuDS & drainage network maintenance

The management and maintenance of the SuDS features, in line with the details and schedules outlined in Section 10 of this report, will be undertaken by contractors appointed by the owners and occupiers of the new residential building.

Recommendations / Next steps

The condition and capacity of the Fray's River should be confirmed and permission should be obtained from the Environment Agency for proposed outfalls and any other permits required. The most appropriate route for pipework should also be confirmed.

2. Proposed SuDS strategy

The most suitable SuDS options are outlined below, and a SuDS strategy schematic is shown overleaf. Supporting information is provided in subsequent sections.

The SuDS strategy has been restricted to the proposed dwelling, with the remainder of the Site presumed to utilise the existing drainage arrangements. Any new areas of driveway should utilise permeable surfacing to avoid increasing the proportion of impermeable areas at the Site.

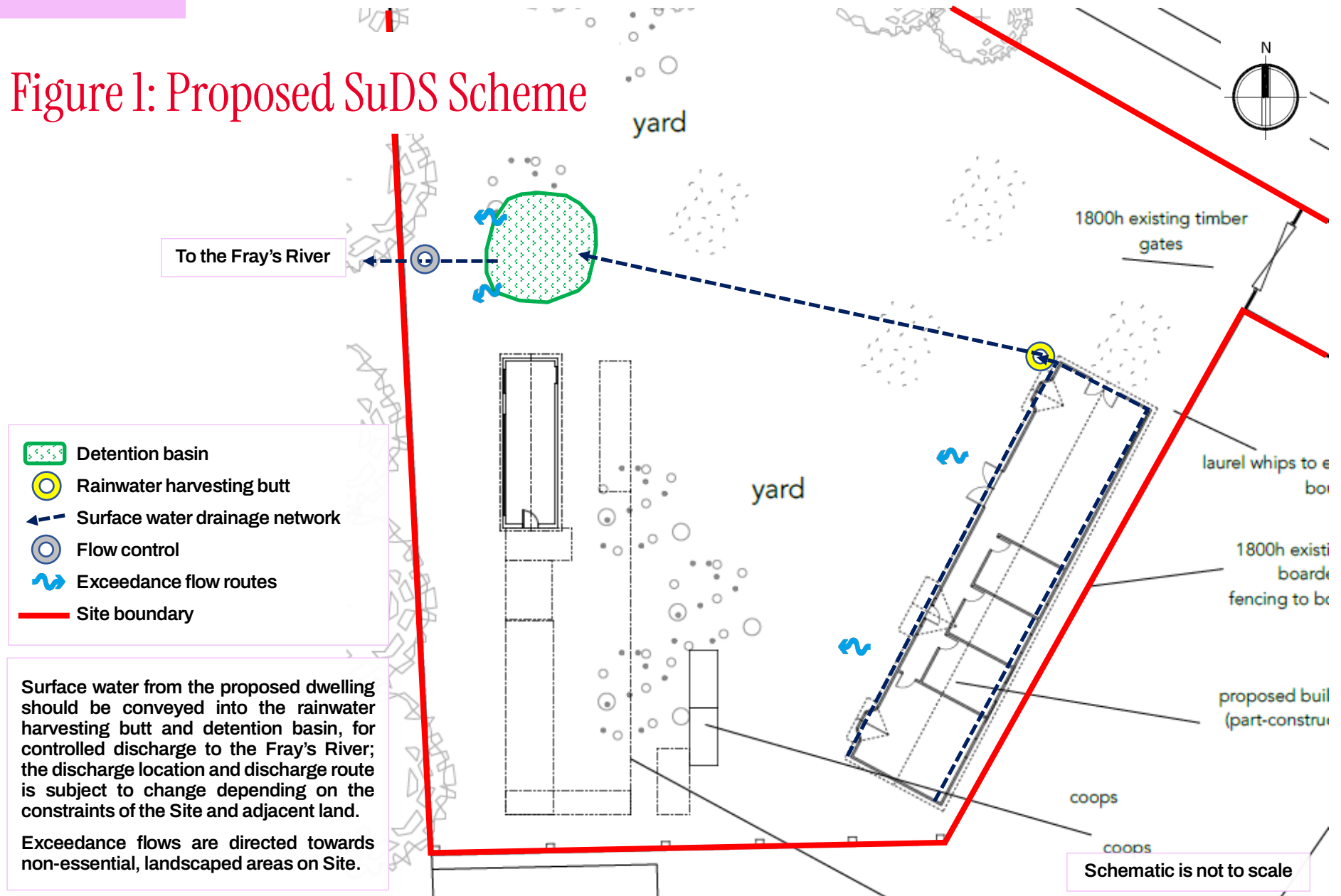
Table 1. Proposed SuDS type, features, discharge location and rate restriction

SuDS type	Source control (interception) and attenuation SuDS.
SuDS features	Rainwater harvesting butts and detention basin.
Discharge location	Surface water feature.
Discharge rate	1 l/s (as close to the Greenfield 1 in 1 year rate as possible, without increasing the risk of blockage).

Table 2. Proposed SuDS sizing (dimensions) and attenuation volumes

Rainwater harvesting	To comply with DEFRA's national standards for SuDS (2025), rainwater harvesting butts should be established for the proposed development. In terms of attenuation storage within this SuDS scheme, the volume of run-off which could be attenuated by rainwater harvesting has not been considered within the preliminary SuDS strategy.
Detention basin	A detention basin should be incorporated into the development to provide the required attenuation. For example, a basin with an area of c. 9 m ² and average depth of 1 m would provide c. 9 m ³ attenuation. The basin should be lined at the base to prevent groundwater ingress, and could be left with some water at the base to act as a pond. Where a basin is considered unfeasible, a tank could be considered as an alternative attenuation feature.
Total attenuation provided	9.00 m ³
Total attenuation required	8.75 m ³
Freeboard storage provided	0.25 m ³

Figure 1: Proposed SuDS Scheme



3. National & local policy context

National Guidance

DEFRA – National standards for sustainable drainage systems (SuDS) (2025)

Standard 1: runoff destinations

A ‘SuDS approach’ shall be adopted to address the management of surface water by the development and where it should be discharged. Runoff shall be treated as a resource and managed in a way that avoids negative impacts of the development on flood risk, the morphology and water quality of receiving waters and the associated ecology.

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

- priority 1: collected for non-potable use
- priority 2: infiltrated to ground
- priority 3: discharged to an above ground surface water body
- priority 4: discharged to a surface water sewer, or another piped surface water drainage system
- priority 5: discharged to a combined sewer

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

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

To utilise a lesser priority final destination, appropriate evidence shall be provided that demonstrates all higher priority final destinations have been utilised to the maximum extent practicable. Higher cost alone shall not be a reason to utilise lower priority final destinations.

Where more than one final destination is utilised, each final destination’s ability to accept runoff shall be maximised in order of priority.

Standard 2: management of everyday rainfall (interception)

Apply a ‘SuDS approach’ so that at least the first 5mm of rainfall for the majority of rainfall events does not result in runoff from the site to surface waters or piped drainage systems.

Evidence shall be provided that the approach to managing runoff from ‘everyday’ rainfall has been developed alongside and in support of the management of runoff quality (standard 4) and the delivery of amenity and biodiversity benefits (standards 5 and 6).

Standard 3: management of extreme rainfall and flooding

A 'SuDS approach' shall be adopted to address the management of development runoff during extreme rainfall, including allowances for climate change and urban creep to:

- protect people and property on the development from flooding of the surface water drainage system
- mitigate any increased flood risk to people and property adjacent to or downstream of the development
- protect the receiving water body from morphological damage or minimise the impact on sewer capacity

When discharging to an infiltration feature, the system shall be appropriately sized to accommodate the design event based on ground conditions and contributing areas.

When discharging to an above ground surface water body, sewer or other piped drainage system, the surface water runoff (rate and volume) for the 1% annual exceedance probability (AEP) event shall be controlled to ensure the runoff from the development does not increase flood risk elsewhere.

When discharging to an above ground surface water body, sewer or other piped drainage system, the surface water runoff rate for the 50% AEP event shall be controlled to ensure development runoff from an event of this magnitude has no negative impact.

Any flooding from the surface water drainage system for events up to the 1% AEP event shall be managed within the development.

Any flooding from off-site sources for the 1% AEP event should be managed on site or safely routed through the site, ensuring any downstream risks are not increased compared to the pre-development scenario.

The risks (both on and off the development) associated with flooding from the surface water drainage system for exceedance events greater than the 1% AEP event shall be appropriately managed.

Standard 4: water quality

Apply a 'SuDS approach' that protects surface waters, groundwater and coastal waters by managing the quality of the surface water runoff to adequately address water quality risks from the development.

The proposed SuDS management train(s) shall be based on a robust water quality risk assessment, appropriate to the pollution hazard and sensitivity of receiving waters, reflecting industry recognised guidance or other quantitative assessment as agreed with the approving body and permitting requirements.

Standard 5: amenity

A 'SuDS approach' shall be adopted that maximises benefits for amenity through the creation of multi-functional places and landscapes.

Standard 6: biodiversity

A 'SuDS approach' shall be adopted to ensure the surface water drainage system maximises biodiversity benefits throughout the development lifecycle.

The surface water drainage system shall add biodiversity value by:

- creating diverse, self-sustaining, resilient local ecosystems which contribute to net gains in biodiversity
- supporting and promoting natural local habitat and species, for example, through local nature recovery strategies (LNRS)
- contributing to the delivery of local biodiversity strategies
- contributing to habitat connectivity

Standard 7: design of drainage for construction, operation, maintenance, decommissioning and structural integrity

A 'SuDS approach' shall be adopted to ensure that surface water drainage systems are designed so they can be easily and safely constructed, operated and maintained taking account of the need to minimise negative impacts on natural resources and the environment.

The designer shall provide a management and maintenance plan that supports the design objectives detailed in standards 1 to 6 and ensures the performance of the surface water drainage system with regards to runoff destinations, everyday and extreme rainfall, water quality, amenity and biodiversity is maintained throughout the lifetime of the development.

Surface water drainage design shall examine for the likelihood and consequences of potential failure scenarios that may occur during the operation phase and safely manage the associated risks.

The surface water drainage system shall be designed to ensure structural integrity of all components under anticipated loading conditions for the design life of the development so that it does not affect the structural integrity of any existing or proposed components within, or adjacent to, the development.

Urban creep

Within developments an urban creep uplift factor shall be applied by adding a percentage increase to the calculated area of the impermeable area within the property curtilages. This shall be 10% for all developments unless there are no external private permeable spaces, for example, flats and apartments, when it shall be 0%.

Ministry of Housing, Communities & Local Government – National Planning Practice Guidance: Flood risk assessments: climate change allowances (2022)

The Peak rainfall intensity allowances section provides advice on the increased rainfall effects on river levels and land and urban drainage systems. As of May 2022, the applicable climate change allowance is defined by specific Management Catchment for the 1 in 30 ($\geq 3.3\%$ AEP) and 1 in 100 (< 3.3 to 1% AEP) year event.

As the Site is located within the Colne Management Catchment the climate change allowances overleaf are applicable.

Table 3. Colne Management Catchment peak rainfall allowances

Colne Management Catchment	3.3% Annual exceedance rainfall event		1% Annual exceedance rainfall event	
	2050s	2070s	2050s	2070s
Central	20%	25%	20%	25%
Upper end	35%	35%	40%	40%

The drainage system should be designed to make sure there is no increase in the rate of runoff discharged from the Site for the upper end allowance.

Where on-Site flooding for the upper end allowance presents a significant flood hazard (for example, depths and velocities of surface water runoff cause a significant danger to people), you will need to take further mitigation measures to protect people and property (for example, raising finished floor levels). As a minimum, there should be no significant flood hazard to people from on-Site flooding for the central allowance.

Regional drainage policy

London Plan – Policy SI3 Sustainable drainage (2021)

Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed. Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:

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

Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.

Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

Development proposals should aim to get as close to greenfield run-off rates as possible depending on Site conditions. The well-established drainage hierarchy set out in this policy helps to reduce the rate and volume of surface water run-off. Rainwater should be managed as close to the top of the hierarchy as possible. There should be a preference for green over grey features, and drainage by gravity over pumped systems. A blue roof is an attenuation tank at roof or podium level; the combination of a blue and green roof is particularly beneficial, as the attenuated water is used to irrigate the green roof.

For many sites, it may be appropriate to use more than one form of drainage, for example a proportion of rainwater can be managed by more sustainable methods, with residual rainwater managed lower down the hierarchy. In some cases, direct discharge into the watercourse is an appropriate approach, for example rainwater discharge into the tidal Thames or a dock. This should include suitable pollution prevention filtering measures, ideally by using soft engineering or green infrastructure. In addition, if direct discharge is to a watercourse where the outfall is likely to be affected by tide-locking, suitable storage should be designed into the system. However, in other cases direct discharge will not be appropriate, for example discharge into a small stream at the headwaters of a catchment, which may cause flooding. This will need to be assessed on a case-by-case basis, taking into account the location, scale and quality of the discharge and the receiving watercourse. The maintenance of identified drainage measures should also be considered in development proposals.

Local policy

Hillingdon Local Plan: Part 1 - Policy EM6: Flood Risk Management (2012):

The Council will require new development to be directed away from Flood Zones 2 and 3 in accordance with the principles of the National Planning Policy Framework (NPPF).

The subsequent Hillingdon Local Plan: Part 2 -Site Specific Allocations LDD will be subjected to the Sequential Test in accordance with the NPPF. Sites will only be allocated within Flood Zones 2 or 3 where there are overriding issues that outweigh flood risk. In these instances, policy criteria will be set requiring future applicants of these sites to demonstrate that flood risk can be suitably mitigated.

The Council will require all development across the borough to use sustainable urban drainage systems (SUDS) unless demonstrated that it is not viable. The Council will encourage SUDS to be linked to water efficiency methods. The Council may require developer contributions to guarantee the long term maintenance and performance of SUDS is to an appropriate standard.

4. Site analysis

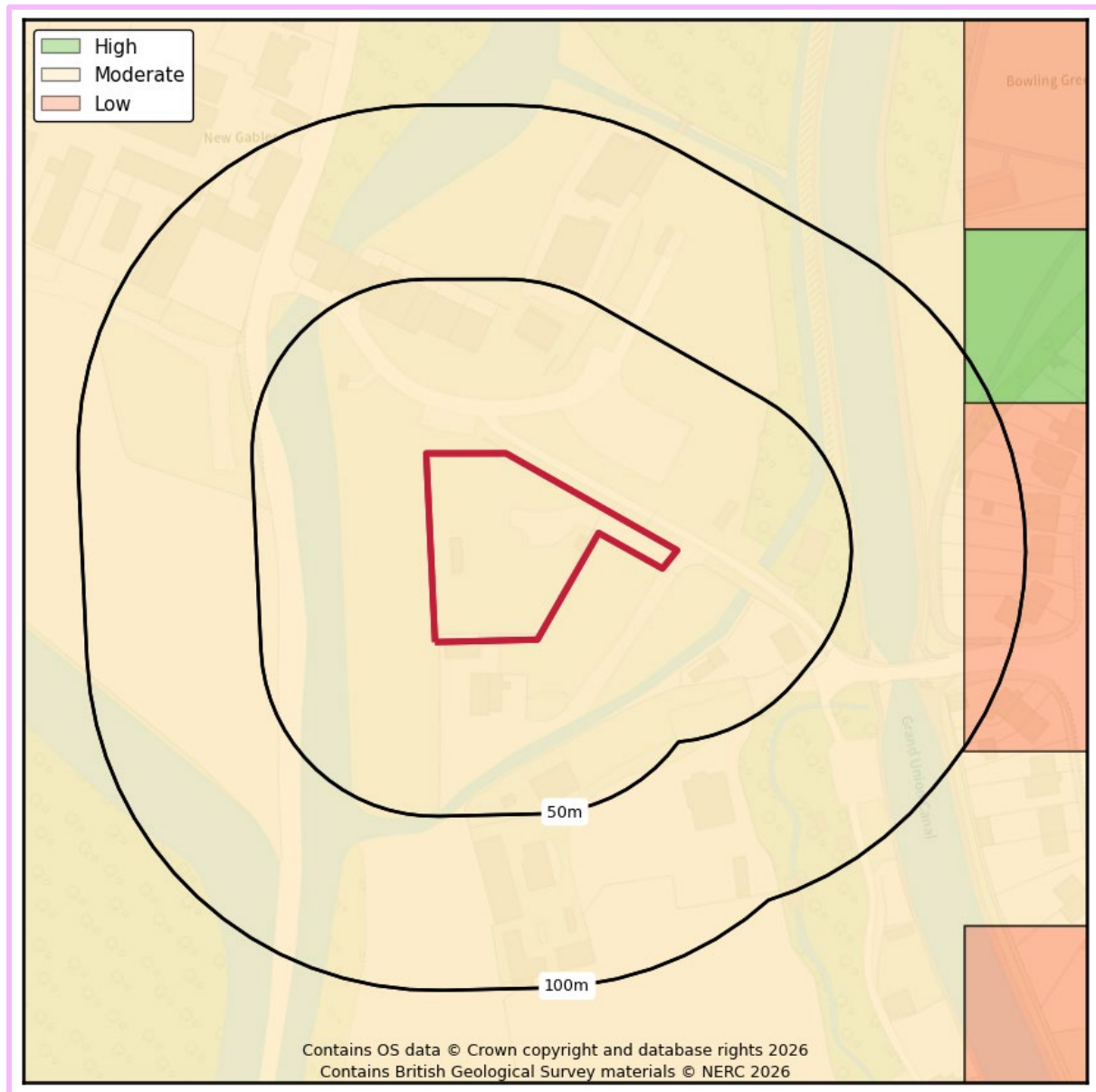
Site location

Figure 2. Aerial Imagery (Bluesky, 2026)



Infiltration suitability

Figure 3. SuDS infiltration suitability (SD50) map (GeoSmart, 2026)

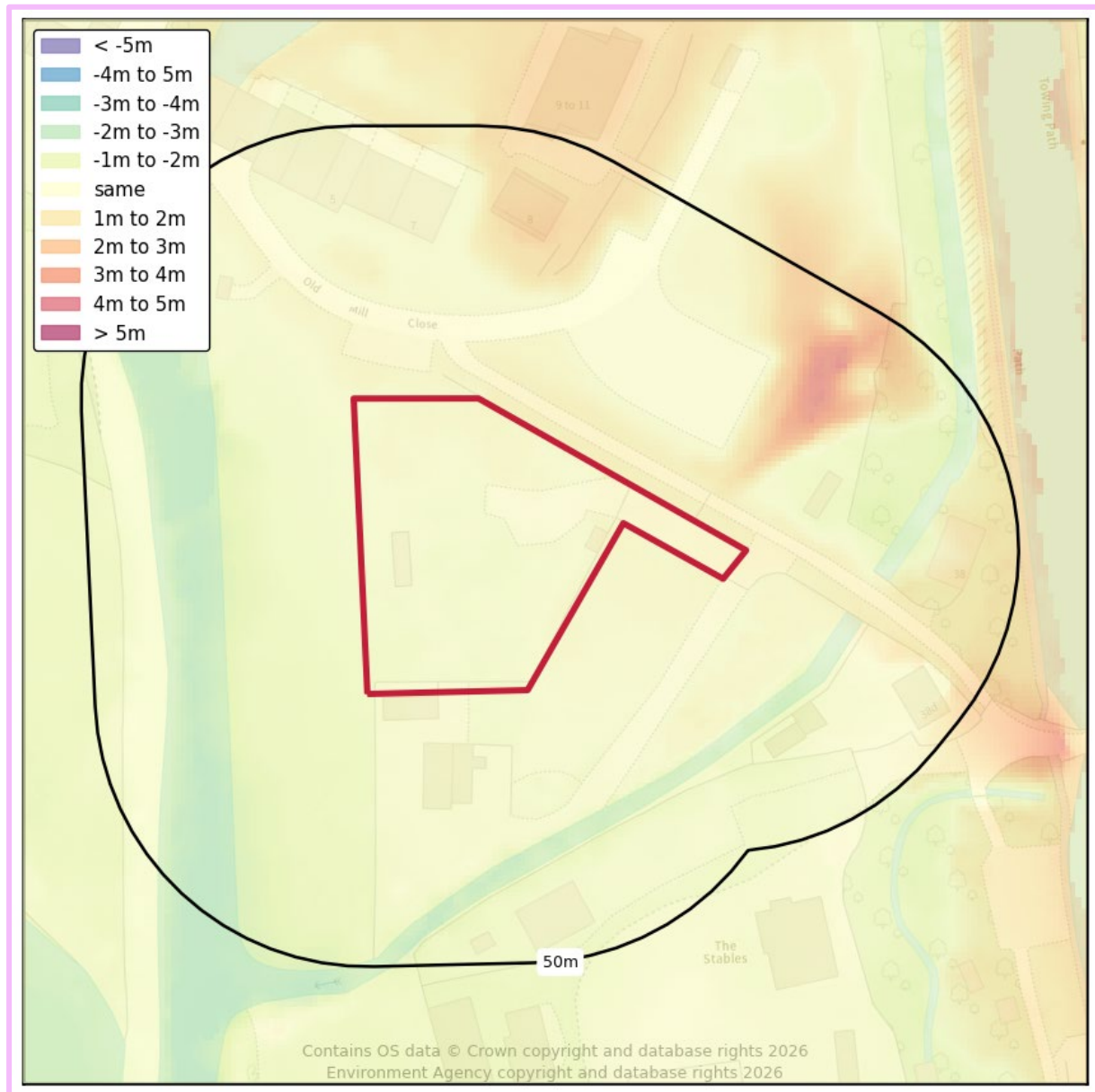


According to GeoSmart's SD50 mapping, there is a Moderate potential for infiltration SuDS across the Site. The SD50 mapping suggests that the underlying geology at the Site has a variable permeability.

However, further analysis suggests that shallow groundwater is likely to be present, constraining the potential for an infiltration SuDS scheme.

Topography

Figure 4. Site topography (GeoSmart, 2026)

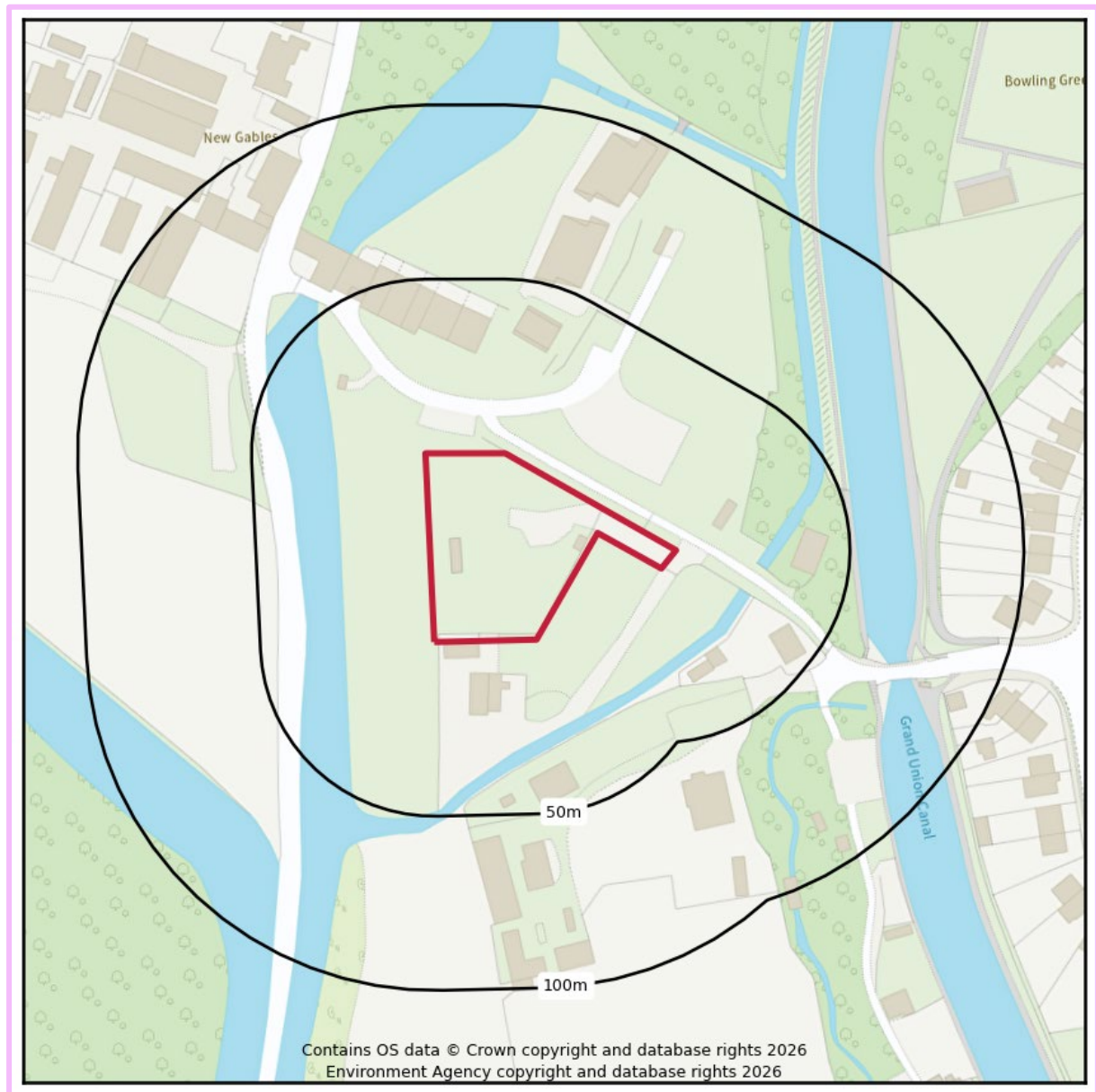


According to a review of the LiDAR DTM5 elevation data for the prevailing area, the ground levels within the vicinity of the Site fall gradually to the south west.

The topography on-Site typically falls to the south west, with ground levels ranging from 28.18 mAOD to 29.08 mAOD. This is based upon a Site specific topographic survey undertaken by Cryfield Surveys Ltd in 2026 (included in Appendix A).

Land designations

Figure 5. Source protection zone map (EA, 2026)

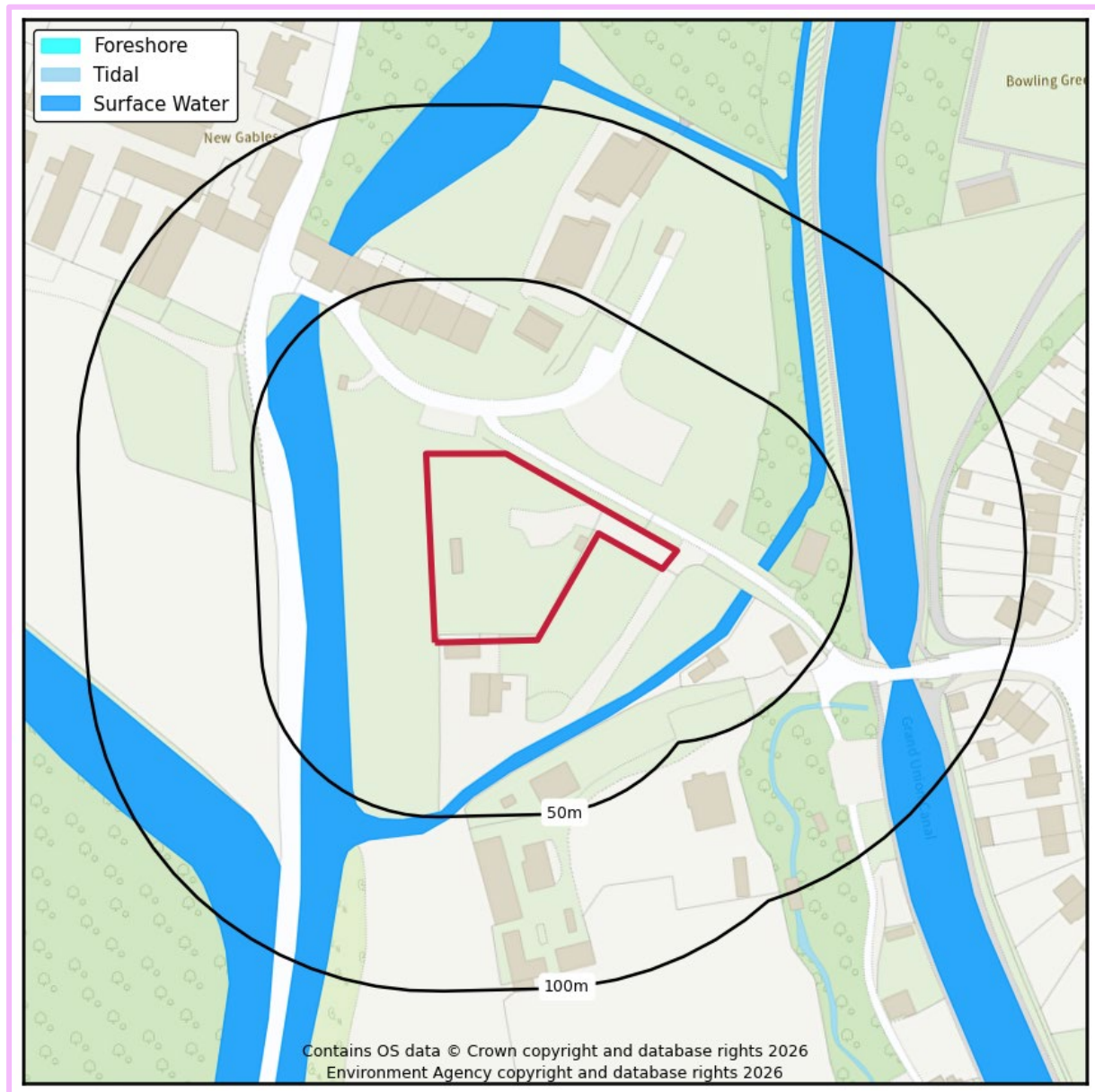


According to DEFRA's Magic Map, the Site is not located within a groundwater Source Protection Zone (SPZ). The mapping also confirms that the Site is not within 250m of a SSSI or SPA.

If further analysis is required, this would involve a review of Site specific contaminated land data. If hazards are identified, it is recommended that the Local Authority and the Environment Agency are contacted to confirm the susceptibility of any SPZs within the wider area.

Surface water features

Figure 6. Surface water features map (EA, 2026)



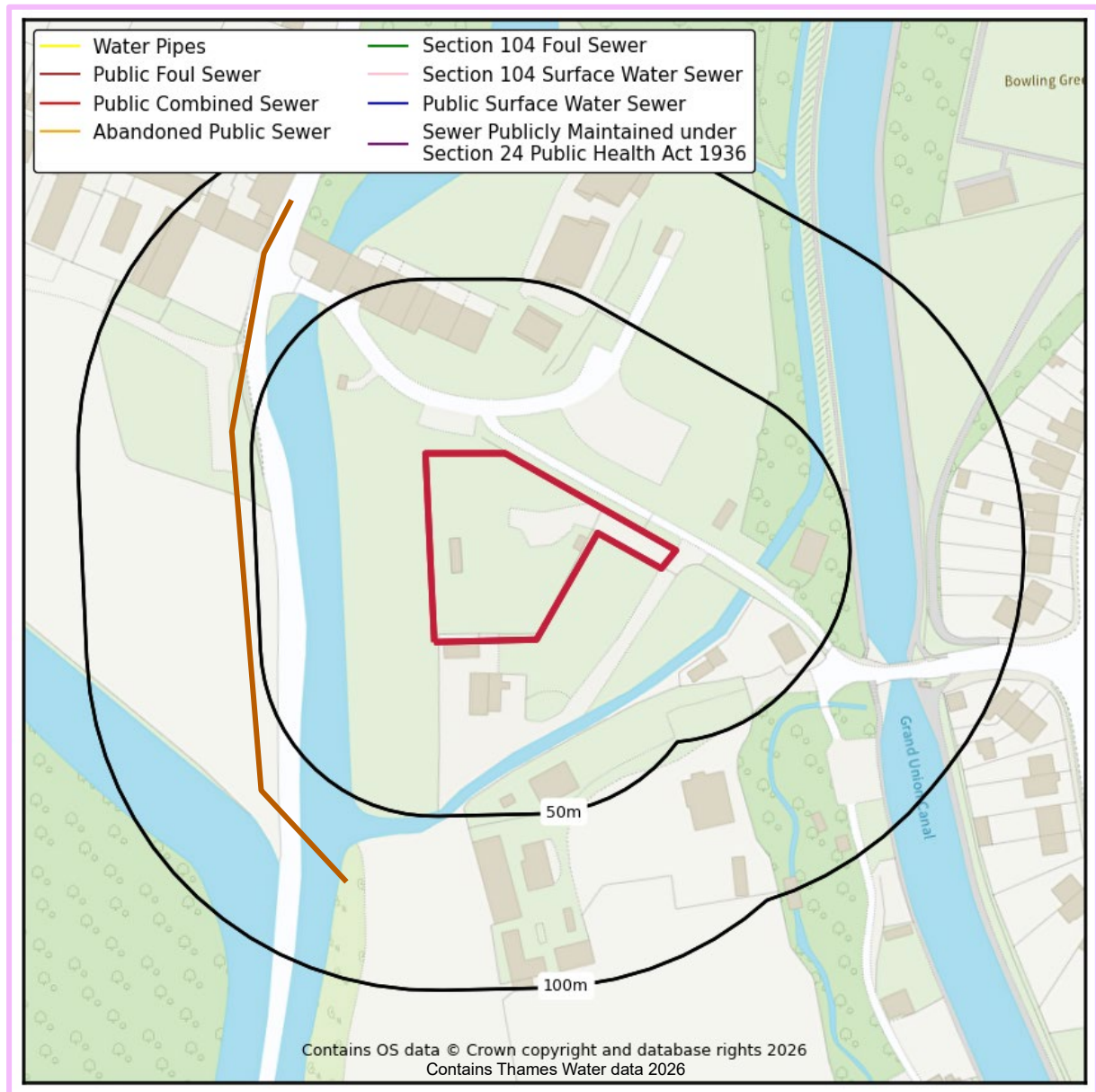
OS mapping indicates that surface water features (primary and secondary channels associated with the Fray's River) are located c. 25 m west and south of the Site.

The watercourse channels are located within close proximity to the Site and would require drainage pipework to cross third-party rural land. On balance, the Fray's River should be considered as a potential discharge destination. Further discussions should be held with third party landowners and regulators to agree a suitable discharge route and any easements required.

Further analysis could be undertaken by visiting the Site or by contacting the Local Council and the Environment Agency (EA) to confirm the presence, location and condition of any mapped or potentially unmapped surface water features.

Sewer features

Figure 7. Sewer features map (OS & Thames Water, 2026)

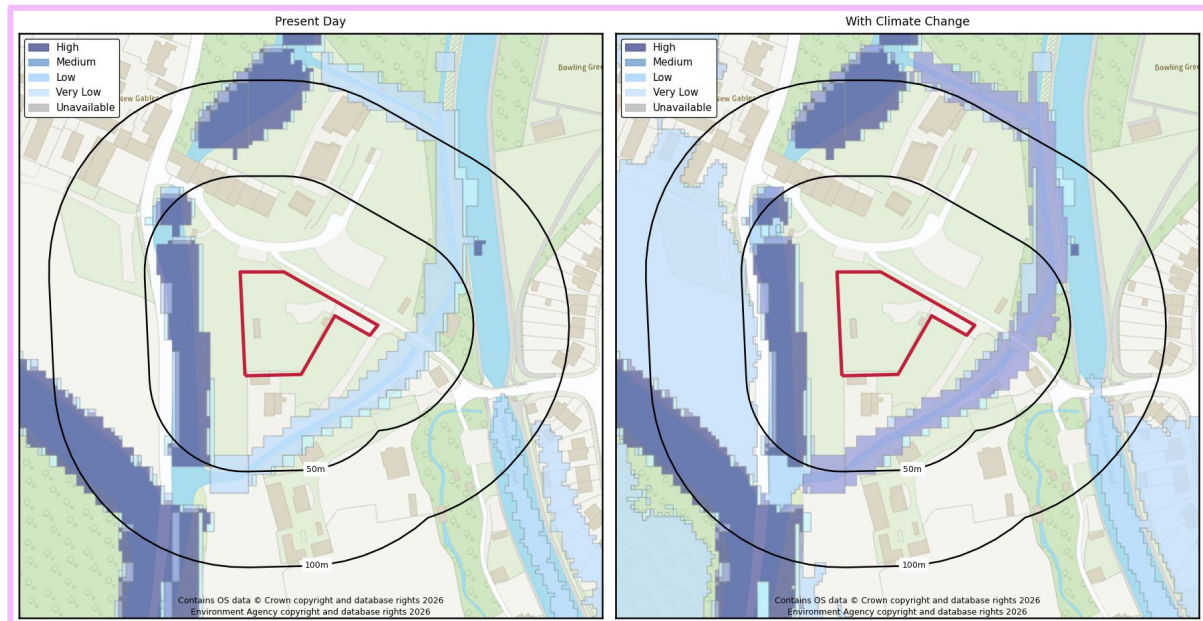


According to the Thames Water asset location plan obtained for the Site (Appendix C), there are no public surface water sewer or combined sewers located within the vicinity of the Site. Therefore, discharging runoff into the public sewer network is not feasible.

The asset location plan also confirms that there is a public foul sewer within 60 m of the Site; however, discharge of runoff to this location is unlikely to be acceptable under national guidance.

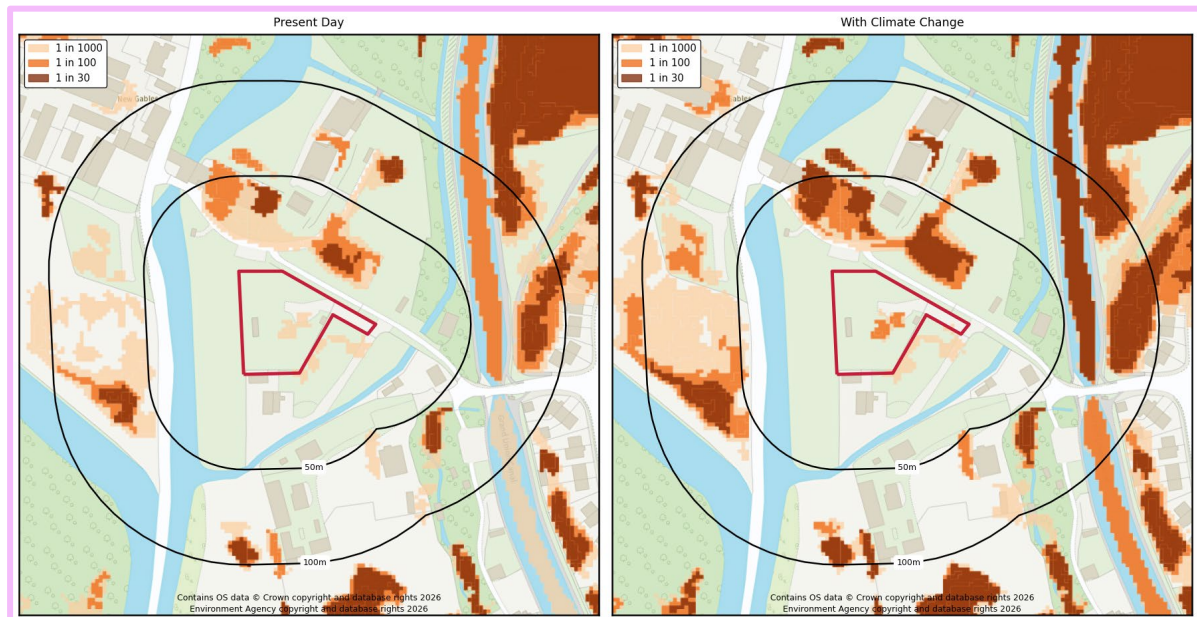
Flood risk

Figure 8. Risk of flooding from rivers & sea map (EA, 2026)



According to the EA's Risk of Flooding from Rivers and the Sea (RoFRS) map, the Site has a Very Low risk of flooding from fluvial or coastal flooding during both the present day and climate change (2036 to 2069) scenarios, with less than 0.1% annual probability of flooding. Therefore, the SuDS design is unlikely to be affected.

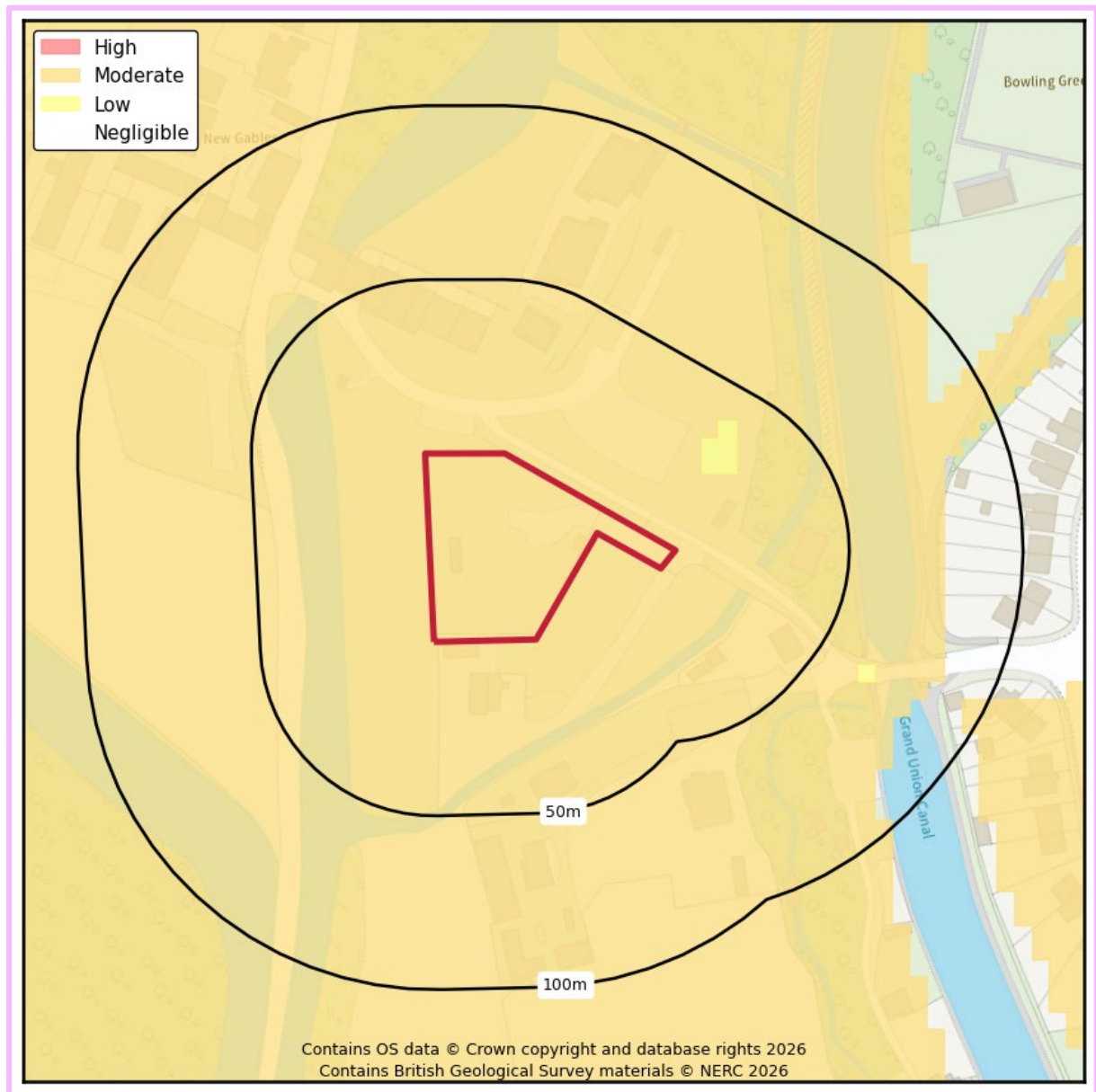
Figure 9. Risk of surface water flooding map (EA, 2026)



The EA's Surface Water Spatial Planning mapping confirms the Site is considered to be at Very Low to Low risk of surface water flooding during the present day, with the risk rising to Very Low to Medium during the climate change (2070s) scenario.

The above map shows the extent of flooding during the >3.3% annual probability (AEP) (1 in 30 year – High risk), 3.3 – 1% AEP (1 in 100 year – Medium risk) and 1 – 0.1% AEP (1 in 1000 year – Low risk) events. This confirms there are areas where flooding could occur in the 1 in 1000 year event during the present day scenario. Flooding in these areas may constrain certain types of SuDS features being used.

Figure 10. Groundwater flood risk (GW5) map (GeoSmart, 2026)



GeoSmart's Groundwater Flood Risk Screening (GW5) map confirms the Site has a Moderate risk of groundwater flooding during a 1% annual probability (1 in 100 year) event.

The Moderate risk indicates the groundwater table may be particularly shallow across the Site and further investigation may be required. The use of SuDS features may be constrained in areas where there is a High or Moderate risk of groundwater emergence.

5. Site context

Site information

The purpose of this report is to assess the potential for disposing of surface water through a Sustainable Drainage System (SuDS) for the site of the Land adjacent to 38 Benbow Waye, Cowley, Uxbridge, UB8 2EY ('the Site'). The Site is located within a setting of predominantly rural and residential land use.

Development

Until recently, the Site comprised generally undeveloped land. An access track and storage area was present in the north-eastern corner of the Site, with several buildings located along the eastern and western boundaries.

Development proposals comprise the construction of a new single-storey dwelling at the Site, as well as the conversion of an existing outbuilding to form a potting shed. It is assumed that all other features of the Site will be retained. Site plans and drawings are provided in Appendix A.

The dwelling is understood to have been partially been built, with this report supporting a part-retrospective application for the development.

Geology, permeability, and thickness

British Geological Survey (BGS) national superficial and bedrock geology mapping confirms the geological formations underlying the Site; each formation may have a range of permeabilities.

Table 4. Site Geology

Geology present on-Site		Likely to be permeable?
Superficial geology (Figure 11)	Alluvium (ALV) – clay, silt, sand and gravel	✓*
Bedrock geology (Figure 12)	London Clay Formation (LC) – clay, silt and sand	X

*Whilst the underlying Alluvium deposits may be permeable, further analysis suggests that shallow groundwater is likely to be present, which constrains the potential for infiltration SuDS features.

A review of the BGS borehole database (BGS, 2026) indicates that there are no relevant boreholes within the vicinity of the Site from which the mapped geology can be confirmed.

Figure 11. Superficial Geology (BGS, 2026)

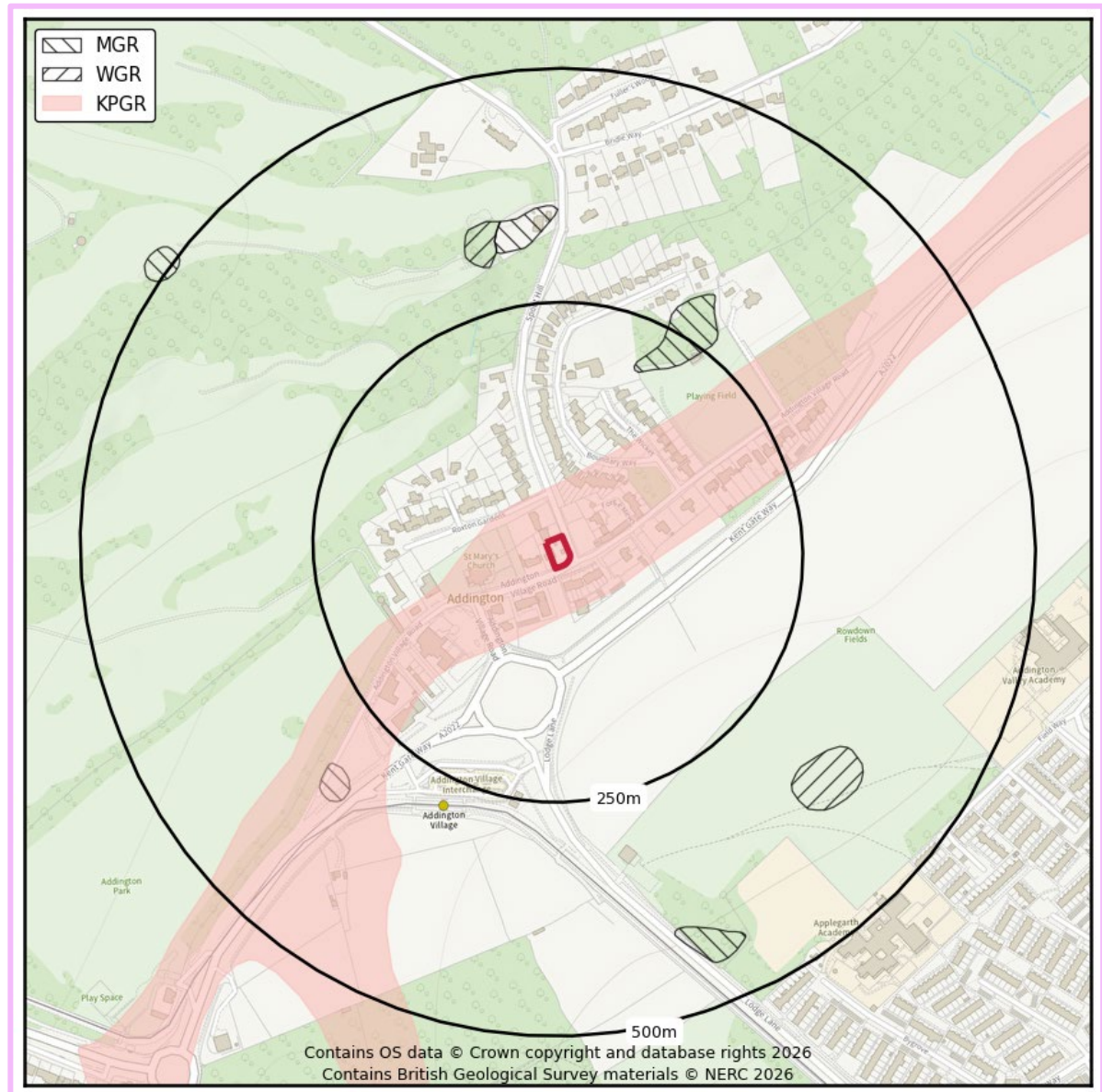
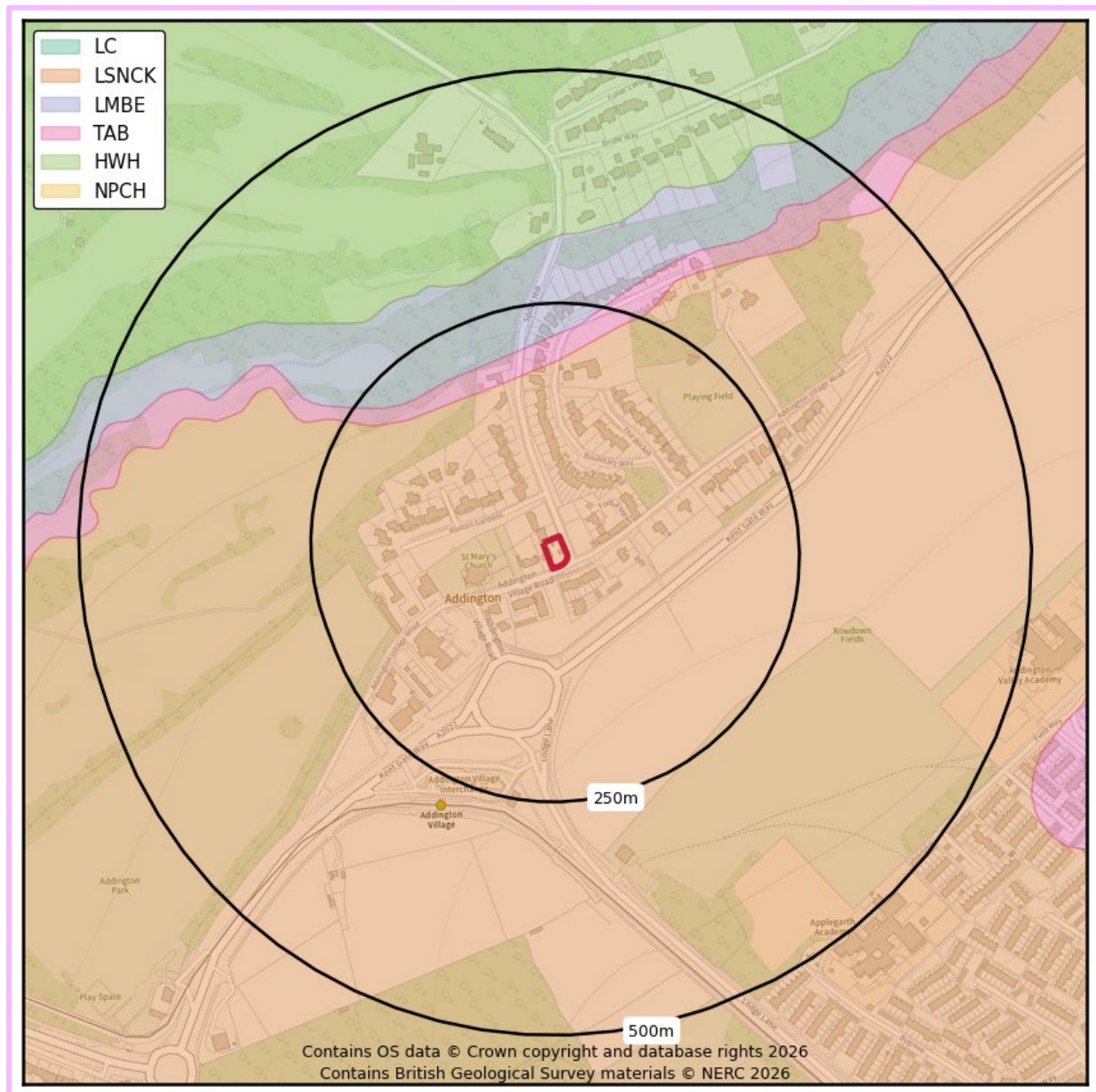


Figure 12. Bedrock Geology (BGS, 2026)



Depth to groundwater

The SuDS system should be designed to operate in periods of extreme groundwater levels.

No nearby BGS borehole records mapped within the same geological strata are available, and therefore the depth to groundwater at the Site cannot be confirmed. However, LiDAR elevation mapping indicates that the Fray's River has an approximate water level of c. 27.00 to 27.50 mAOD (subject to rainfall recharge and seasonal variations), relative to a minimum Site level of c. 28.18 mAOD, suggesting that groundwater is likely to be within 1 to 1.5 m of the ground surface.

According to GeoSmart's Groundwater Flood Risk (GW5) map, shallow groundwater is potentially a problem at the Site.

Ground conditions

Infiltration SuDS features are not proposed at the Site due to the anticipated presence of shallow groundwater; therefore, a detailed investigation into the ground conditions is not required.

Water quality

The Site does not lie within an SPZ, and infiltration features are not proposed; therefore, for the purposes of the sustainable drainage assessment further consideration of the historical land uses (and any associated contamination risks) is not considered necessary.

6. Runoff destination

National Standard 1: runoff destinations

Options for the destination for the runoff generated on-Site have been assessed in line with the prioritisation set out in DEFRA's national standards for sustainable drainage systems (2025).

Priority 1: Collection for non-potable use

An assessment of the potential for rainwater collection and re-use across the proposed development has been undertaken, which confirms that there is the potential for the provision of rainwater harvesting measures at the Site. Captured water could be used to water vegetation in order to provide additional amenity and biodiversity benefits.

Priority 2: Discharge to ground

There are no known issues identified relating to Site contamination or the presence of a SPZ.

According to GeoSmart's SD50 screening data, the Site has Moderate potential for infiltration. Based on the available hydrogeological information (Section 5) the permeability of the underlying strata cannot be reliably quantified using the available geological information, although it is most likely to have a fair permeability. However, shallow groundwater is likely to be a concern at the Site, with LiDAR elevation data suggesting the water table could be c. 1 to 1.5 m from the ground surface.

Infiltration SuDS are not proposed for the Site due to the likely shallow depth to groundwater at the Site.

Priority 3: Discharge to above ground surface water body

According to OS mapping, surface water features (primary and secondary channels associated with the Fray's River) are located c. 25 m west and south of the Site. Given these channels are located within close proximity of the Site, they should be considered as potential discharge destinations.

Access would need to be arranged, and the outfall would be subject to river level and flood conditions. A flow control device would be required to limit peak discharge rates to the maximum selected rate as indicated in Section 7, along with the appropriate attenuation storage volume.

Priority 4: Discharge to surface water sewer

According to the Thames Water asset location plan obtained for the Site (Appendix C), there are no public surface water sewers within the vicinity of the Site. Therefore, discharging runoff to the surface water sewer is not considered to be feasible for the Site and is not proposed.

Priority 5: Discharge to combined sewer

According to the Thames Water asset location plan obtained for the Site (Appendix C), there are no public combined sewers within the vicinity of the Site. Therefore, discharging runoff to the combined sewer is not considered to be feasible for the Site and is not proposed.

7. Storage, volume and peak flow rate

Urban creep

According to Paragraph 3.3 of the DEFRA National standards for SuDS, urban creep should be taken into account as part of the SuDS design. Urban creep accounts for the potential for impermeable areas to increase over the lifespan of a development, such as extensions to proposed building footprints and increases in patio areas.

Therefore, in accordance with the required allowance for a Site with external private permeable spaces, a 10% urban creep allowance has been applied to the proposed impermeable areas.

Surface water runoff

An increase in impermeable areas on-Site will result in greater rainfall runoff. A reduction in runoff will help mitigate flood risk both on and off-Site.

Table 5. Change in impermeable area associated with the development

Total Site area	2,280 m²
Impermeable area (and as a percentage of the total area of the proposed development footprint of 255 m²)[†]	
Pre-development	Post-development
0 m² (0%)	193 m² (75%)[‡]
Impermeable land use: N/A	New impermeable land use: 175 m ² building footprint
Permeable land use: 255 m ² gravel and soft standing	New permeable land use: 63 m ² soft standing

[‡] An additional 10% Urban Creep uplift factor has been applied to the post-development impermeable area in order to account for the potential for impermeable areas to increase over the lifespan of a development.

[†] The drainage calculations have been restricted to the proposed building and immediate surrounding area, as the remainder of the Site is not proposed to be modified at this stage; the proposed potting shed constitutes a change of use of the existing building so is proposed to be drained using the existing arrangements.

Suggested minimum and aspirational storage requirements for an attenuation SuDS scheme for the development footprint are set out below, with more detail provided in subsequent sections.

Table 6. Storage requirements for the proposed development (discharge of runoff to watercourse)

Attenuation scenario		Attenuation required (m ³)	Explanation	
Discharge runoff to watercourse	1 in 30 year	3.65	Attenuation required to ensure surface water runoff is attenuated in all storm events up to and including the 1 in 30 year (0.5 hour, Critical Storm Duration) event*. Flooding of the Site of 1.74 m³ should be contained within permeable landscaped areas within the Site to ensure no flooding of internal areas during the 1 in 100 year storm event.	A further 3.36 m ³ should be managed within overland flow routes to ensure there is no increase in flood risk in all events up to the 1 in 100 year including 40% allowance for climate change.
	1 in 100 year	5.39	Attenuation required to ensure surface water runoff is attenuated in all storm events up to and including the 1 in 100 year (0.75 hour, Critical Storm Duration) event*.	
	1 in 100 year including 40% CC	8.75	Attenuation required to ensure surface water runoff is attenuated in all storm events up to and including the 1 in 100 year (1 hour, Critical Storm Duration) event including a 40% allowance for climate change*.	

*See Appendix B for associated runoff and discharge calculations. Subject to discharge rates being limited to 1 l/s (as close to the equivalent Greenfield 1 in 1 year rate as possible, without increasing the potential for blockages).

Peak discharge rates

The peak discharge rate is the maximum flow rate at which surface water runoff leaves the Site during a particular storm event, without considering the impact of any mitigation such as storage, infiltration or flow control. Proposed discharge rates (with mitigation) should be no greater than existing rates for all corresponding storm events. If all runoff is disposed of via infiltration, there will be no discharge off-Site.

The table below presents peak discharge rates for a range of storm events used to assess the impact of the proposed development and select the maximum permitted discharge rate.

Table 7. Peak discharge rates associated with the development

Rainfall event	Greenfield runoff rates (l/s)	Existing runoff rates ¹ (l/s)	Potential runoff rates without attenuation (l/s)	Potential minus existing (l/s)
QBAR	0.04	N/A	N/A	N/A
6 hour 1 in 1 year	0.04	0.04	0.25	0.21
6 hour 1 in 10 year	0.07	0.07	0.43	0.36
6 hour 1 in 30 year	0.09	0.09	0.56	0.47
6 hour 1 in 100 year	0.13	0.13	0.73	0.59
6 hour 1 in 100 year + 20% CC	N/A	N/A	0.87	0.74
6 hour 1 in 100 year + 40% CC	N/A	N/A	1.02	0.89

¹ Assumes 100% runoff from impermeable surfaces. Assumes Greenfield runoff from permeable surfaces calculated using the loH124 method.

Relevant national, regional and local planning policy has been consulted in Section 3 to determine restrictions on runoff from previously developed and greenfield sites. In some cases, greenfield rates may be requested, but in practice it is difficult to restrict discharge rates at any one control point to less than 1 l/s, without increasing the risk of any potential blockages occurring in the drainage network.

Total discharge volumes

The table below presents discharge volumes for a range of storm events used to assess the impact of the proposed development and calculate the required storage volumes.

Table 8. Total discharge volumes associated with the development

Rainfall event	Greenfield runoff volume (m ³)	Existing runoff volume ² (m ³)	Potential runoff volume without attenuation (m ³)	Potential minus existing (m ³)
QBAR	2.11	N/A	N/A	N/A
6 hour 1 in 1 year	1.96	1.96	5.40	3.45
6 hour 1 in 10 year	3.43	3.43	9.24	5.81
6 hour 1 in 30 year	4.40	4.40	12.14	7.75
6 hour 1 in 100 year	5.69	5.69	15.72	10.03
6 hour 1 in 100 year + 20% CC	N/A	N/A	18.86	13.17
6 hour 1 in 100 year + 40% CC	N/A	N/A	22.01	16.31

² Assumes 100% runoff from impermeable surfaces. Assumes Greenfield runoff from permeable surfaces, as calculated using the loH124 method.

Critical storm duration and volume requirements

Storage volumes for a range of return periods including the 1 in 30 year, 1 in 100 year and 1 in 100 year plus climate change (40%) events have been calculated to assess the impact of the proposed development. The required storage volumes for attenuation features have been calculated for the critical storm durations, limited to a maximum discharge rate of 1 l/s (as close to the equivalent Greenfield 1 in 1 year rate as possible, without increasing the potential for blockages).

Table 9. Critical Storm Duration and Attenuation volume requirements

Return Period	Runoff rate restriction (l/s)	Critical Storm Duration (hr)	Attenuation volume required (m ³)
1 in 30 year	1.00	0.50	3.65
1 in 100 year	1.00	0.75	5.39
1 in 100 year including a 40% climate change	1.00	1.00	8.75

8. Water quality

A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution. This can be effectively managed by an appropriate “train” or sequence of SuDS components that are connected in series. The frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals and various organic and inorganic contaminants). Therefore, the first 5-10 mm of rainfall (first flush) should be adequately treated with SuDS.

The minimum number of treatment stages will depend on the sensitivity of the receiving water body and the potential hazard associated with the proposed development SuDS Manual (CIRIA, 2015). The proposed development is Very Low hazard (residential roof runoff). The Site does not lie within an SPZ and therefore additional treatment stages are not required.

Table 10. Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads and non-residential car parking within infrequent change (i.e. less than 300 traffic movements/day)	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g. hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, storage, used or manufactured: industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

Table 11. Indicative SuDS mitigation indices for discharges to surface waters

Type of SuDS component	Mitigation indices		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area		

As indicated within Tables 10 and 11, the proposed basin would provide sufficient mitigation indices to treat the Very Low pollution hazard associated with the Site use.

9. Proposed SuDS strategy

Sustainable drainage systems

DEFRA's national standards for SuDS require the below ground drainage systems to have the capacity to accommodate at least the 1 in 30 year event and to manage the 1 in 100 year event without flooding of on-site buildings and substations. All runoff should be managed on-Site though for the 1 in 100 year event, accounting for the maximum impacts of climate change to ensure flood risk is not increased to third-parties.

The SuDS strategy has been restricted to the proposed dwelling, with the remainder of the Site presumed to utilise the existing drainage arrangements. Any new areas of driveway should utilise permeable surfacing to avoid increasing the proportion of impermeable areas at the Site.

A surface water drainage strategy (summarised in Section 2 of this report) includes the following SuDS features to intercept, attenuate and treat surface water runoff.

SuDS Strategy:

Infiltration to ground is not achievable at the Site. Therefore, surface water runoff will be managed within SuDS features and discharged to the Fray's River.

Table 12. Proposed SuDS type, features, discharge location and rate restriction

SuDS type	Source control (interception) and attenuation SuDS.
SuDS features	Rainwater harvesting butts and detention basin.
Discharge location	Surface water feature.
Discharge rate	1 l/s (as close to the Greenfield 1 in 1 year rate as possible, without increasing the risk of blockage).

Table 13. Proposed SuDS sizing (dimensions) and attenuation volumes

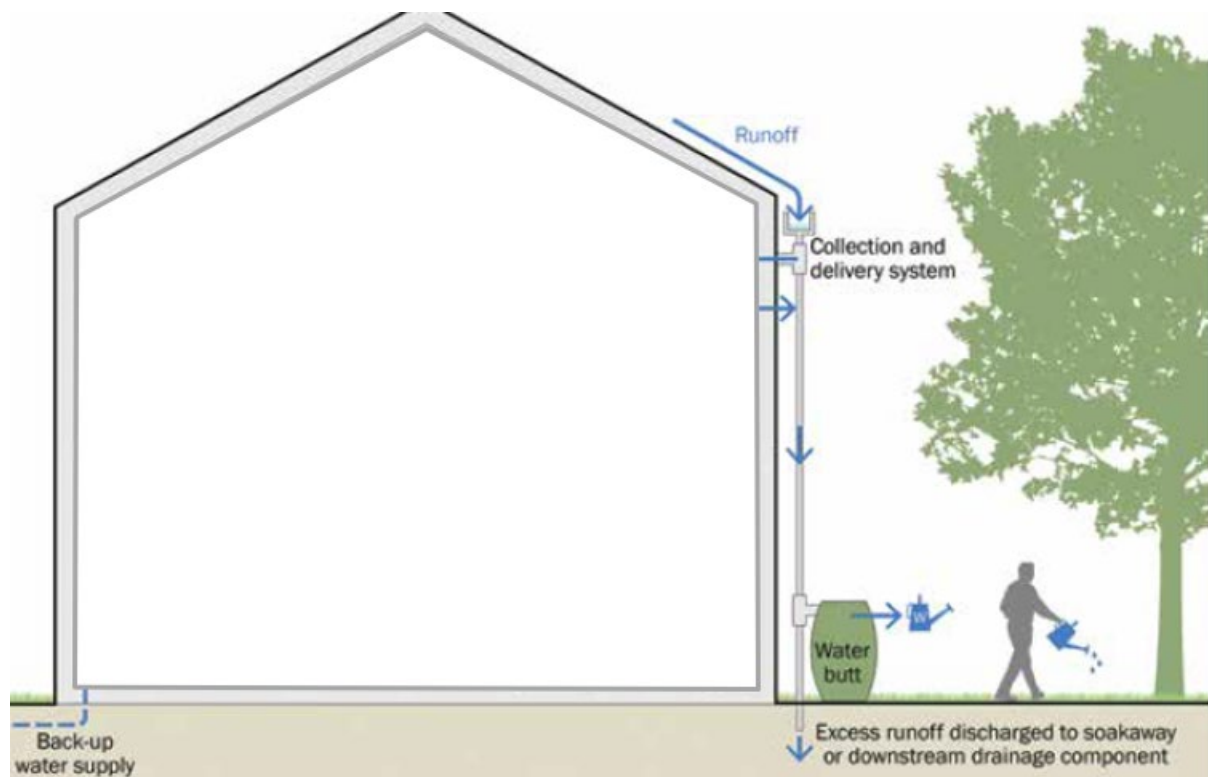
Rainwater harvesting	To comply with DEFRA's national standards for SuDS (2025), rainwater harvesting butts should be established for the proposed development. In terms of attenuation storage within this SuDS scheme, the volume of run-off which could be attenuated by rainwater harvesting has not been considered within the preliminary SuDS strategy.
Detention basin	A detention basin should be incorporated into the development to provide the required attenuation. For example, a basin with an area of c. 9 m ² and average depth of 1 m would provide c. 9 m ³ attenuation. The basin should be lined at the base to prevent groundwater ingress, and could be left with some water at the base to act as a pond. Where a basin is considered unfeasible, a tank could be considered as an alternative attenuation feature.
Total attenuation provided	9.00 m³

Total attenuation required	8.75 m ³
Freeboard storage provided	0.25 m ³

Rainwater harvesting

Run-off from the proposed development roof should be led into rainwater harvesting butts via rainwater downpipes and guttering. Overflow from the butts should be discharged into the storage system provided by the basin.

Due to the relatively insignificant amounts of attenuation provided by rainwater harvesting tanks in this instance and the requirement to retain water for non-potable uses such as garden maintenance, the volume of run-off which could be attenuated by rainwater harvesting has not been considered within the report.



Modified from Figure 11.3 of the CIRIA SuDS Manual (C753) (2015)

Detention basin

A detention basin is proposed to attenuate run-off prior to controlled release into the Fray's River. The basin would provide temporary storage, biological treatment of the water and improvements in biodiversity. A buffer should be employed around the basin to allow for further expansion and for safety.

The basin should be lined at the base to prevent groundwater ingress, and could be left with some water at the base to act as a pond and provide additional amenity and biodiversity benefits. Where a basin is considered unfeasible, a tank could be considered as an alternative attenuation feature.

Flow control devices and systems

Hydrobrake Flow control systems can be used to reduce the runoff rate from the Site. These are usually a device used for controlling water flow into a connecting feature, such as a sewer, to a specific attenuation performance. The design consists of an intake, a volute and an outlet and the configuration is critical to ensure discharge control. For drainage areas which are less than 3 ha, outlet throttle diameters would have to be small (<150mm diameter) to achieve outflow rates which could result in blockage. For most SuDS features, a flow control device will comprise a fixed orifice or a throttle such as a short pipe.

Drainage protection devices

A non-return flap valve is recommended for outflow pipes to reduce the risk of backflow from the channel during a large scale rainfall event.

Exceedance flows

Exceedance flow routes are included within the proposed SuDS drainage layout. Where possible, exceedance flows should be directed into non-essential areas of the Site such as landscaping. The SuDS system recommended for the Site should provide enough storage that this method would only be utilised during a worst case scenario.

Amenity and biodiversity

The inclusion of a detention basin would provide biodiversity and amenity benefits to the proposed development, providing an area where native vegetation can be planted. The rainwater harvesting butts will capture water that can be used to maintain vegetation and ensure their long-term viability as amenity features.

10. SuDS maintenance

Regular maintenance is essential to ensure effective operation of the SuDS features over the intended lifespan of the proposed development. The SuDS Manual (C753) (CIRIA, 2015) provides a maintenance schedule for SuDS with details of the necessary required actions as shown in the Table below.

Table 14. SuDS operation and recommended maintenance requirements

Asset type	Maintenance schedule (and frequency)
Detention basin	Regular maintenance: - Remove litter and debris from basin (monthly). - Trimming any roots and surrounding grass blockages (as required). Monitoring: - Inspect inlets, outlets and overflows for blockages, (monthly or after a heavy storm). - Inspect inlets and outlets for silt accumulation (half yearly). - Inspect infiltration surfaces for compaction and ponding (monthly).
Hydro-Brake Flow Control	Low amounts of maintenance required as there are no moving parts within the Hydro-Brake® Flow Control. Initial monthly inspection at the manhole once the construction phase is over. If blockages occur they normally do so at the intake. Hydro-Brake® Flow Controls are fitted with a pivoting by-pass door, which allows the manhole chamber to be drained down should blockages occur. Inspection should be undertaken annually or when a storm event occurs.
Underground drainage pipe network	Regular maintenance: - Remove sediment and debris from pre-treatment devices and floor of inspection tube or chamber (annually). - Cleaning of gutters and any filters on downpipes (annually). - Trimming any roots that may be causing blockages (annually or as required). Monitoring: - Inspect silt traps and note rate of sediment accumulation (monthly in the first year and then annually).
Rainwater harvesting	Regular maintenance: - Inspection of tank for debris and sediment build up (annually and following poor performance). - Inspection of inlets, outlets, overflow areas, pumps and filters (annually and following poor performance). - Cleaning of tank, inlets, outlets, gutters, roof drain filters and withdrawal devices (annually or as required).

Asset type	Maintenance schedule (and frequency)
	Remedial actions: Repair or overflow erosion damage or damage to tank and associated components (as required)

Health and safety considerations for SuDS

GeoSmart reports may include outline strategies or designs to support with development plans. Any drawings or advice provided do not comprise any form of detailed design. Implementation of any conceptual scheme options may constitute 'Construction Work' as defined by CDM Regulations (2015).

The CDM Regulations place specific Health and Safety duties on those commissioning, planning and undertaking construction works. If you are uncertain what this means you should seek the advice of your architect, builder or other competent professional.

GeoSmart does not provide health and safety advisory services but we are required to advise you of your general responsibilities under CDM (visit <http://geosmartinfo.co.uk/knowledge-hub/cdm-2015/> for more information).

Please remember that detailed design work should be undertaken by a competent professional who might be your engineer, architect, builder or another competent party.

11. Background information

GeoSmart SuDS Infiltration Suitability Map (SD50)

The GeoSmart SuDS Infiltration Suitability Map (SD50) screens the suitability for infiltration drainage in different parts of the Site and indicates where further assessment is recommended. In producing the SuDS Infiltration Suitability Map (SD50), GeoSmart used data from the British Geological Survey on groundwater levels, geology and permeability to screen for areas where infiltration SuDS may be suitable. The map classifies areas into 3 categories of High, Medium and Low suitability for infiltration SuDS. This can then be used in conjunction with additional data on Site constraints to give recommendations for SuDS design and further investigation.

The primary constraint on infiltration potential is the minimum permeability of the underlying material and in some cases the range in permeability may be considerable, ranging down to low. The map classifies these areas as moderate infiltration suitability requiring further investigation. In cases where the thickness of the receiving permeable horizon is less than 1.5 meters then additional Site investigation is recommended. If the Site is at risk of groundwater flooding for up to the 1% annual occurrence the map classifies these areas as moderate infiltration suitability requiring further investigation.

The GeoSmart SuDS Infiltration Suitability Map (SD50) is a national screening tool for infiltration SuDS techniques but a Site specific assessment should be used before final detailed design is undertaken. Further information on the GeoSmart SuDS Infiltration Suitability Map (SD50) is available at geosmartinfo.co.uk.

How was surface water runoff estimated from the Site?

In accordance with the SuDS Manual (C753) (CIRIA, 2015), the Greenfield runoff from the Site has been calculated using the IoH124 method and is assumed representative of the runoff generated on the undeveloped surfaces that are affected by the proposed development. The method used for calculating the runoff complies with the NPPF (2024). For the impermeable surfaces, it has been assumed that 100% runoff will occur (calculations provided in Appendix B). Rainfall data is derived from the Flood Estimation Handbook (FEH), developed by NERC (2009). Only areas affected by the proposed development are considered in the flow and volume calculations. Permeable areas that remain unchanged are not included in the calculations as it is assumed these will not be actively drained and attenuated.

What is the peak discharge rate?

An estimation of peak runoff flow rate and volume is required to calculate infiltration, storage and discharge requirements. The peak discharge rate is the maximum flow rate at which surface water runoff leaves the Site during a particular storm event, without considering the impact of any mitigation such as storage, infiltration or flow control. Proposed discharge rates (with mitigation) should be no greater than existing rates for all corresponding storm events. If all runoff will be disposed of via infiltration there will be no discharge off-Site. Discharging all flow from Site at the existing 1 in 100 event would increase flood risk during smaller events. Flow restriction is generally required to limit the final discharge from Site during all events as a basic minimum to the green field QBAR rate. A more complex flow restriction which varies the final discharge rate from the Site depending on the storm event will reduce the volume of storage required on-Site. Drainage to infiltration SuDS is subtracted from the total discharge off-Site to achieve a beneficial net effect.

What is the total discharge volume?

The total discharge volume is calculated on the basis of the surface water runoff that has the potential to leave the Site as a result of the assumed 6 hour duration design storm event. The runoff is related to the underlying soil conditions, impermeable cover, rainfall intensity and duration of the storm event. The total volume generated by the current Site is compared to the potential total volume from the developed Site (not taking into consideration any mitigation). The difference provides the minimum total volume that will need to be stored and infiltrated on-Site or released at a controlled rate. Guidance indicates that the total discharge volume should never exceed the runoff volume from the development Site prior to redevelopment for that event and should be as close as is reasonably practicable to the Greenfield runoff volume.

12. Additional Products

The following table includes a list of additional products by GeoSmart:

Additional GeoSmart Products		
	Additional assessment: 	The FloodSmart Report range provides clear and pragmatic advice regarding the nature and potential significance of flood hazards which may be present at a Site. Our consultants assess available data to determine the level of risk based on professional judgement and years of experience. Please contact info@geosmartinfo.co.uk for further information.
	Additional assessment: 	Provides a robust desk-based assessment of potential contaminated land issues, taking into account the regulatory perspective. Our EnviroSmart reports are designed to be the most cost effective solution for planning conditions. Each report is individually prepared by a highly experienced consultant conversant with Local Authority requirements. Ideal for pre-planning or for addressing planning conditions for small developments. Can also be used for land transactions. Please contact info@geosmartinfo.co.uk for further information.

13. References and glossary

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Glossary

General terms

Attenuation	Reduction of peak flow and increased duration of a flow event.
Combined sewer	A sewer designed to carry foul sewage and surface water in the same pipe.
Detention basin	A vegetated depression, normally is dry except after storm events, constructed to store water temporarily to attenuate flows. May allow infiltration of water to the ground.
Evapotranspiration	The process by which the Earth's surface or soil loses moisture by evaporation of water and by uptake and then transpiration from plants.
FEH	Flood Estimation Handbook, produced by Centre for Ecology and Hydrology, Wallingford (formerly the Institute of Hydrology).
Filter drain or trench	A linear drain consisting of a trench filled with a permeable material, often with a perforated pipe in the base of the trench to assist drainage, to store and conduct water, but may also be designed to permit infiltration.
First flush	The initial runoff from a site or catchment following the start of a rainfall event. As runoff travels over a catchment it will collect or dissolve pollutants, and the "first flush" portion of the flow may be the most contaminated as a result. This is especially the case for intense storms and in small or more uniform catchments. In larger or more complex catchments pollution.
Flood plain	Land adjacent to a watercourse that would be subject to repeated flooding under natural conditions (see Environment Agency's Policy and practice for the protection of flood plains for a fuller definition).
Greenfield runoff	This is the surface water runoff regime from a site before development, or the existing site conditions for brownfield redevelopment sites.
Impermeable surface	An artificial non-porous surface that generates a surface water runoff after rainfall.
Permeability	A measure of the ease with which a fluid can flow through a porous medium. It depends on the physical properties of the medium, for example grain size, porosity and pore shape.
Runoff	Water flow over the ground surface to the drainage system. This occurs if the ground is impermeable, is saturated or if rainfall is particularly intense.
Sewerage undertaker	This is a collective term relating to the statutory undertaking of water companies that are responsible for sewerage and sewage disposal including surface water from roofs and yards of premises.
Soakaway	A subsurface structure into which surface water is conveyed to allow infiltration into the ground.

Source Protection Zone (SPZ) **Areas where groundwater supplies are at risk from potentially polluting activities and accidental releases of pollutants. They are a policy tool used to control activities close to water supplies intended for human consumption.**

Treatment **Improving the quality of water by physical, chemical and/or biological means.**

The terms included in this glossary have been taken from CIRIA (2015) guidance.

Data sources

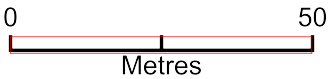
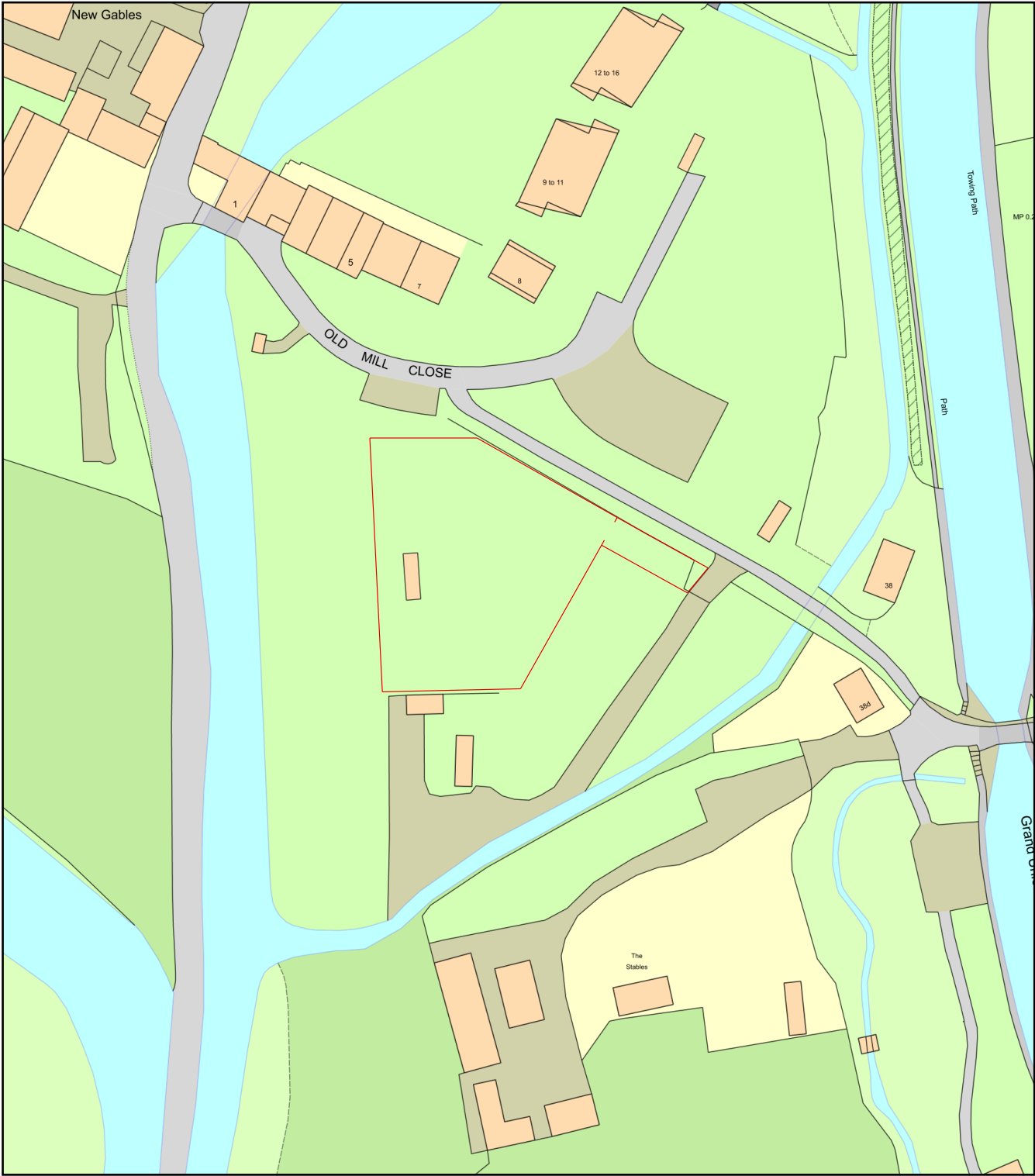
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Flood Risk (RoFRS/Pluvial/Surface Water Features/SPZ)	Environment Agency copyright and database rights 2026 Ordnance Survey data © Crown copyright and database right 2026
Flood Risk (Groundwater) and SuDS infiltration suitability (SD50)	GeoSmart, BGS & OS GW5 (v2.4) Map (GeoSmart, 2026) Contains British Geological Survey materials © NERC 2026 Ordnance Survey data © Crown copyright and database right 2026
Sewer Location	Contains Ordnance Survey data © Crown copyright and database right 2026 Contains Thames Water search data 2026
Topographic Data	OS LiDAR/EA Contains Ordnance Survey data © Crown copyright and database right 2026 Environment Agency copyright and database rights 2026

14. Appendices

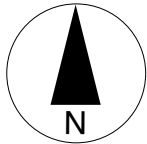
Appendix A

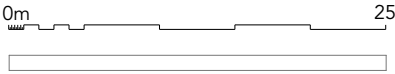
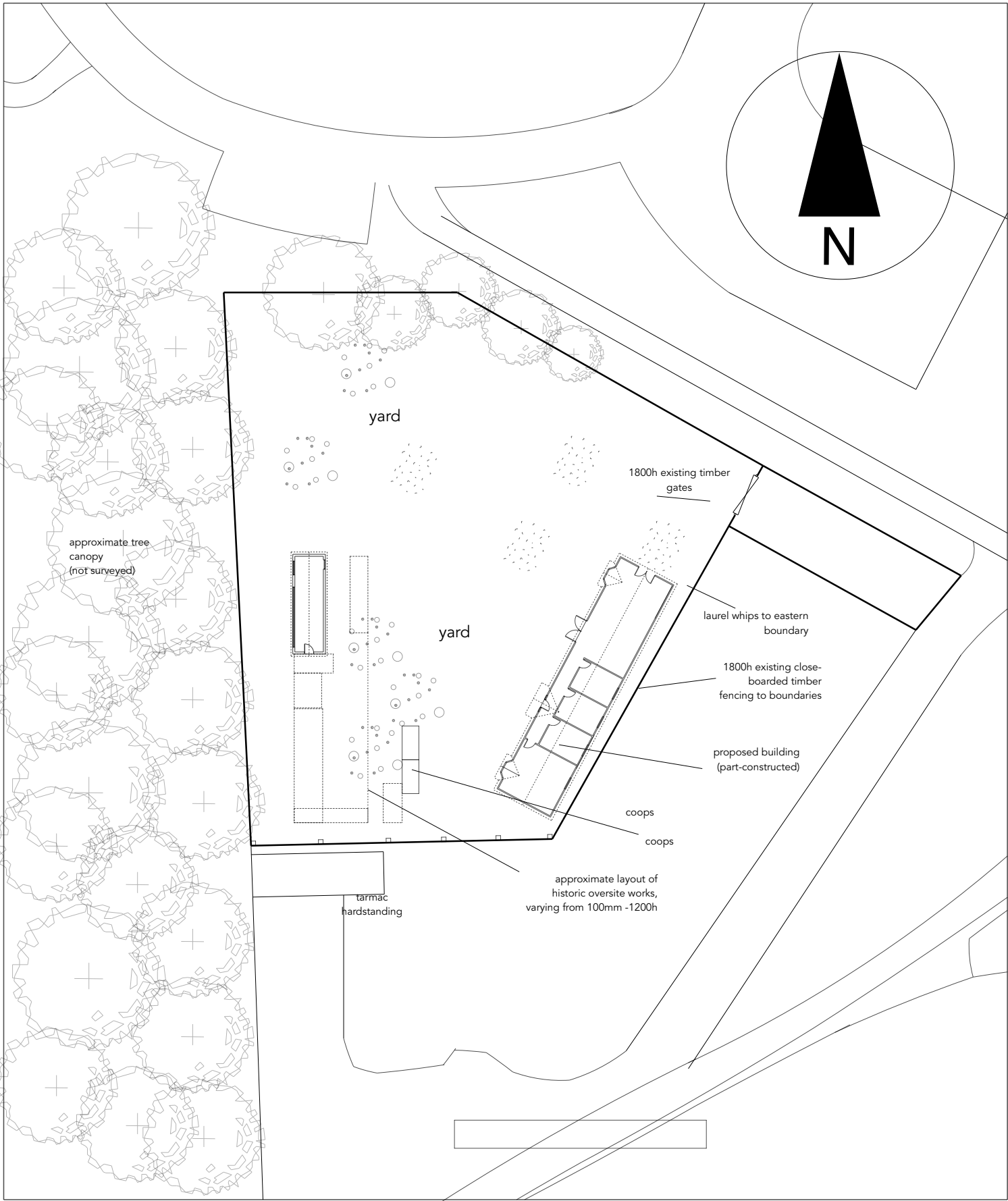
Site plans

Land at Benbow Way, Uxbridge UB8 2EY



Plan Produced for: Becker Design & Partners
Date Produced: 05/08/26
Plan Reference Number: 2627 PRP1.0 location
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project
land at benbow

project no.
2627

drawing title
site block

drawing no.
PRP 2.0

revision no.

date
05/08/26

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Where relevant, attention is drawn to relevant Water Authority Build Over Agreements & obligations.

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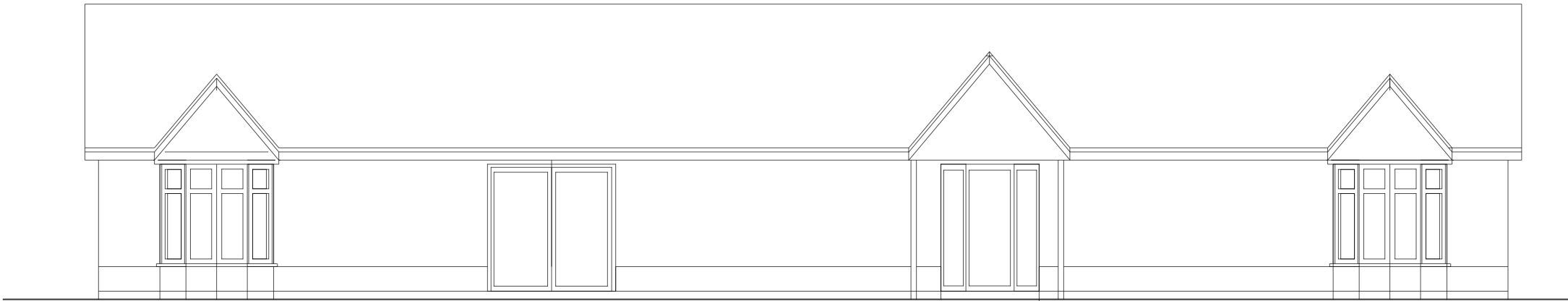
Becker Design & Partners (BDP) 2026



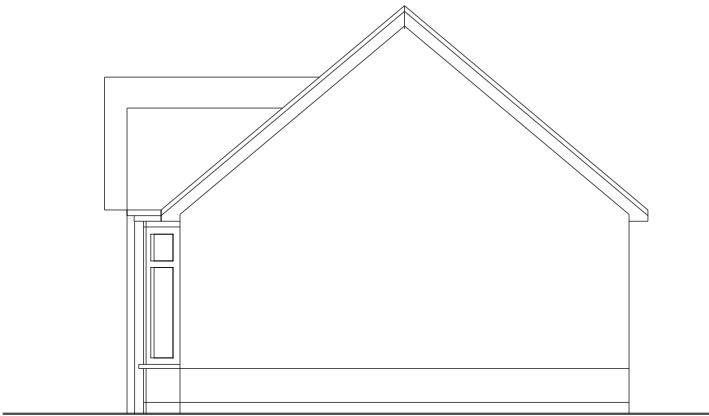
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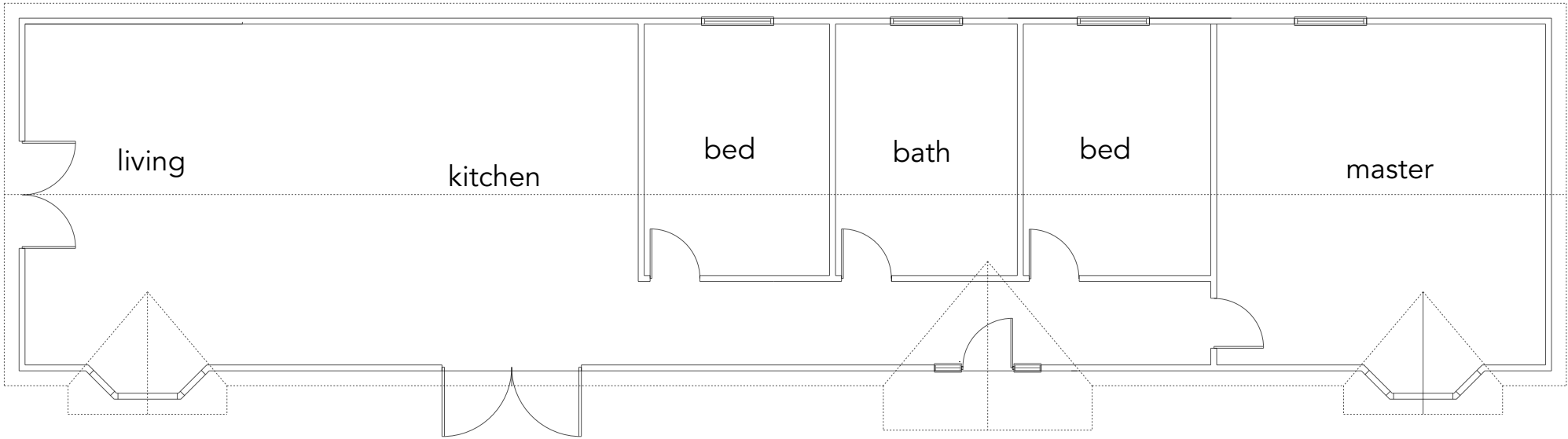
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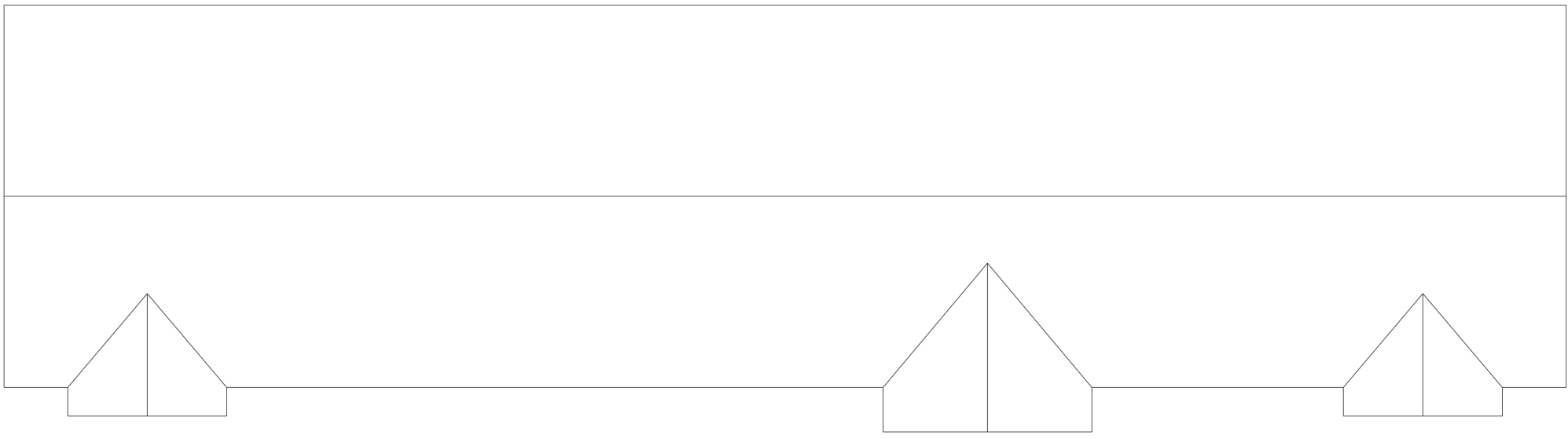
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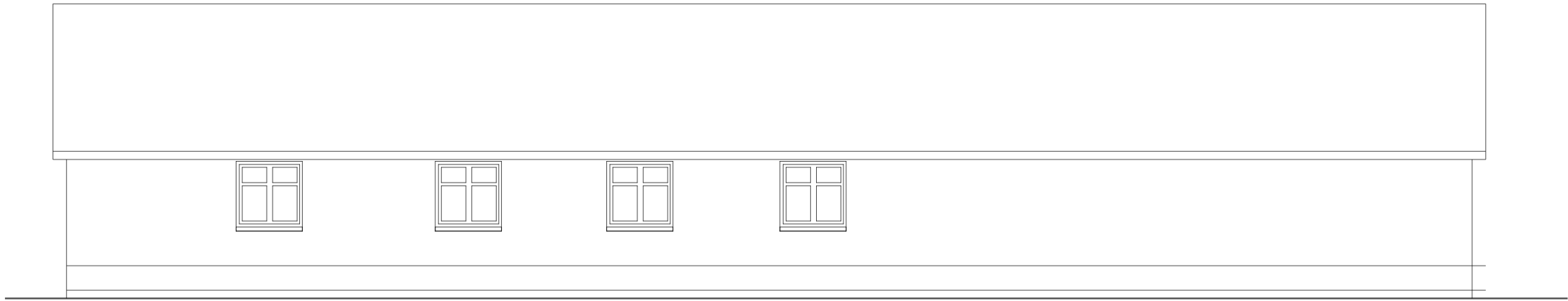
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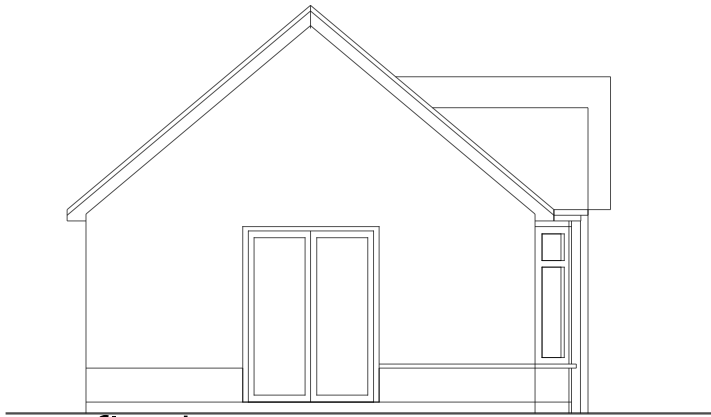
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existing & proposed

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PRP 3.0

revision no.

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notes

PARTY WALL ACT
"INDEPENDENT PROFESSIONAL ADVICE MUST BE SOUGHT"
The owner, should they need to do so under the requirements of the Party Wall Act 1996,
has a duty to serve a Party Structure Notice on any adjoining owner if building work on, to
or near an existing Party Wall involves any of the following:
• Support of beam
• Insertion of DPC through wall
• Raising a wall or cutting off projections
• Demolition and rebuilding
• Underpinning
• Insertion of lead flashings
• Excavations within 3 metres of an existing structure where the new foundations will go
deeper than adjoining foundations, or within 6 metres of an existing structure where the
new foundations are within a 45 degree line of the adjoining foundations.
A Party Wall Agreement is to be in place 28 days prior to start of works on site.

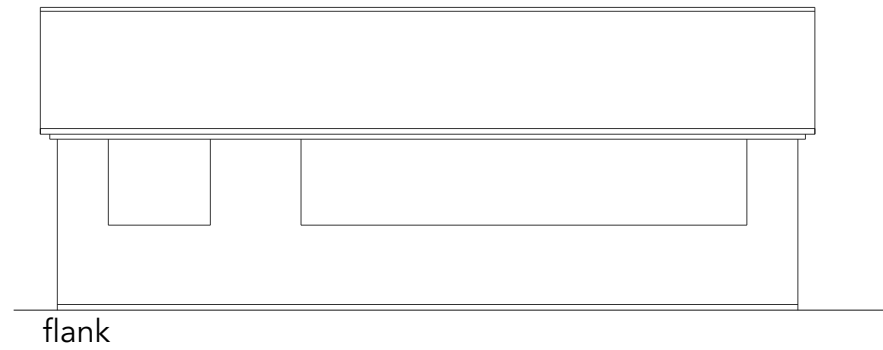
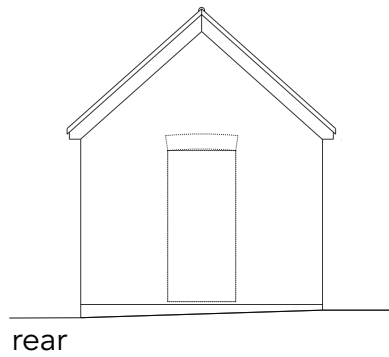
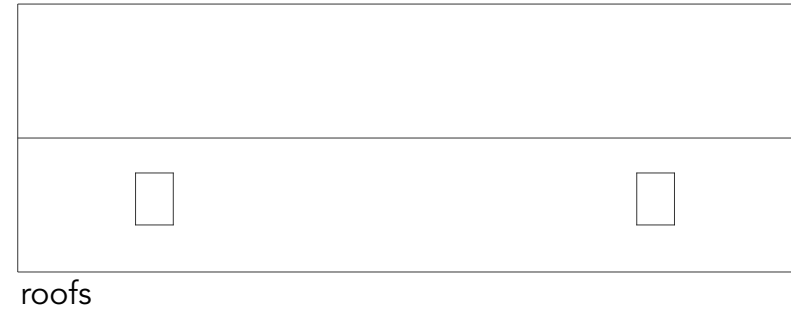
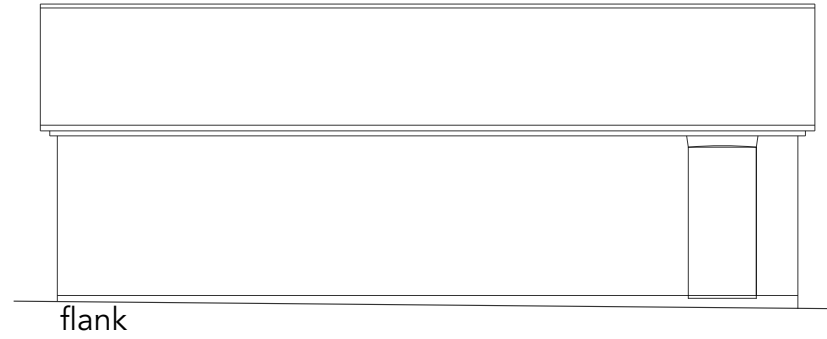
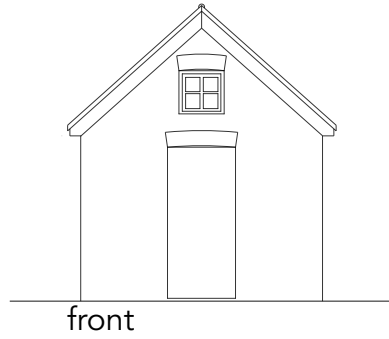
General
Do not write from this drawing
This drawing is to be read in conjunction with all relevant third party inputs,
including but not limited to engineering drawings, specifications & calculations;
timber framing and roof manufacture's details & specifications; sub-ground &
girling details.
Where relevant, attention is drawn to relevant Water Authority Build Over
Agreements & obligations.
Where relevant, attention is drawn to The Party Wall Act & obligations.
This drawing is the property of BDP. It may not be copied, reproduced or
otherwise used without licence or other prior consent.
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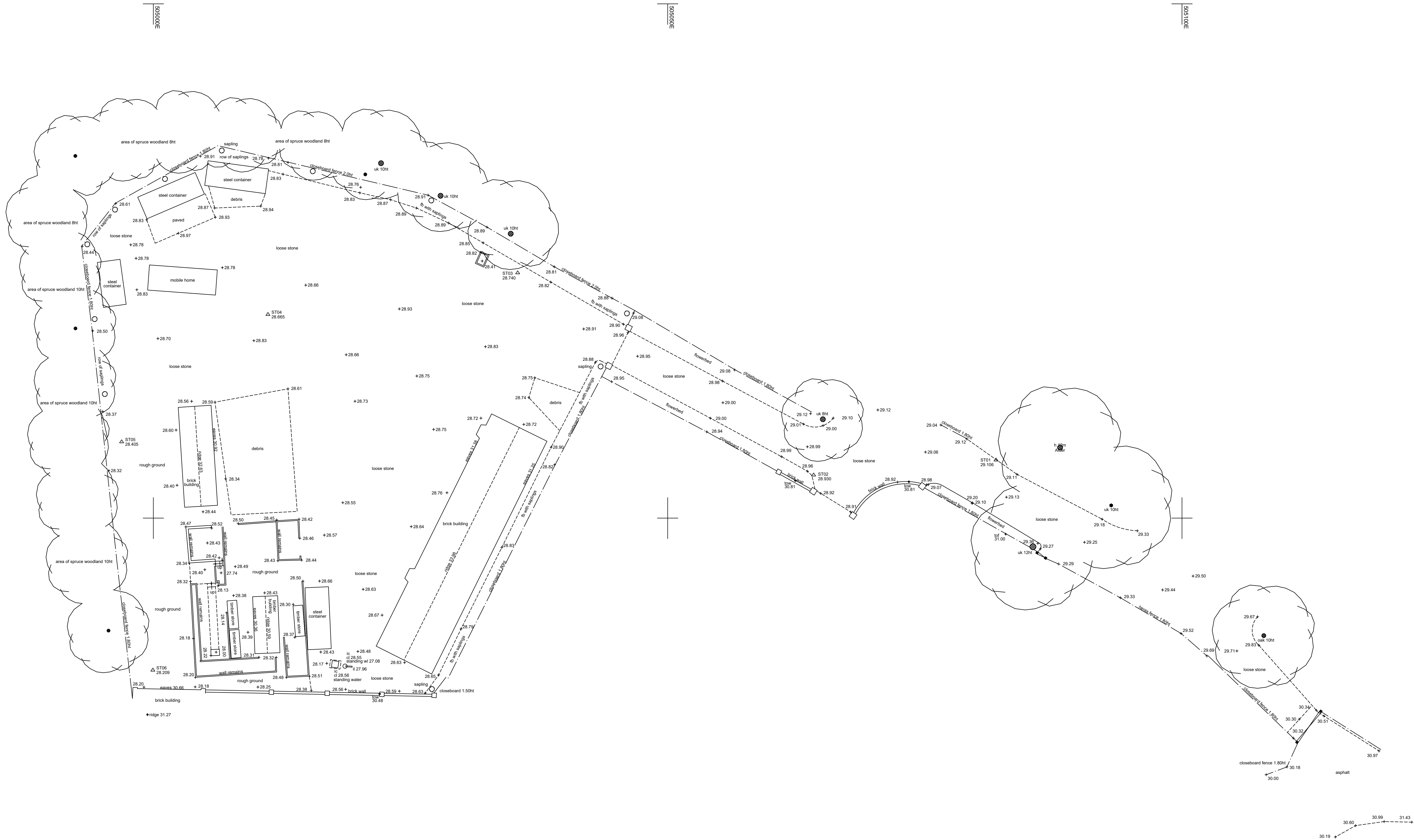
+44 (0) 1276 537272
sm@beckerdesign.co.uk
www.beckerdesign.co.uk





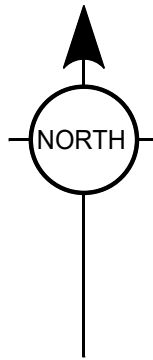
PLEASE NOTE:
For the purposes of
validation
the sheet border
represents the ISO216
paper size





ALL LEVELS ARE IN METRES DERIVED FROM GPS TRANSFORMATION.
GRID COORDINATES ARE ORDNANCE SURVEY OSGB36 GRID DERIVED FROM GPS
TRANSFORMATION. (NO SCALE FACTOR APPLIED)
PLOT SCALE ACCURACY OF 1:200.
TREE SPECIES TO BE CONFIRMED BY A SPECIALIST IF ESSENTIAL TO THE SURVEY.
SERVICE COVERS UNDER STRUCTURES/VEHICLES OR ONES THAT ARE BURIED MAY B
OMITTED FROM THE SURVEY. PIPE DETAILS SURVEYED FROM SURFACE ONLY.
BROKEN COVERS AND COVERS WITHIN BUSY HIGHWAYS WILL NOT BE LIFTED.
OVERHEAD CABLE POSITIONS/HEIGHTS SHOULD BE TREATED AS APPROXIMATE AND
ARE LIABLE TO SEASONABLE CHANGE.
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- TEXT KEY -
- | | |
|------------------------------|---------------------------------|
| av - air valve | p & r fence - post & rail fence |
| bt - telecom | re - rodding eye |
| catv - cable television | rs - road sign |
| c/b fence - closeboard fence | rw - rain water pipe |
| cbox - control box | sl - spot light |
| cl - cover level | sv - stop valve |
| cr - cable riser | sw - soil vent pipe |
| dp - depth | tbn - temporary bench mark |
| ep - electric pole | thl - threshold level |
| er - earthing rod | tl - service light |
| fh - fire hydrant | toc - top of cap |
| fl - floor level | top - top of pipe |
| fs - fire switch | tot - top of tank |
| g - gully | tp - telecom pole |
| gv - gas valve | u/s - underside |
| ht - height | ul - unable to lift |
| ic - inspection cover | vp - vent pipe |
| il - invert level | w/c - water filled chamber |
| lp - lamp post | wm - water meter |
| mh - manhole | wo - wash out |
| mtr - marker | wp - waste pipe |



STATION SCHEDULE				
ID	EASTINGS	NORTHINGS	LEVEL	TYPE
ST01	505081.920	181805.648	29.106	ROAD NAIL
ST02	505084.190	181804.189	28.930	ROAD NAIL
ST03	505035.418	181823.847	28.740	ROAD NAIL
ST04	505011.139	181819.890	28.665	ROAD NAIL
ST05	504996.915	181807.417	28.405	ROAD NAIL
ST06	504999.950	181785.218	28.209	ROAD NAIL

PROJECT
BENBOW WAY, COWLEY, UXBRIDGE, UB8 2EY.

DRAWING TITLE
TOPOGRAPHICAL SURVEY

CLIENT			
ET PLANNING			
SURVEY DATE	SHEET SIZE	SURVEYOR	CHECKED
AUGUST 2026	A1	TDH	VCB
DRAWING NUMBER		SCALE	
2630-01		1:200	



Email: admin@cryfieldsurveys.co.uk Tel: 01926 935144
The Printrooms, C23J, Holly Farm Business Park, Honiley, CV8 1NP

Appendix B

Rainfall runoff calculations

Input parameters for run-off calculations	
Country	England
Total site area	2280 m^2
Area proposed for development	255 m^2
Current permeable ground cover	255 m^2
Current impermeable ground cover	0 m^2
Proposed permeable ground cover	62.5 m^2
Proposed impermeable ground cover	175 m^2
Urban Creep Allowance	10%
Final impermeable ground cover	192.5 m^2
SPR	0.3
SAAR	637 mm
Region	6
Climate change factor	40%
Discharge Rate (l/s)	1.0
Run-off coefficient	100%

Current impermeable area as % of total	0%
Proposed impermeable area as % of total	75%
Change in permeable area (m2)	-193
Change in impermeable area (m2)	193
Change in impermeable area as % of total	75%

Rainfall event	Greenfield run-off rates (l/s)	Existing run-off rates(l/s)	Potential run-off rates without attenuation (l/s)	Potential minus exisiting (l/s)
QBAR	0.04	N/A	N/A	N/A
6 hour 1 in 1 year	0.04	0.04	0.25	0.21
6 hour 1 in 10 year	0.07	0.07	0.43	0.36
6 hour 1 in 30 year	0.09	0.09	0.56	0.47
6 hour 1 in 100 year	0.13	0.13	0.73	0.59
6 hour 1 in 100 year + 20% CC	N/A	N/A	0.87	0.74
6 hour 1 in 100 year + 40% CC	N/A	N/A	1.02	0.89

Rainfall event	Greenfield run-off volume (m³)	Existing run-off volume (m³)	Potential run-off volume without attenuation (m³)	Potential minus existing (m³)
QBAR	2.11	N/A	N/A	N/A
6 hour 1 in 1 year	1.96	1.96	5.40	3.45
6 hour 1 in 10 year	3.43	3.43	9.24	5.81
6 hour 1 in 30 year	4.40	4.40	12.14	7.75
6 hour 1 in 100 year	5.69	5.69	15.72	10.03
6 hour 1 in 100 year + 20% CC	N/A	N/A	18.86	13.17
6 hour 1 in 100 year + 40% CC	N/A	N/A	22.01	16.31

Return Period	Runoff rate restriction (l/s)	Critical Storm Duration (hr)	Attenuation Volume Required (m³)	Volume required above previous return period
1 in 30 year	1.00	0.50	3.65	N/A
6 hour 1 in 100 year	1.00	0.75	5.39	1.74
6 hour 1 in 100 year + 40% CC	1.00	1	8.75	3.36

Appendix C

Thames Water Asset Location Plan

Geosmart Information Ltd
Suite 9-11
1st Floor
Old Bank
SHREWSBURY
SY1 1HU

Search address supplied 38
Benbow Waye
Uxbridge
UB8 2EY

Your reference 93099

Our reference ALS/ALS Standard/2026_5369826

Search date 11 August 2026

Keeping you up-to-date

Price Changes from 1 June 2026

With inflation continuing to influence costs, our prices for all searches will increase by around **4.3%** from **1 June 2026**. We've based this increase on **Retail Price Index (RPI)**.

You can view the new prices here: thameswater.co.uk/property-searches

If you have any questions, our customer experience team is here to help on **0800 009 4540**.



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



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



0800 009 4540

Search address supplied: 38, Benbow Waye, Uxbridge, UB8 2EY

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

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

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

Email: property.searches@thameswater.co.uk

Web: thameswater.co.uk/propertysearches

Waste Water Services

Please provide a copy extract from the public sewer map.

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

For your guidance:

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

Clean Water Services

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

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

Affinity Water Ltd
Tamblin Way



Hatfield
AL10 9EZ
Tel: 0845 7823333

For your guidance:

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

Further contacts:

Waste Water queries

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

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

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

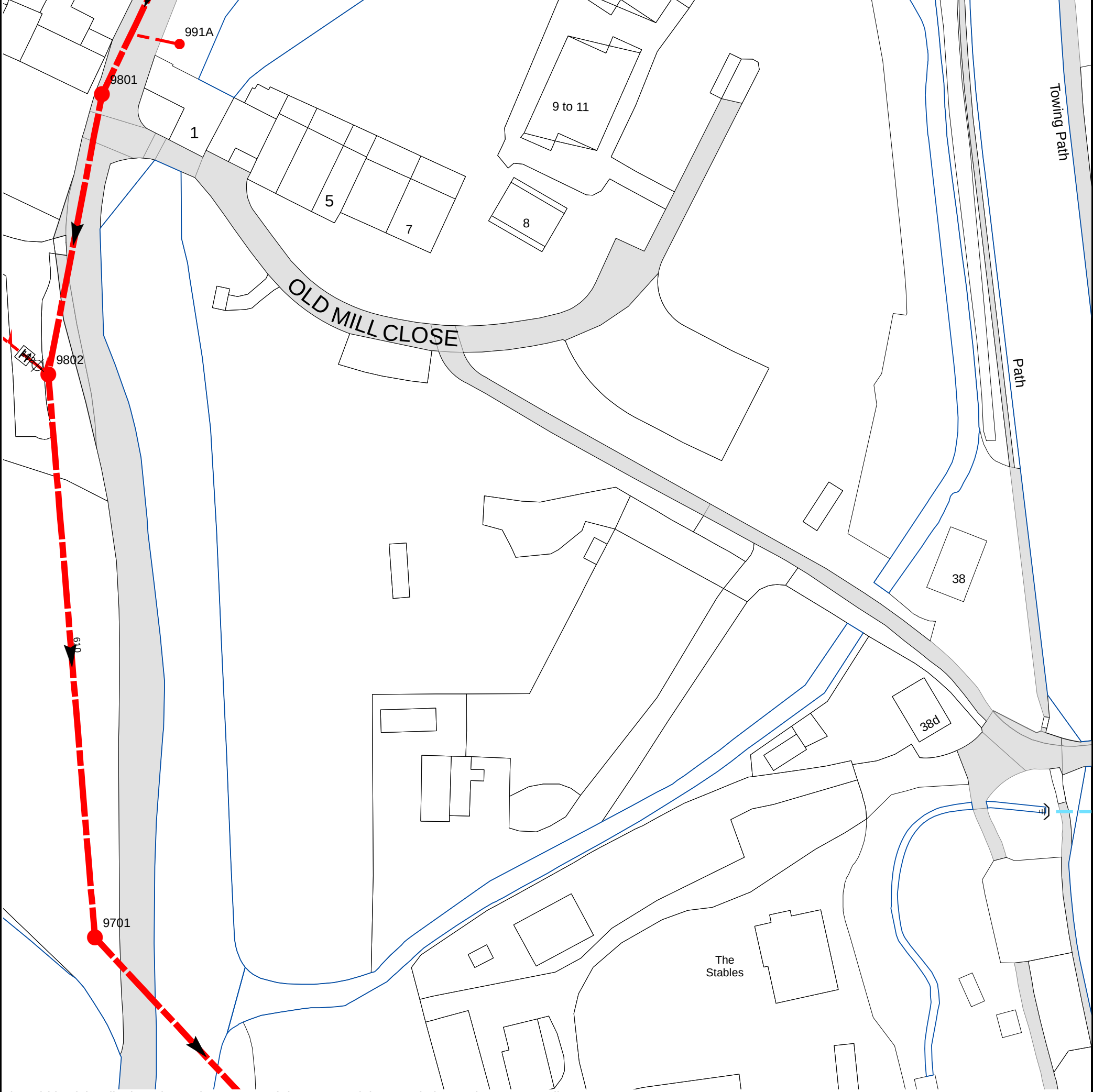
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

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

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

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



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 505032,181811
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

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

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9701	28.10	25.44
9801	28.38	25.76
991A	n/a	n/a
9802	28.29	25.63
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.		



Asset Location Search Sewer Key

Public Sewer Types

(Operated and maintained by Thames Water)

- Foul Sewer:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
- Surface Water Sewer:** A sewer designed to convey surface water (eg. rain water from roofs, driveways 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.
- Trunk Sewer:** A strategic sewer which collects either foul or surface water flow from a number of subsidiary catchments and transfers this flow to a pumping station, river outfall or 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**
- Gulley:** These sewers are generally maintained by the relevant highway authority.

Sewer Fittings

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

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

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer.

- Ancillary**
- Drop Pipe**
- Control Valve**
- Weir**

End Items

End symbols appear at the start or end of the sewer pipe. eg. 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**
- Undefined End**
- Outfall**

0800 009 4540

property.searches@thameswater.co.uk

thameswater.co.uk/propertysearches

Other Symbols

Symbols used on maps that 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 and agreements etc.

- Agreement/Adoption**
- Operational Site**
- Chamber**
- Awaiting Ordnance Survey data**

Ducts or Crossings

Ducts may contain high voltage cables. Please check with Thames Water.

- Casement**
- Subway**
- Conduit Bridge**
- 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.

16129 - 12/25

Disclaimer

This report has been prepared by GeoSmart in its professional capacity as soil, groundwater, flood risk and drainage specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client and is provided by GeoSmart solely for the internal use of its client.

The advice and opinions in this report should be read and relied on only in the context of the report as a whole, taking account of the terms of reference agreed with the client. The findings are based on the information made available to GeoSmart at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology and practices as at that time. They do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

This report is confidential to the client. The client may submit the report to regulatory bodies, where appropriate. Should the client wish to release this report to any other third party for that party's reliance, GeoSmart may, by prior written agreement, agree to such release, provided that it is acknowledged that GeoSmart accepts no responsibility of any nature to any third party to whom this report or any part thereof is made known. GeoSmart accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual or otherwise, against GeoSmart except as expressly agreed with GeoSmart in writing.

For full T&Cs see <http://geosmartinfo.co.uk/terms-conditions>

Further information

Information on confidence levels and ways to improve this report can be provided for any location on written request to info@geosmart.co.uk or via our website. Updates to our model are ongoing and additional information is being collated from several sources to improve the database and allow increased confidence in the findings. Further information on groundwater levels and flooding are being incorporated in the model to enable improved accuracy to be achieved in future versions of the map. Please contact us if you would like to join our User Group and help with feedback on infiltration SuDS and mapping suggestion.

Important consumer protection information

This search has been produced by GeoSmart Information Limited, Suite 1, 1 Bellstone Court, Bellstone, Shrewsbury, SY1 1JB.

Tel: 01743 298 100

Email: info@geosmartinfo.co.uk

GeoSmart Information Limited is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom.
- sets out minimum standards which firms compiling and selling search reports have to meet.
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals.
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.
- By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports.
- act with integrity and carry out work with due skill, care and diligence.
- at all times maintain adequate and appropriate insurance to protect consumers.
- conduct business in an honest, fair and professional manner.
- handle complaints speedily and fairly.
- ensure that products and services comply with industry registration rules and standards and relevant laws.
- monitor their compliance with the Code.

Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs contact details:

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk.

Please ask your search provider if you would like a copy of the search code

Complaints procedure

GeoSmart Information Limited is registered with the Property Codes Compliance Board as a subscriber to the Search Code. A key commitment under the Code is that firms will handle any complaints both speedily and fairly. If you want to make a complaint, we will:

- Acknowledge it within 5 working days of receipt.
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk.

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision. Complaints should be sent to:

Liz Lloyd

Finance Manager

GeoSmart Information Limited

Suite 1, 1 Bellstone Court,

Bellstone, Shrewsbury, SY1 1JB

Tel: 01743 298 100

support@geosmartinfo.co.uk

15. Terms and conditions, CDM regulations and data limitations

Terms and conditions can be found on our website:

<http://geosmartinfo.co.uk/terms-conditions/>

CDM regulations can be found on our website:

<http://geosmartinfo.co.uk/knowledge-hub/cdm-2015/>

Data use and limitations can be found on our website:

<http://geosmartinfo.co.uk/data-limitations/>