



adeptus
ENVIRONMENTAL

SURFACE WATER DRAINAGE DESIGN

**1B OLD SAWMILL LANE, CROWTHORNE,
WOKINGHAM, RG45 6LN**

Report No.: A251112-R02

Date: January 2026

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1 INTRODUCTION

- 1.1 The following report is a Surface Water Drainage Design for the proposed development at 1B Old Sawmill Lane, Crowthorne, Wokingham, RG45 6LN. The proposed development is for the construction of two dwellings and ancillary works.



Figure 1 - Site Location

- 1.2 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
 - Wokingham Borough Council SuDS Design Guidance
 - DEFRA National standards for sustainable drainage systems (June 2025)
 - CIRIA SuDS Manual C753
 - Building Regulations: Part H

DEVELOPMENT PROPOSALS AND TOPOGRAPHY

- 1.3 The proposed development is for the construction of two dwellings and ancillary works.
- 1.4 The redline site area is approximately 0.059ha (590m²) and is currently greenfield. The proposed development would increase the total impermeable area to at least 0.019ha (190m²). The proposed impermeable area would increase at the detailed design stage and would consist of paths and patios.
- 1.5 It is understood that a development of this nature has a design life of approximately 100 years.
- 1.6 According to 1m LiDAR topography (Figure 2), site levels are relatively flat at approximately 82.7 ± 0.2 mAOD.

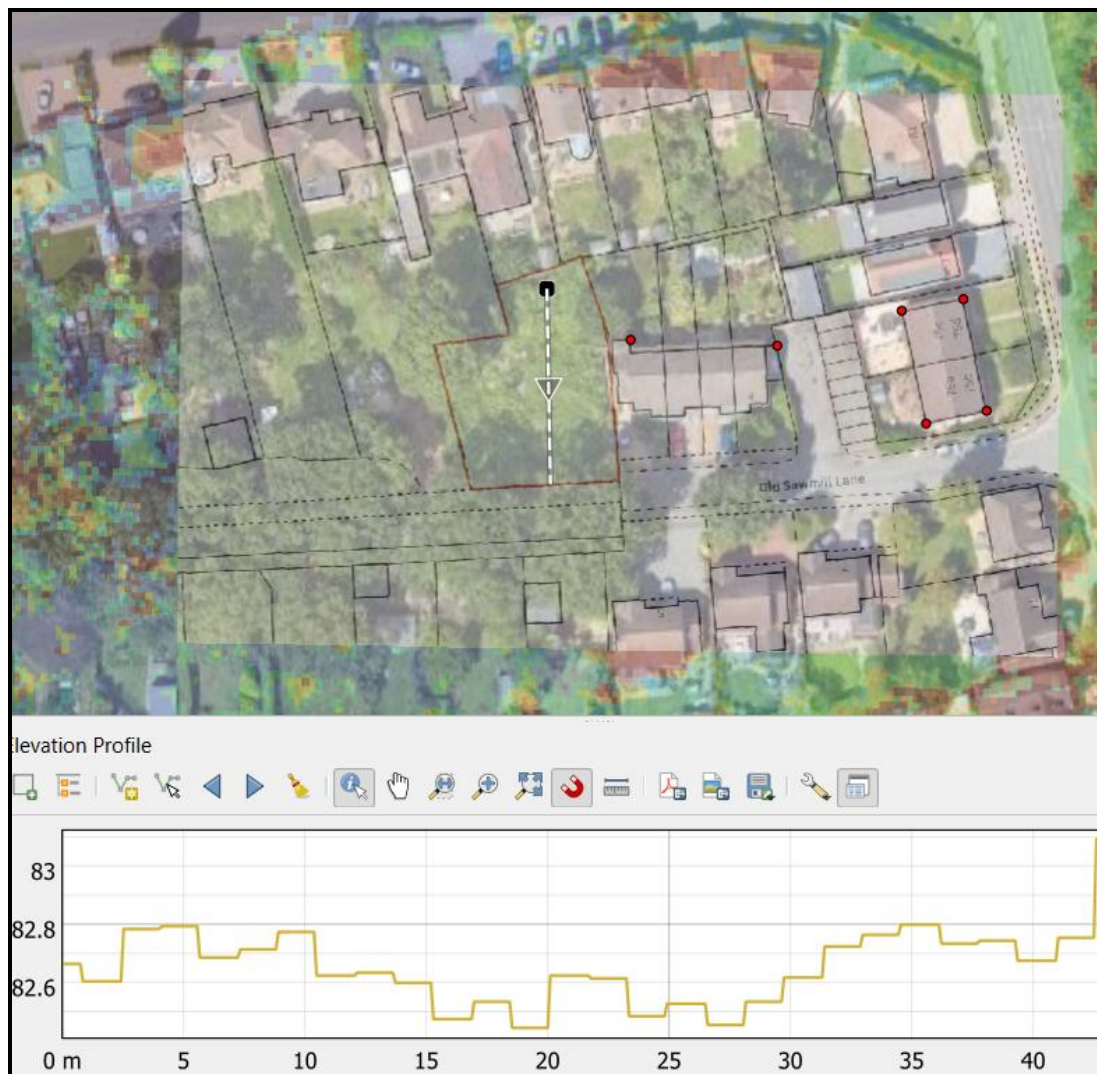


Figure 2 - 1mLiDAR Topography

EXISTING DRAINAGE NETWORKS AND WATERCOURSES

- 1.7 The existing site is greenfield therefore it is unlikely that private drainage infrastructure is present.
- 1.8 According to the Client, Local Council and Thames Water – see collated information in Appendix B - a ditch is located across the road from the site and flows in a westward direction, draining to the Thames Water sewer network in Pinewood Avenue. According to the Client, the ditch is approximately 1.05m lower than the site's levels.

GEOLOGY, INFILTRATION POTENTIAL AND GROUNDWATER

- 1.9 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is part of the Windlesham Formation comprised of sand, silt and clay. No information is provided on the BGS viewer regarding the superficial geology.
- 1.10 The Soilscales geology database describes the superficial geology at the site as "Naturally wet very acid sandy and loamy soils".
- 1.11 Geotechnical investigations conducted by Adeptus Environmental at the site in two boreholes revealed a superficial geology comprised of sandy clay with generally very poor infiltration capacity. Groundwater was struck at 4m below ground level and rose to 1m below ground level and remained at this level for the duration of the works.
- 1.12 As such, due to the clayey superficial geology and high groundwater table depth, all SuDS features should be lined to prohibit infiltration and ingress of groundwater.

CLIMATE CHANGE ALLOWANCES

- 1.13 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.
- 1.14 Climate change allowances were recently updated by the EA and the climate change allowances are now defined by River Catchment peak rainfall allowances.
- 1.15 The data published on the DEFRA database shows the site located within the Loddon and tributaries Management Catchment and for residential development (lifespan 100 years) an upper end allowance of 40% is recommended to be applied to rainfall events.

2 SUSTAINABLE URBAN DRAINAGE (SUDS) ASSESSMENT

- 2.1 In accordance with the SuDS management train approach of Wokingham Borough Council SuDS Design Guidance and DEFRA National standards for sustainable drainage systems, the use of various SuDS measures is required to reduce and control surface water flows for the proposed development.
- 2.2 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 at the rear of the site, if possible, and the water used in gardening activities. Bespoke specialist systems would be further considered at the detailed design stage. See Table 2.
	2.	Use infiltration techniques, such as porous surfaces in non-clay areas	x	Not feasible due to the clay geology and high groundwater table depth.
	3.	Attenuate rainwater in ponds or open water features for gradual release	✓	Runoff would be mainly attenuated in a detention basin SuDS feature.
	4.	Attenuate rainwater by storing in tanks or sealed water features for gradual release	✓	All hardstanding areas should be provided with permeable paving to intercept, treat and attenuate the runoff generated by the proposed development.
	5.	Discharge rainwater direct to a watercourse	✓	Surface water runoff would be directed to the ditch located across the site at a maximum rate of 0.7 l/s during the design storm event.
	6.	Discharge rainwater to a surface water sewer/drain		
	7.	Discharge rainwater to Combined Sewer		

Table 1- SuDS Drainage Hierarchy

- 2.3 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 from 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. Bespoke specialist systems would be further considered at the detailed design stage. Bespoke rainwater or grey water harvesting systems are generally less sustainable than water saving fixtures, due to frequent and complex maintenance requirements and energy use. Any grey water harvesting should be gravity based only, i.e. handwashing sink draining to a toilet tank, a cost-effective solution requiring minimal maintenance.	✓
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 considered where it can be integrated with the landscaping requirements – to be established at the detailed design stage.	-
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 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.	x

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 in the front garden.	✓
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 detention basin 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. Filter drains should be provided mainly for conveyance of runoff across the detention basin.	✓

Table 2 - Suitability of SuDS Components

3 SURFACE WATER DRAINAGE STRATEGY

- 3.1 In order to mitigate flood risk posed by the proposed development, adequate control measures are required to be considered. This will ensure that surface water runoff is dealt with at source and the flood risk on/off site is not increased over the lifetime of the development.
- 3.2 In comparison to the existing greenfield site, the provided plans show the impermeable surface would increase to a total impermeable site area of approximately 0.019ha.
- 3.3 The proposed impermeable area would increase at the detailed design stage and would consist of paths and patios – all to be built with permeable materials.
- 3.4 Current hydraulic calculations and the results presented below use a catchment area of 0.029ha – to include an assumed additional 100m² of paths and patios. Should the additional path/patio areas be larger or smaller, the attenuation required and storage provided would increase or decrease. The calculations prove that regardless of the additional hardstanding created, as long as each additional m² of hardstanding area is provided with 300mm sub-base depth (0.09m³ of attenuation volume), it would not have a detrimental impact on the outflow rate or on the detention basin/car parking permeable paving SuDS features.
- 3.5 The runoff generated will need to be managed in accordance with the National Planning Policy Framework (NPPF 2024) policy which requires the use of Sustainable Drainage Systems (SuDS). The design guidelines for the SuDS should follow the recommendations set out in Wokingham Borough Council SuDS Design Guidance, CIRIA SuDS Manual C753 and DEFRA National standards for sustainable drainage systems (June 2025).
- 3.6 The proposed drainage scheme is for the use of permeable paving (Type C – no infiltration) in all hardstanding areas to intercept, treat and attenuate runoff generated by the total proposed impermeable areas. Runoff

would be directed to a detention basin area in the front garden for additional attenuation. Discharges would be limited by a 20mm diameter orifice plate, the smallest diameter to be used with permeable paving (CIRIA C753 Manual), and directed to the ditch across the site.

- 3.7 All works and runoff rates to the ditch to be approved by Wokingham Borough Council and Thames Water prior to commencement of any construction works.
- 3.8 The SuDS system proposed for the new development adheres to the Council's requirement of demonstrating surface water control and attenuation storage on site with the intention of limiting outflows to the minimum feasible discharge rate.

RUNOFF RATES

- 3.9 According to the plans provided by the client, the proposed impermeable site area is associated with a Greenfield Runoff Rate (QBAR) of 0.1 l/s and 0.4 l/s during a 1 in 100-year flood event. Other results properly factored for each return period and area of the site are shown in Appendix C and also in Table 3 below.

SURFACE WATER DISCHARGE RATES SUMMARY					
	Area (ha)	Discharge Rates (l/s)			
		1 year	2 year/QBAR	30 year	100 year
Greenfield Rates	0.029	0.1	0.1	0.3	0.4
Proposed Rates (+0%CC)	0.029	-	0.5	0.6	0.6
Proposed Rates (+40% CC)	0.029	-	0.6	0.6	0.7

Table 3 - Surface Water Discharge Rates Summary

ON SITE DRAINAGE AND STORAGE SYSTEMS

- 3.10 Rainfall depths for the 1 in 100 years return period plus 40% of CC were produced using Autodesk InfoDrainage software to estimate the largest volume and critical storm, for typical storm durations.
- 3.11 Proposed drainage calculations based on FEH22 rainfall model, 40% climate change allowance and catchment Cv factors of 1 are included in Appendix C. A proposed storm drainage design plan layout and indicative construction details are included in Appendix D.
- 3.12 Calculations indicate that approximately 21.65m³ of storage will be required to attenuate runoff during the 1:100 year + 40%CC design storm event, with runoff rated limited to 0.7 l/s by the proposed 20mm diameter orifice plate.
- 3.13 The proposed detention basin, as indicated on the drainage layout, would be able to provide approximately 8.35m³ of attenuation storage capacity.
- 3.14 The car parking areas (50m²) should be provided with a 0.45m deep sub-base layer (6-20mm clean crushed stone with 0.3 void ratio) to attenuate approximately 6.75m³ of runoff.
- 3.15 The assumed 100m² permeable paths and patios, built with a 0.3m deep sub-base (6-20mm clean crushed stone with 0.3 void ratio) would attenuate approximately 9m³ of runoff.

- 3.16 Due to the high groundwater table depth all SuDS features should be lined to prohibit ingress of groundwater.
- 3.17 Guidance about proper use, installation and maintenance of any proprietary system must be provided by the manufacturers/suppliers of the proposed drainage elements and incorporated into the site proposals at the detailed design stage.

4 WATER QUALITY

- 4.1 Adequate treatment must be delivered to the water runoff to remove pollutants through SuDS devices, which are able to provide pollution mitigation. Pollution Hazards and the SuDS Mitigation have been indexed in the CIRIA 753 'The SUDS Manual'.
- 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 summarized in the Table 5 - Indicative SuDS Mitigation Indices below. It can be seen the water treatment provided by the SuDS devices should be enough to remove the pollutants for runoff with low and medium pollution indices.

INDICATIVE SuDS MITIGATION INDICES FOR DISCHARGES TO SURFACE WATER			
SuDS Component	Total Suspended Solids	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
Filter Drains	0.4	0.4	0.4

Table 5 - Indicative SuDS Mitigation Indices

- 4.4 The highest pollution indices are associated with the driveway/car parking area. The proposed permeable paving would be sufficient to remove the respective pollutants, according to Table 5 above.

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 site/development owner/s will be responsible for the management and maintenance of SuDS devices.
- 5.4 General maintenance of key SuDS components is provided below.

- 5.5 Maintenance of any bespoke SuDS devices (i.e. permeable paving, flow control, etc) are to be in accordance with manufacturer's recommendations.

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 Drainage Elements Indicative Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect surface for litter, leaves, and debris. Sweep or vacuum regularly to maintain infiltration capacity.	Monthly or more frequently in autumn
	Check for blocked or clogged joints and remove detritus.	Monthly
	Inspect adjacent drainage features such as gullies, channels, or edge restraints.	Monthly
Occasional Maintenance	Use suction sweeping (not pressure washing) to remove accumulated silt from jointing material.	Every 6 months to annually, depending on silt loads
	Check for structural issues such as settlement, heave, or rutting of paving units.	Annually
	Inspect and clean geotextile or geogrid edge restraints if exposed.	Annually
Remedial Actions	Replace jointing gravel or infiltration surface material if severely clogged.	As needed (typically every 5–10 years)
	Lift and relay paving blocks in areas where infiltration is significantly reduced.	As needed
	Excavate and replace sub-base if performance is significantly impaired by fines.	Rarely (10+ years or post-incident)
Monitoring	Conduct infiltration rate tests to ensure continued performance meets design standards.	Every 2–5 years
	Inspect for signs of ponding or prolonged surface wetness after rainfall.	After rainfall events or monthly
	Assess long-term performance through visual inspections and review of drainage effectiveness.	Annually

Table 7 - Permeable Paving Indicative Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect for and remove litter, debris, and sediment from the surface of the filter drain and surrounding area.	Monthly or after significant rainfall
	Check inlets and outlets for blockages or sediment accumulation; clear as necessary.	Monthly
	Inspect for water ponding on the surface which may indicate compaction or clogging.	Monthly
Occasional Maintenance	Loosen or replace surface gravel if signs of compaction or poor infiltration are observed.	Every 6 months or as needed
	Remove invasive vegetation or deep-rooted species that may affect system performance.	Twice per year
	Inspect edge restraints (e.g. kerbs, geotextile barriers) for damage or displacement.	Annually
	Check structural integrity of the perforated pipes, inspection chambers, and manholes.	Annually
Remedial Actions	Replace filter media where significant clogging or reduction in infiltration capacity is observed.	Typically every 5–10 years or based on monitoring
	Repair or replace damaged pipework, geotextile membranes, or bedding layers.	As needed
	Reconstruct the system if there is evidence of widespread failure or non-performance.	As a last resort
Monitoring	Monitor runoff quality at outlet for suspended solids, hydrocarbons, and heavy metals.	Annually or post-incident
	Conduct infiltration or permeability tests to assess long-term performance.	Every 2–5 years or when poor drainage is observed
	Check for erosion or undermining along the length of the filter drain.	Annually or after storms

Table 8 - Filter Drain Indicative Maintenance Requirements

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 9 - Dry Ponds/Detention Basins 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 Adeptus Consulting has been instructed by Keith Andrews to prepare a site-specific Surface Water Drainage Design for the proposed development at 1B Old Sawmill Lane, Crowthorne, Wokingham, RG45 6LN. The proposed development is for the construction of two dwellings and ancillary works.
- 6.2 The redline site area is approximately 0.059ha (590m²) and is currently greenfield. The proposed development would increase the total impermeable area to at least 0.019ha (190m²). The proposed impermeable area would increase at the detailed design stage and would consist of paths and patios.
- 6.3 Current hydraulic calculations and the results presented below use a catchment area of 0.029ha – to include an assumed additional 100m² of paths and patios. Should the additional path/patio areas be larger or smaller, the attenuation required and storage provided would increase or decrease. The calculations prove that regardless of the additional hardstanding created, as long as each additional m² of hardstanding area is provided with 300mm sub-base depth (0.09m³ of attenuation volume), it would not have a detrimental impact on the outflow rate or on the detention basin/car parking permeable paving SuDS features.
- 6.4 Geotechnical investigations conducted by Adeptus Environmental at the site in two boreholes revealed a superficial geology comprised of sandy clay with generally very poor infiltration capacity. Groundwater was struck at 4m below ground level and rose to 1m below ground level and remained at this level for the duration of the works.
- 6.5 The proposed drainage scheme is for the use of permeable paving (Type C – no infiltration) in all hardstanding areas to intercept, treat and attenuate runoff generated by the total proposed impermeable areas. Runoff would be directed to a detention basin area in the front garden for additional attenuation. Discharges would be limited by a 20mm diameter orifice plate, the smallest diameter to be used with permeable paving (CIRIA C753 Manual), and directed to the ditch across the site. All works and runoff rates to the ditch to be approved by Wokingham Borough Council and Thames Water prior to commencement of any construction works.
- 6.6 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 property owner/s will be responsible for the management and maintenance of SuDS devices, in accordance with the manufacturer's recommendations.

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	Rainwater harvesting, such as water butts, should be provided at the rear of the site, if possible, and the water used in gardening activities. Bespoke specialist systems would be further considered at the detailed design stage. 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 Section 1.
1.4	Is the base of all infiltration features demonstrated to be at least 1m above the maximum likely groundwater level (req. 1.15)?	N/A	All SuDS features would be lined to prohibit ingress of groundwater.
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	All works and runoff rates to the ditch would be approved by Wokingham Borough Council and Thames Water prior to commencement of any construction works.
1.6	Has discharge to a foul-only sewer been avoided (req. 1.10)?	Yes	-
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	Discharges to the ditch would be by gravity.

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)?	No	Not feasible due to the high groundwater table – no infiltration (regardless of rates) can be provided.
2.2	Has the volume of runoff captured via interception been quantified and its benefit	N/A	See above.

	to the overall drainage strategy explained?		
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?	No	Discharges would be limited by a 20mm diameter orifice plate, the smallest diameter to be used with permeable paving (CIRIA C753 Manual), however these would not be the exact greenfield rates.
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)?	N/A	Not feasible due to the high groundwater table – no infiltration (regardless of rates) can be provided.
3.5	Has an appropriate factor of safety been selected and justified for the design of infiltration systems (req. 3.17)?	N/A	See above.
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 & D. 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	Yes	See Section 4.

	'management train' of SuDS features to provide the required level of treatment (req. 4.3)?		
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. The final construction specifications would be provided by the selected manufacturer of each SuDS device, in line with best practice standards.

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	Not applicable to the current study.
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.
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

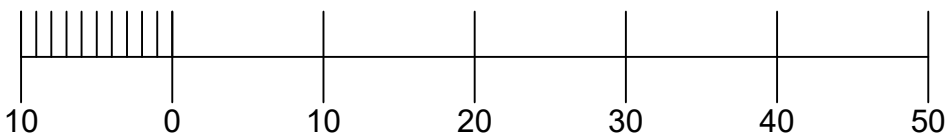
Ref	Checklist Item	Yes/No/ N/A	Evidence Location
7.1	Has a comprehensive Management and Maintenance Plan been provided as a core part of the submission (req. 7.2)?	Yes	Detailed general maintenance information for each SuDS device proposed can be found in Section 5. These details are very often referenced by the main SuDS manufacturers; however, they should be confirmed by the selected manufacturers and the details 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 site would be held responsible, or any delegated 3 rd party (to be specified by the Client).
7.3	Does the plan provide a specific, actionable schedule of inspection and maintenance tasks, frequencies, and performance criteria for each SuDS component?	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 – to be done during the detailed design stage.
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 detention basin is located in the front garden and is easily accessible for maintenance.
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)?	N/A	Infiltration is not recommended.

APPENDIX B – SITE INFORMATION



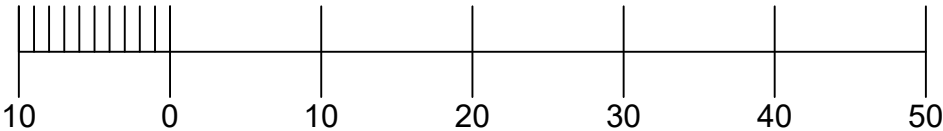
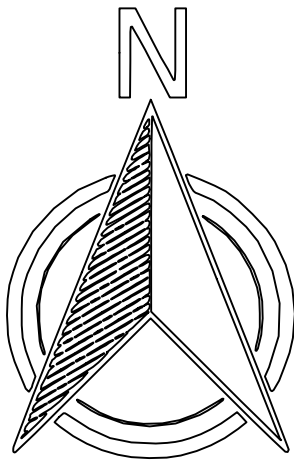
08		Description		03.09.2025	
Drawing Status:					
PLANNING					
Client: MR.KEITH ANDREWS					
Project: 1B_OLD_SAWMILL_LANE CROWTHORNE BERKSHIRE RG45_6LN					
LOCATION PLAN_1:500					
Engr:		Chkd:		Appd:	
Cod File:		X		Date 03.09.2025	
Drawing Number		X		Scale 1:500	
				Size A3	
Revision				08	

Produced on 11 August 2025 from the Ordnance Survey National Geographic Database and incorporating surveyed revision available at this date.
This map shows the area bounded by 484152 164831,484252 164831,484252 164931,484152 164931,484152 164831
Crown copyright and database rights 2025 OS 100054135. Supplied by copla ltd trading as UKPlanningMaps.com a licensed Ordnance Survey partner (OS 100054135).
Data licence expires 11 August 2026. Unique plan reference: v1f//1296375/1738242

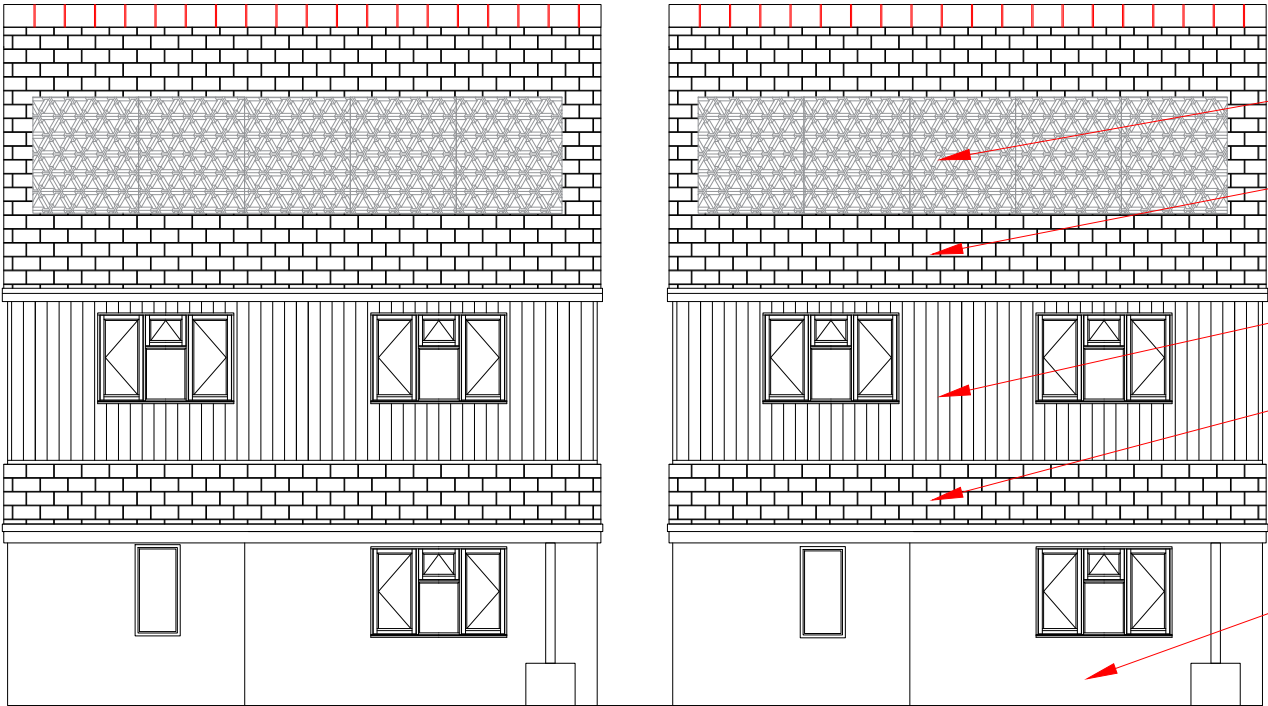


LOCATION PLAN

SCALE 1:500



08		Description		14.11.2025							
Drawing Status:											
PLANNING											
						Client: MR.KEITH ANDREWS					
						Project: 1B_OLD_SAWMILL_LANE CROWTHORNE BERKSHIRE RG45_6LN					
						PROPOSED SITE_PLAN_WITH_TREES					
Engr:		Chkd:		Appd:		Date 14.11.2025					
Cad File:				X		Scale 1/500		Size A3			
Drawing Number							Revision				
X							09				



SOLAR PANELS TBC

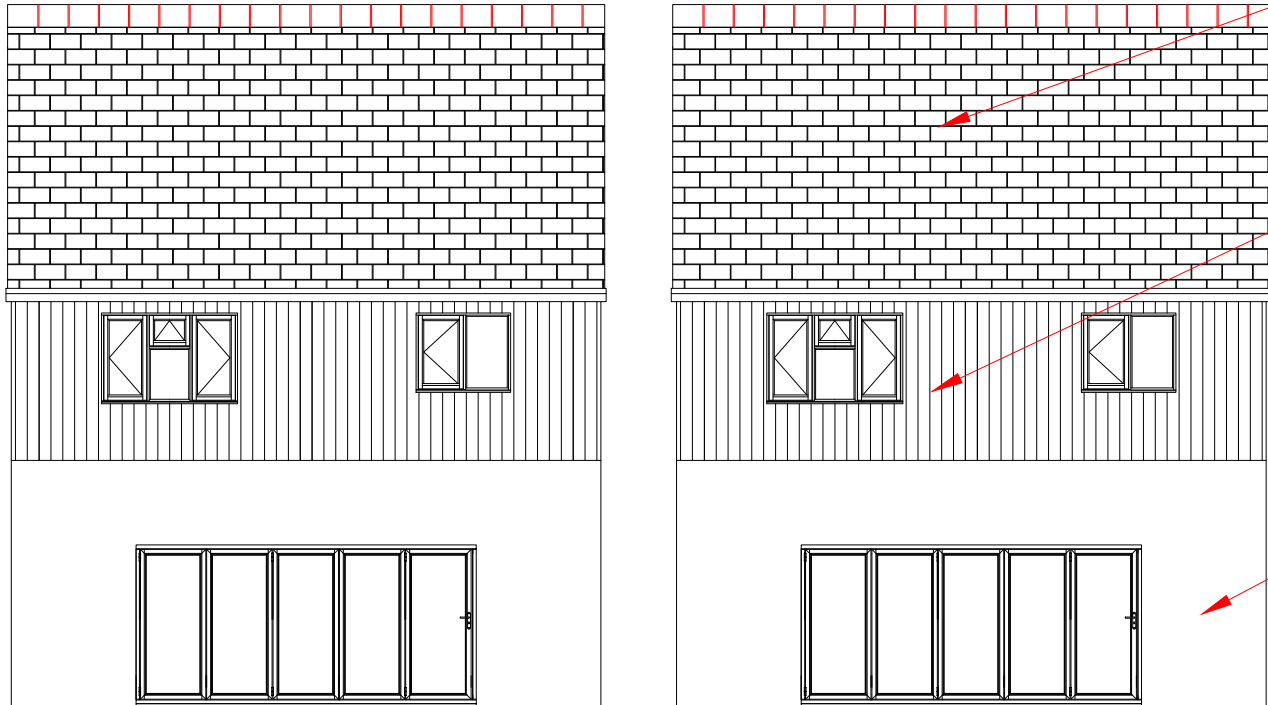
Marley black concrete
RoofTiles

Grey PVC Cladding Planks

Marley black concrete
RoofTiles

White Render

FRONT ELEVATIONS SCALE 1:100

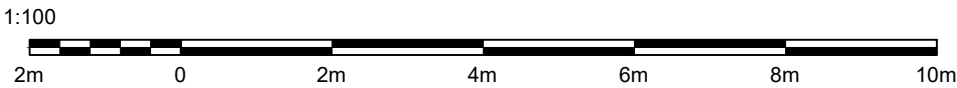


Grey PVC Cladding Planks

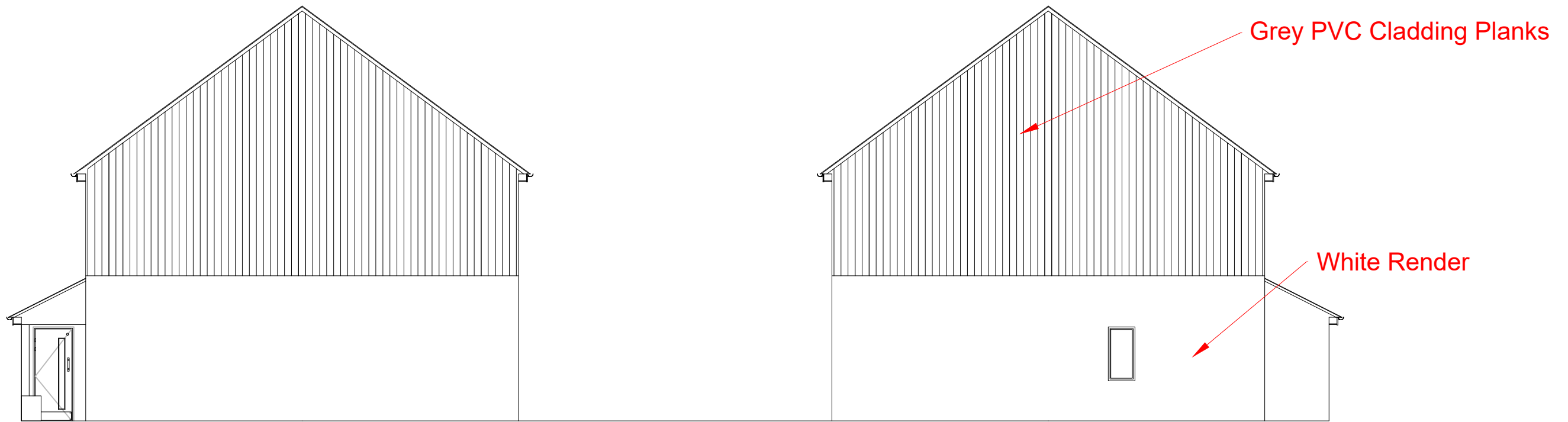
Marley black concrete
RoofTiles

White Render

REAR ELEVATIONS SCALE 1:100

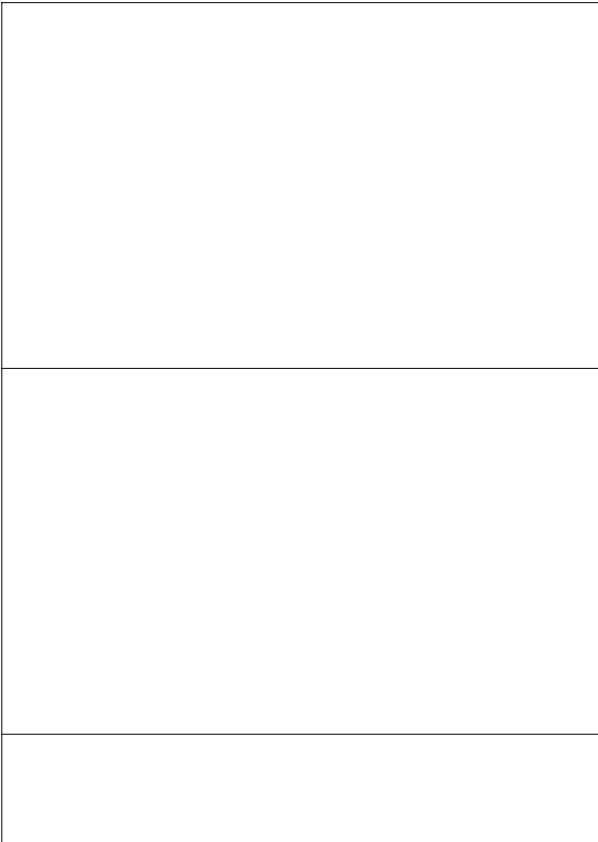


08	Description	03.09.2025
Drawing Status:		
PLANNING		
Client: MR.KEITH ANDREWS		
Project: 1B_OLD_SAWMILL_LANE CROWTHORNE BERKSHIRE RG45_6LN		
PROPOSED FRONT_AND_REAR ELEVATIONS		
Engr:	Chkd:	Appd: Date 03.09.2025
Cad File: X		Scale 1/100 Size A3
Drawing Number X		Revision 08



SIDE ELEVATIONS

SCALE 1:100



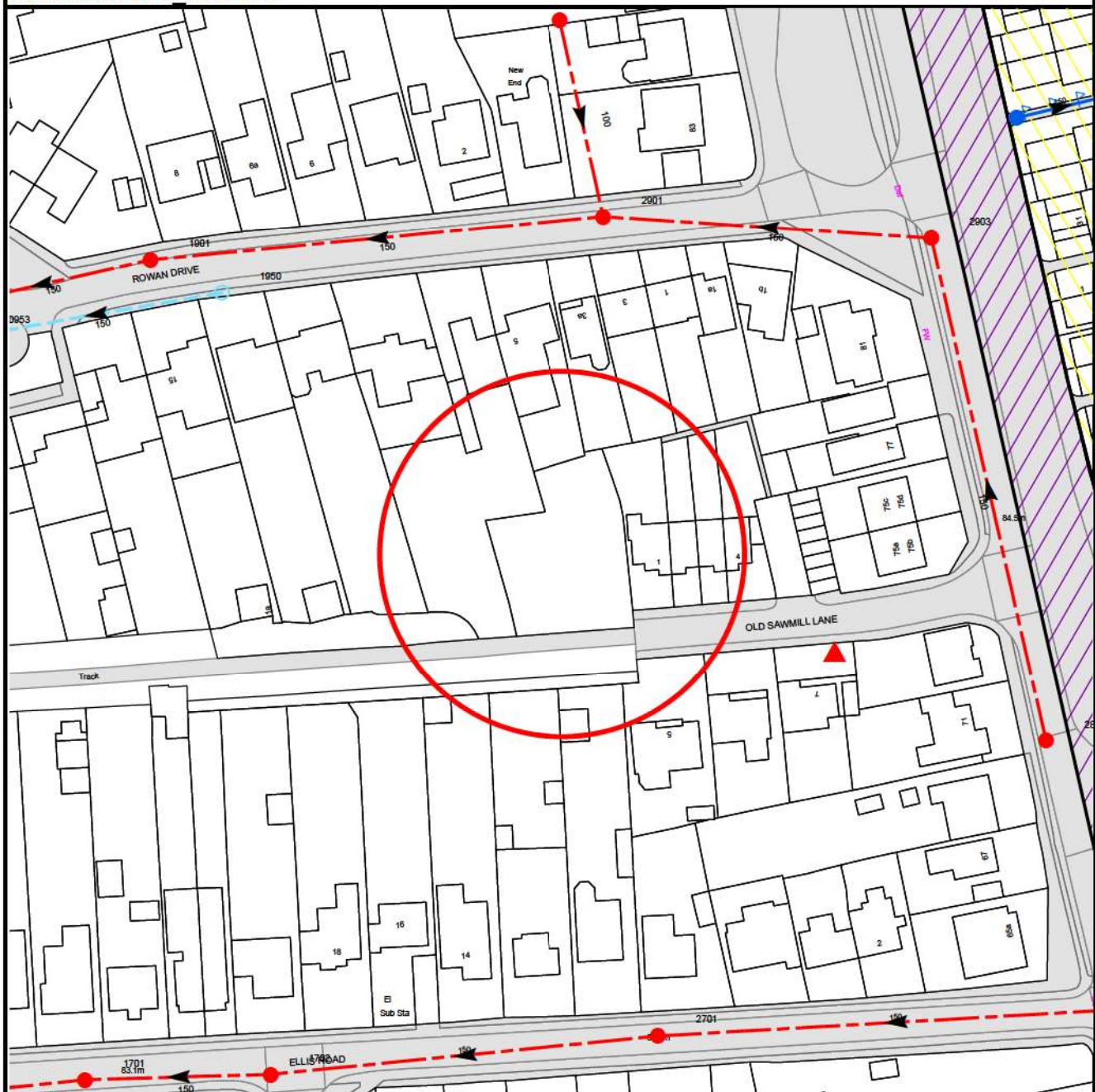
ROOFPLAN

SCALE 1:100



08		Description		03.09.2025	
Drawing Status:					
PLANNING					
Client: MR.KEITH ANDREWS					
Project: 1B_OLD_SAWMILL_LANE CROWTHORNE BERKSHIRE RG45_6LN					
PROPOSED SIDE_ELEVATIONS_AND ROOFPLAN					
Engr:		Chkd:		Appd:	
Cad File:		X		Date 03.09.2025	
				Scale 1/100	Size A3
Drawing Number X				Revision	
				08	

**Residential CON29DW Drainage & Water Search Sewer Map-DWS/DWS
Standard/2024 5047123**



The width of the displayed area is 200m

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

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



Con29DW Residential Drainage and Water Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

-  **Foul Sewer:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
-  **Surface Water Sewer:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
-  **Combined Sewer:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
-  **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 Overflow Sewer:** A sewer designed to convey excess rainfall to rivers or watercourses so that the flow does not exceed the capacity of normal sewers (which could cause flooding).
-  **Sludge Sewer:** A sewer designed to convey sludge from one treatment works to another.
-  **Vent Pipe:** A section of sewer pipe connected between the top of a sewer and vent column, used to prevent the accumulation of gas in a sewer and thus allowing the system to operate properly.
-  **Rising Main:** A pipe carrying pumped flow under pressure from a low point to a high point on the sewerage network. The direction of the fleck indicates the direction of flow within the pipe.
-  **Vacuum:** A foul sewer designed to remove foul sewage under pressure (vacuum sewers cannot accept direct new connections).
-  **Thames Water Proposed Sewer**

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.

Other Sewer Types (Not Operated or Maintained by Thames Water)

-  **Foul Sewer:** Any foul sewer that is not owned by Thames Water.
-  **Gulley:** A sewer designed to convey surface water from large roads, motorways, etc. to watercourses or to public surface water sewers. These sewers are generally maintained by the relevant highway authority.
-  **Culverted Watercourse:** A watercourse running through a culvert or pipe which is the responsibility of the property owner or the Environment Agency.
-  **Decommissioned Sewer:** A disused sewer. Usually filled with cement mixture or removed from the ground.
-  Content of this drainage network is currently unknown.
-  Ownership of this drainage network is currently unknown.

Other Symbols

-  **Undefined Ends:** These symbols represent the point at which a pipe continues but no records of its position are currently held by Thames Water. These symbols are rare but may be found on any of the public sewer types.
-  **Public / Private Pumping Station:** Foul or Surface Water pumping station.
-  **Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

- 5) 'na' or 'D' 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.



Drawing Title: 5047123

South East Water Mains and Fittings

Valve	Meter	Distribution Main
Washout	Pressure Valve	Abandoned Main
Fire Hydrant	Air Valve	Company Boundary

Reference:

Plot Date:	17/08/2024
Grid Reference:	484 204 0000 104878 0000
Scale:	1:1,250

south east water

(Water Mains)
Roxton Road
Stretford, Kent
ME9 6JH
Telephone: 0333 000 0065 (Option 5)
Email: water.mains@south-eastwater.co.uk
Website: www.south-eastwater.co.uk

The following information was collated from various emails between the Client, Thames Water and Local Planning Authority. Thames Water has confirmed (see email response in 1st image below) that the ditch at the front of the site (see brown line in the 2nd image below) enters their system further downstream.

The Client has confirmed that the ditch is approximately 1.05m lower than the site (3rd image below).

Dear Sir/Madam,

Thank you for your enquiry

Please find attached a plan showing the locations of this Authority's highway drainage as currently recorded on our database at the relevant location.

IMPORTANT - Please note the following:

- *Appropriate care & safety precautions should be taken when digging in the vicinity of drainage equipment*
- *Locations and identification markings are approximate and subject to site survey and constant update/alteration.*
- *pipe depths are not shown.*
- *Not all Council owned/operated surface or underground equipment may be shown (records of private drains are currently very limited)..*
- *Any damage to equipment should be reported immediately to these offices or VolkaHighways as appropriate.*
- *Disclaimer - Information shown on the attached plan is for indication only. No warranty is made as to its accuracy. The plan must not solely be relied upon in the event of excavation or other works carried out. No liability of any kind whatsoever is accepted by Wokingham Borough Council, its servants or agents for any omissions or in accuracies in respect of this plan nor for any loss or damage howsoever arising and of whatever nature incurred in the use of this plan or any reliance on any information contained on it.*
- *This information is valid for the date printed.*

Should you have any queries regarding the plans provided then please do not hesitate to contact me

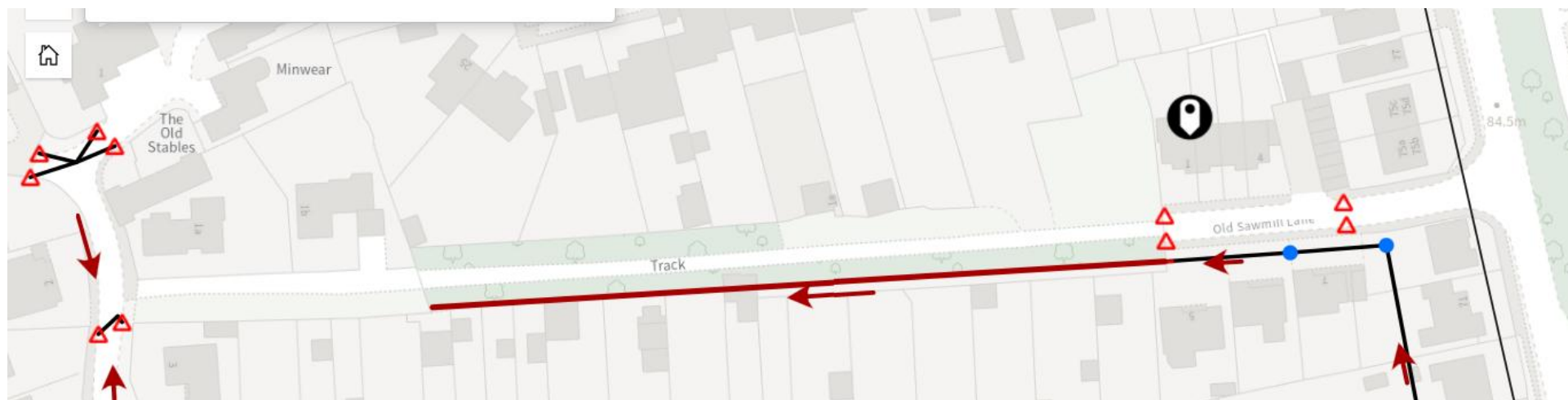
Kind regards

Find attached plan below, the outfall is a Thames Water sewer, this is after the ditch (shown as a brown line, which is riparian owners responsibility to maintain) and piped system at the start of Old Sawmill Lane. Should you wish to get a copy of the Thames Water assets these can be purchased directly vis Thames Water or they can be viewed free of charge at the council offices.

Should you have any further queries please do not hesitate to contact us.

Kind regards,

Simawz



Highways_General2

Boundaries

Borough Boundary



Drainage

Drainage Flow Arrows



Pumping Stations



Grille



Grip



Gully



Manhole



Soakaway



ACO Grille Drain



ACO Grille Drain



Beany Block



Culvert



Ditch



Headwall



Pipe



Balancing Pond



Permeable Surface



Private Drainage Points



Permeable Surface



Private Drainage Points

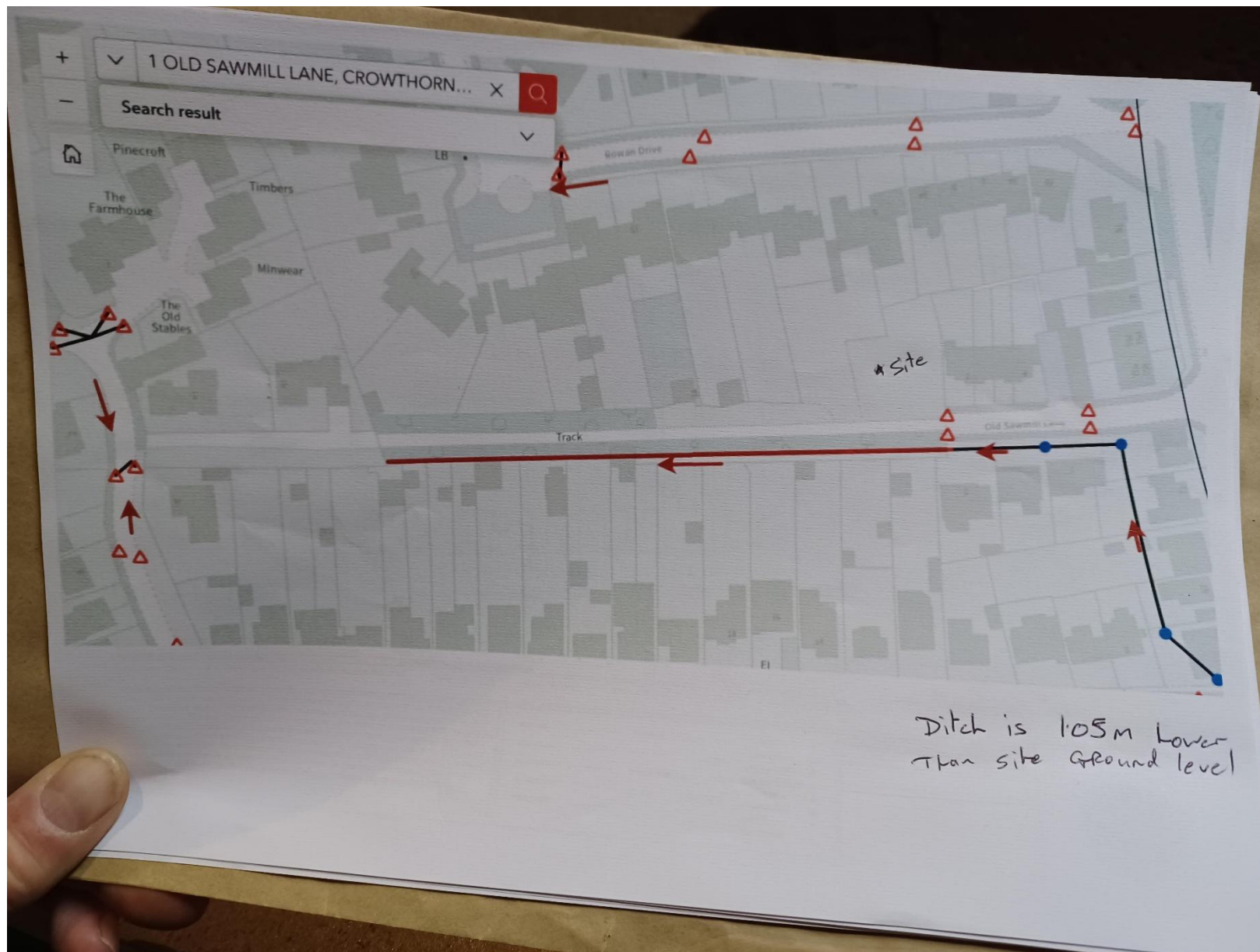


Private Drainage line



Private Drainage Regions





APPENDIX C – INFODRAINAGE CALCULATIONS

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Storm Phase: Phase		Company Address:			



Proposed Impermeable Area

Type : Catchment Area

Area (ha)	0.019
-----------	-------

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

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Storm Phase: Phase		Company Address:			



Assumed 100sqm Catchment Area (see drawing/report)

Type : Catchment Area

Area (ha)	0.01
-----------	------

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

A251112 1B Old Sawmill Lane, Crowthorne:				Date: 23/01/0026							
Calculations				Designed by:		Checked by:			Approved By:		
				SD							
Report Details: Type: Junctions Storm Phase: Phase				Company Address:							

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)	Lock
SWIC 3 - Flow Control	Manhole	208676.358	601319.533	82.700	0.850	81.850	Circular	0.450	None

Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
SWIC 3 - Flow Control	Inlet	Pipe	(None)	No Restriction
	Inlet (2)	Pipe (1)	(None)	No Restriction

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SWIC 3 - Flow Control	Outlet	(None)	Orifice
	Diameter (m)	0.020	
	Coefficient of Discharge	0.600	
	Invert Level (m)	81.850	

A251112 1B Old Sawmill Lane, Crowthorne: Calculations Report Details: Type: Stormwater Controls Storm Phase: Phase	Date: 23/01/0026			
	Designed by: SD	Checked by:	Approved By:	
	Company Address:			



Permeable Car Parking

Type : Tank

Dimensions

Exceedance Level (m)	82.700
Depth (m)	0.580
Base Level (m)	82.120
Freeboard (mm)	130
Initial Depth (m)	0.000
Porosity (%)	30
Average Slope (1:X)	0.00
Total Volume (m³)	6.750

Depth (m)	Area (m²)	Volume (m³)
0.000	50.00	0.000
0.450	50.00	6.750

Inlets

Inlet

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

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (2)
Bypass Destination	(None)
Capacity Type	No Restriction

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by:	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase		SD			
		Company Address:			

Outlets

Outlet

Outgoing Connection	Pipe
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	0.446



Assumed Patio/Paths (see drawing/report)

Type : Tank

Dimensions

Exceedance Level (m)	82.700
Depth (m)	0.430
Base Level (m)	82.270
Freeboard (mm)	130
Initial Depth (m)	0.000
Porosity (%)	30
Average Slope (1:X)	0.00
Total Volume (m³)	9.000

Depth (m)	Area (m²)	Volume (m³)
0.000	100.00	0.000
0.300	100.00	9.000

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase		Company Address:			

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Assumed 100sqm Catchment Area (see drawing/report)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

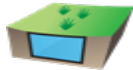
Outlet

Outgoing Connection	Pipe (2)
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	0.958

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase		Company Address:			



Detention Basin

Type : Tank

Dimensions

Exceedance Level (m)	82.700
Depth (m)	0.700
Base Level (m)	82.000
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.412
Total Volume (m³)	8.359

Depth (m)	Area (m²)	Volume (m³)
0.000	0.43	0.000
0.200	0.43	0.086
0.201	10.20	0.090
0.700	23.90	8.359

Inlets

Outlets

Outlet

Outgoing Connection	Pipe (1)
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	0.760

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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)
Assumed 100sqm Catchment Area (see drawing/report)	Assumed Patio/Paths (see drawing/report)		Time of Concentration	0.010	100	10	110	0.011
Proposed Impermeable Area	Permeable Car Parking		Time of Concentration	0.019	100	10	110	0.021
TOTAL		0.0		0.029				0.032

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Phase		Company Address:			

Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	1.200
Min. Slope (1:X)	500.00
Max. Slope (1:X)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Manhole Options

Apply Offset	☐
--------------	--------------------------

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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
SWIC 3 - Flow Control	Free Discharge			

A251112 1B Old Sawmill Lane, Crowthorne:	Date: 23/01/0026			
	Designed by:	Checked by:	Approved By:	
	SD			
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	☐

Rainfall

FEH

Type: FEH

Site Location	GB 484182 164868 SU 84182 64868
Rainfall Version	2022
Summer	☒
Winter	☒

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	40.000
30.0	40.000
100.0	40.000
2.0	0.000
30.0	0.000
100.0	0.000

Storm Durations

A251112 1B Old Sawmill Lane, Crowthorne: Calculations Report Title: Rainfall Analysis Criteria	Date: 23/01/0026			
	Designed by: SD	Checked by:	Approved By:	
	Company Address:			

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Title: UK and Ireland Rural Runoff Calculator		Company Address:			

ICP SUDS / IH 124

Details

Method	ICP SUDS
Area (ha)	0.029
SAAR (mm)	676.0
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	0.1	0.1	0.1	0.3	0.4

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase		Company Address:			



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

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Proposed Impermeable Area	FEH: 2 years: +40 %: 15 mins: Summer	0.02	6.4	2.765
Assumed 100sqm Catchment Area (see drawing/report)	FEH: 2 years: +40 %: 15 mins: Summer	0.01	3.4	1.452

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase		Company Address:			



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

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Proposed Impermeable Area	FEH: 30 years: +40 %: 15 mins: Summer	0.02	15.5	6.739
Assumed 100sqm Catchment Area (see drawing/report)	FEH: 30 years: +40 %: 15 mins: Summer	0.01	8.2	3.550

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase		Company Address:			



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

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Proposed Impermeable Area	FEH: 100 years: +40 %: 15 mins: Summer	0.02	19.7	8.569
Assumed 100sqm Catchment Area (see drawing/report)	FEH: 100 years: +40 %: 15 mins: Summer	0.01	10.4	4.510

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase		Company Address:			



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Proposed Impermeable Area	FEH: 2 years: +0 %: 15 mins: Summer	0.02	4.5	1.971
Assumed 100sqm Catchment Area (see drawing/report)	FEH: 2 years: +0 %: 15 mins: Summer	0.01	2.4	1.038

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase		Company Address:			



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Proposed Impermeable Area	FEH: 30 years: +0 %: 15 mins: Summer	0.02	11.1	4.815
Assumed 100sqm Catchment Area (see drawing/report)	FEH: 30 years: +0 %: 15 mins: Summer	0.01	5.8	2.535

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase		Company Address:			



FEH: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Proposed Impermeable Area	FEH: 100 years: +0 %: 15 mins: Summer	0.02	14.1	6.124
Assumed 100sqm Catchment Area (see drawing/report)	FEH: 100 years: +0 %: 15 mins: Summer	0.01	7.4	3.223

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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
SWIC 3 - Flow Control	FEH: 2 years: +40 %: 180 mins: Summer	82.700	81.850	82.321	0.471	2.0	0.075	0.000	0.6	11.752	OK

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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
SWIC 3 - Flow Control	FEH: 30 years: +40 %: 180 mins: Winter	82.700	81.850	82.491	0.641	1.8	0.102	0.000	0.7	16.547	Flood Risk

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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
SWIC 3 - Flow Control	FEH: 100 years: +40 %: 180 mins: Winter	82.700	81.850	82.587	0.737	2.2	0.117	0.000	0.7	19.185	Flood Risk

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address:			



FEH: 2 years: Increase Rainfall (%): +0: 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
SWIC 3 - Flow Control	FEH: 2 years: +0 %: 180 mins: Summer	82.700	81.850	82.280	0.430	1.4	0.068	0.000	0.5	8.726	OK

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address:			



FEH: 30 years: Increase Rainfall (%): +0: 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
SWIC 3 - Flow Control	FEH: 30 years: +0 %: 120 mins: Winter	82.700	81.850	82.397	0.547	2.2	0.087	0.000	0.6	10.237	OK

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address:			



FEH: 100 years: Increase Rainfall (%): +0: 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
SWIC 3 - Flow Control	FEH: 100 years: +0 %: 180 mins: Winter	82.700	81.850	82.457	0.607	1.8	0.097	0.000	0.6	15.627	Flood Risk

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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 Car Parking	FEH: 2 years: +40 %: 180 mins: Summer	82.321	82.321	0.201	0.201	3.6	3.022	0.000	0.000	2.0	10.748		OK
Assumed Patio/Paths (see drawing/report)	FEH: 2 years: +40 %: 180 mins: Summer	82.322	82.322	0.052	0.052	1.3	1.545	0.000	0.000	1.2	3.796		OK
Detention Basin	FEH: 2 years: +40 %: 180 mins: Summer	82.321	82.321	0.321	0.321	1.3	1.479	0.000	0.000	0.2	1.422		OK

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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 Car Parking	FEH: 30 years: +40 %: 180 mins: Winter	82.491	82.491	0.371	0.371	3.4	5.570	0.000	0.000	1.8	16.423		OK
Assumed Patio/Paths (see drawing/report)	FEH: 30 years: +40 %: 180 mins: Winter	82.491	82.491	0.221	0.221	2.3	6.642	0.000	0.000	1.0	5.489	115	OK
Detention Basin	FEH: 30 years: +40 %: 180 mins: Winter	82.491	82.491	0.491	0.491	1.1	4.054	0.000	0.000	0.2	1.761		OK

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		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 Car Parking	FEH: 100 years: +40 %: 180 mins: Winter	82.588	82.588	0.468	0.468	4.3	6.761	0.000	0.000	2.2	19.083		Flood Risk
Assumed Patio/Paths (see drawing/report)	FEH: 100 years: +40 %: 180 mins: Winter	82.588	82.588	0.318	0.318	3.0	9.016	0.000	0.000	1.0	5.553		Flood Risk
Detention Basin	FEH: 100 years: +40 %: 180 mins: Winter	82.587	82.587	0.587	0.587	1.5	5.874	0.000	0.000	0.6	2.312	125	OK

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address:			



FEH: 2 years: Increase Rainfall (%): +0: 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 Car Parking	FEH: 2 years: +0 %: 180 mins: Summer	82.281	82.281	0.161	0.161	2.6	2.410	0.000	0.000	1.4	7.758		OK
Assumed Patio/Paths (see drawing/report)	FEH: 2 years: +0 %: 30 mins: Summer	82.287	82.287	0.017	0.017	1.5	0.508	0.000	0.000	1.4	1.246		OK
Detention Basin	FEH: 2 years: +0 %: 180 mins: Summer	82.280	82.280	0.280	0.280	0.8	0.971	0.000	0.000	0.2	0.971		OK

A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address:			



FEH: 30 years: Increase Rainfall (%): +0: 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 Car Parking	FEH: 30 years: +0 %: 120 mins: Winter	82.398	82.398	0.278	0.278	4.2	4.166	0.000	0.000	2.2	10.354	90	OK
Assumed Patio/Paths (see drawing/report)	FEH: 30 years: +0 %: 120 mins: Winter	82.398	82.398	0.128	0.128	2.3	3.833	0.000	0.000	1.3	3.871		OK
Detention Basin	FEH: 30 years: +0 %: 120 mins: Winter	82.397	82.397	0.397	0.397	1.5	2.540	0.000	0.000	0.1	0.985		OK

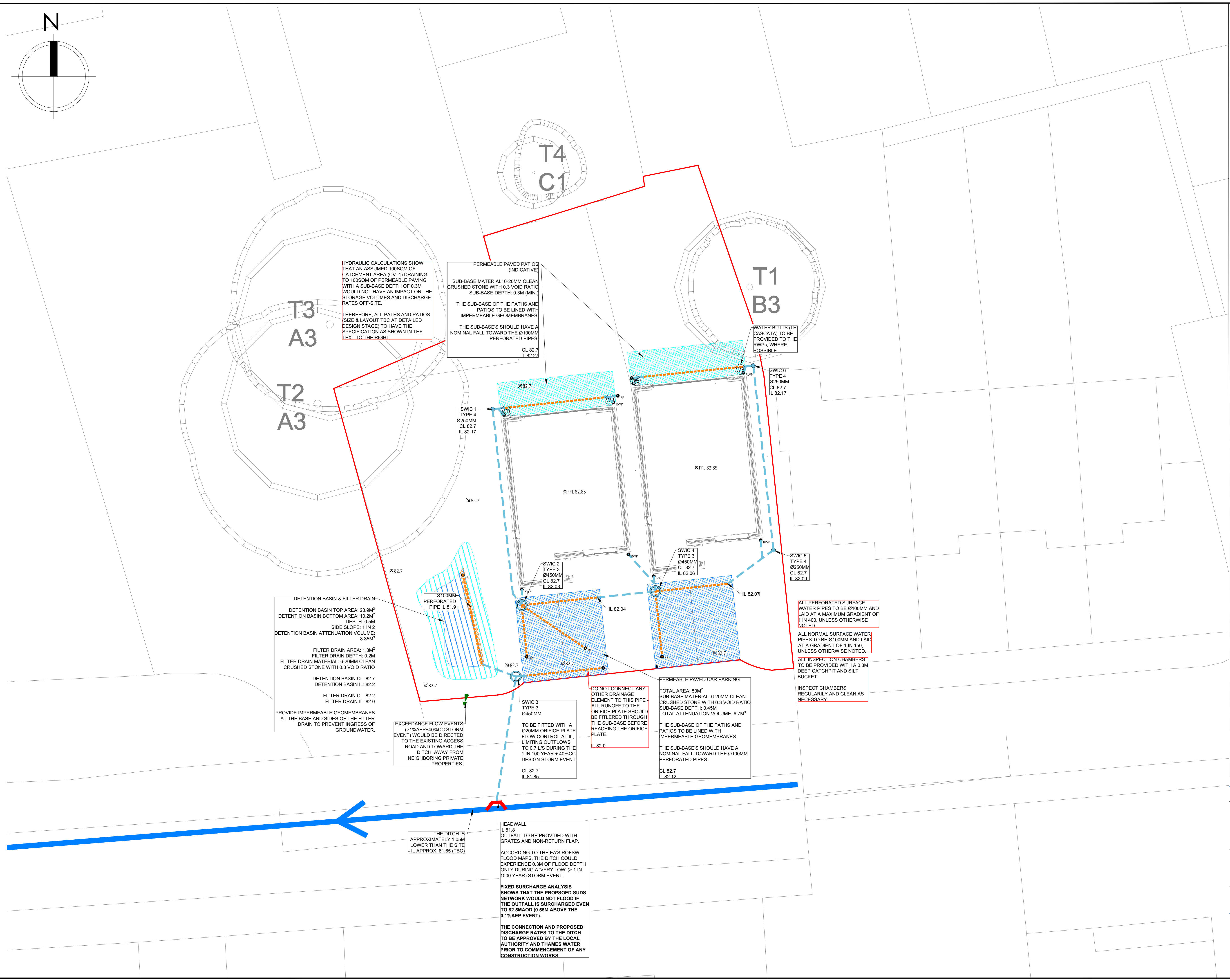
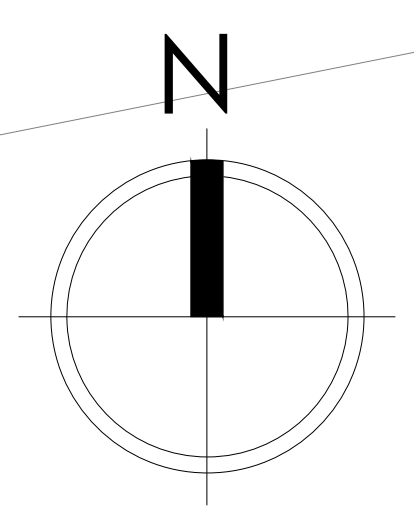
A251112 1B Old Sawmill Lane, Crowthorne:		Date: 23/01/0026			
Calculations		Designed by: SD	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address:			



FEH: 100 years: Increase Rainfall (%): +0: 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 Car Parking	FEH: 100 years: +0 %: 180 mins: Winter	82.458	82.458	0.338	0.338	3.4	5.063	0.000	0.000	1.8	15.379		OK
Assumed Patio/Paths (see drawing/report)	FEH: 100 years: +0 %: 180 mins: Winter	82.458	82.458	0.188	0.188	2.1	5.628	0.000	0.000	1.1	5.479	65	OK
Detention Basin	FEH: 100 years: +0 %: 180 mins: Winter	82.457	82.457	0.457	0.457	1.2	3.480	0.000	0.000	0.2	1.642		OK

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



HYDRAULIC CALCULATIONS SHOW THAT AN ASSUMED 100SQM OF CATCHMENT AREA (CV=1) DRAINING TO 100SQM OF PERMEABLE PAVING WITH A SUB-BASE DEPTH OF 0.3M WOULD NOT HAVE AN IMPACT ON THE STORAGE VOLUMES AND DISCHARGE RATES OFF-SITE.

THEREFORE, ALL PATHS AND PATIOS (SIZE & LAYOUT TBC AT DETAILED DESIGN STAGE) TO HAVE THE SPECIFICATION AS SHOWN IN THE TEXT TO THE RIGHT.

PERMEABLE PAVED PATIOS (INDICATIVE)

SUB-BASE MATERIAL: 6-20MM CLEAN CRUSHED STONE WITH 0.3 VOID RATIO
SUB-BASE DEPTH: 0.3M (MIN.)

THE SUB-BASE OF THE PATHS AND PATIOS TO BE LINED WITH IMPERMEABLE GEOMEMBRANES

THE SUB-BASE'S SHOULD HAVE A NOMINAL FALL TOWARD THE Ø100MM PERFORATED PIPES:

CL 82.7
IL 82.27

WATER BUTTS (IE CASCATA) TO BE PROVIDED TO THE RWPs, WHERE POSSIBLE.

SWIC 1
TYPE 4
Ø250MM
CL 82.7
IL 82.17

SWIC 2
TYPE 3
Ø450MM
CL 82.7
IL 82.03

SWIC 4
TYPE 3
Ø450MM
CL 82.7
IL 82.06

SWIC 5
TYPE 4
Ø250MM
CL 82.7
IL 82.09

DETENTION BASIN & FILTER DRAIN

DETENTION BASIN TOP AREA: 23.9M²
DETENTION BASIN BOTTOM AREA: 10.2M²
DEPTH: 0.3M
SIDE SLOPE: 1 IN 2
DETENTION BASIN ATTENUATION VOLUME: 8.35M³

FILTER DRAIN AREA: 1.3M²
FILTER DRAIN DEPTH: 0.2M
FILTER DRAIN MATERIAL: 6-20MM CLEAN CRUSHED STONE WITH 0.3 VOID RATIO

DETENTION BASIN CL: 82.7
DETENTION BASIN IL: 82.2

FILTER DRAIN CL: 82.2
FILTER DRAIN IL: 82.0

PROVIDE IMPERMEABLE GEOMEMBRANES AT THE BASE AND SIDES OF THE FILTER DRAIN TO PREVENT INGRESS OF GROUNDWATER

EXCEEDANCE FLOW EVENTS (>1% AEP + 40% CC STORM EVENT) WOULD BE DIRECTED TO THE EXISTING ACCESS ROAD AND TOWARD THE DITCH, AWAY FROM NEIGHBORING PRIVATE PROPERTIES.

SWIC 3
TYPE 3
Ø450MM

TO BE FITTED WITH A Ø20MM ORIFICE PLATE FLOW CONTROL AT IL, LIMITING OUTFLOWS TO 0.7 L/S DURING THE 1 IN 100 YEAR + 40% CC DESIGN STORM EVENT.

CL 82.7
IL 81.85

DO NOT CONNECT ANY OTHER DRAINAGE ELEMENT TO THIS PIPE - ALL RUNOFF TO THE ORIFICE PLATE SHOULD BE FILTERED THROUGH THE SUB-BASE BEFORE REACHING THE ORIFICE PLATE.

IL 82.0

PERMEABLE PAVED CAR PARKING

TOTAL AREA: 50M²
SUB-BASE MATERIAL: 6-20MM CLEAN CRUSHED STONE WITH 0.3 VOID RATIO
SUB-BASE DEPTH: 0.45M
TOTAL ATTENUATION VOLUME: 6.7M³

THE SUB-BASE OF THE PATHS AND PATIOS TO BE LINED WITH IMPERMEABLE GEOMEMBRANES.

THE SUB-BASE'S SHOULD HAVE A NOMINAL FALL TOWARD THE Ø100MM PERFORATED PIPES.

CL 82.7
IL 82.12

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

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

ALL INSPECTION CHAMBERS TO BE PROVIDED WITH A 0.3M DEEP CATCHPIT AND SILT BUCKET.

INSPECT CHAMBERS REGULARLY AND CLEAN AS NECESSARY.

HEADWALL
IL 81.8
OUTFALL TO BE PROVIDED WITH GRATES AND NON-RETURN FLAP.

ACCORDING TO THE EA'S ROPSW FLOOD MAPS, THE DITCH COULD EXPERIENCE 0.3M OF FLOOD DEPTH ONLY DURING A VERY LOW (> 1 IN 1000 YEAR) STORM EVENT.

FIXED SURCHARGE ANALYSIS SHOWS THAT THE PROPOSED SUDS NETWORK WOULD NOT FLOOD IF THE OUTFALL IS SURCHARGED EVEN TO 82.5M AOD (0.65M ABOVE THE 0.1% AEP EVENT).

THE CONNECTION AND PROPOSED DISCHARGE RATES TO THE DITCH TO BE APPROVED BY THE LOCAL AUTHORITY AND THAMES WATER PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION WORKS.

THE DITCH IS APPROXIMATELY 1.05M LOWER THAN THE SITE IL APPROX. 81.65 (TBC)

- GENERAL
 - THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
 - ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
 - THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
 - 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.
 - 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.
- CONSTRUCTION NOTE
 - 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.
 - THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
 - 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.
 - THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
 - ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON ANY ADEPTUS DRAWINGS, THE MANUFACTURER'S INSTRUCTIONS MUST BE USED.
- BELOW GROUND DRAINAGE
 - 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
 - ALL ADOPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE APP C - DESIGN AND CONSTRUCTION GUIDANCE AND THE RELEVANT COUNCIL DESIGN GUIDE.
 - 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.
 - 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.
 - ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
 - ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100mm DIAMETER FROM DOWNPIPES AND 150mm DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
 - ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES OR SOIL STACKS DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER.
 - EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
 - CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
 - ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.
- MANHOLE COVERS AND FRAMES
 - MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
 - MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

LEGEND

PROPOSED SURFACE WATER PIPE RUN

PROPOSED PERFORATED SURFACE WATER DRAIN

PROPOSED TYPE 3/4 SURFACE WATER INSPECTION CHAMBER (IC) - Ø450MM

PROPOSED TYPE 3/4 SURFACE WATER INSPECTION CHAMBER - Ø250MM

PERMEABLE PAVING - 450MM DEEP SUB-BASE - TANKED

PERMEABLE PAVING - 300MM DEEP SUB-BASE - TANKED

FILTER DRAIN - TANKED

DETENTION BASIN

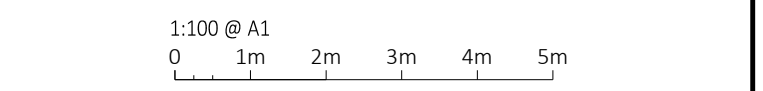
OVERLAND FLOW DIRECTION

PROPOSED RODDING EYE

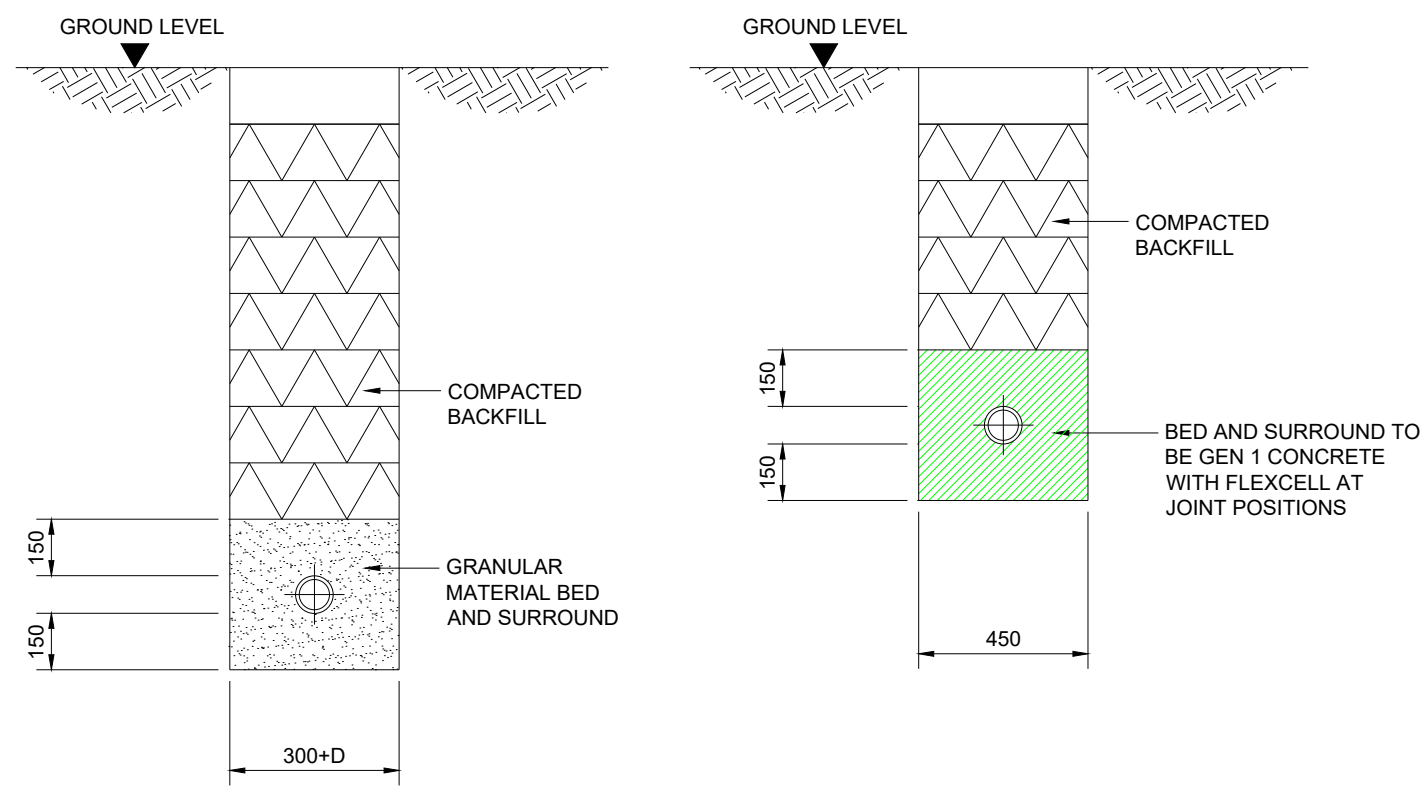
PROPOSED SW RAINWATER PIPE

PROPOSED LEVEL EXISTING LEVEL

RWP ROUTED THROUGH WATER BUTT



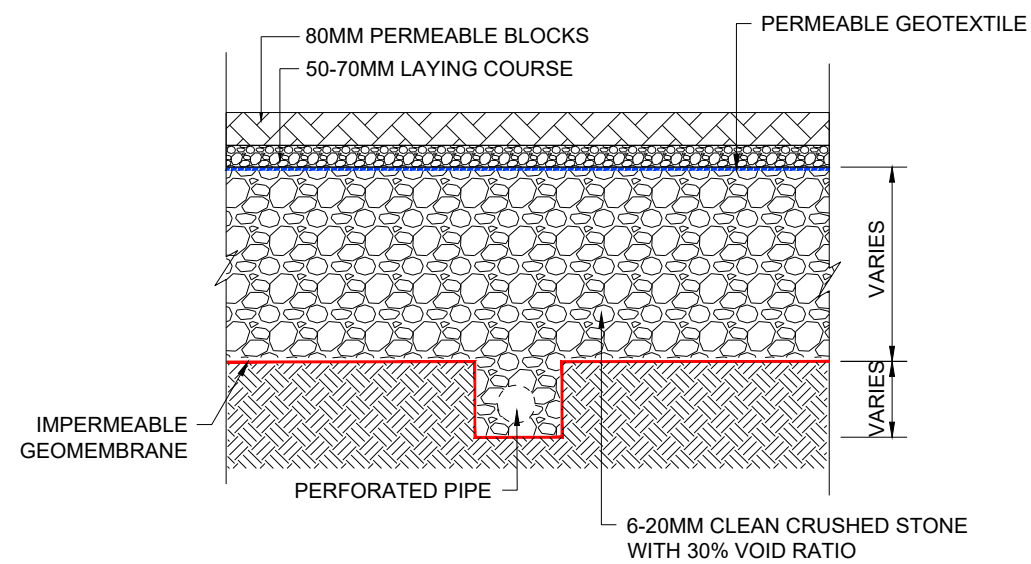
REV:	DESCRIPTION:	BY:	DATE:
STATUS: FOR INFORMATION			
adeptus ENVIRONMENTAL			
CLIENT: MR. KEITH ANDREWS			
SITE: 1B OLD SAWMILL LANE CROWTHORNE, RG45 6LN			
TITLE: SURFACE WATER DRAINAGE DESIGN PROPOSED LAYOUT			
SCALE AT A1: 1:100@A1	DATE: JAN 26	DRAWN: SD	CHECKED: SD
PROJECT NO: A251112	DRAWING NO: DR01	REVISION:	-



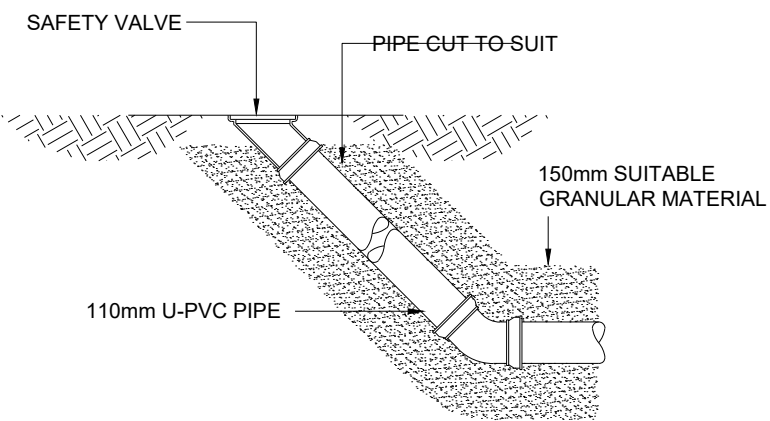
GRANULAR BEDDING DETAIL. (WHERE COVER >600mm)

CONCRETE BEDDING DETAIL. (WHERE COVER <600mm)

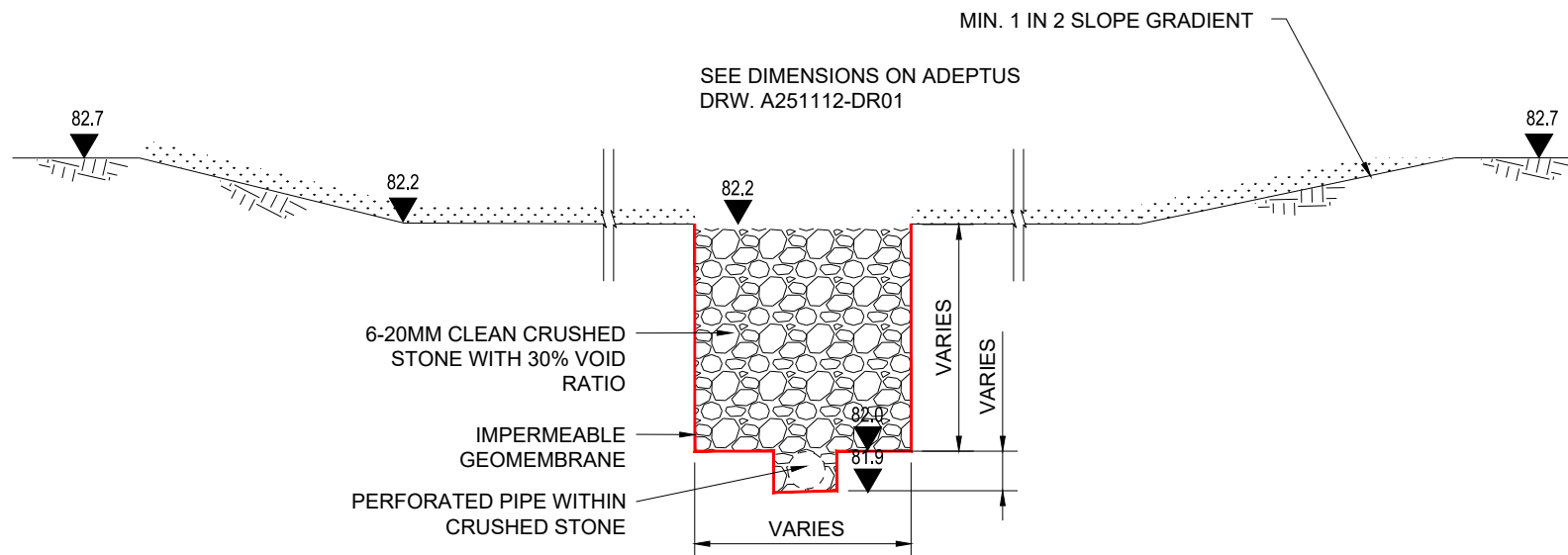
NOTE
ALL BACKFILLING AND REINSTATEMENT WITHIN ROADS AND STREETS TO BE IN ACCORDANCE WITH THE HIGHWAY AUTHORITY AND HAUC SPECIFICATION.



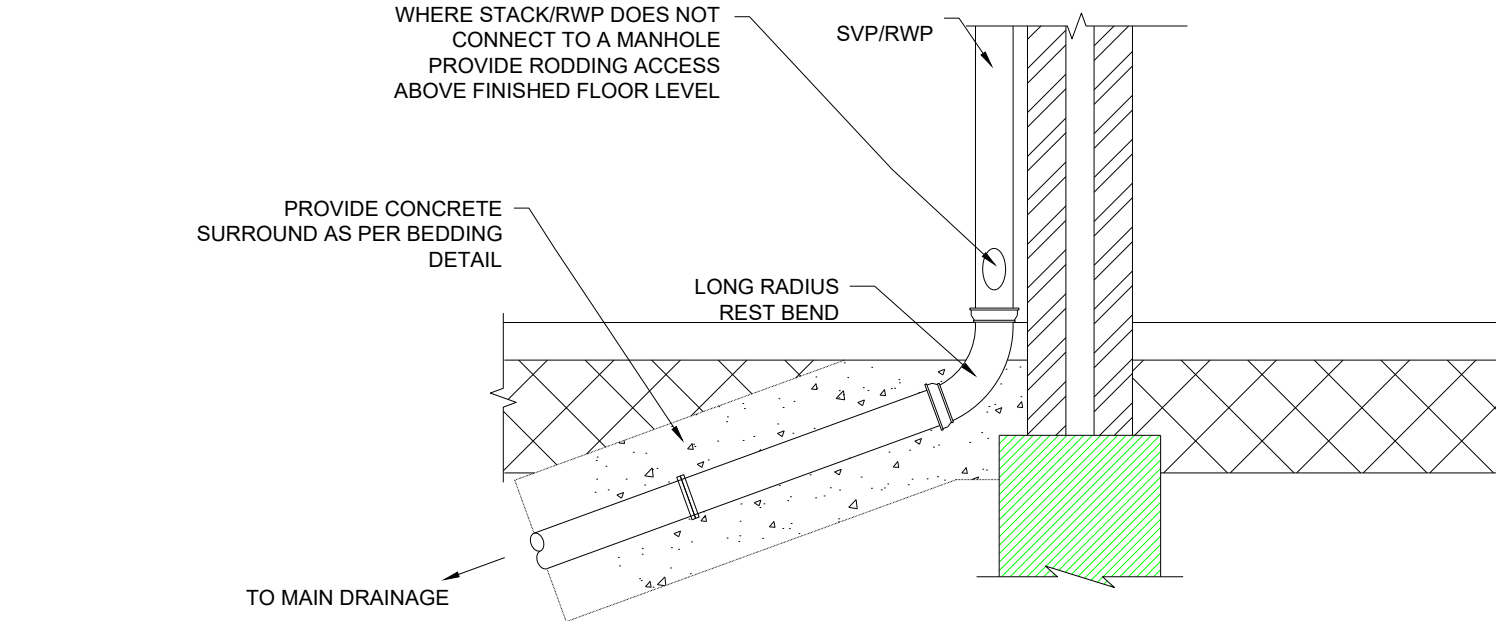
PERMEABLE PAVING (TYPE C) WITH PERFORATED PIPE



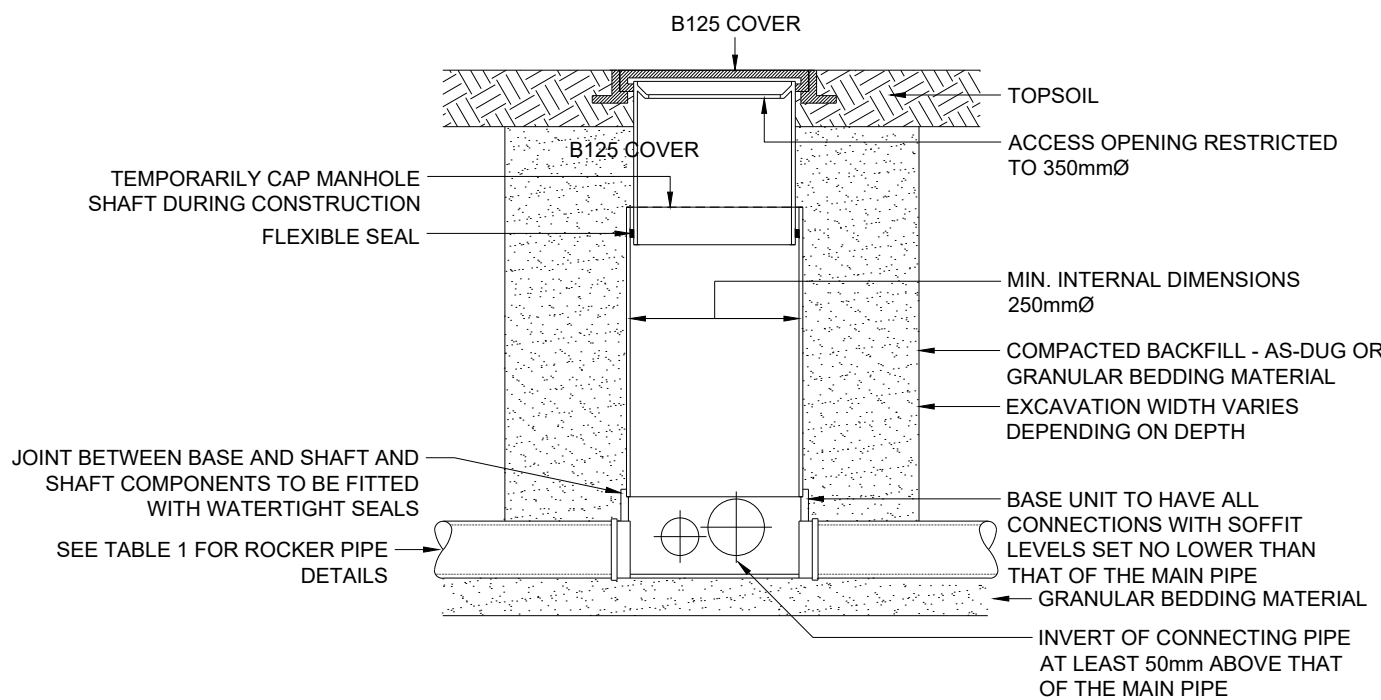
RODDING EYE DETAIL



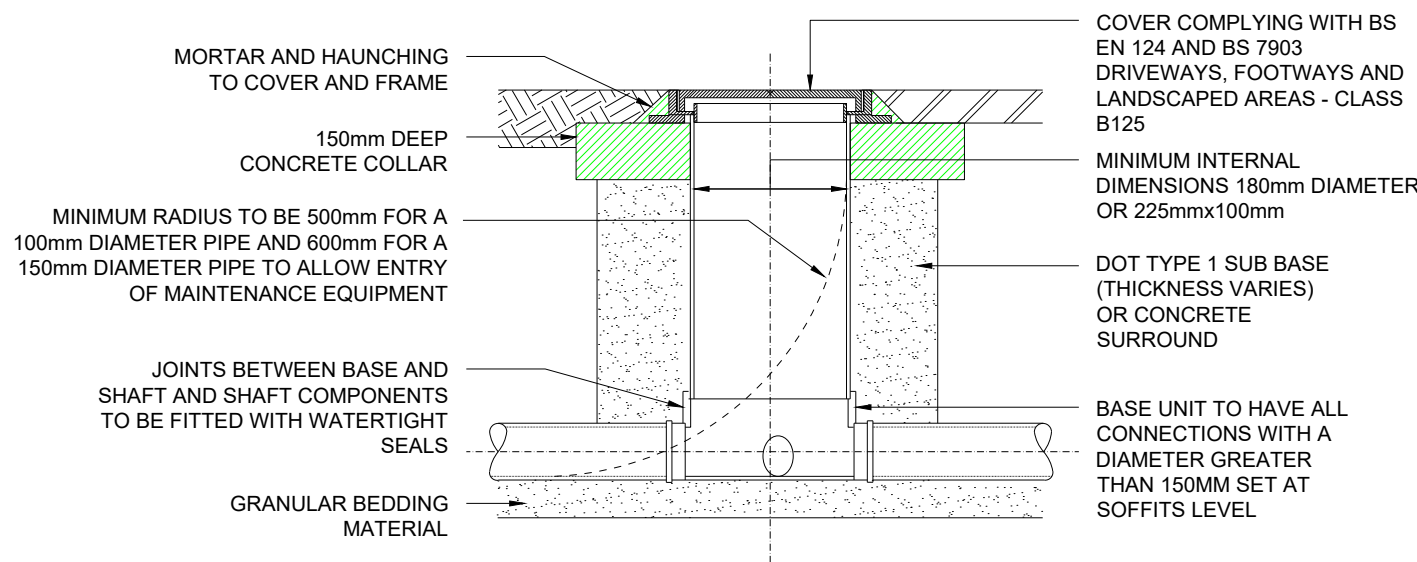
DETENTION BASIN WITH IMPERMEABLE FILTER DRAIN BASE



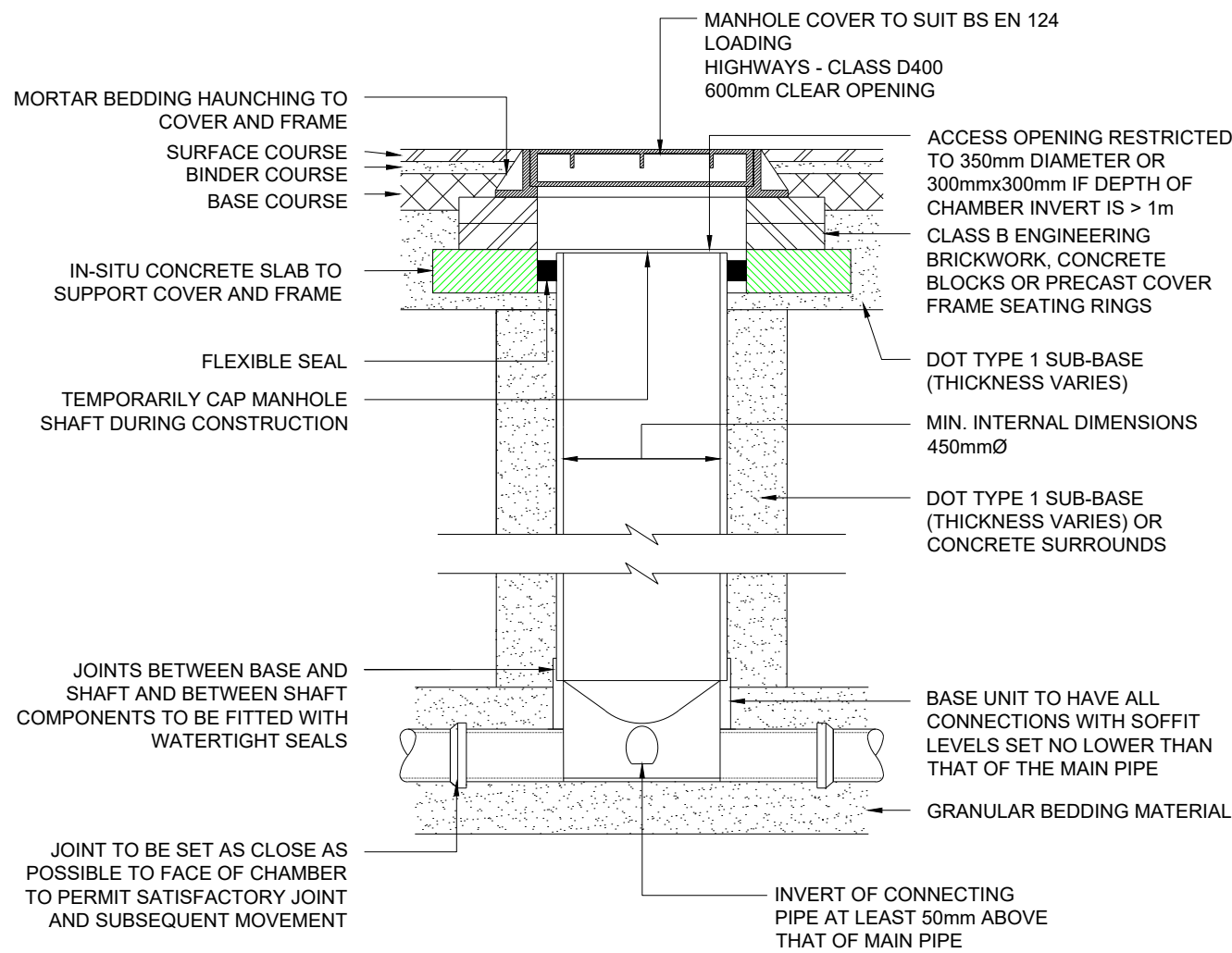
RWP CONNECTION



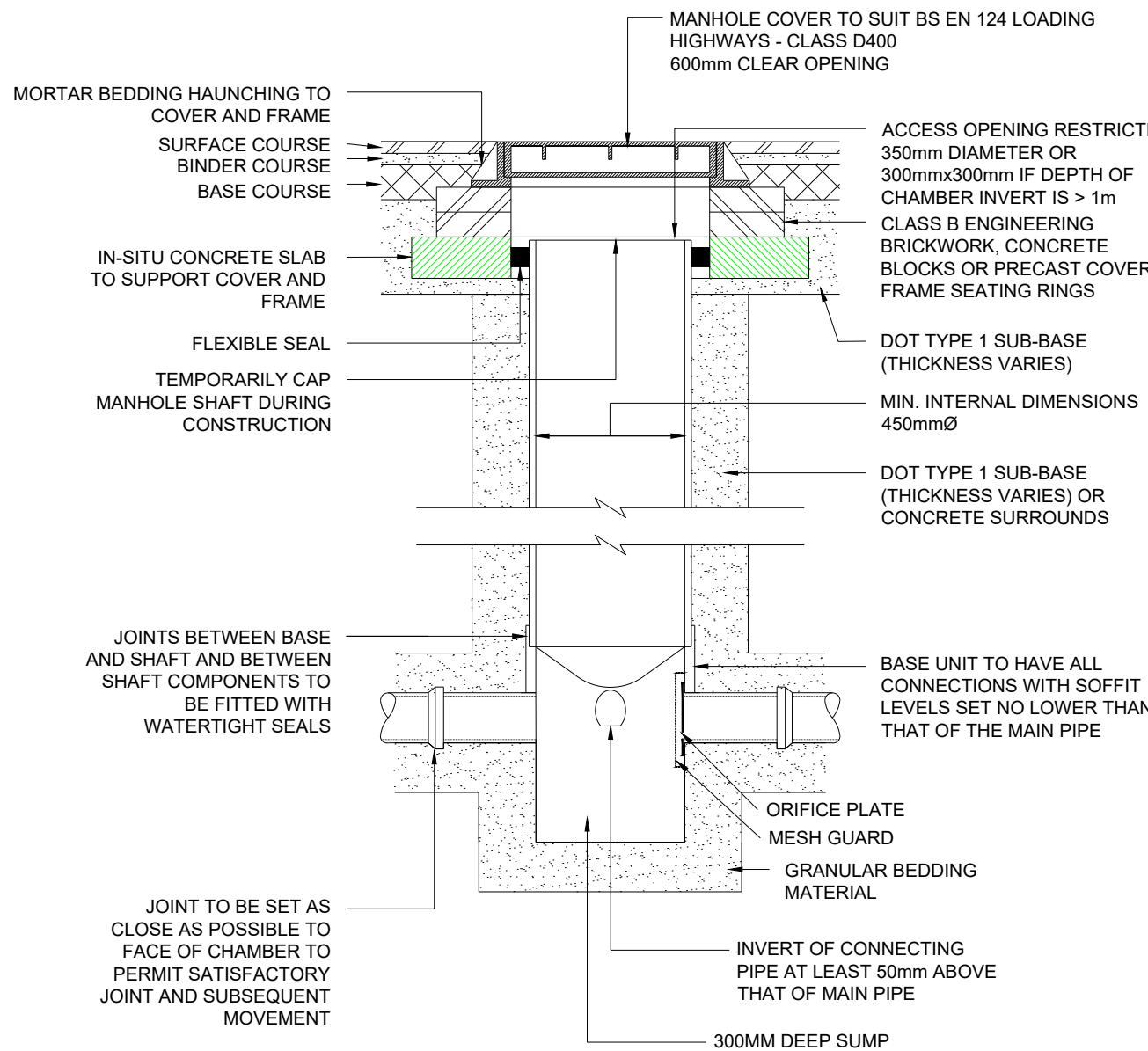
TYPE 4 ACCESS CHAMBER - FLEXIBLE MATERIAL SOFT LANDSCAPING (SUBJECT TO LIGHT TRAFFIC LOADS, MAX. DEPTH 3m, NON-ENTRY)



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)



TYPE 3 INSPECTION CHAMBER WITH ORIFICE PLATE FLOW CONTROL

- GENERAL
- THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
- ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
- 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.
- 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.
- CONSTRUCTION NOTE
- 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.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
- 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.
- THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
- 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 ANY ADEPTUS DRAWINGS, THE MANUFACTURERS INSTRUCTIONS MUST BE USED
- BELOW GROUND DRAINAGE
- 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
- ALL ADAPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE App C - DESIGN AND CONSTRUCTION GUIDANCE AND THE RELEVANT COUNCIL DESIGN GUIDE.
- 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.
- 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.
- ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
- ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100mm DIAMETER FROM DOWNPIPES AND 150mm DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
- ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES OR SOIL STACKS DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER.
- EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
- CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
- ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.
- MANHOLE COVERS AND FRAMES
- MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
- MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

REV:	DESCRIPTION:	BY:	DATE:
STATUS: FOR INFORMATION			
CLIENT: MR. KEITH ANDREWS			
SITE: 1B OLD SAWMILL LANE CROWTHORNE, RG45 6LN			
TITLE: INDICATIVE DRAINAGE DETAILS			
SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1 IN 20	JAN 26	SD	SD
PROJECT NO:	DRAWING NO:	REVISION:	
A251112	DR02	-	