SURFACE WATER DRAINAGE DESIGN

LAND TO THE EAST OF WEPHAM CLOSE

HAYES

UB4 9YE

Date: October 2025

1 INTRODUCTION

1.1 The following report is a Surface Water Drainage Design for the proposed development at Land to the east of Wepham Close, Hayes, UB4 9YE, as indicated in Figure 1 below.

1.2 This report should accompany a full planning application for the construction of 5 new-build residential dwellings and ancillary works.

Figure 1 - Site Location

1.3 The purpose of this assessment is to demonstrate that the development proposal outlined above can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk of flooding, as per the:

- National Planning Policy Framework
- Hillingdon SuDS Design and Evaluation Guide
- DEFRA National SuDS Guidelines (June, 2025)
- CIRIA SuDS Manual C753
- Building Regulations: Part H

DEVELOPMENT PROPOSALS

1.4 According to the proposed plans, the site has a redline area of approximately 1250m^2 (0.125ha) and is currently greenfield.

1.5 The proposed development is for the construction of 5 new-build residential dwellings, each with private garden space, private entrances, and dedicated refuse storage, including shared communal amenities and secure cycle parking facilities. The total post-development impermeable site area would be approximately 770m^2 (0.077ha).

EXISTING DRAINAGE NETWORKS AND WATERCOUSES

1.6 The site is currently greenfield and according to the topographic survey (see in Appendix B) no drainage infrastructure is present.

1.7 According to the Thames Water sewer asset plan, dedicated surface and foul water sewers are located in Wepham Close. Based on the topographic survey (see Appendix B), it is assumed that the surface water manhole ref. 9511 is located nearest to the site.

1.8 The nearest watercourse to the site is a local drain, located on the south eastern site corner and flows southwards. Analysis of the 1mLiDAR topography in the area of the watercourse indicates that the ditch is very shallow or culverted.

1.9 It is recommended to discharge runoff to the surface water sewer in Wepham Close in order to provide unhindered access to the drainage network and flow control for maintenance.

GEOLOGY, INFILTRATION POTENTIAL AND GROUNDWATER

1.10 According to the nearest borehole log (ref. TQ18SW270, see Appendix B) the superficial geology is comprised mainly of clay with some content of gravel/ and sand. No groundwater intrusions have been recorded to the end of the borehole, at 10m below ground level (mbgl).

1.11 Bespoke infiltration testing is not recommended due to the likely almost impermeable geology. Infiltration should be allowed where possible to promote groundwater recharge and vegetation growth. Furthermore, all 5mm rainfall events would be fully contained within the SuDS network and infiltrated – no offsite discharges, in line with the latest DEFRA National SuDS Guidelines.

SURFACE WATER FLOOD RISK

1.12 Surface water flooding occurs when the volume and intensity of rainfall overwhelms local drainage systems. Lead Local Flood Authorities (LLFAs) are responsible for managing the risk of flooding from surface water. LLFAs are the unitary authority or, if there is no unitary authority, the county council for the area. They manage local flood risks and work in partnership with other organisations, including the Environment Agency (EA) district councils, internal drainage boards and sewerage companies.

1.13 In 2025, the EA updated the national map showing the risk of flooding from surface water. According to the latest flood depth maps for a variety of storm events, show the likelihood of a particular flood depth (e.g. 0.2m) occurring in an area based on a specific storm event, either with a ‘High’ likelihood of occurrence or ‘Very Low’ (shown as ‘Unavailable’ in the flood maps used for this study).

1.14 The various rainfall categories correspond to the following annual probabilities of occurrence:

- High risk indicates a ≥ 3.3% chance (≥ 1-in-30 chance) of flooding from surface water in any year.
- Medium risk corresponds to an annual probability between 1% and 3.3% (1-in-100 to 1-in-30 chance).
- Low risk represents a probability between 0.1% and 1% (1-in-1000 to 1-in-100 chance).

1.15 While not typically distinguished in public displays, "Very Low" risk (> 0.1%) exists in the source data. These definitions are consistent across the Environment Agency's datasets and reflect flood likelihood rather than exact depths.

1.16 According to the latest flood depth maps for a variety of storm events, the proposed site would be at a 'Low' risk of flooding from surface water (Figure 2) and flood depths would not exceed 0.2m. The proposed dwellings would be located outside the surface water flood outline; therefore, no water displacement would occur as a result of the proposed development.

1.17 Flood depths above 0.2m would not occur across the site, according to the latest RoFWS EA model, as indicated in Figure 2 below.

1.18 All properties should be provided with a 150mm finished floor level difference to the external ground levels and flood proof construction up to 0.3m height, as per *Improving the flood performance of new buildings - Flood resilient construction (May, 2007)*.

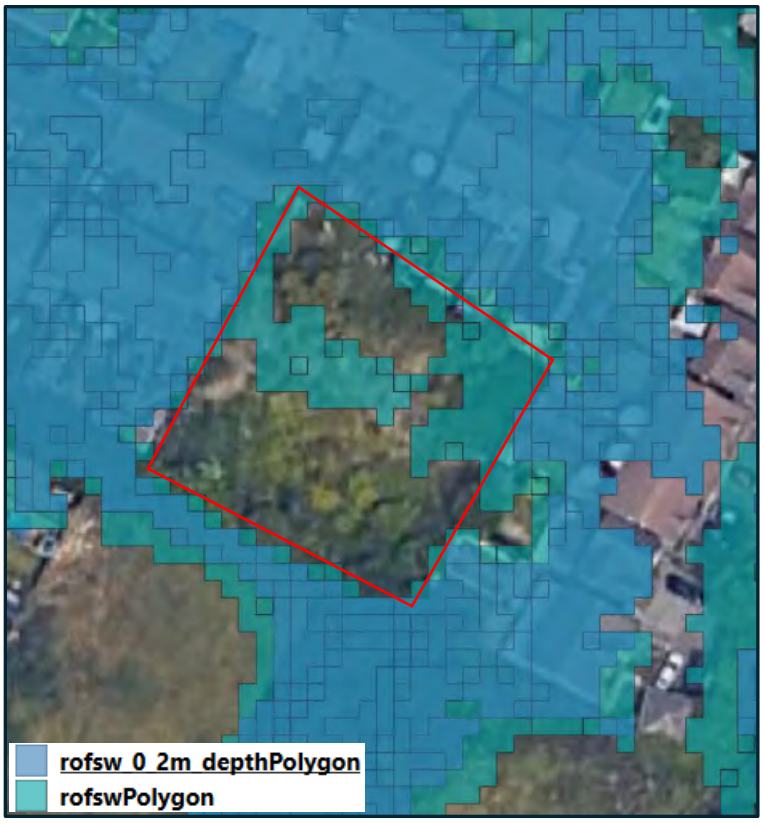


Figure 2 - EA Surface Water Flood Outlines

CLIMATE CHANGE ALLOWANCES

1.19 Making an allowance for climate change in the design of surface water drainage systems will help to minimise vulnerability and provide resilience to flooding and coastal change in the future. Climate Change allowances vary across the UK subject to catchment conditions and are based on climate change projections and different scenarios of carbon dioxide (CO2) emissions to the atmosphere.

1.20 Climate change allowances were recently updated by the EA and the climate change allowances are now defined by River Catchment peak rainfall allowances.

1.21 The data published on the DEFRA database shows the site located within the London Management Catchment and for residential development (lifespan 100yrs) an upper end allowance of 40% should be applied to rainfall events as the climate change allowance within this region.

2 SUSTAINABLE URBAN DRAINAGE (SUDS) ASSESSMENT

2.1 In accordance with the Hillingdon SuDS Design and Evaluation Guide, the use of various SuDS measures to reduce and control surface water flows have been considered in detail for the development.

2.2 The Hillingdon SuDS Design and Evaluation Guide states that a drainage scheme should be designed to:

- *protect people and property on the development site from flooding;*
- *prevent increases in flood risk outside of the development in any part of the catchment, either upstream or downstream;*
- *where possible mimic natural flow routes and maintain existing hydrological catchments; and*
- *provide a sustainable drainage systems approach, using, where possible, an above ground, gravity drained and multifunctional approach.*

2.3 The management of surface water has been considered in respect to the SuDS hierarchy below as detailed in the CIRIA 753 'The SUDS Manual', Section 3.2.3:

SUDS DRAINAGE HIERARCHY				
			Suitability	**Comment**
	1.	**Store rainwater for later use**	✓	Rainwater harvesting, such as water butts, should be provided, where possible, and the water used in gardening activities/car washing.
	2.	**Use infiltration techniques, such as porous surfaces in non-clay areas**	-	Infiltration should be allowed for groundwater recharge and vegetation growth. No infiltration rates have been assumed in calculations and further bespoke testing is not recommended.
	3.	**Attenuate rainwater in ponds or open water features for gradual release**	✓	A detention basin is proposed in the vegetated area bordering the eastern site boundary.
	4.	**Attenuate rainwater by storing in tanks or sealed water features for gradual release**	✓	Below-ground attenuation is proposed in permeable paving and bioretention system gravel/infiltration layer.
	5.	**Discharge rainwater direct to a watercourse**	-	Possibly a very shallow ditch or culverted watercourse is located on the site's south eastern corner. Due to these constraints, including poor access for maintenance of the drainage network, it is recommended to discharge runoff to the surface water sewer in Wepham Close.
	6.	**Discharge rainwater to a surface water sewer/drain**	✓	The nearest surface water sewer manhole (ref. 9511) is located next to the site in Wepham Close. It is recommended to provide a new connection to this manhole, subject to Thames Water approval of the construction works and discharge rates.
	7.	**Discharge rainwater to Combined Sewer**	x	

Table 1 - SuDS Drainage Hierarchy

2.4 The suitability of SuDS components has been assessed in order to provide a sustainable means of providing the required attenuation volumes. The following components have been assessed as follows in Table 2, below.

SUITABILITY OF SUDS COMPONENTS		
SuDS Component	**Comment**	**Suitability**
Permeable Pavement	Pervious surfaces can be used in combination with aggregate sub-base and/or geocellular/modular storage to attenuate and/or infiltrate runoff from surrounding surfaces and roofs. Liners can be used where ground conditions are not suitable for infiltration. **Permeable paving is recommended to be provided in all proposed hardstanding areas for runoff interception, treatment. conveyance and attenuation.**	✓
Green Roofs	Green Roofs provide areas of visual benefit, ecological value, enhanced building performance and the reduction of surface water runoff. They are generally more costly to install and maintain than conventional roofs but can provide many long-term benefits and reduce the on-site storage volumes. **Not suitable due to the pitched type roof of the proposed building.**	x
Rainwater Harvesting	Rainwater Harvesting is the collection of rainwater runoff for use. It can be collected form roofs or other impermeable area, stored, treated (where required) and then used as a supply of water for domestic, commercial and industrial properties. **Rainwater harvesting, such as water butts, should be provided at the rear of the site, if possible, and the water used in gardening activities.** **The proposed development should focus on water saving fixtures and appliances (low pressure shower heads, low-flow toilets, high-efficiency washing machines and dishwashers, etc.) before considering specialist rainwater harvesting (RWH) systems, including grey water reuse (GRW) solutions.** **Water saving is preferable and significantly more cost/ water efficient when compared to specialist RWH and GRW systems, which require a significant upfront cost and professional maintenance in the long term.**	✓
Swales	Swales are designed to convey, treat and attenuate surface water runoff and provide aesthetic and biodiversity benefits. They can replace conventional pipework as a means of conveying runoff, however space constraints of some sites can make it difficult incorporating them into the design. **This SuDS feature would provide little benefit to the overall drainage network of the site.**	x
Rills and Channels	Rills and Channels keep runoff on the surface and convey runoff along the surface to downstream SuDS components. They can be incorporated into the design to provide a visually appealing method of conveyance, they also provide effectiveness in pre-treatment removal of silts. **This SuDS feature would provide little benefit to the overall drainage network of the site.**	x
Bioretention Systems	Bioretention systems can reduce runoff rates and volumes and treat pollution through the use of engineer soils and vegetation. They are particularly effective in delivering interception, but can also be an attractive landscape feature whilst providing habitat and biodiversity. **This SuDS feature should be provided in all vegetated areas, where possible, and as a minimum at the base of the detention basin.**	✓
Retention Ponds and Wetlands	Ponds and Wetlands are features with a permanent pool of water that provide both attenuation and treatment of surface water runoff. They enhance treatment processes and have great	x

	amenity and biodiversity benefits. Often a flow control system at the outfall controls the rates of discharge for a range of water levels during storm events. **This SuDS feature would provide little benefit to the overall drainage network of the site.**	
Detention Basins	Detention Basins are landscaped depressions that are usually dry except during and immediately following storm events, and can be used as a recreational or other amenity facility. **A detention basin/dry pond should be provided above the bioretention system in the vegetated area to the east of the car parking area.**	✓
Geocellular Systems	Attenuation storage tanks are used to create a below-ground void space for the temporary storage of surface water before infiltration, controlled release or use. The inherent flexibility in size and shape means they can be tailored to suit the specific characteristics and requirements of any site. **This SuDS feature would provide little benefit to the overall drainage network of the site.**	x
Proprietary Treatment Systems	Proprietary treatment systems are manufactured products that remove specific pollutants from surface water runoff. They are especially useful where site constraints preclude the use of other methods and can be useful in reducing the maintenance requirements of downstream SuDS. **The catchpits, permeable paving and bioretention system would provide adequate runoff treatment.**	x
Filter Drains and Filter Strips	Filter drains are shallow trenches filled with stone, gravel that create temporary subsurface storage for the attenuation, conveyance and filtration of surface water runoff. Filter strips are uniformly graded and gently sloping strips of grass or dense vegetation, designed to treat runoff from adjacent impermeable areas by promoting sedimentation, filtration and infiltration. **This SuDS feature would provide little benefit to the overall drainage network of the site.**	✓

Table 2 - Suitability of SuDS Components

3 SURFACE WATER DRAINAGE STRATEGY

3.1 In accordance with Hillingdon SuDS Design and Evaluation Guide, developments are required to use SuDS to reduce both the volume and runoff rates to the drainage system.

3.2 Local guidance states that the peak runoff rate post-development must be as close to the respective greenfield Q_{BAR} runoff rate from the proposed development.

3.3 The greenfield runoff rates for the proposed impermeable areas are low and as such, as per the local guidance, peak runoff rates from the proposed development would be limited to the lowest possible per current flow control technology.

3.4 According to The SuDS Manual, the lowest orifice diameter to be used with permeable paving structures is 20mm. As such, a 20mm diameter orifice plate is recommended to limit outflows to the surface water sewer to a maximum rate of 0.6 l/s during the design storm event (1%AEP+40%CC).

3.5 The proposed orifice plate would be located 8mm above the invert level of the permeable paving in order for the 5mm rainfall events to be fully retained on-site.

3.6 The proposed drainage strategy is to manage runoff in permeable paving (Type B and C), a detention basin and bioretention systems. Outflows, limited to a maximum of 0.6 l/s during the design storm event, would be directed to the surface water sewer (MH Ref. 9511) in Wepham Close. Post-development outflows could not be limited to the Greenfield QBAR rate, however the proposed rates would not exceed the Greenfield runoff rates associated with each main storm event, as per Table 3 below.

3.7 Proposed Surface water discharge rates have been calculated below and supporting calculations are included in Appendix C. Calculations include a volumetric coefficient (Cv) of 1 for the impermeable areas and Urban Creep Factor (UCF) of +10%.

SURFACE WATER DISCHARGE RATES SUMMARY					
	Area (ha)	Discharge Rates (l/s)			
		1 year	2 year	30 year	100 year
Greenfield Runoff Rates	0.077	0.3	0.3	0.7	1.0
Proposed Runoff Rates + 40%CC	0.077	-	0.2	0.4	0.6

Table 3 - Surface Water Discharge Rates Summary

3.8 Hydraulic calculations show that an attenuation storage of approximately 83.5m^3 would be required to limit the peak runoff rate for the 100-year storm event + 40% climate change to a rate of 0.6 l/s from the respective impermeable area.

3.9 This volume is proposed to be partially attenuated in permeable paving, providing approximately 62.4m^3 of attenuation storage capacity.

3.10 The remaining attenuation volume would be attenuated in the detention basin and bioretention system near the site's eastern boundary, providing a total of approximately 21.4m^3 of attenuation volume capacity.

3.11 The total runoff attenuation capacity of the proposed development would be approximately 83.8m^3.

3.12 The national SuDS standard (Standard 2) requires that development should be designed so that, for the majority of rainfall events, the first 5 mm of rainfall is either collected for use, infiltrated, or retained on-site and not discharged to surface water or piped drainage systems.

3.13 The supporting local guidance for London Borough of Hillingdon allows an interception credit of 5 mm in the net inflow calculations where interception losses are demonstrated. This approach is used because many studies (e.g., HR Wallingford) show that pollutant mobilisation (e.g., oils, silts) is highest in the early part of a rainfall event ('first flush'), so retention of this initial depth helps reduce pollution entering receiving water bodies.

3.14 A 5mm rainfall event would generate 3.85m^3 (5*770/1000) of runoff that should be retained on-site and fully infiltrated. The infiltration gravel layer beneath the bioretention system would provide 3.2m^3 and an additional 0.8m^3 would be available in the car park permeable paving, between its invert level (IL) and the orifice plate IL (8mm difference – 8*345*0.3/1000).

3.15 The proposed drainage calculations based on FEH22 rainfall model, 40% climate change allowance, Cv factors of 1.0 and UFC of + 10% are included in Appendix C. A proposed storm drainage design plan layout and indicative construction details are included in Appendix D.

3.16 The proposed drainage structures should be reviewed by the manufacturers/providers of the respective devices and confirm or amend the proposals to suit the final selected product.

4 WATER QUALITY

4.1 Runoff from the roofs and the patios is largely considered to be uncontaminated.

4.2 The Pollution Hazard Indices are summarised in Table 4 – Summary of Pollution Hazard Indices for different Land Use below (based on Table 26.2 of The SuDS Manual):

POLLUTION HAZARD INDICES FOR DIFFERENT LAND USE CLASSIFICATIONS				
LAND USE	**Pollution Hazard Level**	**Total Suspended Solids**	**Metals**	**Hydrocarbons**
Residential Roofs	Very Low	0.2	0.2	0.05
Residential Car Parking	Medium	0.7	0.6	0.7

Table 4 - Summary of Pollution Hazard Indices for different Land Use

4.3 The Mitigation Indices of the proposed SuDS techniques are summarised in Table 5 below.

INDICATIVE SuDS MITIGATION INDICES FOR DISCHARGES TO SURFACE WATER			
SuDS Component	**Total Suspended Solids**	**Metals**	**Hydrocarbons**
Permeable Paving	0.7	0.6	0.7
Bioretention System	0.8	0.8	0.8

Table 5 - Indicative SuDS Mitigation Indices.

4.4 It can be seen that the total SuDS Mitigation Index ≥Pollution Hazard Index for the permeable paving, therefore the water treatment provided solely by this SuDS device is enough to remove the potential pollutants generated on the roofs, patios and car trafficked areas.

5 SCHEDULE OF MAINTENANCE

5.1 All onsite SuDS and drainage systems will be privately maintained. A long-term maintenance regime should be agreed with the site owner/s before adoption.

5.2 In addition to a long-term maintenance regime, it is recommended that all drainage elements implemented on site should be inspected following the first rainfall event post-construction and monthly for the first quarter following construction.

5.3 The owner/s of the properties will jointly responsible for the management and maintenance of SuDS devices, in accordance with the manufacturer's recommendations. Maintenance for the permeable paving, orifice plate and water butts are to be in accordance with manufacturer's recommendations. General maintenance requirements for each of these devices is provided below.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and clear manholes, inspection chambers, and gullies of debris, silt, and blockages.	Monthly or after storm events
	Check that manhole and inspection chamber covers are secure, undamaged, and seated correctly.	Monthly
	Flush drainage pipes with clean water to check for blockages and confirm flow paths.	Quarterly
Occasional Maintenance	Remove silt and debris from the bottom of chambers and sumps.	Every 6 months or as required
	Perform CCTV inspections to assess internal pipe condition and structural integrity.	Every 1–5 years depending on risk and design
	Check for root intrusion, displacement, or deformation of pipe sections.	Annually
Remedial Actions	Repair cracked or displaced pipework using lining, patching, or excavation.	As needed
	Replace damaged or missing chamber components (e.g. benching, steps, covers).	As required
	Excavate and relay collapsed or severely deformed pipes.	As required
Monitoring	Record flow rates and identify any persistent surcharging or slow drain-down.	Annually or post-incident
	Compare sediment accumulation rates over time to adjust maintenance schedules.	Ongoing
	Check connectivity and hydraulic performance across the drainage network.	Every 2–5 years or during audit inspections

Table 6 – General Schedule of Maintenance

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect inlet and outlet structures for blockages, debris, or erosion.	Monthly or after heavy rainfall
	Remove litter, debris, and sediment from basin floor and flow channels.	Monthly
	Inspect basin floor and embankments for signs of erosion, scouring, or sediment build-up.	Monthly
	Check grass cover and mow to maintain design vegetation height.	Monthly during growing season
Occasional Maintenance	Control invasive plant species and remove undesirable vegetation.	Twice per year
	Reseed or replant areas with poor vegetation cover.	Annually or as needed
	Check and maintain access paths, fencing, signage, and safety features.	Annually
Remedial Actions	Repair eroded areas and stabilise embankments as required.	As needed
	Remove and dispose of accumulated sediment from basin floor and forebay.	Every 5–10 years or based on inspection
	Replace or repair inlet/outlet structures or flow control devices.	As needed
Monitoring	Check for prolonged ponding and confirm basin drains as per design.	Monthly or after rainfall
	Inspect sediment levels and track changes to determine maintenance frequency.	Annually

	Confirm flow routing, volume control, and temporary storage performance against design.	Every 2–5 years

Table 7 - Detention Basins Indicative Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 8 - Permeable Paving Indicative Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect inlets and outlets for blockages or sediment build-up; clear debris and obstructions.	Monthly or after heavy rainfall
	Remove litter and organic debris from the surface and inflow zones.	Monthly
	Check for signs of erosion, scouring, or sediment deposition at inflow points and within the basin.	Monthly
	Inspect and maintain pretreatment devices (e.g. forebays, filter strips, sediment traps).	Monthly
	Water vegetation during extended dry periods, especially during establishment.	As needed (typically in first 1–2 years)
Occasional Maintenance	Remove dead or dying vegetation and replant where necessary to maintain full vegetation cover.	Twice per year
	Weed the system to remove invasive or undesirable plant species.	Quarterly or as needed
	Prune and trim plants to maintain aesthetics, sunlight penetration, and plant health.	Twice per year
	Check for signs of ponding or poor infiltration; remove surface mulch and scarify or replace filter media if required.	Annually or as needed
	Check for clogging or compaction of mulch and topsoil; scarify or replace as necessary.	Every 1–2 years
	Maintain and clean overflow structures and underdrain inspection ports.	Annually
Remedial Actions	Replace mulch layer to maintain filtration and suppress weed growth.	Every 1–2 years
	Excavate and replace clogged or compacted filter media.	Every 5–10 years or if infiltration performance declines
	Repair erosion damage, regrade surface and revegetate if bare soil is present.	As needed
	Repair or replace damaged underdrain pipes, inspection ports, and outlet structures.	As needed based on inspection
Monitoring	Inspect for signs of poor drainage, such as standing water lasting more than 48 hours.	Monthly or after rainfall
	Conduct infiltration tests to confirm that the system meets design performance.	Every 2–5 years
	Sample outflow for water quality (e.g., nutrients, metals, hydrocarbons) if required by regulation.	Annually or project-specific
	Evaluate vegetation health and diversity; update planting plans if system is underperforming.	Annually
	Inspect tree and shrub root health and check for root intrusion into drainage infrastructure.	Annually

Table 9 - Bioretention Systems Indicative Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect flow control chambers for debris, blockages, and silt accumulation. Remove as necessary.	Monthly or after storm events
	Ensure access covers are secure and free from damage or obstruction.	Monthly
	Check for water backing up or ponding upstream of the device.	Monthly
Occasional Maintenance	Inspect flow control devices (orifice plates, hydrobrakes, vortex controls) for signs of corrosion or mechanical damage.	Every 6 months to annually
	Flush system upstream of control device to dislodge any trapped material or silt.	Every 6–12 months
	Confirm that orifice diameter or flow opening is clear and unobstructed.	Annually
Remedial Actions	Replace damaged or deformed orifice plates or mechanical control units.	As needed based on inspection
	Clean and re-seat gaskets or seals around the flow control unit to prevent bypass or leaks.	As required
	Recalibrate or reset adjustable flow control systems if discharge performance has altered.	As needed following performance testing
Monitoring	Record water levels upstream and downstream of the device to evaluate performance.	Annually or after major rainfall
	Conduct hydraulic testing or simulation to confirm that flow control is operating as per design.	Every 2–5 years or when issues arise
	Compare flow control device condition and performance with design records and previous inspection logs.	Annually

Table 10 - Flow Controls Indicative Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Check and clear gutters and downpipes feeding the water butt of leaves and debris.	Monthly, especially during autumn
	Inspect the inlet filter/screen and clean to prevent clogging.	Monthly
	Ensure lid or cover is securely in place to prevent mosquito breeding and contamination.	Monthly
	Check for overflows and ensure overflow outlets are not blocked.	Monthly or after rain events
Occasional Maintenance	Clean the inside of the water butt to remove algae or sediment buildup.	Every 6–12 months
	Drain and flush the water butt completely and inspect for cracks or structural damage.	Annually
	Test and clean diverter or bypass device (if fitted).	Annually
Remedial Actions	Repair or replace cracked or leaking components (butt body, taps, diverters).	As needed
	Apply water treatment (e.g. barley straw, chlorine tablets) if algae or odour is present.	As required
Monitoring	Check collected water for odour, clarity, or signs of stagnation.	Monthly
	Ensure that use of water is within safe limits (e.g., not for drinking unless treated).	Ongoing, user-specific

Table 11 - Water Butts Indicative Maintenance Requirements

6 CONCLUSION

6.1 According to the proposed plans, the site has a redline area of approximately 1250m^2 (0.125ha) and is currently greenfield. The proposed development is for the construction of 5 new-build residential dwellings, each with private garden space, private entrances, and dedicated refuse storage, including shared communal amenities and secure cycle parking facilities. The total post-development impermeable site area would be approximately 770m^2 (0.077ha).

6.2 According to the nearest borehole log (ref. TQ18SW270, see Appendix B) the superficial geology is comprised mainly of clay with some content of gravel/ and sand. No groundwater intrusions have been recorded to the end of the borehole, at 10m below ground level (mbgl).

6.3 Bespoke infiltration testing is not recommended due to the likely almost impermeable geology. Infiltration should be allowed where possible to promote groundwater recharge and vegetation growth. Furthermore, all 5mm rainfall events would be fully contained within the SuDS network and infiltrated – no offsite discharges, in line with the latest DEFRA National SuDS Guidelines.

6.4 According to the Thames Water sewer asset plan, dedicated surface and foul water sewers are located in Wepham Close. Based on the topographic survey (see Appendix B), it is assumed that the surface water manhole ref. 9511 is located nearest to the site.

6.5 The nearest watercourse to the site is a local drain, located on the south eastern site corner and flows southwards. Analysis of the 1mLiDAR topography in the area of the watercourse indicates that the ditch is very shallow or culverted.

6.6 It is recommended to discharge runoff to the surface water sewer in Wepham Close in order to provide unhindered access to the drainage network and flow control for maintenance.

6.7 According to the latest flood depth maps for a variety of storm events, the proposed site would be at a 'Low' risk of flooding from surface water and flood depths would not exceed 0.2m. The proposed dwellings would be located outside the surface water flood outline; therefore, no water displacement would occur as a result of the proposed development.

6.8 The proposed drainage strategy is to manage runoff in permeable paving (Type B and C), a detention basin and bioretention systems. Outflows, limited to a maximum of 0.6 l/s during the design storm event, would be directed to the surface water sewer (MH Ref. 9511) in Wepham Close. Post-development outflows could not be limited to the Greenfield QBAR rate, however the proposed rates would not exceed the Greenfield runoff rates associated with each main storm event, as per Table 3.

6.9 Hydraulic calculations show that an attenuation storage of approximately 83.5m^3 would be required to limit the peak runoff rate for the 100-year storm event + 40% climate change to a rate of 0.6 l/s from the respective impermeable area. The total attenuation capacity available in the proposed SuDS scheme would be approximately 83.8m^3.

6.10 In addition to a long-term maintenance regime, it is recommended that all drainage elements implemented on site should be inspected following the first rainfall event post-construction and monthly for the first quarter following construction. The owner/s of the properties will be jointly responsible for the management and maintenance of SuDS devices, in accordance with the manufacturer's recommendations, where applicable.

APPENDIX A – NATIONAL SUDS STANDARDS CHECKLIST

STANDARD 1: RUNOFF DESTINATIONS

Ref	Checklist Item	Yes/No/ N/A	Evidence Location
1.1	Has the discharge hierarchy (req. 1.2) been strictly followed in order of priority (Use > Infiltration > Water Body > SW Sewer > Combined Sewer)?	Yes	See Table 1.
1.2	If not collecting for reuse (Priority 1), has a justification been provided?	Yes	See Table 2.
1.3	If not discharging to ground (Priority 2), is a full technical justification provided, including site-specific infiltration test results (e.g., BRE365), seasonal groundwater monitoring data, and a contamination risk assessment?	Yes	See Sections 1.10, 1.11.
1.4	Is the base of all infiltration features demonstrated to be at least 1m above the maximum likely groundwater level (req. 1.15)?	Yes	See Sections 1.10, 1.11.
1.5	If discharging to a water body or sewer (Priorities 3, 4, or 5), is written evidence of agreement on the connection principle and flow parameters from the relevant authority included?	N/A	A capacity check application would be submitted to Thames Water at the detailed design stage. The proposed runoff rates are the lowest feasible, below greenfield runoff rates; therefore, the approval is deemed certain.
1.6	Has discharge to a foul-only sewer been avoided (req. 1.10)?	Yes	See Table 1.
1.7	If pumping is proposed, is it demonstrated to be by exception only, with a full justification and risk assessment provided (req. 1.24, 1.25)?	N/A	See Table 1.

STANDARD 2: MANAGEMENT OF EVERYDAY RAINFALL (INTERCEPTION)

Ref	Checklist Item	Yes/No/ N/A	Evidence Location
2.1	Does the design ensure that at least the first 5mm of rainfall from contributing surfaces results in no runoff from the site (req. 2.1)?	Yes	See Section 3.14.
2.2	Has the volume of runoff captured via interception been quantified and its benefit to the overall drainage strategy explained?	Yes	See Sections 3.12.-3.14.
2.3	Are the interception features used (e.g., green roofs, permeable paving, swales) designed in accordance with the presumptions in req. 2.7 or supported by specific calculations?	Yes	See Appendix C and Appendix D.

STANDARD 3: MANAGEMENT OF EXTREME RAINFALL AND FLOODING

Ref	Checklist Item	Yes/No/ N/A	Evidence Location
3.1	Are post-development peak runoff rates controlled to the required greenfield runoff rates for the 50% AEP and 1% AEP storm events?	Yes	See Table 3.
3.2	Have the correct, most up-to-date 'Upper End' climate change allowances been applied to the design calculations for the development's lifetime (req. 3.8)?	Yes	See Appendix C.
3.3	Has a 10% urban creep uplift factor been applied to impermeable areas within private residential curtilages where appropriate (req. 3.33)?	Yes	See Appendix C.
3.4	For infiltration systems, is it demonstrated that they will half-empty their volume from a 3.3% AEP event within 24 hours (req. 3.16)?	Yes	See Appendix C.
3.5	Has an appropriate factor of safety been selected and justified for the design of infiltration systems (req. 3.17)?	N/A	No infiltration rates have been assumed in calculations. See Appendix C.
3.6	Is it demonstrated that no flooding of any building, susceptible utility plant, or safe access/escape route will occur for events up to the 1% AEP storm (req. 3.36)?	Yes	See Appendix C. All runoff generated by the 1%AEP + 40%CC storm event would be fully accommodated in the proposed SuDS devices.
3.7	Have exceedance flow routes (for events >1% AEP) been identified and shown to safely manage floodwater without risk to people or property (req. 3.40)?	Yes	See Appendix D.

STANDARD 4: WATER QUALITY

Ref	Checklist Item	Yes/No/N/ A	Evidence Location
4.1	Has a water quality risk assessment been undertaken, proportionate to the land use and receiving water sensitivity (req. 4.2)?	Yes	See Section 4.
4.2	Does the design incorporate a 'management train' of SuDS features to provide the required level of treatment (req. 4.3)?	Yes	See Section 4.
4.3	Is the management train and its treatment performance described and justified within the report?	Yes	See Section 4.
4.4	For high-risk areas, does the design include measures to intercept and contain pollution incidents (e.g., penstocks) (req. 4.11)?	N/A	The proposed development is residential with low-medium typical pollution indices.

STANDARD 5: AMENITY

Ref	Checklist Item	Yes/No/N/A	Evidence Location
5.1	Does the design maximize amenity by creating multi-functional SuDS features that are integrated into the landscape and public open space (req. 5.1, 5.2)?	Yes	See Table 2 and Appendix D.
5.2	Do the SuDS features positively contribute to placemaking, health and wellbeing (e.g., creating attractive spaces, walking/cycling routes) (req. 5.3, 5.9)?	Yes	See Table 2 and Appendix D.
5.3	Have safety aspects been designed in accordance with good practice (e.g., shallow side slopes, appropriate boundary treatments) (req. 5.11, 5.12)?	Yes	See Appendix D.

STANDARD 6: BIODIVERSITY

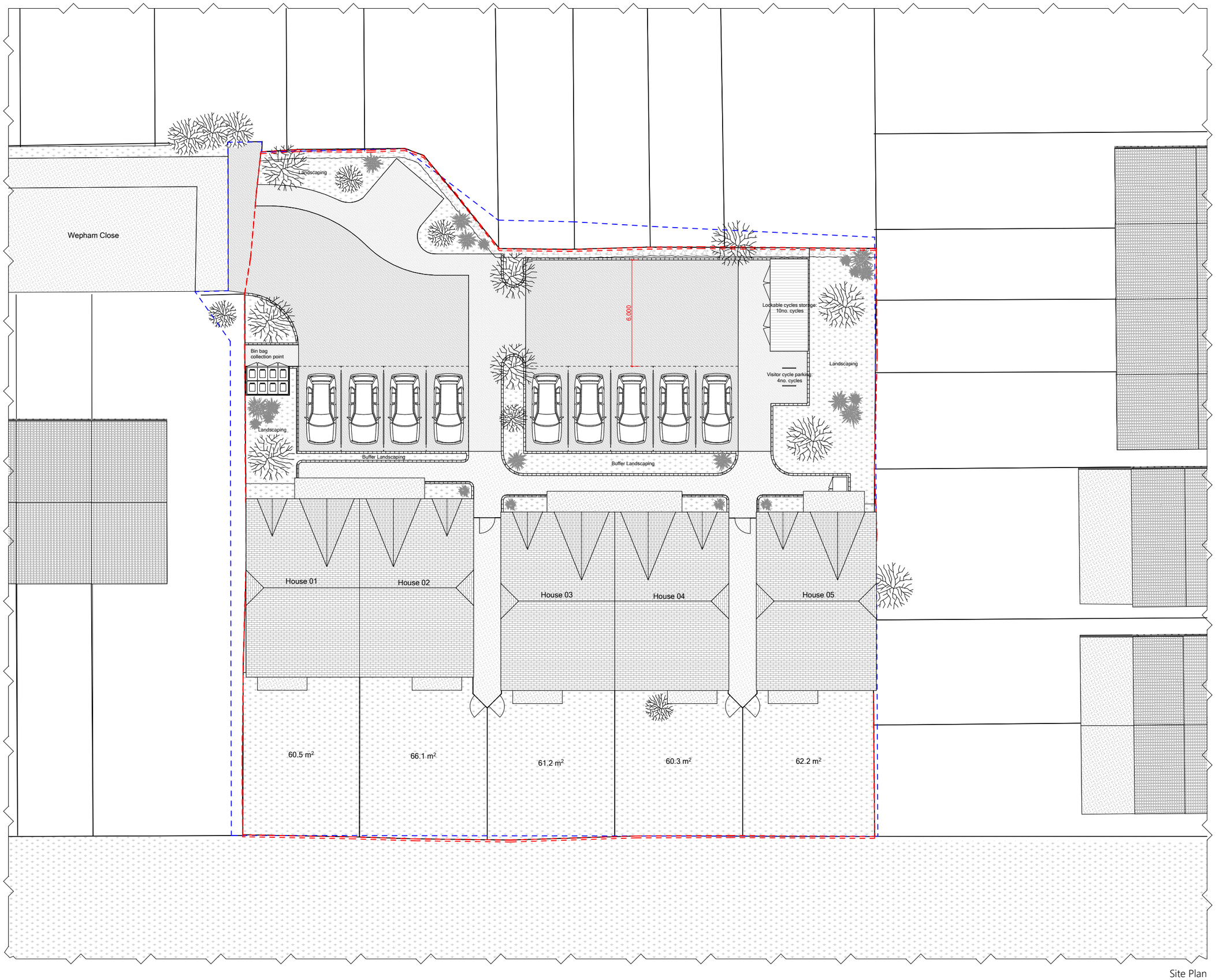
Ref	Checklist Item	Yes/No/N/A	Evidence Location
6.1	Does the design maximize biodiversity benefits and contribute to a net gain in biodiversity (req. 6.1, 6.2)?	Yes	See Table 2 and Appendix D.
6.2	Is there evidence of a biodiversity risk and opportunity assessment informing the SuDS design (req. 6.4)?	N/A	The proposed SuDS scheme would provide significant biodiversity value to the site, exceeding the existing simple vegetation.
6.3	Is the contribution of the SuDS scheme to statutory Biodiversity Net Gain (BNG) requirements quantified and explained (if applicable)?	N/A	See above. A BNG study is not deemed necessary given the proposed landscaping features and SuDS scheme, far exceeding the current biodiversity value of the site.
6.4	Does the design create diverse, resilient habitats and support habitat connectivity (req. 6.7)?	Yes	See Table 2 and Appendix D.

STANDARD 7: DESIGN FOR LIFECYCLE AND STRUCTURAL INTEGRITY

Ref	Checklist Item	Yes/No/N/A	Evidence Location
7.1	Has a comprehensive Management and Maintenance Plan been provided as a core part of the submission (req. 7.2)?	Yes	Detailed general maintenance information for each SuDS device proposed can be found in Section 5. These details are very often referenced by the main SuDS manufacturers; however, they should be confirmed by the selected manufacturers and the details and included, along with surface water management during construction, in a Construction Surface Water Management Plan (CSWMP) report. The CSWMP should be prepared by the Principal Contractor in accordance with the Environment Agency's Pollution Prevention Guidelines.

7.2	Does the plan clearly define management and maintenance responsibilities for the lifetime of the development (req. 7.10, 7.11)?	Yes	See Section 5. The owner/s of the properties would be held responsible, or any delegated 3rd party (to be specified by the developer).
7.3	Does the plan provide a specific, actionable schedule of inspection and maintenance tasks, frequencies, and performance criteria for each SuDS component?	Yes	See Section 5.
7.4	Is free, safe, and easy access for maintenance personnel, vehicles, and machinery demonstrated on the design drawings (req. 7.12)?	Yes	See Appendix D. The bioretention system/detention basin is located in the front garden and is easily accessible for maintenance. Similarly, other SuDS elements (ie flow control) would be accessed from the car parking area.
7.5	Are all components designed for structural integrity over the development's design life, considering all anticipated loads (req. 7.24, 7.25)?	Yes	See Appendix D. All drainage components and SuDS devices construction details follow the recommendations of the principal manufacturers. The selected manufacturers would further confirm whether their specific product would suit the proposed design.
7.6	Has the structural stability risk from infiltration systems near buildings or infrastructure been assessed and mitigated (req. 7.27)?	Yes	See Appendix D. Gravel-based permeable pavements and other similar SuDS devices with a sub-base designed primarily for attenuation (not rapid infiltration) are not typically subject to the 5 m rule, provided infiltration is slow, diffuse, and not concentrated at a single point.

APPENDIX B – SITE INFORMATION



Site Plan

Scale: 1:200

0 4 m 8 m 20 m

Notes

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Ownership / Land Registry Line

Application Boundary Line

N

URBANIST ARCHITECTURE

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2 Eaton Gate London SW1W 9BJ
T: 0203 793 7878
E: info@urbanistarchitecture.co.uk
W: www.urbanistarchitecture.co.uk

Project Description:
Construction of 5 new-build residential dwellings, each with private garden space, private entrances, and dedicated refuse storage, including shared communal amenities and secure cycle parking facilities.

Site Address:
Land to the east of Wepham Close, Hayes UB4 9YE

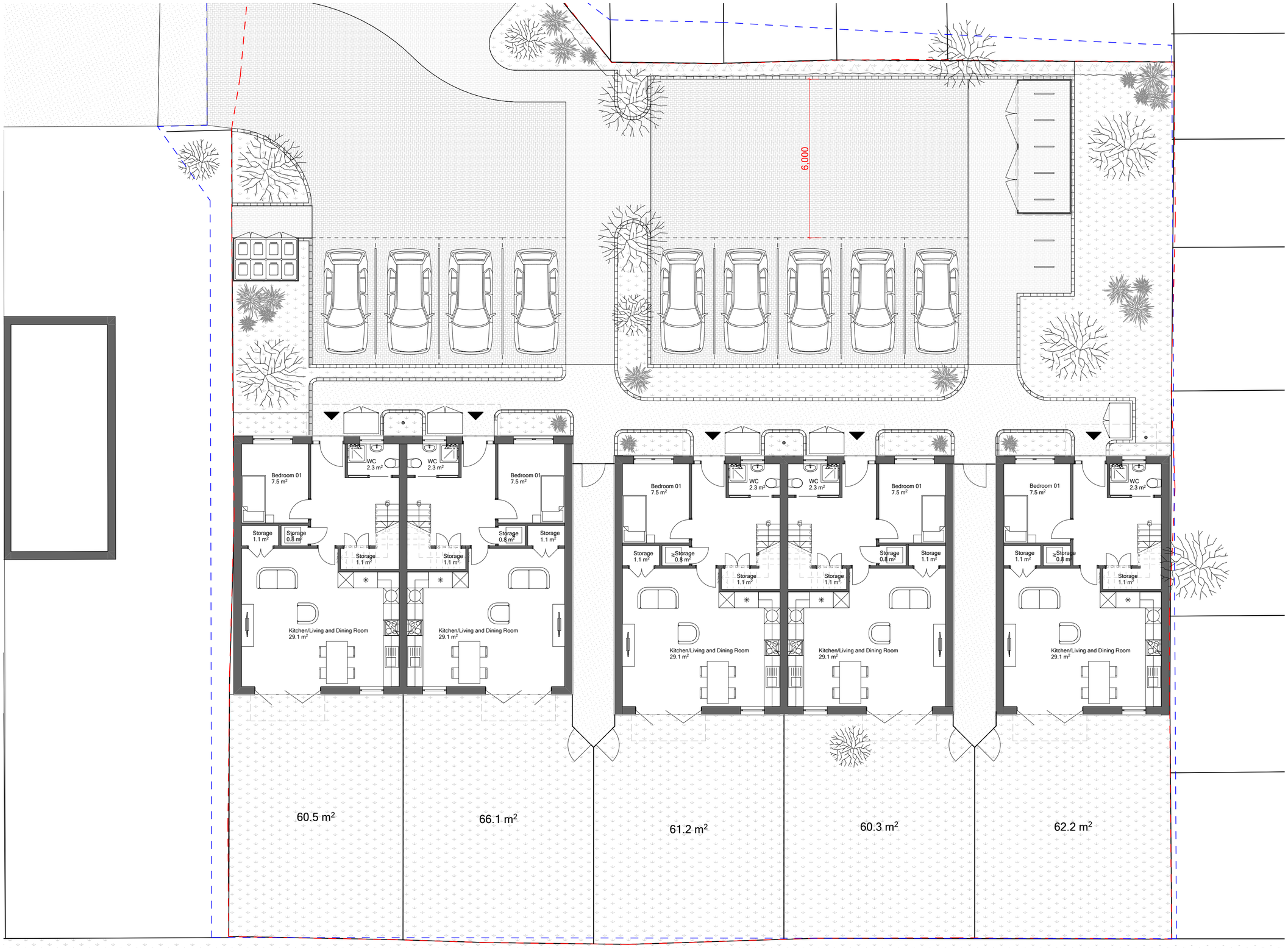
Drawing Name:
Plans Proposed
Site Plan

Drawing Status: Planning

Scale: 1:200 @A3 Drawn: DP
Date: 23/10/2025 Checked: RC

Drawing no

project	originator	zone	level	type	role	no.	rev
366 - UB4 9YE	- URB	- ZZ	- XX	- DR	- A	- 2001	- R1



Ground Floor

Scale: 1:100

0 2 m 4 m 10 m

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Boundary Line

Entrance

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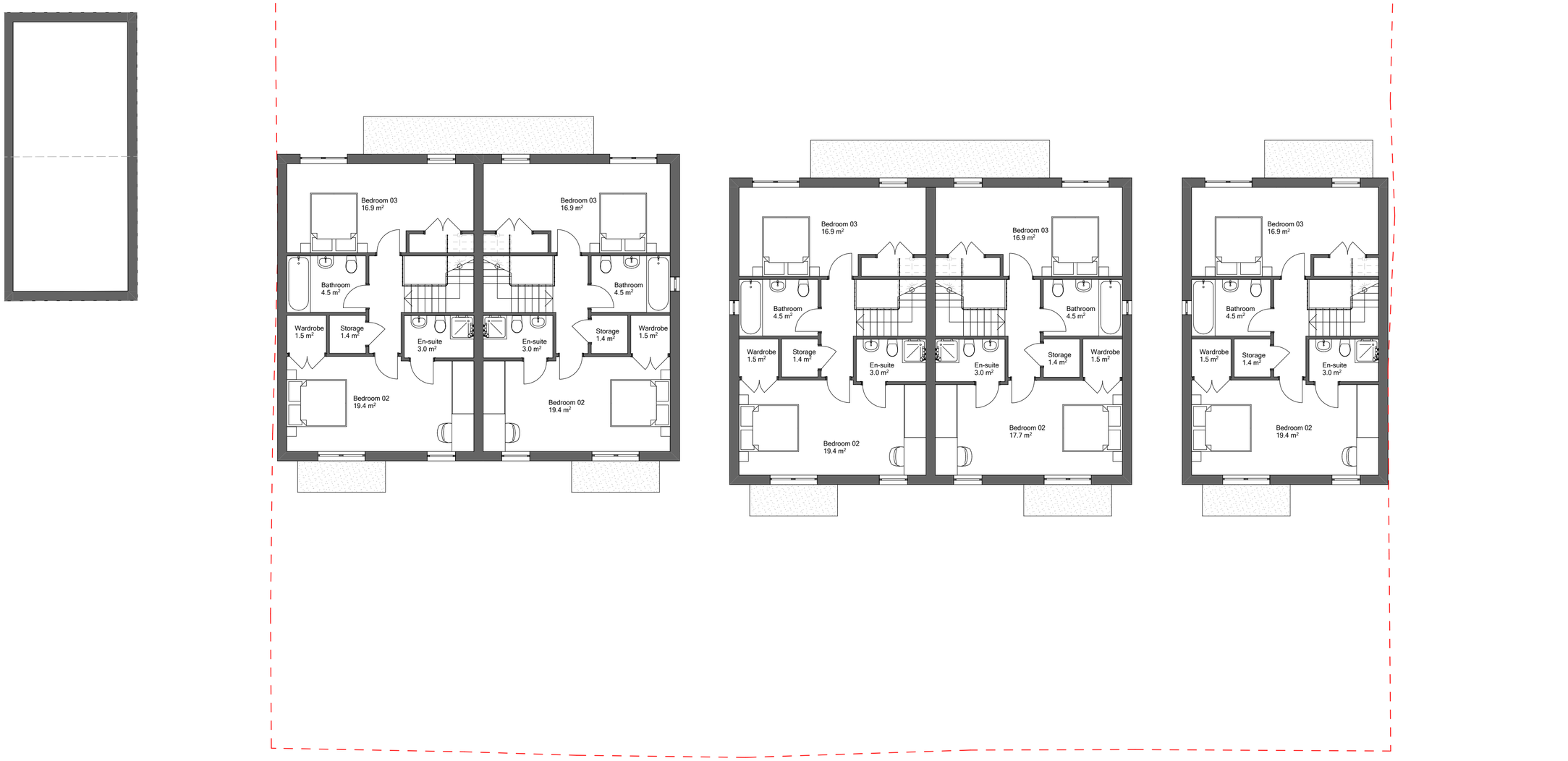
Drawing Name:
Plans Proposed
Ground Floor

Drawing Status: Planning

Scale: 1:100 @A2 Drawn: DP
Date: 23/10/2025 Checked: RC

Drawing no

project	originator	zone	level	type	role	no.	rev
366 - UB4 9YE	URB	ZZ	GF	DR	A	2002	R1



First Floor
Scale: 1:100

0 2 m 4 m 10 m

Notes

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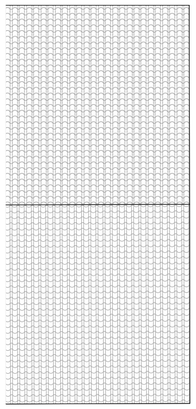
Drawing Name:
Plans Proposed
First Floor

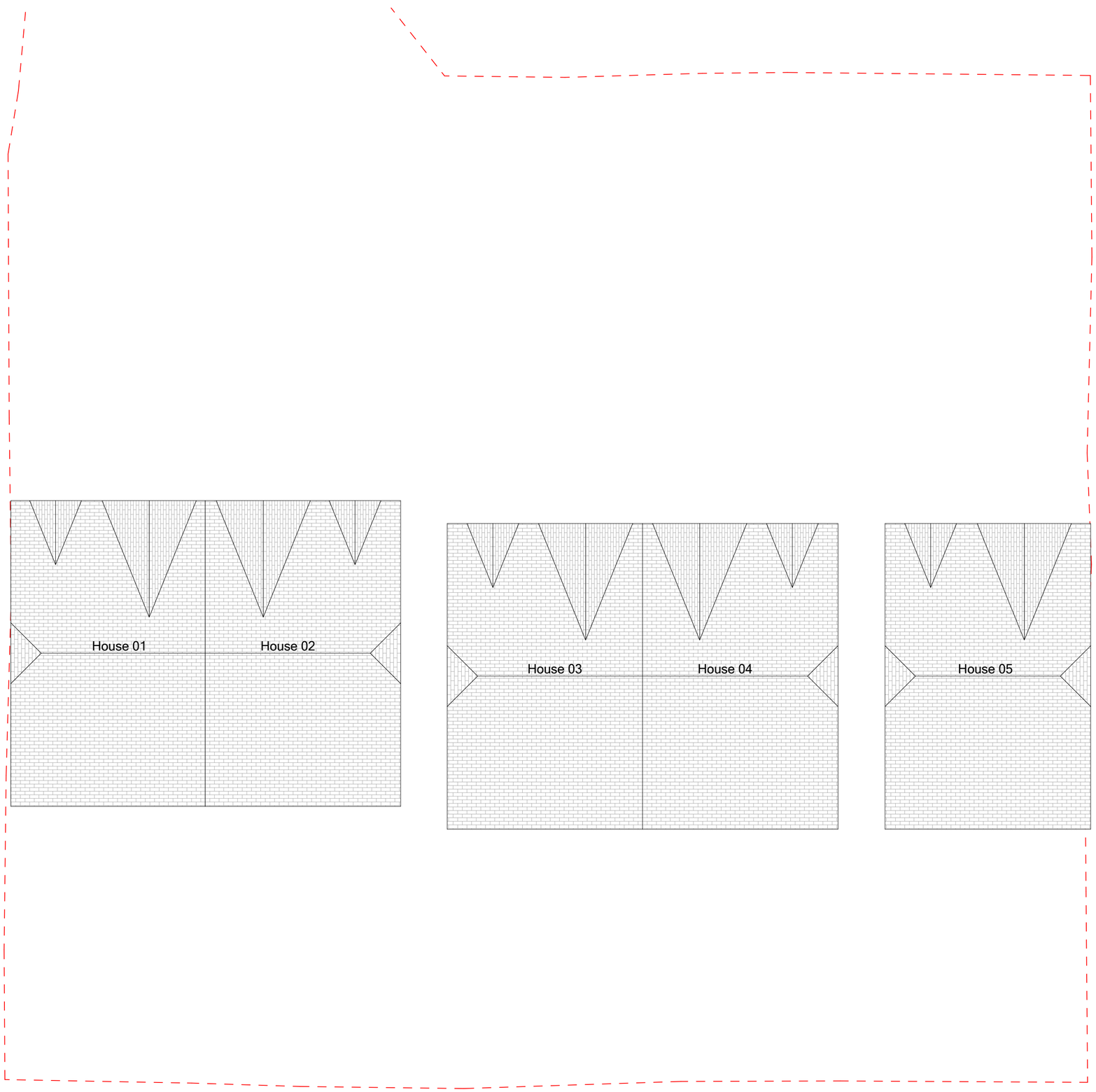
Drawing Status: Planning

Scale: 1:100 @A2 Drawn: DP
Date: 23/10/2025 Checked: RC

Drawing no

project	originator	zone	level	type	role	no.	rev
366 - UB4 9YE	- URB	- ZZ	- FF	- DR	- A	- 2003	- R1





Roof
Scale: 1:100

0 2 m 4 m 10 m

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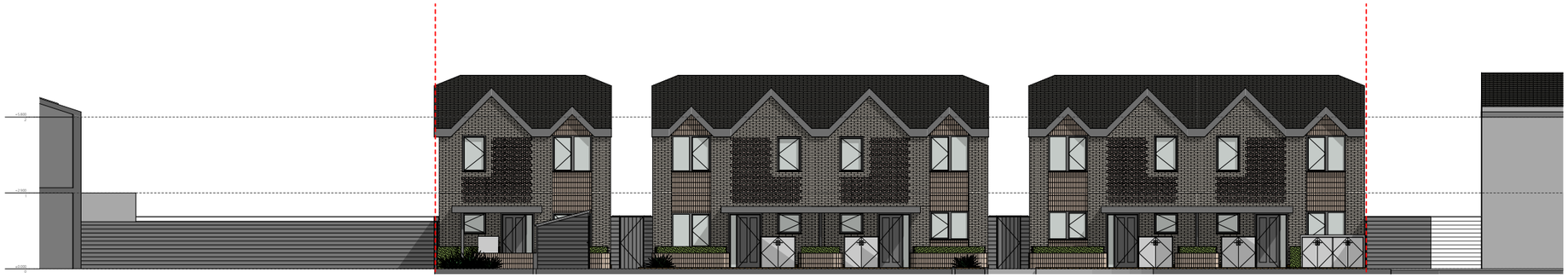
Drawing Name:
Plans Proposed
Roof

Drawing Status: Planning

Scale: 1:100 @A2 Drawn: DP
Date: 23/10/2025 Checked: RC

Drawing no

project	originator	zone	level	type	role	no.	rev
366 - UB4 9YE	- URB	- ZZ	- R	- DR	- A	- 2004	- R1



E-01 Reference Elevation
Scale: 1:200

E-01 Elevation
Scale: 1:100

E-01 Elevation
Scale: 1:100

Scale 1:100
0 2 m 4 m 10 m

Scale 1:200
0 4 m 8 m 20 m

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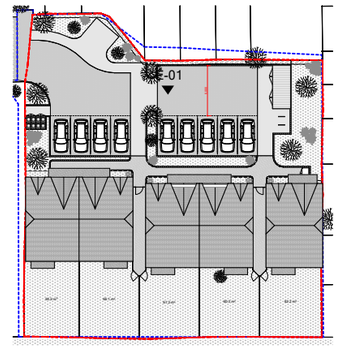
Application Boundary Line



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Drawing Name:
Elevations Proposed
E-01 Elevation, E-01 Reference Elevation

Drawing Status: Planning
Scale: 1:100, 1:200 @A3
Date: 23/10/2025
Drawn: DP
Checked: RC

Drawing no

project	originator	zone	level	type	role	no.	rev
366 - UB4 9YE	- URB	- ZZ	- E1	- DR	- A	- 2101	- R1

E-02 Reference Elevation
Scale: 1:200

E-02 Elevation
Scale: 1:100

E-02 Elevation
Scale: 1:100

Scale 1:100

0 2 m 4 m 10 m

Scale 1:200

0 4 m 8 m 20 m

Notes

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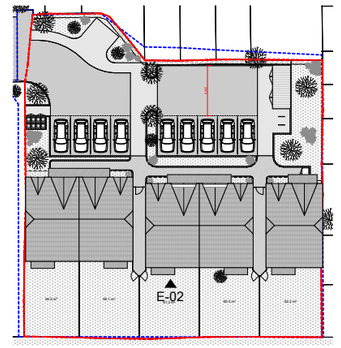

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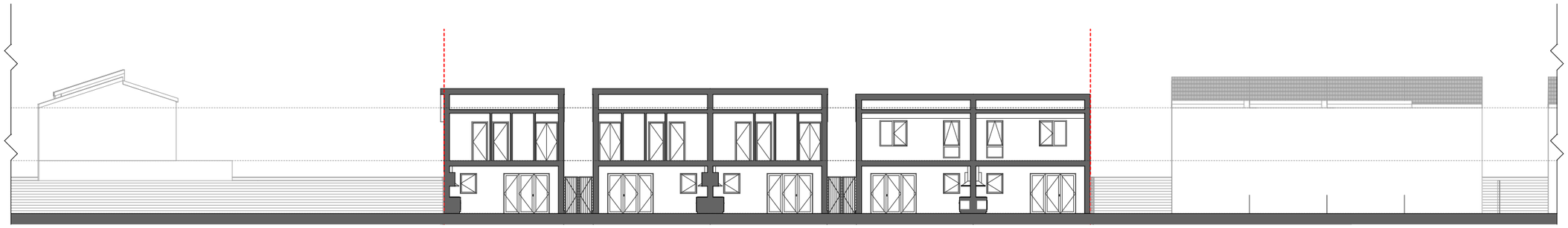
Drawing Name:
Elevations Proposed
E-02 Reference Elevation, E-02 Elevation

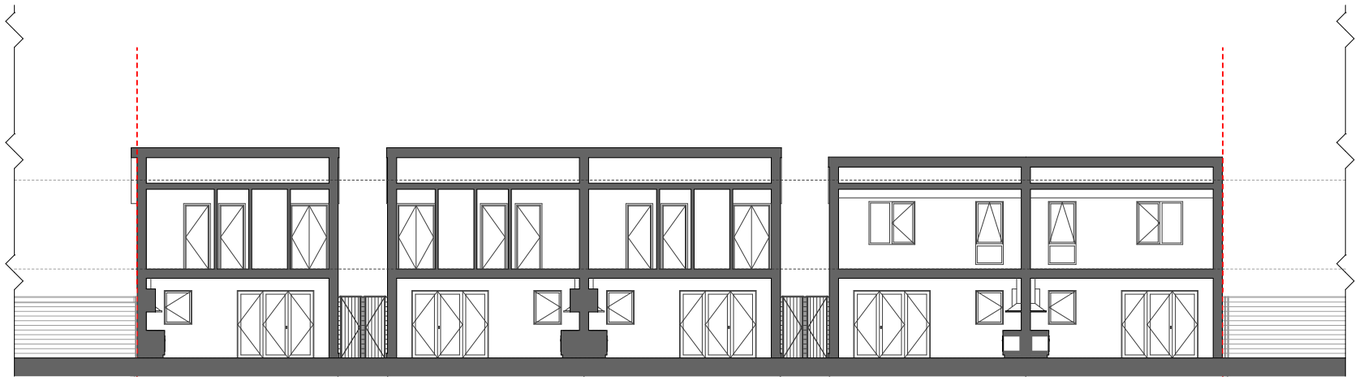
Drawing Status: Planning
Scale: 1:200, 1:100
@A3
Date: 23/10/2025
Drawn: DP
Checked: RC

Drawing no

project	originator	zone	level	type	role	no.	rev
366 - UB4 9YE	- URB	- ZZ	- E2	- DR	- A	- 2102	- R1



S-01 Site Section
Scale: 1:250



S-01 Site Section
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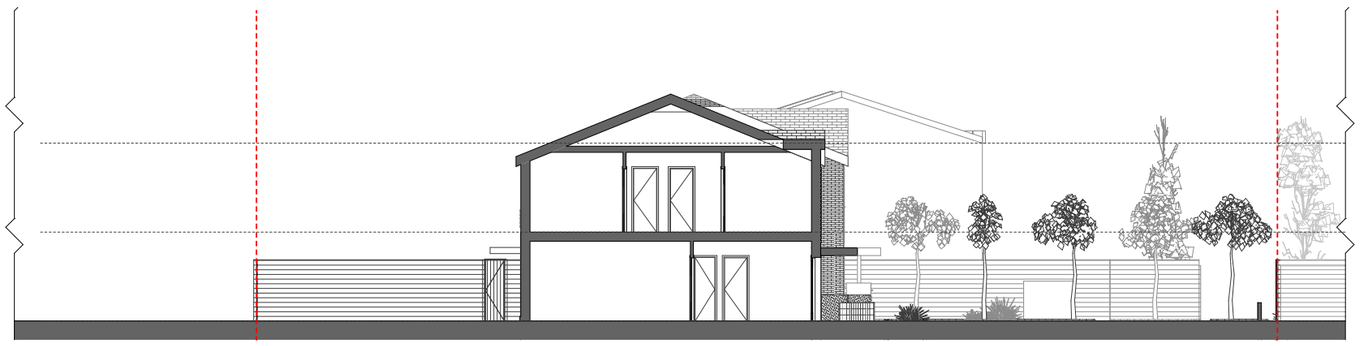

S-02 Site Section
Scale: 1:200

Scale 1:100
0 4 m 8 m 20 m

Scale 1:250
0 5 m 10 m 25 m

Notes

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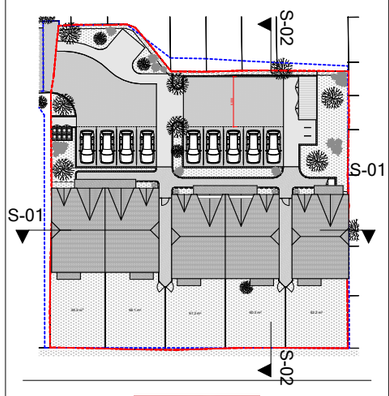

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Drawing Name:
Sections Proposed
S-01 Site Section, S-02 Site Section

Drawing Status: Planning
Scale: 1:200, 1:250 @A3
Date: 23/10/2025
Drawn: DP
Checked: RC

Drawing no

project	originator	zone	level	type	role	no.	rev
366 - UB4 9YE	- URB	- ZZ	- XX	- DR	- A	- 2201	- R1

SETTING THE BENCHMARK IN GEOMATICS

- TOPOGRAPHICAL SURVEYS
- MEASURED BUILDING SURVEYS
- 3D LASER SCANNING
- BOUNDARY DEMARCATION & SUB-DIVISION
- LAND REGISTRY COMPLIANT PLANS
- BOUNDARY DISPUTES
- GPS SURVEYS
- VOLUMETRIC SURVEYS
- SETTING OUT
- BUILDING INFORMATION MODELLING

LEGEND

A	ASPHALT	FH	FIRE HYDRANT	RWP	RAIN WATER PIPE
A/C	AIR CONDITIONING	FL	FLOOR LEVEL	SC	STOP COCK
B	BOLLARD	G	GAS IC	SEG	SIDE ENTRY GULLY
BIN	LITTER BIN	GJB	GAS JUNCTION BOX	SGY	STRIP GULLY
BL	BED LEVEL	GP	GATE POST	SP	SIGN POST
BM	BENCH-MARK	GR	GRATING	STN	SURVEY STATION
BP	BRICK PILLAR	GV	GAS VALVE	SU	STEPS UP
BRS	BRICK SETTS	GY	GULLY	THL	THRESHOLD LEVEL
TIC	TELECOM IC	H	HIGH/HEIGHT	TJB	TELECOM JUNCTION BOX
CATV	CABLE TELEVISION IC	IC	INSPECTION COVER	TK	TANK
CIP	CABLE INSPECTION POINT	KO	KERB OUTLET	TOW	TOP OF WALL
CL	COVER LEVEL	LB	LITTER BIN	TP	TELEGRAPH POLE
COL	COLUMN	LP	LAMP POST	TS	TRAFFIC SIGNAL
DHL	DOOR HEAD LEVEL	MB	MULTI BOLE	VL	AIR BRICK BASE LEVEL
DPC/M	DAMP PROOF COURSE/MEMBRANE	MH	MANHOLE	VP	VENT PIPE
ESC	ELECTRICITY IC	MP	MARKER POST	WCL	WINDOW CILL LEVEL
EJB	ELECTRICITY JUNCTION BOX	P	POST / POLE	WHL	WINDOW HEAD LEVEL
EL	EAVES LEVEL	PL	PARAPET LEVEL	WL	WATER LEVEL
EP	ELECTRICITY POLE	RE	ROODING EYE	WM	WATER METER
ER	EARTHING ROD	RL	RIDGE LEVEL	WO	WASH OUT
F	FOUL WATER MH	RU	RAMP UP	WV	WATER VALVE

FEATURES

TREE (Species, D=Bole Diameter, Sp=Spread, Ht = Height)

- GATE - GATES
- FENCE
- BUILDING
- OVERHEAD BUILDING LINE
- FACE OF WALL
- RETAINING WALL
- CHANGE OF SURFACE
- CHANNEL
- DROP KERB
- TOP OF BANK
- BOTTOM OF BANK
- TREE LINE
- OHW OVER HEAD WIRE
- EDGE OF UNDERGROWTH

SURVEY NOTES

CONTROL

- ALL LEVELS ARE STATED IN METRES.
- ALL LEVELS ARE RELATED TO ORDNANCE SURVEY DATUM USING THE ACTIVE GPS/GNSS NETWORK.
- ALL COORDINATES ARE RELATED TO NATIONAL GRID USING THE ACTIVE GPS/GNSS NETWORK.

SERVICES

- PIPE DIAMETERS, INVERT LEVELS, & DRAINAGE TYPES HAVE ALL BEEN GUAGED FROM THE SURFACE, AS SUCH WE CANNOT GUARANTEE THE ACCURACY OF THIS INFORMATION, PRIOR TO ANY GROUNDWORKS WE WOULD ADVISE CONFIRMING THE INFORMATION PROVIDED.
- NO RESPONSIBILITY CAN BE TAKEN FOR THE ACCURACY OF PLANS SUPPLIED BY STATUTORY AUTHORITIES.
- UNLESS OTHERWISE SHOWN, NO UNDERGROUND SERVICE TRACING HAS BEEN CARRIED OUT.

TREES

- EVERY EFFORT HAS BEEN TAKEN TO IDENTIFY TREE SPECIES, BUT WE TAKE NO RESPONSIBILTY AS TO THE ACCURACY OF THIS INFORMATION.
- TREE CANOPIES & BOLE ARE SHOWN TO SCALE WITH MEAN DIMENSIONS.

FEATURES

- UNLESS OTHERWISE INDICATED LEVELS TAKEN AT KERB LINES ARE CHANNEL LEVELS.

LEGAL

- WHILST THIS IS A DIGITAL SCALE, THE INFORMATION PROVIDED HAS ONLY BEEN SURVEYED TO AN ACCURACY COMMENSURATE WITH THE STATED SCALE.
- IT IS SUGGESTED THAT ONLY R L SURVEY'S ESTABLISHED CONTROL IS USED FOR ADDING TO THE CONTROL NETWORK. SURVEY DETAIL SHOULD ONLY BE USED AS A CHECK ON THIS ADDITIONAL CONTROL.
- IT IS RECOMMENDED THAT YOU PLOT FROM THE ORIGINAL AUTOCAD FILE ONLY, AS PLOTTING FROM A PDF MAY INTRODUCE AN INHERENT SCALING ERROR INTO THE DRAWING.
-

SHEET 01

SHEET LAYOUT

Revision -	Initial Drawing Issue	09/05/2024

SURVEYED & DRAWN BY

RL Surveys
www.rlsurveys.co.uk

working on behalf of

Earlswood Homes

PROJECT TITLE:
Land off Wepham Close, Hayes, Middlesex. UB4 9YG

DRAWING DESCRIPTION:
Topographical Survey

PROJECT REFERENCE:
T24/049

DRAWING REFERENCE:
T24049_Wepham_01.dwg

DRAWING SCALE:
1:200

SURVEY DATE:
05/2024

SHEET:
A1

REVISION:
-

N

STATS Geotechnical

Consulting Geologists, Geotechnical & Environmental Engineers

Site	Borehole Number
WILLOW TREE LANE, YEADING	BH4

Boring Method	Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm Cased to 1.50m	29.81	SOUTHGATE DEVELOPMENTS LTD	30781
	Location	**Dates**	**Engineer**	**Sheet**
		05/06/96 - 05/06/96	OVE ARUP AND PARTNERS	1/1

Depth m	Samples / Tests	Casing Depth m	Water Depth m	Field Records	Level (mOD)	Depth m (Thickness)	Description	Legend	Water	Inst.
0.00-1.00	B1					(1.10)	Brown very dry silty sandy CLAY with much gravel, concrete and brick fragments (MADE GROUND)			
1.10	D1				28.71	1.10				
1.20-1.65	U1	1.50		19 blows			Soft orange brown mottled brown silty CLAY with occasional to some gravel (LONDON CLAY)			
1.70-2.15	SPT N=8			1,1,2,2,2,2						
1.70	D2					(1.90)				
2.20	D3									
2.30-2.75	U2	1.50		27 blows						
2.80	D4									
3.00-3.45	SPT N=10			2,2,2,3,2,3	26.81	3.00				
3.50	D5						firm becoming firm to stiff brown silty CLAY with occasional silty sandy partings (LONDON CLAY)			
3.50-3.95	U3	1.50		31 blows						
4.00-4.45	SPT N=17			3,3,4,4,4,5						
4.00	D6									
4.50	D7					(3.00)				
5.00-5.45	SPT N=18			3,3,4,5,4,5						
5.00	D8									
5.50-5.95	U5	1.50		41 blows						
6.00-6.45	SPT N=17			2,3,3,4,5,5	23.81	6.00				
6.00	D10						Stiff dark grey brown fissured silty CLAY (LONDON CLAY)			
6.50	D11									
6.50-6.95	U6	1.50		41 blows						
7.00-7.45	SPT N=21			3,3,4,5,6,6						
7.00	D12									
7.50	D13									
7.50-7.95	U7	1.50		43 blows						
8.00-8.45	SPT N=22			3,4,4,5,6,7		(4.00)				
8.00	D14									
8.50	D15									
8.50-8.95	U8	1.50		46 blows						
9.00-9.45	SPT N=24			3,4,5,5,6,8						
9.00	D16									
9.50	D17									
9.50-9.95	U9	1.50		50 blows						
10.00	D18				19.81	10.00				

Remarks

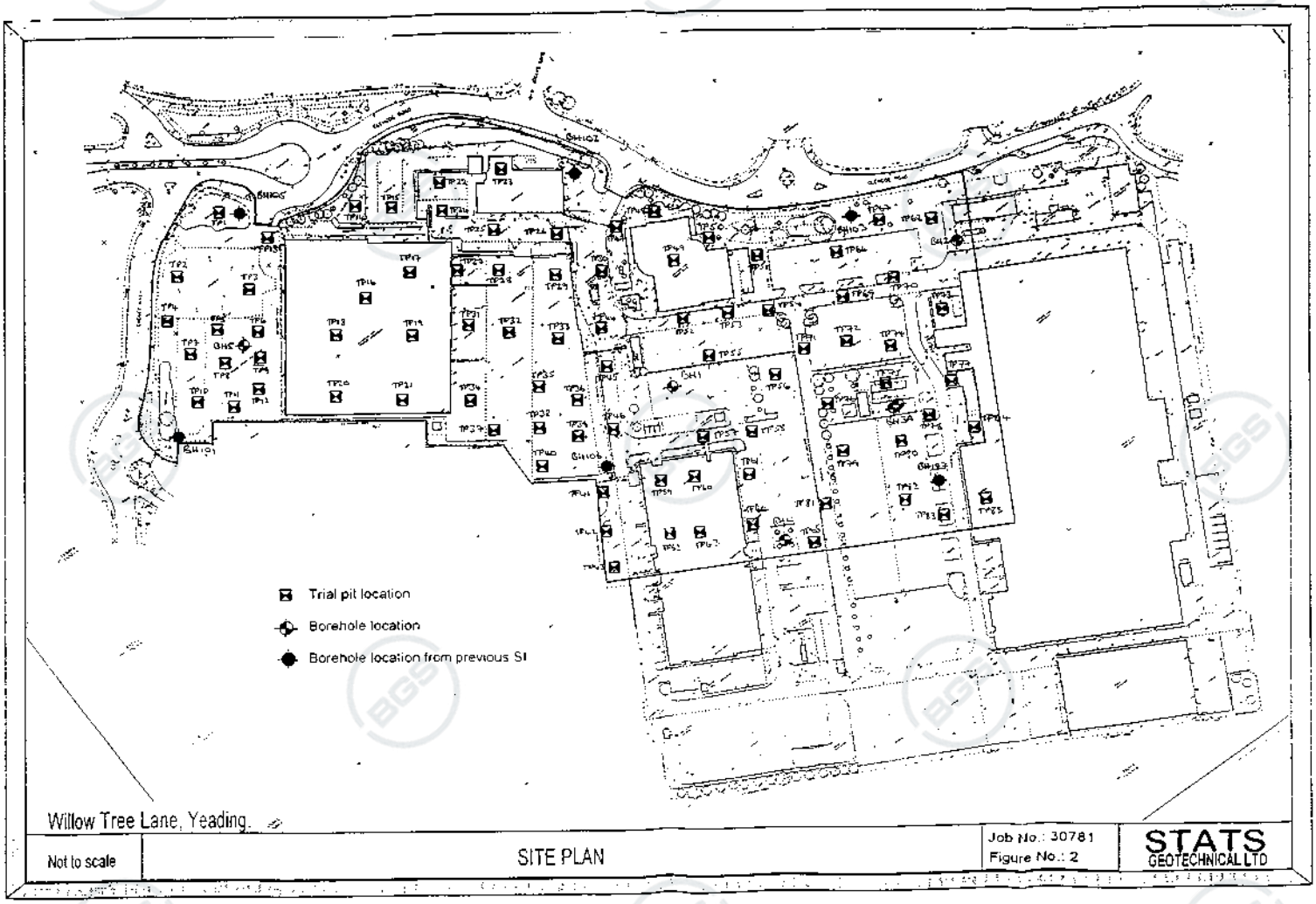
Borehole position moved from inside building with insufficient headroom to outside.
Borehole remained dry.

See key sheet for symbols and abbreviations

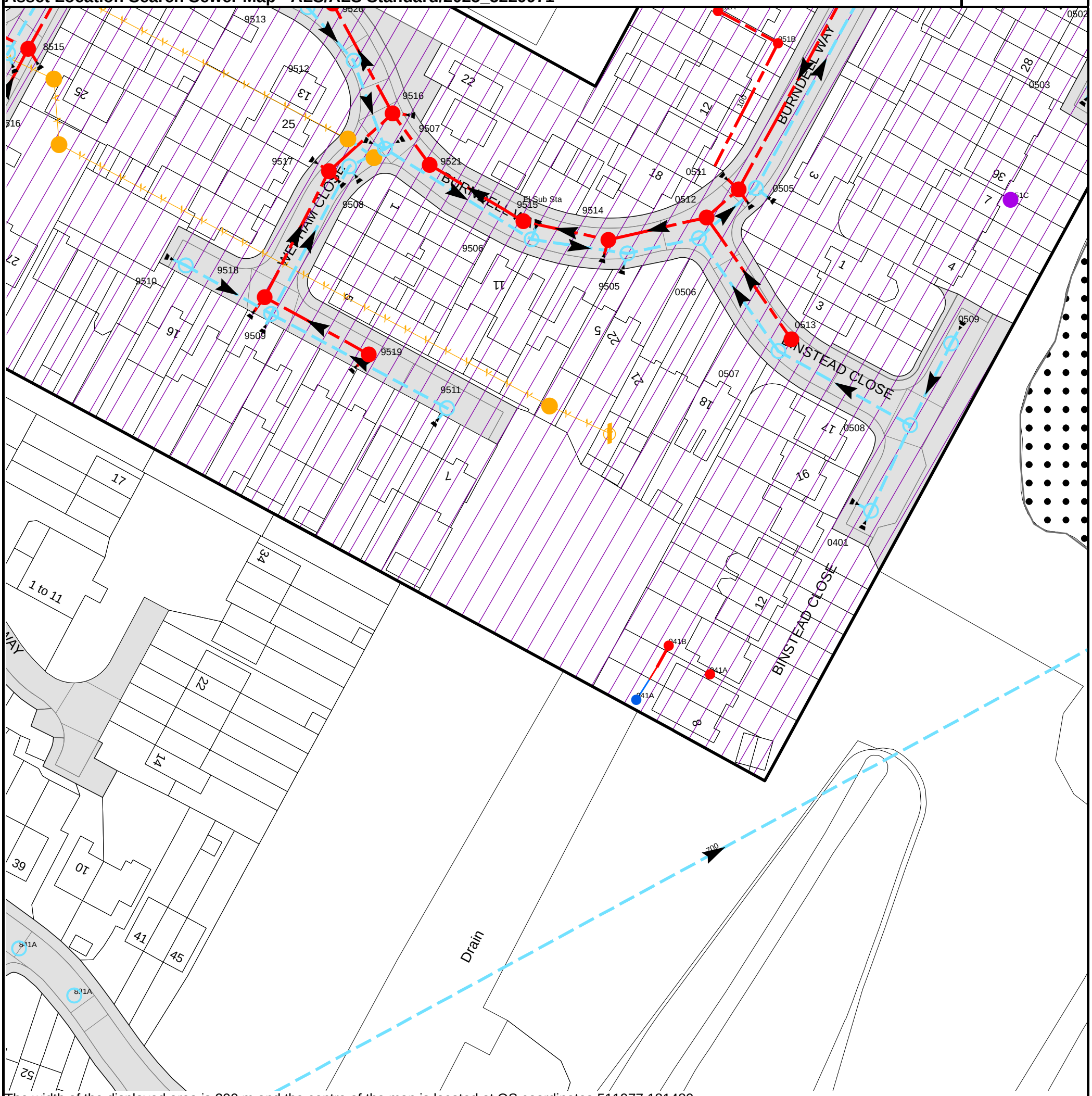
Scale (approx)	Logged By
1:50	SCH

Figure No.

30781.B5


Trial pit location
Borehole location
Borehole location from previous SI
Willow Tree Lane, Yeading.
Not to scale
SITE PLAN
Job No.: 30781
Figure No.: 2
STATS
GEOTECHNICAL LTD

Asset Location Search Sewer Map - ALS/ALS Standard/2025_5229971



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 511977,181480

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.

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
831A	n/a	n/a
841A	n/a	n/a
0508	n/a	n/a
0509	n/a	n/a
051C	n/a	n/a
0503	n/a	n/a
9512	n/a	n/a
8509	n/a	n/a
8515	n/a	n/a
051B	n/a	n/a
051A	n/a	n/a
9513	n/a	n/a
9520	n/a	n/a
9510	n/a	n/a
9518	n/a	n/a
9509	n/a	n/a
9517	n/a	n/a
9508	n/a	n/a
9519	n/a	n/a
9507	n/a	n/a
9516	n/a	n/a
9521	n/a	n/a
9511	n/a	n/a
9515	n/a	n/a
9506	n/a	n/a
9514	n/a	n/a
9505	n/a	n/a
941B	n/a	n/a
0506	n/a	n/a
0512	n/a	n/a
041A	n/a	n/a
0511	n/a	n/a
0505	n/a	n/a
0507	n/a	n/a
0513	n/a	n/a
0401	n/a	n/a
941A	n/a	n/a

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

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

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

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

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 divects 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.

APPENDIX C – INFODRAINAGE CALCULATIONS

UA2_25: Land to the east of Wepham Close Greenfurb Calculations	Date: 27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Phase	Company Address:		

Proposed Impermeable Area

Type : Catchment Area

Area (ha)	0.077

Preliminary Sizing

Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric	1.000
Winter Volumetric Runoff	1.000
Time of Concentration	5
Percentage Impervious	100

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)	Lock
SWIC6 - Flow Control	Manhole	208711.243	601486.943	29.620	0.700	28.920	Circular	1.200	None

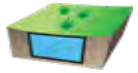
Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
SWIC6 - Flow Control	Inlet (1)	Pipe	(None)	No Restriction

Outlets

Junction	Outlet Name		Outgoing Connection	Outlet Type
SWIC6 - Flow Control	Outlet		(None)	Orifice
	Diameter (m)	0.020		
	Coefficient of Discharge	0.600		
	Invert Level (m)	29.100		

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



Permeable Paving

Type : Tank

Dimensions

Exceedance Level (m)	29.650
Depth (m)	0.630
Base Level (m)	29.020
Freeboard (mm)	130
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	62.400

Depth (m)	Area (m²)	Volume (m³)
0.000	124.80	0.000
0.500	124.80	62.400

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Proposed Impermeable Area
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe
Outlet Type	Free Discharge

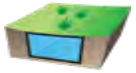
Outlet (1)

Outgoing Connection	Pipe (1)
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	0.468

UA2_25: Land to the east of Wepham Close Greenfurb Calculations	Date: 27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



Detention Basin & Bioretention System

Type : Tank

Dimensions

Exceedance Level (m)	29.650
Depth (m)	1.400
Base Level (m)	28.250
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	21.392

Depth (m)	Area (m²)	Volume (m³)
0.000	15.28	0.000
1.400	15.28	21.392

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Advanced

Perimeter	Circular
Length (m)	0.604

UA2_25: Land to the east of Wepham Close Greenfurb Calculations	Date: 27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Proposed Impermeable Area	Permeable Paving		Time of Concentration	0.077	100	10	110	0.085
TOTAL		**0.0**		**0.077**				**0.085**

UA2_25: Land to the east of Wepham Close Greenfurb Calculations	Date: 27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Outfall Details Storm Phase: Phase	Company Address:		

Outfalls

Outfall	Outfall Type	Gated	Fixed Surcharged Level (m)	Level Curve
SWIC6 - Flow Control	Free Discharge			

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	10
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

ICP SUDS / IH 124

Details

Method	ICP SUDS
Area (ha)	0.077
SAAR (mm)	618.0
Soil	0.47
Region	Region 6
Urban	0
Return Period (years)	0

Results

Region	QBAR Rural (L/s)	QBAR Urban (L/s)	Q 1 (years) (L/s)	Q 30 (years) (L/s)	Q 100 (years) (L/s)
Region 6	0.3	0.3	0.3	0.7	1.0

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH: 2 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWIC6 - Flow Control	FEH: 2 years: +40 %: 1440 mins: Winter	29.620	28.920	29.187	0.267	0.2	0.302	0.000	0.2	18.643	OK

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWIC6 - Flow Control	FEH: 30 years: +40 %: 720 mins: Winter	29.620	28.920	29.390	0.470	0.4	0.532	0.000	0.4	25.779	Flood Risk

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWIC6 - Flow Control	FEH: 100 years: +40 %: 720 mins: Winter	29.620	28.920	29.615	0.695	0.6	0.786	0.000	0.6	33.020	Flood Risk

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FEH: 2 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Permeable Paving	FEH: 2 years: +40 %: 1440 mins: Winter	29.187	29.187	0.167	0.167	1.3	20.852	0.000	0.000	1.0	33.194		OK
Detention Basin & Bioretention System	FEH: 2 years: +40 %: 1440 mins: Winter	29.187	29.187	0.937	0.937	1.0	14.319	0.000	0.000	0.0	1.182		OK

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FEH: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Permeable Paving	FEH: 30 years: +40 %: 720 mins: Winter	29.390	29.390	0.370	0.370	4.3	46.210	0.000	0.000	2.0	43.622		OK
Detention Basin & Bioretention System	FEH: 30 years: +40 %: 720 mins: Winter	29.390	29.390	1.140	1.140	2.0	17.423	0.000	0.000	0.0	1.835		OK

UA2_25:	Date:		
Land to the east of Wepham Close Greenfurb Calculations	27/10/2025		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Permeable Paving	FEH: 100 years: +40 %: 720 mins: Winter	29.616	29.616	0.596	0.596	5.6	62.540	0.000	0.000	1.9	54.441		Flood Risk
Detention Basin & Bioretention System	FEH: 100 years: +40 %: 720 mins: Winter	29.616	29.616	1.366	1.366	1.9	20.867	0.000	0.000	0.0	3.600		OK

APPENDIX D – SURFACE WATER DRAINAGE DESIGN LAYOUT & INDICATIVE CONSTRUCTION DETAILS

Ø100MM PERFORATED PIPE LAID WITH NOMINAL FALL (MAX. 1 IN 400) TOWARD THE FLOW CONTROL.

DO NOT CONNECT ANY OTHER DRAINAGE ELEMENT TO THIS PERFORATED PIPE IN ORDER TO ENABLE THE USE OF A Ø20MM ORIFICE FLOW CONTROL.

SWIC6 - FLOW CONTROL
TYPE 3
Ø600MM
CL 29.62
IL 28.92
TO BE FITTED WITH A Ø20MM ORIFICE PLATE FLOW CONTROL AT IL 29.1. LIMITING OUTFLOWS TO 0.6 L/S DURING THE 1 IN 100 YEAR + 40%CC DESIGN STORM EVENT.

PROVIDE A 300MM DEEP CATCHPIT (IL 28.62) AND PRE-SCREENING MESH PROTECTION TO THE ORIFICE PLATE.

THAMES WATER SURFACE WATER MANHOLE REF. 9511

ACCORDING TO THE TOPOGRAPHIC SURVEY, THE IL IS 27.88 - TBC BY THAMES WATER.

NEW ADOPTABLE SURFACE WATER PIPE.
Ø100MM
1:12.0
ALL WORKS AND PROPOSED DISCHARGE RATES TO THE PUBLIC SEWER TO BE APPROVED BY THAMES WATER PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.

OVERLAND FLOWS TO BE DIRECTED TO THE PUBLIC STREET AWAY FROM NEIGHBORING PRIVATE PROPERTIES.

BIORETENTION SYSTEMS TO BE PROVIDED IN THE LANDSCAPED AREAS. WHERE POSSIBLE, THE ENGINEERED SOIL COMPOSITION AND DEPTH TO BE ESTABLISHED BY THE LANDSCAPE ARCHITECT TO SUIT THE PLANTING REQUIREMENTS OF EACH AREA.

SWIC 5
TYPE 4
Ø600MM
CL 29.15
IL28.1
TO BE PROVIDED WITH A 300M (MIN.) DEEP CATCHPIT.

RE5
CL 29.65
IL 28.95

SWMM 1
TYPE 2
Ø1200MM
CL 29.65
IL28.92
TO BE PROVIDED WITH A 300M (MIN.) DEEP CATCHPIT.

ALL PERFORATED PIPES TO BE Ø100MM AND LAID WITH A MAXIMUM GRADIENT OF 1 IN 400, UNLESS OTHERWISE NOTED.

BIORETENTION SYSTEM WITH A DETENTION BASIN AND INFILTRATION LAYER AT THE BASE

DETENTION BASIN TOP AREA: 54M^2
DETENTION BASIN BOTTOM AREA: 21.5M^2
DEPTH: 0.5M
SIDE SLOPE: BETWEEN 1 IN 2
DETENTION BASIN ATTENUATION VOLUME: 18.2M^3

BIORETENTION AREA: 21.5M^2
BIORETENTION LAYER DEPTH: 0.5M
BIORETENTION LAYER MATERIAL: ENGINEERED SANDY SOIL WITH A SATURATED HYDRAULIC CONDUCTIVITY BETWEEN 100-300MM/HR, AS PER FAWB (2008) GUIDELINES.

INFILTRATION LAYER AREA: 21.5M^2
INFILTRATION LAYER DEPTH: 0.5M
INFILTRATION LAYER MATERIAL: 6-20MM CLEAN CRUSHED STONE WITH 0.3 VOID RATIO
INFILTRATION LAYER ATTENUATION VOLUME: 3.2M^3

DETENTION BASIN CL: 29.65
DETENTION BASIN IL: 29.15

BIORETENTION SYSTEM CL: 29.15
BIORETENTION SYSTEM IL: 28.75

INFILTRATION LAYER CL: 28.75
INFILTRATION LAYER IL: 28.25

RE5
CL 29.15
IL 28.15

DRIVEWAY & PARKING PERMEABLE PAVING (TYPE B)

TOTAL AREA: 345M^2
SUB-BASE DEPTH: 0.5M
SURFACING LAYER DEPTH: 0.13M
SUB-BASE MATERIAL: 6-20MM CLEAN CRUSHED STONE WITH 0.3 VOID RATIO
ATTENUATION STORAGE CAPACITY: 51.7M^3

PROVIDE PERMEABLE GEOTEXTILES AT THE BASE AND SIDES OF THE SUB-BASE.

CL 29.62-29.65
IL FLAT AT 29.02

THE FLOW CONTROL SHOULD BE PLACED 8MM ABOVE THE IL OF THE PAVEMENT IN ORDER TO FULLY INFILTRATE VERY FREQUENT RAINFALL EVENT (IE 5MM STORMS).

BIN STORE AREA TO DRAIN TO THE FOUL WATER NETWORK.

PATHS & PATIOS PERMEABLE PAVING (TYPE C)

TOTAL AREA: 102M^2
SUB-BASE DEPTH: 0.35M
SURFACING LAYER DEPTH: 0.13M
SUB-BASE MATERIAL: 6-20MM CLEAN CRUSHED STONE WITH 0.3 VOID RATIO
ATTENUATION STORAGE CAPACITY: 10.7M^3

PROVIDE IMPERMEABLE GEOMEMRBANES AT THE BASE AND SIDES OF THE SUB-BASE.

CL 29.65
IL 29.22

RE3
CL 29.65
IL 29.12

SWIC 3
TYPE 4
Ø450MM
CL 29.65
IL29.02

SWIC 4
TYPE 4
Ø450MM
CL 29.65
IL29.06

RE4
CL 29.65
IL 29.12

INDICATIVE RWP DRAINAGE TO WATER BUTT AND FURTHER CONNECTED TO THE PERFORATED PIPE - TO BE PROVIDED WHERE POSSIBLE. WATER STORED TO BE USED IN GARDENING ACTIVITIES OR CAR WASHING.

RE1
CL 29.65
IL 29.12

ALL SURFACE WATER PIPES TO BE Ø100MM AND LAID WITH A MAXIMUM GRADIENT OF 1 IN 150, UNLESS OTHERWISE NOTED.

SWIC 2
TYPE 4
Ø450MM
CL 29.65
IL29.04

SWIC 1
TYPE 4
Ø450MM
CL 29.65
IL29.1

RE2
CL 29.65
IL 29.12

1. GENERAL
a. THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
b. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
c. ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
d. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
e. CDM REGULATIONS 2015. ALL CURRENT DRAWINGS AND SPECIFICATIONS MUST BE READ IN CONJUNCTION WITH THE DESIGNER'S HAZARD RISK AND ENVIRONMENT ASSESSMENT RECORD. DESIGN HAS BEEN PRODUCED BASED ON INFORMATION PROVIDED BY THE CLIENT/PRINCIPLE DESIGNER AVAILABLE AT TIME OF ISSUE. CONTRACTOR TO REVIEW DRAWING AND SPECIFICATION IN CONTEXT WITH THE WIDER SITE AND SPECIFIC SITE INVESTIGATION, CONTAMINATION ASSESSMENT, ASBESTOS SURVEY, ENVIRONMENTAL SURVEY, UXO SURVEY AND ANY OTHER RELEVANT INFORMATION AND MANAGE RISKS RELATING TO THE WORKS OUTLINED IN THE DRAWINGS AND SPECIFICATION. PRINCIPLE CONTRACTOR TO MAKE DESIGNER AND CLIENT AWARE OF SITE SPECIFIC RISKS THAT MAY AFFECT THE DRAWING AND SPECIFICATION.
f. CDM REGULATIONS 2015. FOR GENERIC MAINTENANCE AND MANAGEMENT RISKS REFER TO CHAPTER 36 OF CIRIA 752 SUDS MANUAL. FOR PROPRIETARY SYSTEMS SEE MANUFACTURER'S MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.

2. CONSTRUCTION NOTE
a. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
b. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
c. ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN IN GOOD FAITH AFTER CONSULTATION WITH THE RELEVANT AUTHORITY, HOWEVER ACCURACY IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION WHILST UNDERTAKING THE WORKS.
d. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
e. ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON THIS DRAWING, THE MANUFACTURERS INSTRUCTIONS MUST BE USED

3. BELOW GROUND DRAINAGE
a. UPVC-U PIPES TO BS 4660 : 2000 AND PLASTIC INSPECTION CHAMBERS AND FITTINGS TO BS EN 13598-1:2020. CLAY PIPES TO BS EN 295-1:2013. CONCRETE MANHOLE AND INSPECTION CHAMBERS TO BS EN 1917:2002
b. ALL ADOPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE App C - DESIGN AND CONSTRUCTION GUIDANCE AND THE RELEVANT COUNCIL DESIGN GUIDE.
c. ALL PRIVATE FOUL WATER SEWERS TO BE LAID AT 1 IN 40 AT THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
d. ALL PRIVATE FOUL SEWER PIPES TO BE 100mm DIAMETER FROM SOIL STACKS UNLESS OTHERWISE STATED ON THE DRAWING AND 150mm WHERE SERVING MORE THAN 9 PROPERTIES.
e. ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
f. ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100mm DIAMETER FROM DOWNPIPES AND 150mm DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
g. ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES OR SOIL STACKS DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER.
h. EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
i. CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
j. ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.

4. MANHOLE COVERS AND FRAMES
a. MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
b. MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

LEGEND

- EXISTING SURFACE WATER SEWER
- PROPOSED SURFACE WATER DRAIN
- PROPOSED PERFORATED SURFACE WATER DRAIN
- PROPOSED PRIVATE TYPE 2 SURFACE WATER MANHOLE
- PROPOSED TYPE 3/4 SURFACE WATER INSPECTION CHAMBER
- PERMEABLE PAVING - TYPE B
- PERMEABLE PAVING - TYPE C
- BIORETENTION SYSTEM
- DETENTION BASIN
- WB — WATER BUTT
- RWP — RAINWATER PIPE
- RE — PROPOSED SW RODDING EYE
- 123.123 — PROPOSED LEVEL
- OVERLAND FLOW

1:100 @ A1
0 1m 2m 3m 4m 5m

REV:	DESCRIPTION:	BY:	DATE:

STATUS: FOR APPROVAL

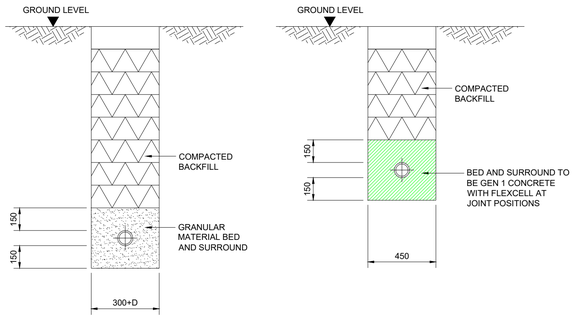
CLIENT: GREENFURB

SITE: WEPHAM CLOSE
HAYES, UB4 9YE

TITLE: SURFACE WATER DRAINAGE DESIGN
PROPOSED LAYOUT

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1:100	OCT/25	SD	SD

PROJECT NO:	DRAWING NO:	REVISION:
UA2_25	DR01	-



GRANULAR BEDDING DETAIL.

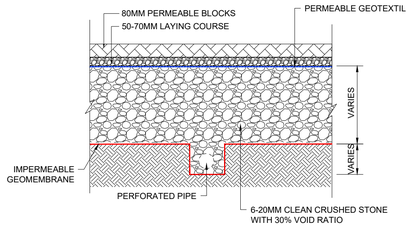
(WHERE COVER >600mm)

CONCRETE BEDDING DETAIL.

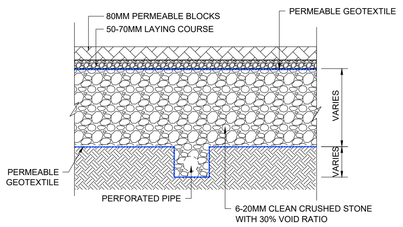
(WHERE COVER <600mm)

NOTE

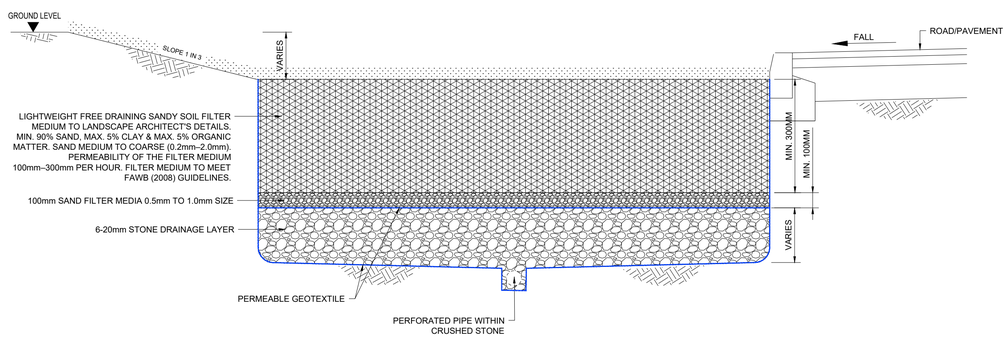
ALL BACKFILLING AND REINSTATEMENT WITHIN ROADS AND STREETS TO BE IN ACCORDANCE WITH THE HIGHWAY AUTHORITY AND HAUC SPECIFICATION.



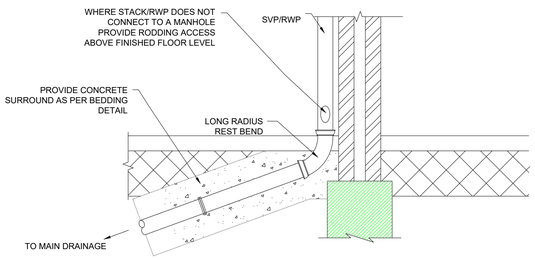
PERMEABLE PAVING (TYPE C) WITH PERFORATED PIPE



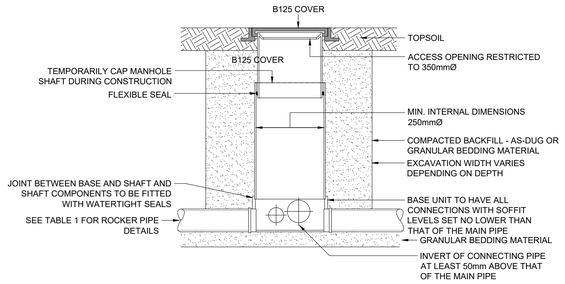
PERMEABLE PAVING (TYPE B) WITH CRUSHED STONE SUB-BASE



PERMEABLE BIORETENTION SYSTEM

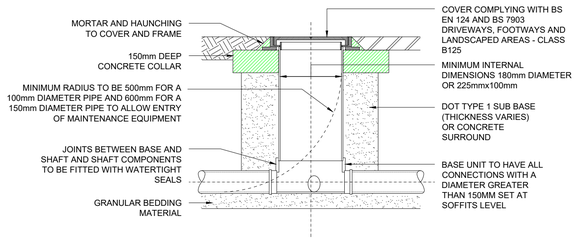


RWP CONNECTION



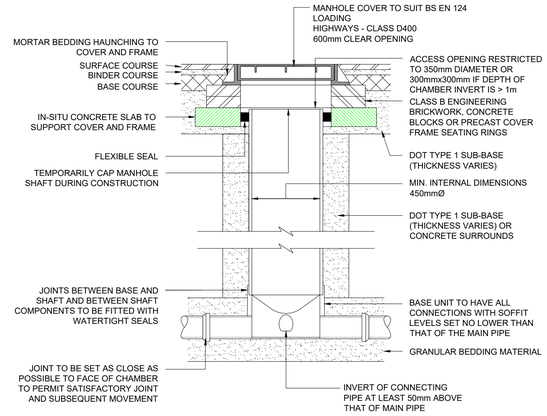
TYPE 4 ACCESS CHAMBER - FLEXIBLE MATERIAL SOFT LANDSCAPING

(SUBJECT TO LIGHT TRAFFIC LOADS, MAX. DEPTH 3m, NON-ENTRY)



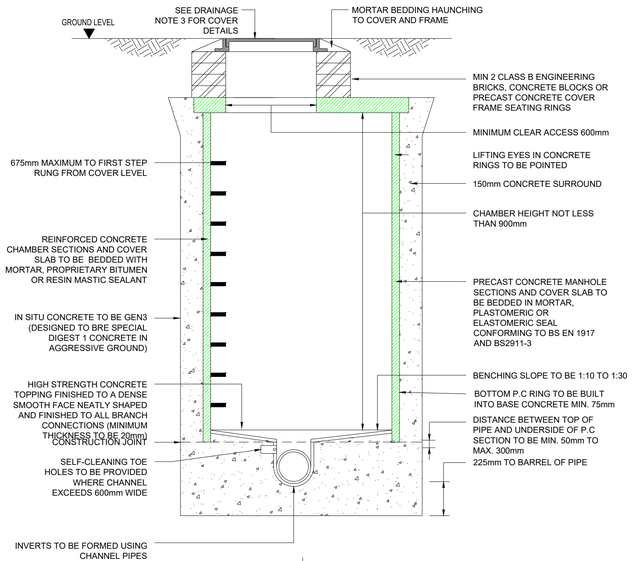
TYPE 4 ACCESS CHAMBER - FLEXIBLE MATERIAL SURFACED AREA

(SUBJECT TO LIGHT TRAFFIC LOADS, MAX. DEPTH 2m, NON-ENTRY)



TYPE 3 ACCESS CHAMBER - FLEXIBLE MATERIAL

(SUBJECT TO VEHICLE LOADING, MAX. DEPTH 3m, NON-ENTRY)



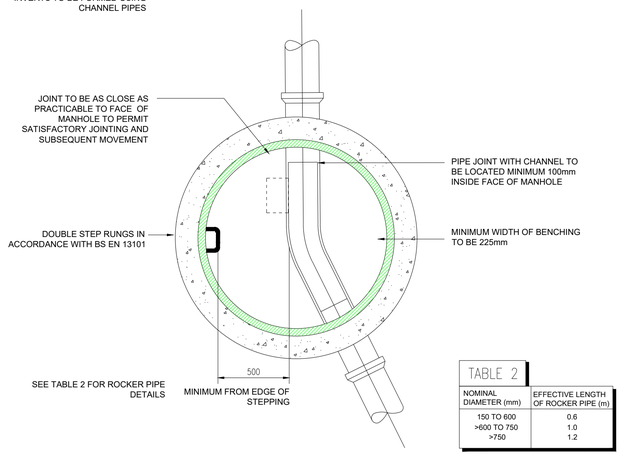


TABLE 2

NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH OF ROCKER PIPE (m)
150 TO 600	0.6
>600 TO 750	1.0
>750	1.2

TYPE 2 MANHOLE

(DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE LESS THAN 3.0m)

1. GENERAL
a. THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
b. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
c. ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
d. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
e. CDM REGULATIONS 2015. ALL CURRENT DRAWINGS AND SPECIFICATIONS MUST BE READ IN CONJUNCTION WITH THE DESIGNER'S HAZARD RISK AND ENVIRONMENT ASSESSMENT RECORD. DESIGN HAS BEEN PRODUCED BASED ON INFORMATION PROVIDED BY THE CLIENT/PRINCIPLE DESIGNER AVAILABLE AT TIME OF ISSUE. CONTRACTOR TO REVIEW DRAWING AND SPECIFICATION IN CONTEXT WITH THE WIDER SITE AND SPECIFIC SITE INVESTIGATION, CONTAMINATION ASSESSMENT, ASBESTOS SURVEY, ENVIRONMENTAL SURVEY, UXO SURVEY AND ANY OTHER RELEVANT INFORMATION AND MANAGE RISKS RELATING TO THE WORKS OUTLINED IN THE DRAWINGS AND SPECIFICATION. PRINCIPLE CONTRACTOR TO MAKE DESIGNER AND CLIENT AWARE OF SITE SPECIFIC RISKS THAT MAY AFFECT THE DRAWING AND SPECIFICATION.
f. CDM REGULATIONS 2015. FOR GENERIC MAINTENANCE AND MANAGEMENT RISKS REFER TO CHAPTER 36 OF CIRIA 752 SUDS MANUAL. FOR PROPRIETARY SYSTEMS SEE MANUFACTURER'S MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.

2. CONSTRUCTION NOTE
a. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
b. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
c. ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN IN GOOD FAITH AFTER CONSULTATION WITH THE RELEVANT AUTHORITY, HOWEVER ACCURACY IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION WHILST UNDERTAKING THE WORKS.
d. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
e. ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON THIS DRAWING, THE MANUFACTURERS INSTRUCTIONS MUST BE USED

3. BELOW GROUND DRAINAGE
a. UPVC-U PIPES TO BS 4660 : 2000 AND PLASTIC INSPECTION CHAMBERS AND FITTINGS TO BS EN 13598-1:2020. CLAY PIPES TO BS EN 295-1:2013. CONCRETE MANHOLE AND INSPECTION CHAMBERS TO BS EN 1917:2002
b. ALL ADOPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE App C - DESIGN AND CONSTRUCTION GUIDANCE AND THE RELEVANT COUNCIL DESIGN GUIDE.
c. ALL PRIVATE FOUL WATER SEWERS TO BE LAID AT 1 IN 40 AT THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
d. ALL PRIVATE FOUL SEWER PIPES TO BE 100mm DIAMETER FROM SOIL STACKS UNLESS OTHERWISE STATED ON THE DRAWING AND 150mm WHERE SERVING MORE THAN 9 PROPERTIES.
c. ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
d. ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100mm DIAMETER FROM DOWNPIPES AND 150mm DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
e. ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES OR SOIL STACKS DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER.
f. EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
g. CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
h. ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.

4. MANHOLE COVERS AND FRAMES
a. MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
b. MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

1:20 @ A1
0 200 400 600 800 1000mm

REV:	DESCRIPTION:	BY:	DATE:

STATUS: FOR APPROVAL

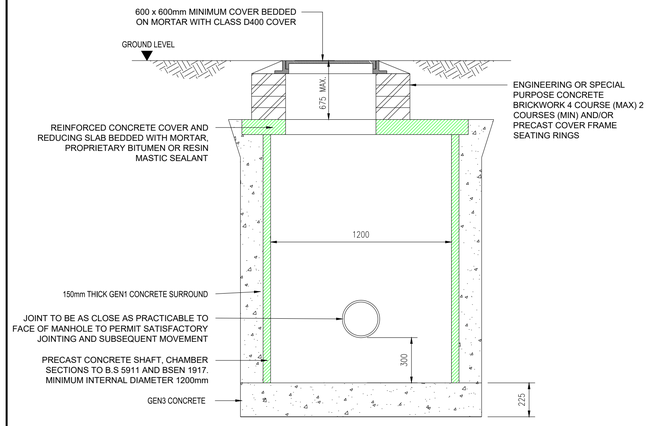
CLIENT: GREENFURB

SITE: WEPHAM CLOSE, HAYES, UB4 9YE

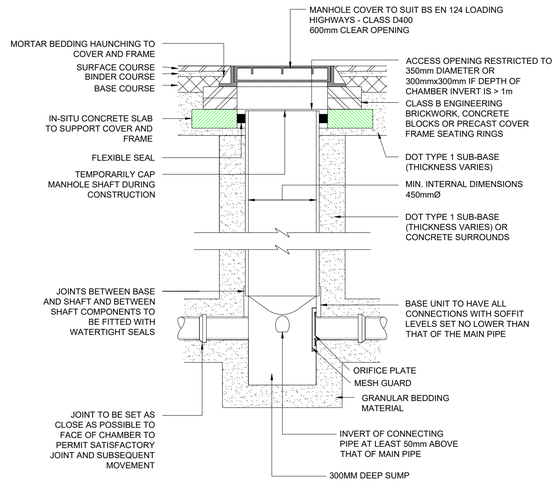
TITLE: SURFACE WATER DRAINAGE DESIGN INDICATIVE CONSTRUCTION DETAILS

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1:100	OCT/25	SD	SD

PROJECT NO:	DRAWING NO:	REVISION:
UA2_25	DR02	-



CATCHPIT TO INVERT 0.9m TO 2.7m.



TYPE 3 INSPECTION CHAMBER WITH ORIFICE PLATE FLOW CONTROL

1. GENERAL
a. THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
b. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
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f. CDM REGULATIONS 2015. FOR GENERIC MAINTENANCE AND MANAGEMENT RISKS REFER TO CHAPTER 36 OF CIRIA 752 SUDS MANUAL. FOR PROPRIETARY SYSTEMS SEE MANUFACTURER'S MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.

2. CONSTRUCTION NOTE
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1:20 @ A1
0 200 400 600 800 1000mm

REV:	DESCRIPTION:	BY:	DATE:

STATUS: FOR APPROVAL

CLIENT: GREENFURB

SITE: WEPHAM CLOSE
HAYES, UB4 9YE

TITLE: SURFACE WATER DRAINAGE DESIGN
INDICATIVE CONSTRUCTION DETAILS

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1:100	OCT/25	SD	SD

PROJECT NO:	DRAWING NO:	REVISION:
UA2_25	DR03	-