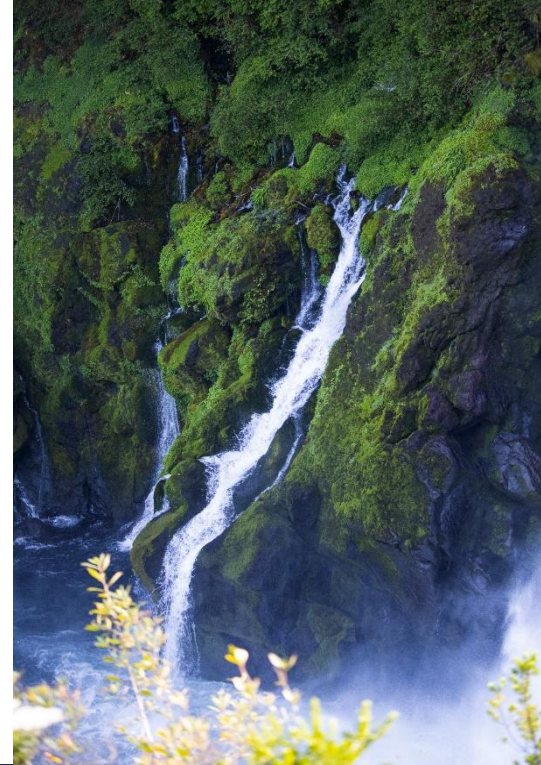




degadea
water, civils and environment

Drainage Strategy 7630_GU12_Ash_07

Site Address: Land at Shortland Farm
Guildford Road
Ash
Surrey
GU12 6DF

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

degadea
water, civils and environment

Document Issue Record

Project: Land at Shortland Farm

Prepared for: Gleeson Land Limited

Reference: 7630_GU12_Ash_07

Site Location: Land at Shortland Farm, Guildford Road, Ash, Surrey, GU12 6DF

Issue	Date	Author	Check	Authorised	Comments
1	22/09/25	Daniel Buciak	Victoria Walker	Victoria Walker	Draft - First issue
2	25/09/25	Daniel Buciak	Victoria Walker	Victoria Walker	Final first issue
3	01/09/25	Daniel Buciak	Victoria Walker	Victoria Walker	Minor amendments to planners comments
4	28/10/25	Daniel Buciak	Victoria Walker	Victoria Walker	Appendix F updated

Please Note:

This report has been prepared for the exclusive use of the commissioning party and may not be reproduced without prior written permission from Aegaea Limited. All work has been carried out within the terms of the brief using all reasonable skill, care, and diligence. No liability is accepted by Aegaea Limited for the accuracy of data or opinions provided by others in the preparation of this report, or for any use of this report other than for the purpose for which it was produced. Where reference has been made to probability events, or risk probability, it does not ensure that there is no risk or that there is no residual risk from an extreme, unlikely or unforeseen flood event over the lifetime of the development.

Table of Contents

1. Introduction.....	1
Topography.....	2
Site Geology.....	3
Development Proposals.....	4
2. Surface Water Drainage Strategy.....	5
Greenfield Runoff Rate	5
Proposed Drainage Strategy	5
Attenuation Volumes	6
Outfalls.....	7
Permeable Paving/Sub-base	7
Attenuation Basins	7
Hydro-Brake Flow Controls	9
Overland/Exceedance Flow Paths	9
Conclusion.....	9
3. Future Maintenance Strategy	10
Adoption.....	10
General Management.....	10
Swale.....	13
Permeable Paving	14
Cellular Attenuation Tank.....	15
4. Pollution Prevention & Water Quality Management.....	16
Pollution Hazard Indices	16
Pollutant Hazard Indices.....	16
Indicative SuDS Mitigation Indices	17
Residential Area	18
5. Foul Drainage Strategy	19
Proposed Strategy	19
Foul Drainage Maintenance	20

Appendix A - Topographical Survey21

Appendix B - Ground Investigations Extract.....22

Appendix C - Site Layout23

Appendix D - Greenfield Runoff & Storage Estimate Calculations.....24

Appendix E - Thames Water Sewer Mapping25

Appendix F - Drainage Layout.....26

Introduction

- 1.1. This Drainage Strategy has been prepared by Aegaea to accompany an application for outline planning permission for the redevelopment of Land at Shortland Farm, Guildford Road, Ash, Guildford. The application is submitted on behalf of Gleeson Land Limited.
- 1.2. The proposed development is for an outline planning application with all matters except for the accesses from Guildford Road and Wyke Lane reserved for subsequent approval for the demolition of the existing buildings and hardstanding and the erection of
 - up to 200 residential dwellings including affordable housing and plots of self-build plots (Class C3);
 - green and blue infrastructure; and
 - associated service and utility structures.
- 1.3. This Drainage Strategy document has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG).
- 1.4. The purpose of this document is to demonstrate a suitable drainage strategy for the disposal of surface and foul water flows arising from the proposed development. The Flood Risk Assessment accompanying the planning application, shows the development proposals are safe for the lifetime of the development and would not increase flood risk elsewhere.
- 1.5. This document is intended to support the outline application, and as such the level of detail included is commensurate and subject to the nature of the proposals.

Existing Site

- 1.6. The site of the proposed development is located at Land at Shortland Farm, Guildford Road, Ash, Guildford, GU12 6DF ("the application site"). The site is proposed to be accessed from Guildford Road (A323) to the north.
- 1.7. The existing site is predominantly undeveloped comprising of agricultural fields featuring varied vegetation cover, ditches and hedgerow boundaries. There are farm buildings in the middle of the site, which are proposed to be removed as part of the development.

- 1.8. The site (10.24ha approx.) is bounded by Guildford Road (A323) with existing residential beyond to the north, Wyke Lane to the east, an unnamed watercourse and open agricultural land to the south and existing recreational/sports pitches and residential to the west.
- 1.9. The approximate centre of the site is located at Ordnance Survey National Grid Reference SU 90651 50994. Guildford Borough Council is the Local Planning Authority (LPA) for the site and Surrey County Council are the designated Lead Local Flood Authority (LLFA).



Figure 1: Site Location Plan

Topography

- 1.10. A topographic survey has been undertaken by MK Surveys in April 2025. The survey indicates that the site falls from a high point of approx. 84.80mAOD to the north of the site, and a low point of approx. 76.00mAOD to the south of the site. The topographical survey is included in Appendix A.
- 1.11. An unnamed ordinary watercourse runs along the western half of the southern boundary. It is understood that this ordinary watercourse flows in a westerly direction towards the River Blackwater.

Site Geology

- 1.12. Geological maps¹ published by British Geological Survey's (BGS) indicate that the site is underlain by Bagshot Formation - Sand.
- 1.13. Soils² mapping provided by Cranfield University on behalf of DEFRA shows that the site is underlain by Loamy soils with naturally high groundwater.
- 1.14. RSK Geosciences carried out intrusive ground investigations as part of the Phase 1 and 2 geo-environmental and geotechnical report accompanying the planning application. Infiltration tests were carried out in accordance with BRE365 across six trial pit locations within the site. Three of the six trial pits produced infiltration rates between circa 1.07×10^{-5} m/s and 2.95×10^{-5} m/s, the remaining three trial pits failed to produce a sufficient infiltration rate. The infiltration rate encountered is considered low and may result in difficulty achieving half drain time design criterion required in design of infiltration features. A copy of an extract from the site investigation containing the soakage tests is reproduced in Appendix B
- 1.15. The infiltration test results show a varied rates encountered within the Bagshot Formation within the site. Unfortunately, the successful trial pits with infiltration rates were located in areas where parts of the site would be unable to drain to via gravity due to the successful tests being located at higher points of the site.
- 1.16. Groundwater was encountered in window samples at varying depths between 2-4mbgl. Neighbouring developments infiltration testing recorded water seepage within trial pits at 0.8m (BGL) and no significant soakage within infiltration test pits (to BRE 365). It is recommended that groundwater monitoring is undertaken to establish the highest annual groundwater level to inform the detailed drainage design and assessment of suitability of infiltration drainage. Any proposed infiltration features will need to ensure sufficient separation (>1m) is provided between the base of the feature and seasonal high groundwater level.
- 1.17. Based on the above it is anticipated that some parts of the site could be suitable for infiltration features to be implemented however due to varying low rates and site levels constraints it is considered that only partial infiltration would be suitable for disposing surface water runoff arising from the proposed development.

¹ The British Geological Survey (BGS) Geology Map Available online: [BGS \(www.geologyviewer.bgs.ac.uk\)](http://www.geologyviewer.bgs.ac.uk)

² Soils mapping: Hallett, S.H., Sakrabani, R., Keay, C.A. and Hannam, J.A. (2017) Developments in Land Information Systems: Case studies in land resource management capabilities and options. Soil Use and Management. doi: 10.1111/sum.12380. <http://onlinelibrary.wiley.com/doi/10.1111/sum.12380/full>

Development Proposals

- 1.18. The proposed development is for outline planning application with all matters except for the accesses from Guildford Road and Wyke Lane reserved for subsequent approval for the demolition of the existing buildings and hardstanding and the erection of:
- up to 200 residential dwellings including affordable housing and plots of self-build plots (Class C3);
 - green and blue infrastructure; and
 - associated service and utility structures.
- 1.19. The proposed site layout is included in Appendix C of the report.
- 1.20. Further site details can be found in the Design and Access Statement prepared by OSP Architecture, accompanying the planning application.

2. Surface Water Drainage Strategy

Greenfield Runoff Rate

- 2.1. The existing greenfield runoff rate for the development site have been calculated using the IH124 methodology, the results of which are contained within Appendix D. The greenfield runoff rates (in l/s/ha) for the site are summarised in the Table 1 below.

Return Period	Greenfield Runoff Rate (l/s)
Q_{BAR}	12.70
1 in 1 Year	10.80
1 in 30 Year	30.40
1 in 100 Year	40.40

Table 1: Greenfield Runoff Rates

Proposed Drainage Strategy

- 2.2. Current guidance (National Standards for Sustainable Drainage Systems) indicates that the following surface water disposal options should be considered, listed in order of preference:
- Rainwater harvesting:** This is considered to be top of the hierarchy, above infiltration. Any overflows such systems would continue to follow the drainage hierarchy. There are opportunities for rainwater butts to be provided to residential rainwater down pipes within private land/gardens.
 - Disposal via on-site infiltration systems:** Based on the information discussed above partial infiltration features such as unlined permeable paving, filter drains, swales, partial infiltration basins etc. could be implemented. This should be investigated during reserved matters/detailed design subject to groundwater monitoring and detailed layout proposals. Based on the location of the successful trial pit location, level constraints and relatively low infiltration rates encountered and possibility of high groundwater, an alternative means of surface water disposal should be sought at this outline stage.
 - Disposal to a watercourse/surface water body:** An existing ordinary watercourse runs along the southern boundary of the development site. The topographic survey has been undertaken which indicates that the ditch is approximately 0.80m deep.

- iv. **Disposal to surface water sewer:** There do not appear to be any Thames Water public surface water sewers located within the vicinity of the site. Refer to Appendix E for Thames Water Sewer Mapping.
 - v. **Disposal to combined sewer:** There are no public combined water sewers located within the vicinity of the site. Refer to Appendix E for Thames Water Sewer Mapping.
- 2.3. A sustainable drainage strategy, involving the implementation of SuDS, is proposed for managing surface water on the site. As discussed above feasibility to implement partial infiltration features should be investigated during detailed design for the scheme.
- 2.4. On review of the SuDS hierarchy, it is proposed that surface water generated from the proposed development will be managed on site via a number of partial infiltration features, attenuation features such as permeable paving located within parking bays, attenuation tanks, bio-retention areas, swales & attenuation basin.

Attenuation Volumes

- 2.5. The attenuation features shown on the drainage layout within Appendix F, allows sufficient space for an open surface SuDS feature is safeguard for the outline application however, it should be noted the attenuation volumes can be accommodated using a number of SuDS features located throughout development. These SuDS features will be determined during detailed design and should be designed in accordance with the SuDS 'management train' philosophy.
- 2.6. The attenuation volume and discharge rates are subject to change during detailed design stage, as the development layout is developed and impermeable areas refined. The discharge rate is subject to agreement with the LLFA.
- 2.7. In accordance with best practice, when designing a drainage scheme, priority should be given to green, above ground SuDS which can help meet the 4 pillars SuDS:
- Water Quantity – Controlling the quantity of runoff.
 - Water Quality – Managing the quality of the runoff in order to prevent pollution.
 - Amenity – Create and sustain better places for people.
 - Biodiversity – Creating and sustain better places for nature.

Outfalls

- 2.8. The surface water outfall is proposed to discharge to the unnamed ordinary watercourse along the southern boundary. Discharging into the onsite watercourse will require ordinary watercourse consent to be obtained during detailed design stage.
- 2.9. The outfall may become surcharged during some flood events and will therefore be modelled under surcharge conditions at detailed design stage.
- 2.10. The drainage system will be designed to operate without risk of increased off-site flooding, this includes during a surcharged outfall conditions.

Permeable Paving/Sub-base

- 2.11. To provide treatment for the first 5mm to 10mm of run-off at least one treatment stage should be considered to provide source control. An example of this is permeable paving/sub-base.
- 2.12. It is unlikely that local highways authority will accept permeable paving or permeable sub-base within their adopted highways, therefore this is best suited to managed parking areas and private surfaces where block paving and sub-base is typically used as the surface treatment and ongoing maintenance can be ensured by way of the homeowner or management company.

Attenuation Basins

- 2.13. The proposed attenuation basin will be a vegetated area that are typically dry and designed to retain runoff and discharge via a flow control device limited to the agreed discharge rate. Dry attenuation basins can also enhance the amenity and biodiversity value of an area.
- 2.14. The attenuation basins will be designed to provide storage and treatment to surface water runoff from the proposed residential development and associated infrastructure.
- 2.15. The basin could be designed with 1 in 3 side slopes in line with current guidance on attenuation basins for safety and maintenance purposes, and as set out within The SuDS Manual (Ciria 753). The basin would provide ecology, amenity and biodiversity benefits and can be designed to enhance the existing vegetation and shall improve the aesthetics of the open space.

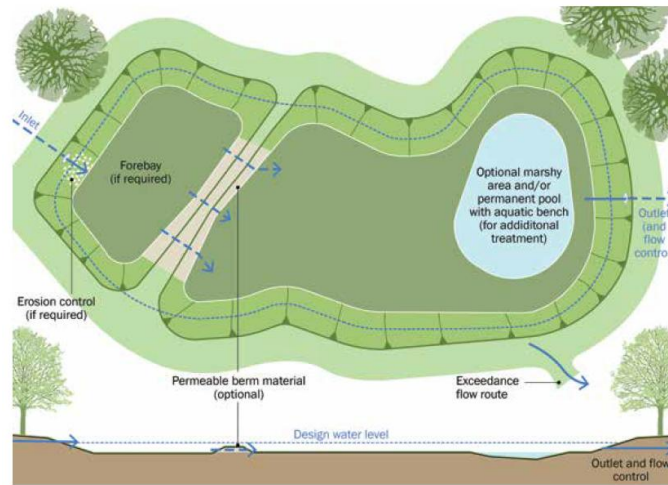


Figure 2: Ciria (C753) Figure 22.2 – Typical Plan View and Profile of Vegetated Detention Basin

- 2.16. A forebay will be proposed within the attenuation basin to improve water quality and long-term performance of the attenuation basin. The forebay will be formed by an earth berm to allow settlement and retainment of silt from surface water runoff. The inlet areas of the basins will need to be kept easily accessible to allow for regular maintenance.
- 2.17. A low flow channel could be used to route flows from a forebay area through the basin towards the outfall, with surface water flows routed via the longest viable route to maximise treatment opportunities. Additional secondary settlement areas could also be implemented to further promote settlement
- 2.18. The attenuation basin will both attenuate and convey treated surface water flows prior to entering the ordinary watercourse at the agreed discharge rate.
- 2.19. The provision of a formalised surface water drainage network for the proposed impermeable areas will capture surface water runoff and will be discharged back into the environment at a limited runoff rate, currently proposed at greenfield runoff rate i.e. Q_{BAR} rate (equivalent to the 1 in 2.3 year). All flows from rainfall events greater than the Q_{BAR} event will be attenuated within the development site, meaning that there will be a reduction in peak runoff rates leaving the development compared to the baseline scenario.
- 2.20. The provision of planted landscaped areas will assist in slowing the rate of surface water runoff from the permeable areas during high intensity rainfall events and promote the interception of surface water runoff.

Hydro-Brake Flow Controls

- 2.21. It is proposed to restrict flows from the development via a Hydro-Brake flow control, discharging at an agreed rate of 12.70 l/s (Q_{BAR}).
- 2.22. Hydro-Brake within the drainage network will be designed specifically for each location.
- 2.23. As discussed above, should there be a risk of the outfall/Hydro-Brake chamber becoming surcharged, the Hydro-Brake will be designed for surcharged conditions.
- 2.24. The drainage will be designed with surcharged outfalls, where required, to confirm the adequacy of the operation and performance of the system in the event of the receiving ordinary watercourse being in flood conditions.

Overland/Exceedance Flow Paths

- 2.25. In accordance with best practice the design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of 1 in 100 year rainfall event are managed in exceedance routes that minimise the risk to people or property.
- 2.26. Overland/exceedance flow paths would follow the natural topography of the land towards the low-lying areas of the development. The design of the internal road network would convey flows away from built development towards low lying areas to minimise risk to properties.

Conclusion

- 2.27. The proposed drainage strategy would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the proposed development, without increasing flood risk elsewhere.

3. Future Maintenance Strategy

Adoption

- 3.1. Details for the adoption and maintenance of any SuDS features will need to be agreed with Surrey County Council (the LLFA) as part of any reserved matters or discharge of conditions applications associated with the proposed development.
- 3.2. It is anticipated that the SuDS features in public/shared ownership will be adopted/owned by:
 - a) Surrey County Council, as part of the open space;
 - b) Thames Water or a or New Appointments and Variations (NAVs),
 - c) Private Management Company (with appropriate experience).

General Management

- 3.3. The surface water drainage network will need to be managed throughout the lifetime of the development by an adopting body.
- 3.4. The maintenance schedules below are based on anticipated SuDS features that will form part of development, however these will need to be updated accordingly to reflect detail design proposals.
- 3.5. All drainage, whether piped or SuDS require regular maintenance. The tables below provide an overview of general maintenance tasks and frequency of which they need to be undertaken.
- 3.6. The maintenance strategy would need to be updated accordingly as detailed design is undertaken, and drainage proposal are finalised.

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Inspect for sediment and debris in catchpit manholes and gullies. Clean out as required	Twice Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional Maintenance	Remove sediment and debris in catchpits, gullies, attenuation devices and inside concrete manhole rings.	As required, based on inspections.
Remedial actions	Reconstruct and/or replace components, if performance deteriorates or failure/blockage occurs.	As required
	Replacement of clogged components (flow restriction)	As required
Monitoring	Inspect silt traps/gullies/catchpits and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check attenuation devices	Annually

General maintenance for Surface Water Drainage Systems as per CIRIA C753.

- 3.7. The required maintenance for each component making up the drainage system is scheduled in the tables below, based on CIRIA report C753 – The SuDS manual.

Detention Basin

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove Litter and debris	Monthly
	Cut grass – spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Monthly (spring - before nesting season & autumn)
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures, pipework etc. for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required.
	Check any penstocks and other mechanical devices (i.e. flow controls)	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage any wetland plants in pools – where provided	Annually (As set out in Chapter 23, C753)
Occasional Maintenance	Reseed areas or poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlet, forebay and main basin when required	Every 5 years, or as required (Likely minimal where upstream source control is used)
Remedial Maintenance	Repair erosions or other damage by reseeding or re-turfing	As required
	Realignment of riprap	As required
	Repair / rehabilitate inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

Swale

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove Litter and debris	Monthly or as required
	Cut the grass – to retain grass height within specified design range	Monthly (during growing season) or as required
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets, and overflows for, blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, record areas where water is ponding for 48+ hours.	Monthly, or when required
	Inspect vegetation Coverage	Monthly for 6 months, quarterly for 2 years, then half yearly.
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies.	Half yearly
Occasional Maintenance	Reseed areas of poor vegetation growth alter plant types to better suit conditions, if required	As required or if soil is exposed over 10% or more of the swale treatment area.
Remedial Maintenance	Repair erosions or other damage by returfing or reseeded	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface.	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

Permeable Paving

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 Maintenance	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
	Remediate 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
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 hr after large storms in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

- 3.8. Many of the specific maintenance activities for pervious pavements can be undertaken as part of a general site cleaning contract (many car parks or roads are swept to remove litter and for visual reasons to keep them tidy) and therefore, if litter management is already required at site, this should have marginal cost implications.

Cellular Attenuation Tank

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings.	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional Maintenance	Remove sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings.	As required, based on inspections.
Remedial actions	Reconstruct tank and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of tank)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check tank to ensure emptying is occurring	Annually

General maintenance for a Cellular Attenuation Tank as per CIRIA C753.

- 3.9. Maintenance will usually be carried out manually, although a suction tanker can be used for sediment/debris removal for large systems. If maintenance is not undertaken for long periods, deposits can become hard packed and require considerable effort to remove.

4. Pollution Prevention & Water Quality Management

Pollution Hazard Indices

- 4.1. Chapter 26 of the CIRIA C753 The SuDS Manual provides design advice to meet water quality standards by adopting the SuDS train treatment mechanism and thereby reduce the risk of pollution by evaluating potential pollution hazards at the outset.
- 4.2. The proposed site layout provides the opportunity to introduce SuDS into the scheme to reduce potential contaminant risk further.
- 4.3. Runoff from other roofs is generally viewed as low risk (as per Table 26.2 of C753). Refer to the tables below. The below tables below should be used accordingly during detailed design once layouts and associated drainage measures are fully established to ensure the water quality criterion is achieved.

Pollutant Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Individual Property Driveways, residential car parks, low traffic roads	Low	0.5	0.4	0.4

(*) Up to 0.8 where there is potential for metals to leach from the roof. This would be determined during detailed design stage and suitable mitigation incorporated within the design

Indicative SuDS Mitigation Indices

SuDS Component	Mitigation Indices		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Filter Strip	0.4	0.4	0.5
Filter Drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention System	0.8	0.8	0.8
Permeable Pavement	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8*	0.8	0.8
Proprietary treatment system	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1year return period event, for inflow concentrations relevant to the contributing drainage area.		

- 4.4. The mitigation indices offered by the proposed SuDS features must exceed the pollution hazard indices identified based on land use.

Residential Area

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05

Pollutant Hazard Classification

	Mitigation Indices				Indices for Calculation		
	TSS	Metals	Hydrocarbons		TSS	Metals	Hydrocarbons
Detention Basin	0.5	0.5	0.6	100%	0.5	0.5	0.6
Total Mitigation Indices score					0.5	0.5	0.6
Sufficiency of Pollution Mitigation Indices					Sufficient (No additional mitigation required)		

Indicative SuDS Mitigation Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Individual Property Driveways, residential car parks, low traffic roads	Low	0.5	0.4	0.4

Pollutant Hazard Classification

	Mitigation Indices				Indices for Calculation		
	TSS	Metals	Hydrocarbons		TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7	100%	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6	50%	0.25	0.25	0.30
Total Mitigation Indices score					0.95	0.75	1.0
Sufficiency of Pollution Mitigation Indices					Sufficient (No additional mitigation required)		

Indicative SuDS Mitigation Indices

- 4.5. The mitigation indices offered by the proposed permeable paving and attenuation basin exceed the hazard indices and therefore provides adequate mitigation.
- 4.6. It is therefore considered that the proposed SuDS features on site are appropriate and acceptable in terms of water quality.

5. Foul Drainage Strategy

Proposed Strategy

- 5.1. Foul drainage for the residential development is proposed to connect into the existing Thames Water public sewer network via a pump station. The proposed on-site drainage system is to be included in a Section 104 Water Industry Act (WIA) Agreement with either Thames Water or New Appointments and Variations (NAVs) in accordance with The Design and Construction Guidance for foul and surface water sewers offered for adoption (the DCG). Refer to Appendix F for a copy of Indicative Drainage Layout.
- 5.2. It is proposed that the foul drainage infrastructure comprises of gravity sewers/connections to a pump station before discharge to the public sewer.
- 5.3. All details will be subject to technical approval at the detailed design stage as part of the S104 process. All private foul drainage for the development will be designed in accordance with the Building Regulations Part H and relevant British Standards.
- 5.4. An enquiry has been submitted to Thames Water, to determine the point of connection. Thames Water confirmed their preferred point of connection would be existing MH 5101 on Guildford Road, their correspondence is contained in Appendix E.
- 5.5. The DCG states (Section B3.1.1) that the peak design flow rates for dwellings should, at the discretion of the designer, be either:
 - a) calculated in accordance with BS EN 12056-2 System II (this method is recommended for this application in BS EN 16933-2); or
 - b) 4000 litres per dwelling per day (0.05 litres per second per dwelling). Note: This is a design peak flow rate not a daily average water usage and represents the peak flow rate from a number of appliances. Reducing daily water usage does not necessarily reduce the peak flow rate.
- 5.6. At this time, the detailed number of discharge units and appliances is yet to be determined, therefore, calculating foul flow rates to option a is not viable therefore, the estimated foul flow rates based on The DCG using option b.

5.7. Residential:

The development proposals are for 200 dwellings.

$4000 \text{ l/dwelling/day} \times 200 = 800,000 \text{ l/day}$

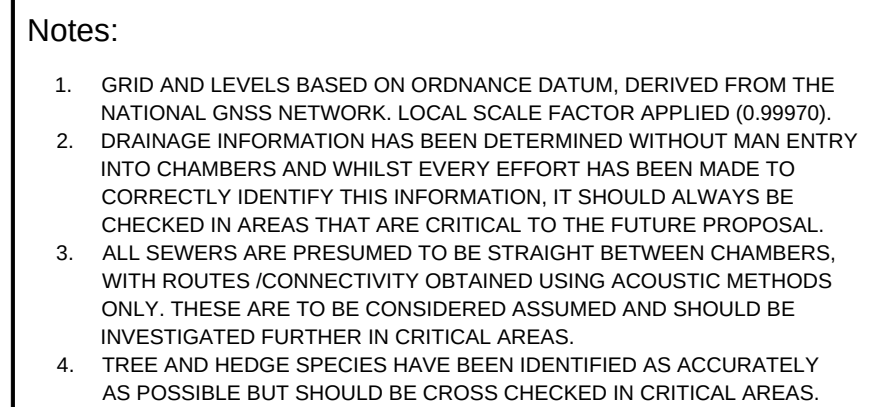
Total estimated flow rate = $800,000 / 24\text{hrs} / 3600 = 9.25 \text{ l/s}$

- 5.8. This information will be confirmed with Thames Water during Reserved Matters/Detailed design stage.

Foul Drainage Maintenance

- 5.9. It is proposed that the foul drainage system is to be adopted by either with either Thames Water or a NAV under a Section 104 (WIA) Agreement. Consequently, maintenance of the system will become the responsibility of the Statutory Undertaker.

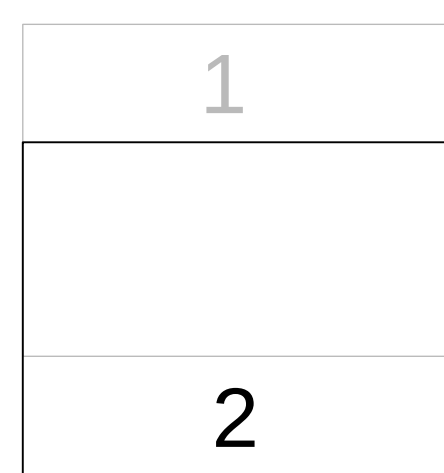
Appendix A - Topographical Survey



Coordinate Table					
Station	Description	Easting	Northing	Level	
S1	ROAD NAIL	490527.904	151181.164	84.368	
S2	ROAD NAIL	490600.321	151204.239	84.933	
S3	ROAD NAIL	490684.038	151232.795	84.783	
S4	ROAD NAIL	490800.697	151270.501	84.366	
S5	ROAD NAIL	490768.248	151140.452	81.502	
S6	ROAD NAIL	490793.950	151054.568	81.959	
S7	ROAD NAIL	490858.046	150964.760	82.195	

[illegible]

Sheet Layout: (Not to Scale)



Topographical Survey

Client:



Guildford Road
Shortland Farm
Ash
Surrey

Scale: 1:500	Sheet Size: A0	Sheet Number: 2	Date: April 2025		
Project Number: 35799		Rev: -	Surveyed by: JM	Checked by: AG	Approved by: NS



Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

Appendix B - Ground Investigations Extract

3.3 Information from regulatory authorities

3.3.1 Local Authority environmental health department information

The Environmental Health Department of the local authority (Guildford Borough Council) has been contacted to confirm whether they hold records of contamination in connection with the site.

A copy of the response is included in **Appendix D**.

3.4 Site geology

3.4.1 Anticipated geological sequence

Published geological records (British Geological Survey) for the area indicate the geology of the site to be characterised by the succession recorded in **Table 6**.

There are no publicly available BGS historical boreholes located on or within 250m of the site.

The site is understood to be underlain by bedrock geology of the Windlesham Formation to the north, the Swinley Clay Member across the centre of the site and the Bagshot Formation to the south.

Table 6 Site geology

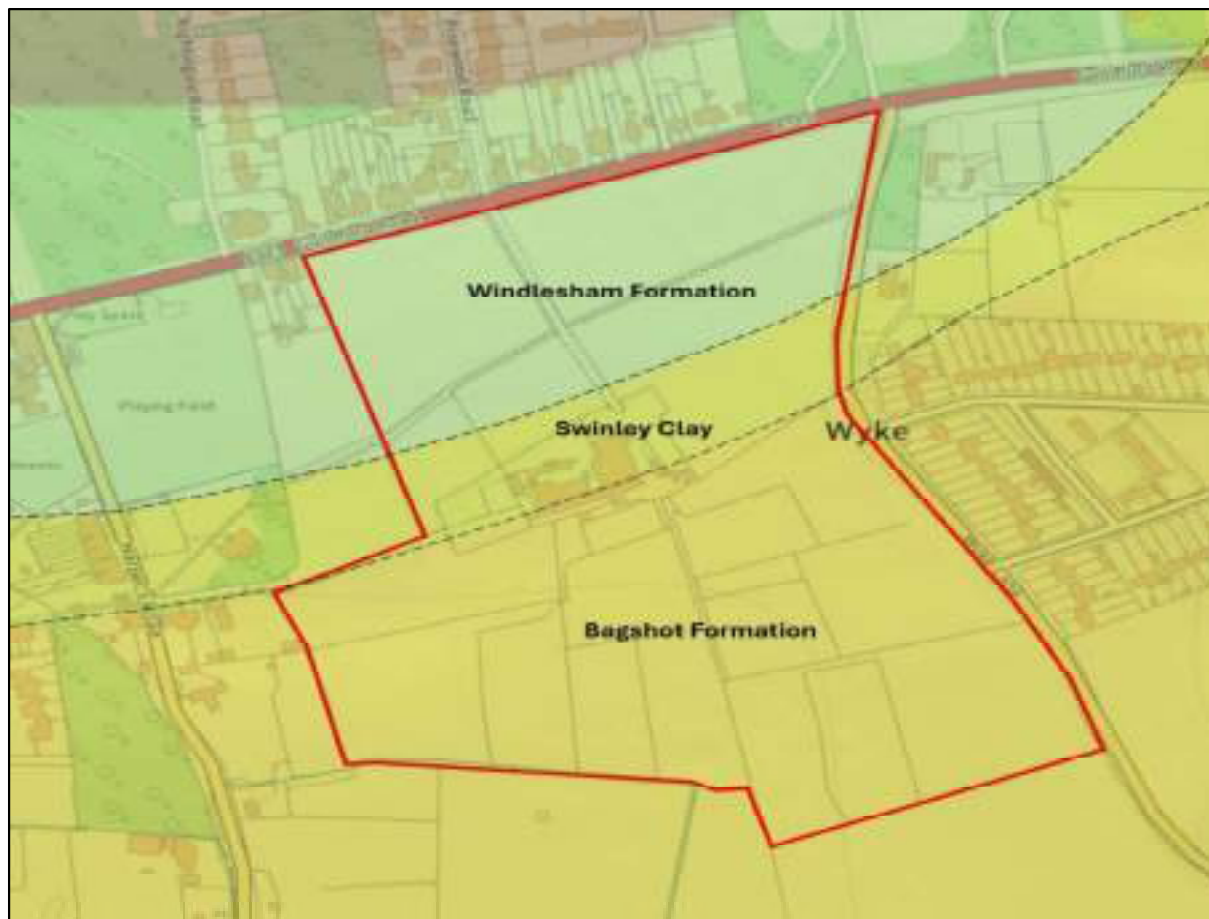
Strata	Description	Permeability
Bedrock: Windlesham Formation (northern extent of site)	Sand - pale brown to yellow, fine to medium grain locally clayey	Anticipated to be moderate to moderate
Bedrock: Swinley Clay Member (across the centre of site)	Clay - dominantly dark grey to brown organic-rich laminated clays	Anticipated to be low
Bedrock: Bagshot Formation (southern extent of site)	Sand - pale brown to yellow, fine to medium includes thinly laminated clays	Anticipated to be moderate to high

Both the Windlesham Formation and Swinley Clay Member are identified to be part of the western London Basin, with the Bagshot Formation anticipated to be the primary bedrock geology beneath the site. The Bagshot Formation is also identified to be a 'parent unit' for the Swinley Clay Member.

In consideration of the published geological records and general topography of the study site, it is anticipated that the Windlesham Formation overlies the Swinley Clay Member in the north of site, which are both in turn underlain by the Bagshot Formation.

Reference should be made to an extract of the published geological records (BGS) presented as **Image 1** below.

Image 1: Published Geological Mapping (BGS)



3.4.2 Radon

The environmental database report provides an assessment of site-specific radon risk. The report indicates that the estimated percentage of houses with radon above the Radon Action Level (200 Bq m⁻³) is <1 %.

The environmental database report indicates that the site is not located within an 'Affected Area' and therefore no radon protective measures are required within new dwellings (or extensions) at the site.

3.5 Mining and quarrying

Evidence has been sought to identify any mining, quarrying, landfilling and land reclamation operations, past and present, which have taken place within 500m of the site.

An initial site appraisal has been carried out based on the information provided on the Mining Remediation Authority Interactive Viewer of the UK Coalfield areas and the commercial environmental databased report for information on non-coal mining.

The site is not identified to be within an area of current mining or quarrying. However, historical mapping infers significant former gravel workings and a brickfield to the north of the site.

8 SITE INVESTIGATION FACTUAL FINDINGS

The results of the intrusive investigation and subsequent geo-environmental and geotechnical laboratory analysis undertaken are detailed below.

8.1 Ground conditions encountered

The descriptions of the strata encountered, notes regarding visual or olfactory evidence of contamination, list of samples taken, field observations of soil and groundwater, in-situ testing and details of monitoring well installations are included on the exploratory hole records presented in **Appendix I**.

The exploratory holes revealed that the site is underlain by a variable thickness of topsoil with made ground, primarily within the central area of site, over deposits of the Swinley Clay Formation and Bagshot Formation at depth. Some localised deposits considered representative of the Windlesham Formation were recorded in the north of site.

Based upon the information obtained to date, the Bagshot Formation is recognised as the primary bedrock geology present beneath the majority of the site. A veneer of topsoil was also recorded primarily within the southern area of site and along the northern boundary of site.

For the purpose of discussion, the ground conditions encountered during the fieldworks are summarised in **Table 18** with the strata discussed in subsequent subsections.

Table 18 General succession of strata encountered

Stratum	Exploratory holes encountered	Depth to top of stratum m bgl	Proven thickness (m)
Topsoil	WS09, WS14 to WS16, WS20 TP03 to TP04 HP01 to HP04	Ground level	0.30 to 0.50
Made ground	WS01 to WS08, WS10 to WS13, WS17 to WS19 TP01, TP02, TP05, TP06	Ground level	0.30 to 2.50
Windlesham Formation	WS02, WS03 TP01 HP01 to HP04	0.30 to 0.80	0.40 to 1.20
Swinley Clay Member	WS01 to WS04, WS06, WS17, WS18 TP01	0.40 to 1.20	0.20 to 3.10
Bagshot Formation	WS02, WS05 to WS16, WS19, WS20 TP02 to TP06	0.30 to 2.50	1.00 to 3.65

Table 28 Characteristic pH, water soluble sulphate and total sulphate values

Stratum	pH	Characteristic Water Soluble Sulphate (mg/l)	Total Potential Sulphate (%)
Made ground	5.53 to 9.98	320 ¹	-
Windlesham Formation	5.03 to 5.05	100 ²	-
Swinley Clay Formation	5.05 to 5.09	100 ²	0.06
Bagshot Formation	5.27 to 7.18	34 ³	0.03
¹ Characteristic value presented as the mean of the highest 20% of results (BRE Special Digest 1) ² Characteristic value presented as the highest result rounded to 100mg/l (BRE Special Digest 1) ³ Characteristic value presented as mean of the highest two results (BRE Special Digest 1)			

Based on the results above and following the steps outlined in the BRE guidance, the Design Sulphate Classes and Aggressive Chemical Environment for Concrete classifications are summarised in **Table 29**, on the basis of water soluble sulphate and total potential sulphate, respectively.

Table 29 Concrete design class

Stratum	Groundwater	Water Soluble Sulphate		Total Potential Sulphate	
		DS Class	AC Class	DS Class	AC Class
Made ground	Mobile	DS-1	AC-1	-	-
Windlesham Formation	Static	DS-1	AC-1	-	-
Swinley Clay Formation	Static	DS-1	AC-1	DS-1	AC-1
Bagshot Formation	Mobile	DS-1	AC-1	DS-1	AC-1

Based upon the testing undertaken to date, the recommended ACEC Classification is therefore AC-1 with a Design Sulphate Class of DS-1.

11.9 Infiltration drainage

Infiltration testing was undertaken at trial pits TP01 to TP06. The results of soakaway testing are summarised in **Table 30**.

Table 30 Infiltration test results

Location	Response zone	Test number	Test result (m/s)
TP01	0.80m to 2.00m (Windlesham / Swinley Clay)	1 of 1	N/A*
TP02	0.50m to 2.00m (Bagshot Formation)	1 of 1	N/A*
TP03	0.50m to 3.00m (Bagshot Formation)	1 of 2	1.24 x 10 ⁻⁵
		2 of 2	1.07 x 10 ⁻⁵

Location	Response zone	Test number	Test result (m/s)
TP04	0.50m to 3.00m (Bagshot Formation)	1 of 2	1.16 x 10 ⁻⁵
		2 of 2	1.09 x 10 ⁻⁵
TP05	0.60m to 3.00m (Bagshot Formation)	1 of 1	N/A*
TP06	0.80m to 3.00m (Bagshot Formation)	1 of 2	4.25 x 10 ⁻⁵
		2 of 2	2.95 x 10 ⁻⁵
*Unable to calculate infiltration rate due to insufficient drop in water level			

It is recommended that the appointed drainage engineer reviews the above testing results to determine the most appropriate strategy for surface water discharge within the development. Reference should be made to the full testing records provided in **Appendix O**.

The EA should be contacted at the design stage in order to obtain a 'consent to discharge'. This may not be forthcoming where soakage will be into or just above the water table, particularly within groundwater protection zones. In addition, planning approval will have to be sought for their use.

DO NOT SCALE FROM THIS DRAWING

DISCUSSION

- Site Boundary
- Hard Encroached Tril Pit
- Machine Encroached Tril Pit
- Window Sampler Borehole

© 2004 Blackwell Publishing Ltd
Journal of Internal Medicine 255: 111–120

Site	Time	First Year	DT	AM	AM
CB1	16.01.25				
		Admission	Enrol	Clas	Asses

[illegible]

Classroom Land

Shorland Farm, Ash

Description
Exploratory Hole Location Plan

Project ID:	1923829	Classifying no:	22201	(Revisions)	G01
-------------	---------	-----------------	-------	-------------	-----

192 5899-HH-222-XX-O-2-22201-C01

m	1:1,600	A3
0	20	40
	40	80
	60	120
	80	160
	100	200
	120	240
	140	280
	160	320
	180	360
	200	400
	220	440
	240	480
	260	520
	280	560
	300	600
	320	640
	340	680
	360	720
	380	760
	400	800
	420	840
	440	880
	460	920
	480	960
	500	1000
	520	1040
	540	1080
	560	1120
	580	1160
	600	1200
	620	1240
	640	1280
	660	1320
	680	1360
	700	1400
	720	1440
	740	1480
	760	1520
	780	1560
	800	1600
	820	1640
	840	1680
	860	1720
	880	1760
	900	1800
	920	1840
	940	1880
	960	1920
	980	1960
	1000	2000
	1020	2040
	1040	2080
	1060	2120
	1080	2160
	1100	2200
	1120	2240
	1140	2280
	1160	2320
	1180	2360
	1200	2400
	1220	2440
	1240	2480
	1260	2520
	1280	2560
	1300	2600
	1320	2640
	1340	2680
	1360	2720
	1380	2760
	1400	2800
	1420	2840
	1440	2880
	1460	2920
	1480	2960
	1500	3000
	1520	3040
	1540	3080
	1560	3120
	1580	3160
	1600	3200
	1620	3240
	1640	3280
	1660	3320
	1680	3360
	1700	3400
	1720	3440
	1740	3480
	1760	3520
	1780	3560
	1800	3600
	1820	3640
	1840	3680
	1860	3720
	1880	3760
	1900	3800
	1920	3840
	1940	3880
	1960	3920
	1980	3960
	2000	4000
	2020	4040
	2040	4080
	2060	4120
	2080	4160
	2100	4200
	2120	4240
	2140	4280
	2160	4320
	2180	4360
	2200	4400
	2220	4440
	2240	4480
	2260	4520
	2280	4560
	2300	4600
	2320	4640
	2340	4680
	2360	4720
	2380	4760
	2400	4800
	2420	4840
	2440	4880
	2460	4920
	2480	4960
	2500	5000
	2520	5040
	2540	5080
	2560	5120
	2580	5160



FULL SCALE SOAKAWAY TEST

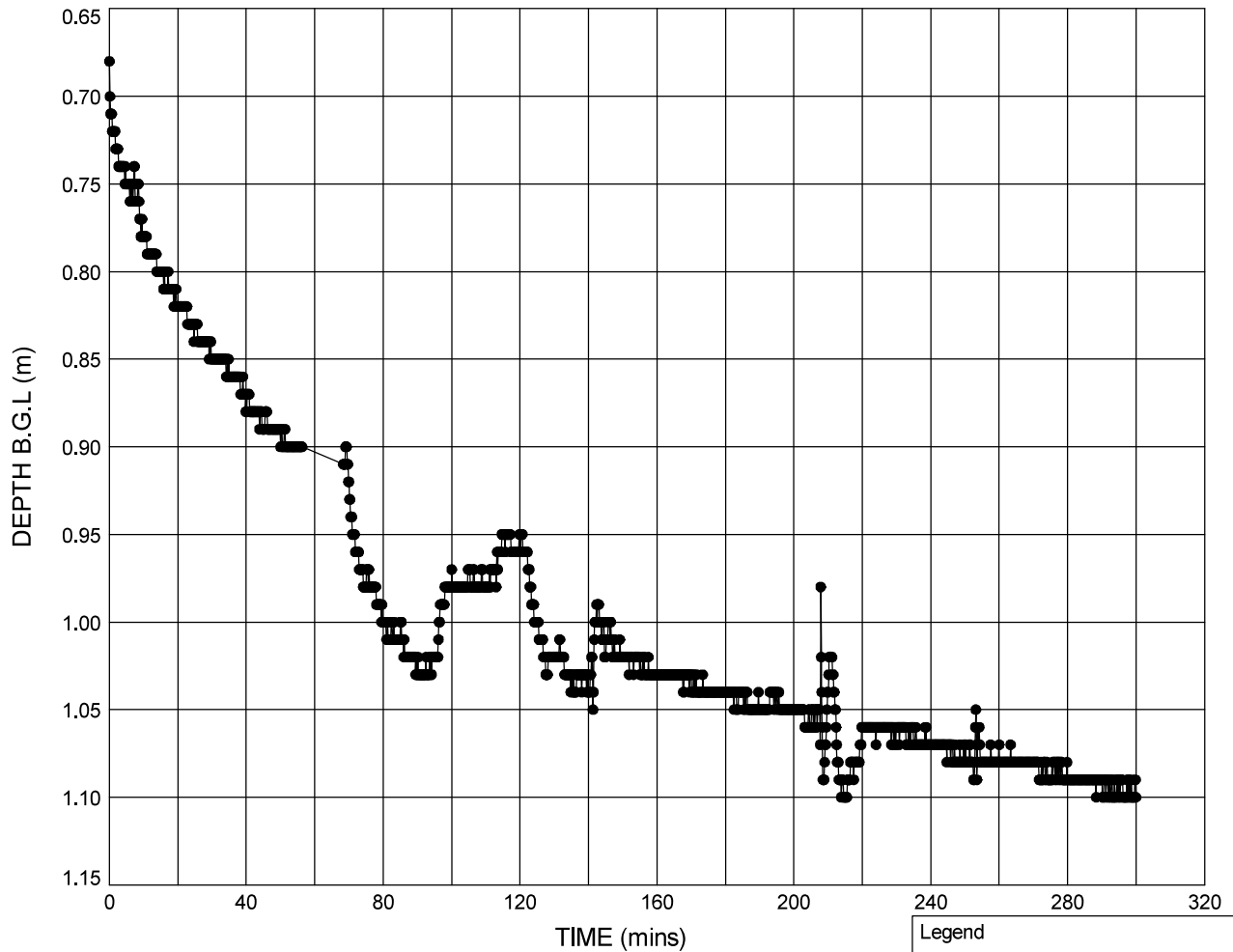
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP01

Ground Level (m AOD): 81.77

National Grid Co-ordinates: E:490666.4 N:151095.2

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

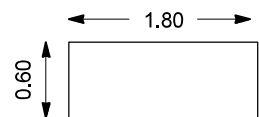


Pit start depth = 2 m
Pit final depth = 2 m
Effective depth, D_e = 1.32 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = NA m^3
Surface area, a_{s50} = NA m^2
Time, t_{p75-25} = NA secs
Infiltration rate, f = NA m/s

Legend

● Test 1 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

29/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

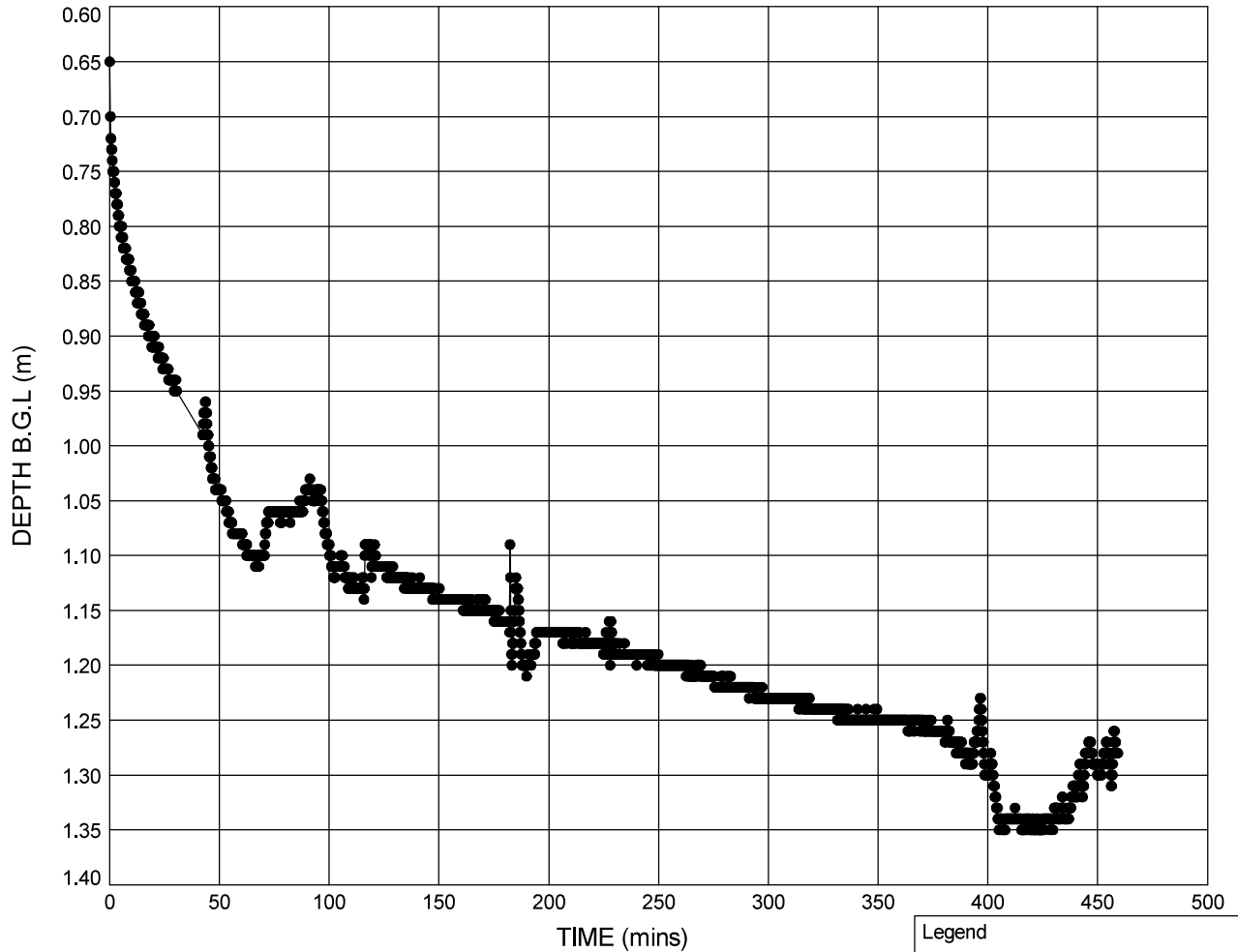
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP02

Ground Level (m AOD): **80.63**

National Grid Co-ordinates: **E:490700.6 N:151018.4**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

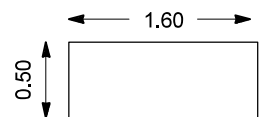


Pit start depth = 2 m
Pit final depth = 2 m
Effective depth, D_e = 1.35 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = NA m^3
Surface area, a_{s50} = NA m^2
Time, t_{p75-25} = NA secs
Infiltration rate, f = NA m/s

Legend

● Test 1 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

29/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

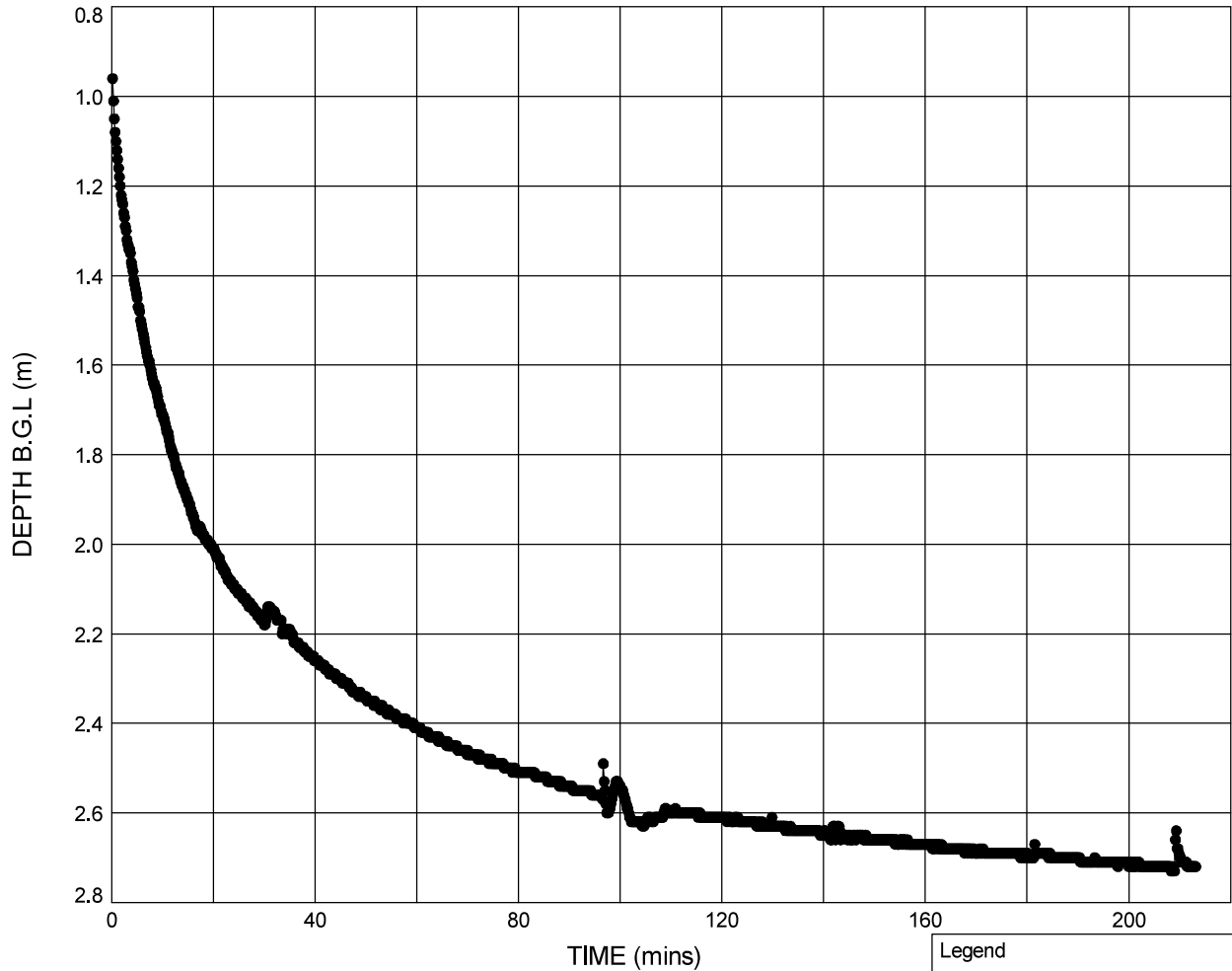
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP03

Ground Level (m AOD): **77.88**

National Grid Co-ordinates: **E:490661.4 N:150938.9**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

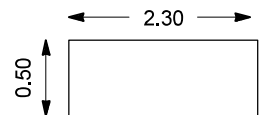


Pit start depth = 3 m
Pit final depth = 3 m
Effective depth, D_e = 2.04 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = 0.3519 m³
Surface area, a_{s50} = 6.8620 m²
Time, t_{p75-25} = 4140 secs
Infiltration rate, f = 1.24×10^{-5} m/s

Legend

● Test 1 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

16/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

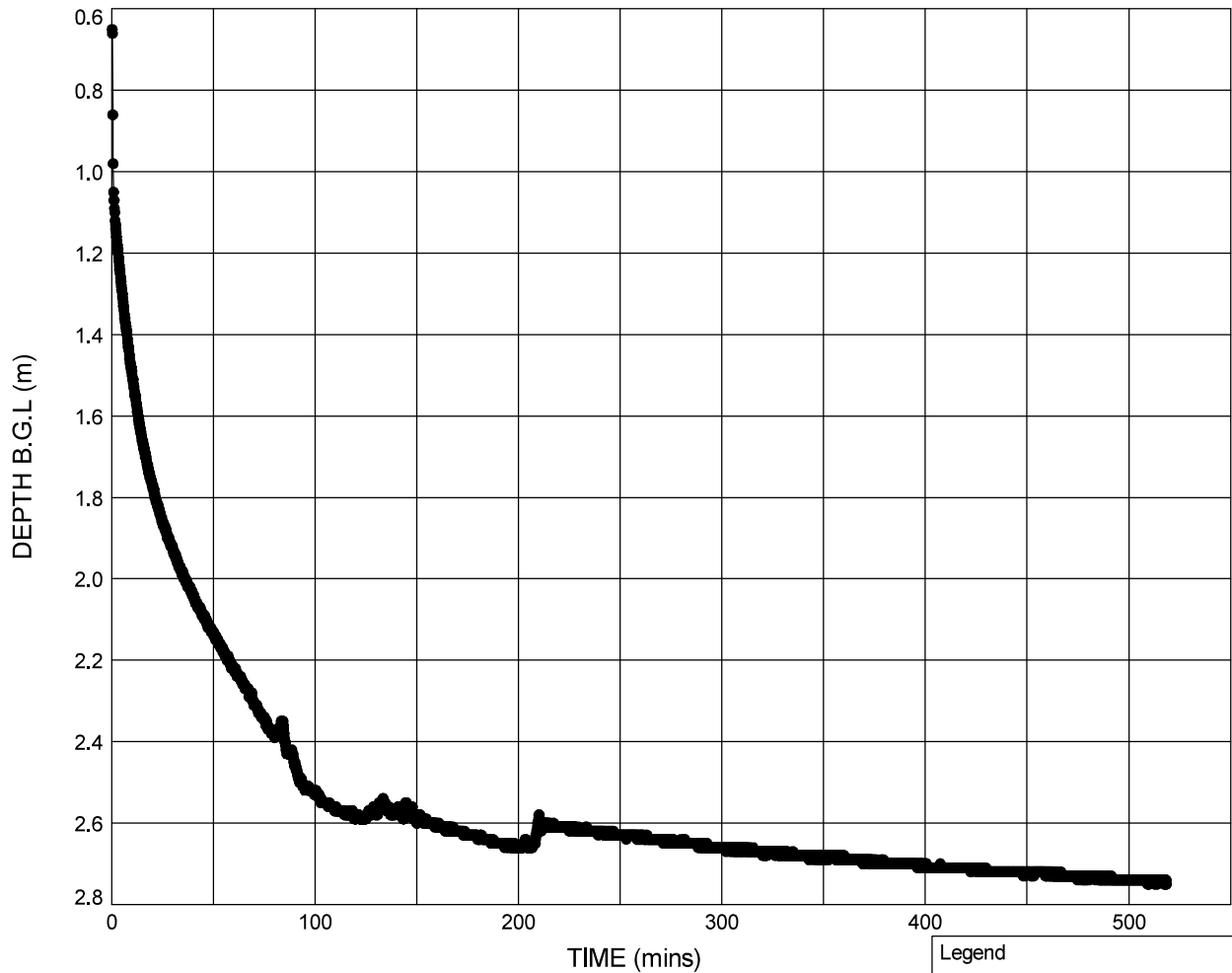
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP03

Ground Level (m AOD): **77.88**

National Grid Co-ordinates: **E:490661.4 N:150938.9**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

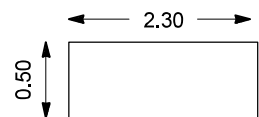


Pit start depth = 3 m
Pit final depth = 3 m
Effective depth, D_e = 2.35 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = 0.4054 m³
Surface area, a_{s50} = 7.7300 m²
Time, t_{p75-25} = 4906 secs
Infiltration rate, f = 1.07×10^{-5} m/s

Legend

● Test 2 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

16/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

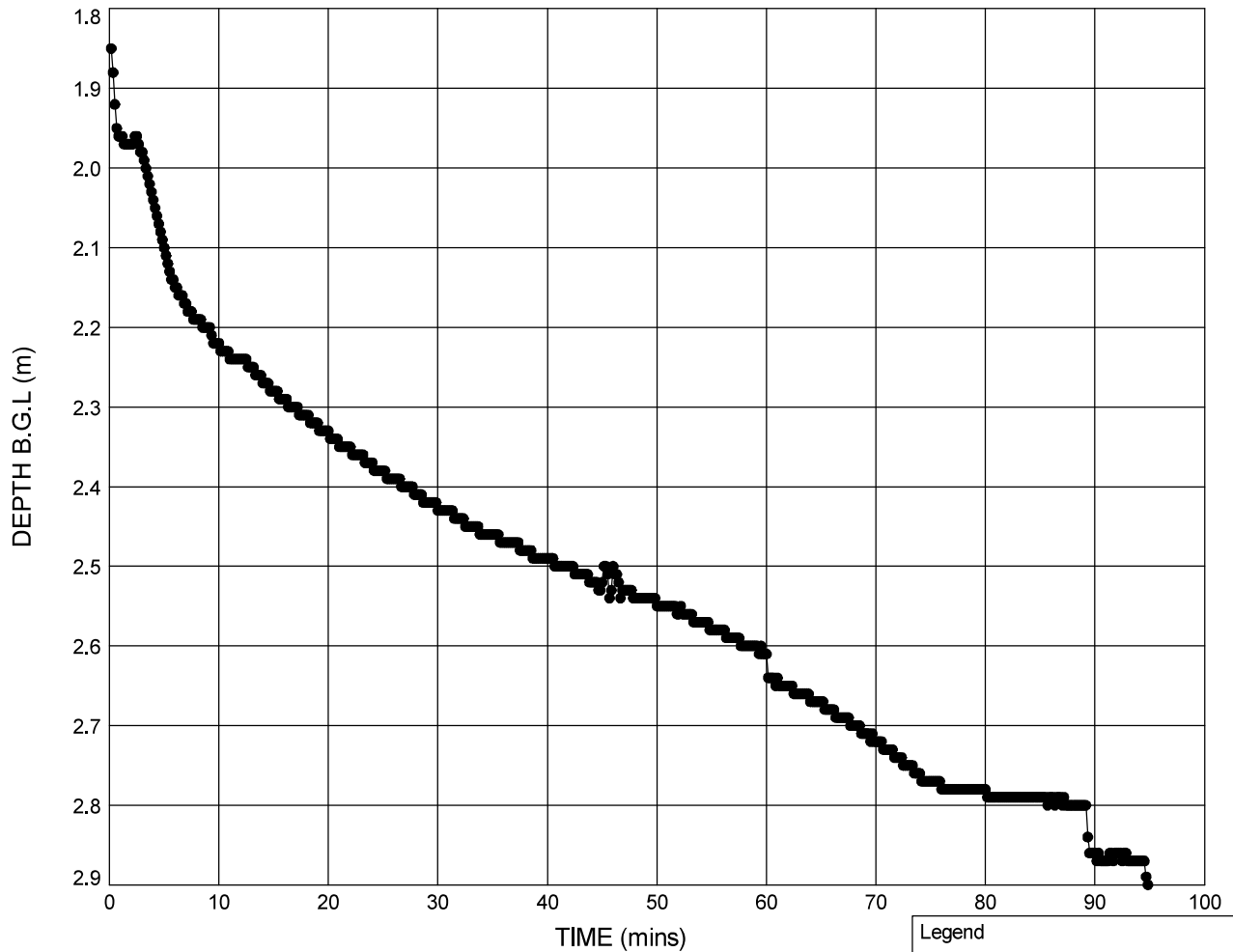
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP04

Ground Level (m AOD): **80.69**

National Grid Co-ordinates: **E:490538.0 N:150921.0**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

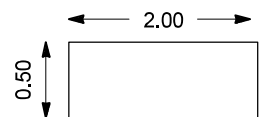


Pit start depth = 3 m
Pit final depth = 3 m
Effective depth, D_e = 1.15 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = 0.1725 m³
Surface area, a_{s50} = 3.8750 m²
Time, t_{p75-25} = 3840 secs
Infiltration rate, f = 1.16×10^{-5} m/s

Legend

● Test 1 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

16/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

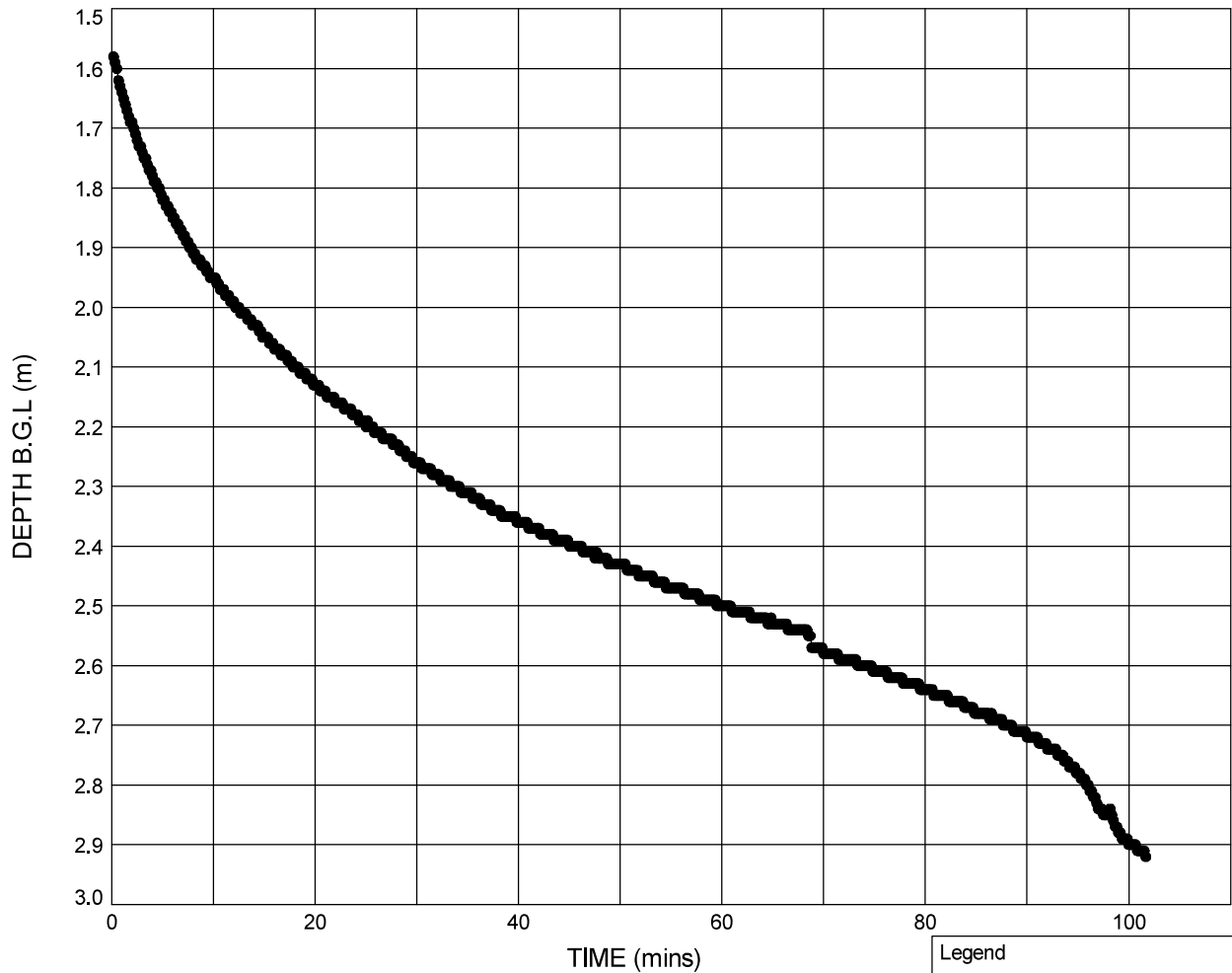
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP04

Ground Level (m AOD): **80.69**

National Grid Co-ordinates: **E:490538.0 N:150921.0**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

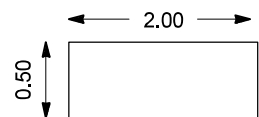


Pit start depth = 3 m
Pit final depth = 3 m
Effective depth, D_e = 1.42 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = 0.2130 m³
Surface area, a_{s50} = 4.5500 m²
Time, t_{p75-25} = 4290 secs
Infiltration rate, f = 1.09×10^{-5} m/s

Legend

● Test 2 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

16/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

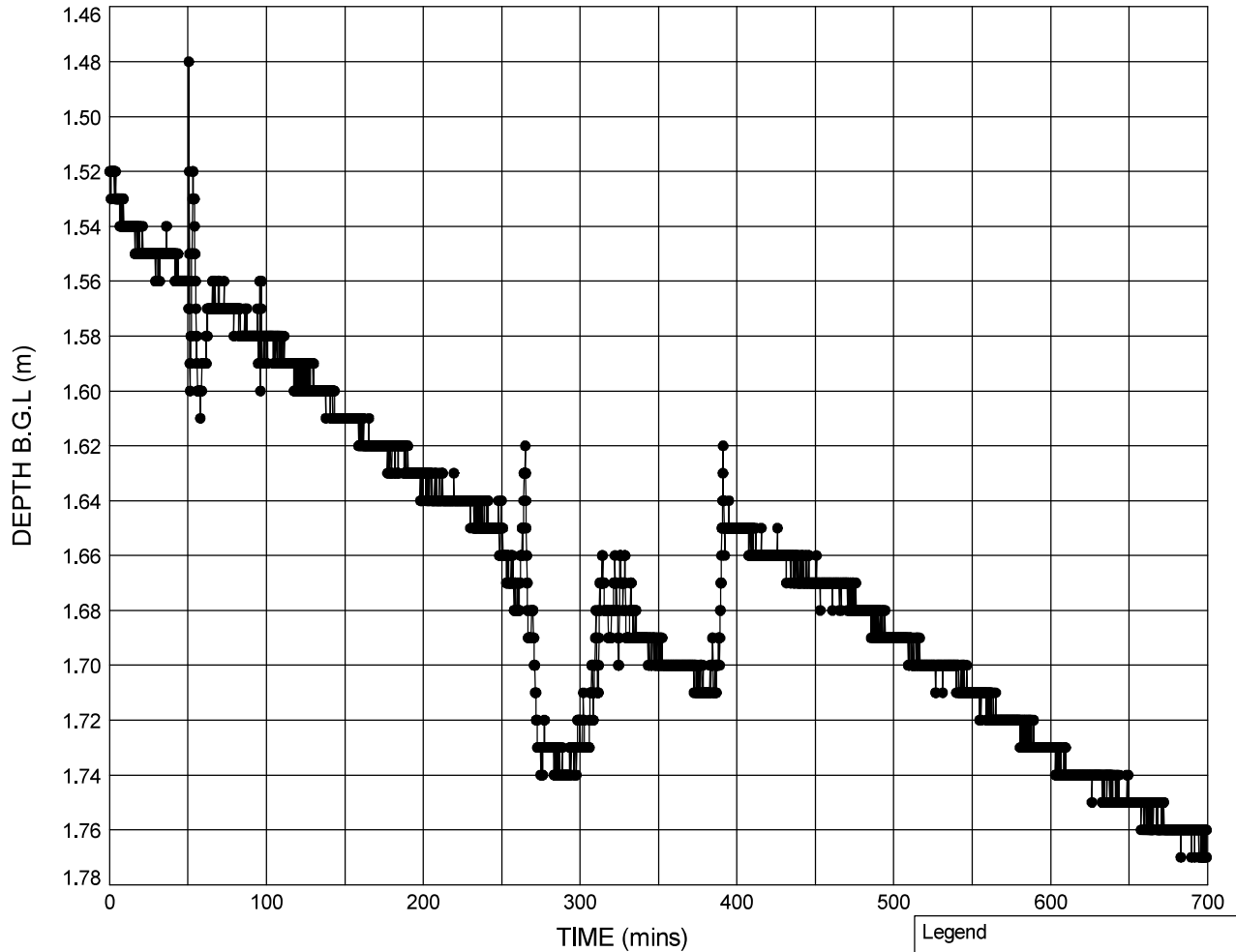
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP05

Ground Level (m AOD): **76.27**

National Grid Co-ordinates: **E:490682.9 N:150854.7**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

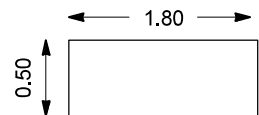


Pit start depth = 3 m
Pit final depth = 3 m
Effective depth, D_e = 1.48 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = NA m^3
Surface area, a_{s50} = NA m^2
Time, t_{p75-25} = NA secs
Infiltration rate, f = NA m/s

Legend

● Test 1 (19.06.25)

Plan (Not to scale)



Compiled By

Date

Checked By

Date

A. MARCELO

29/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

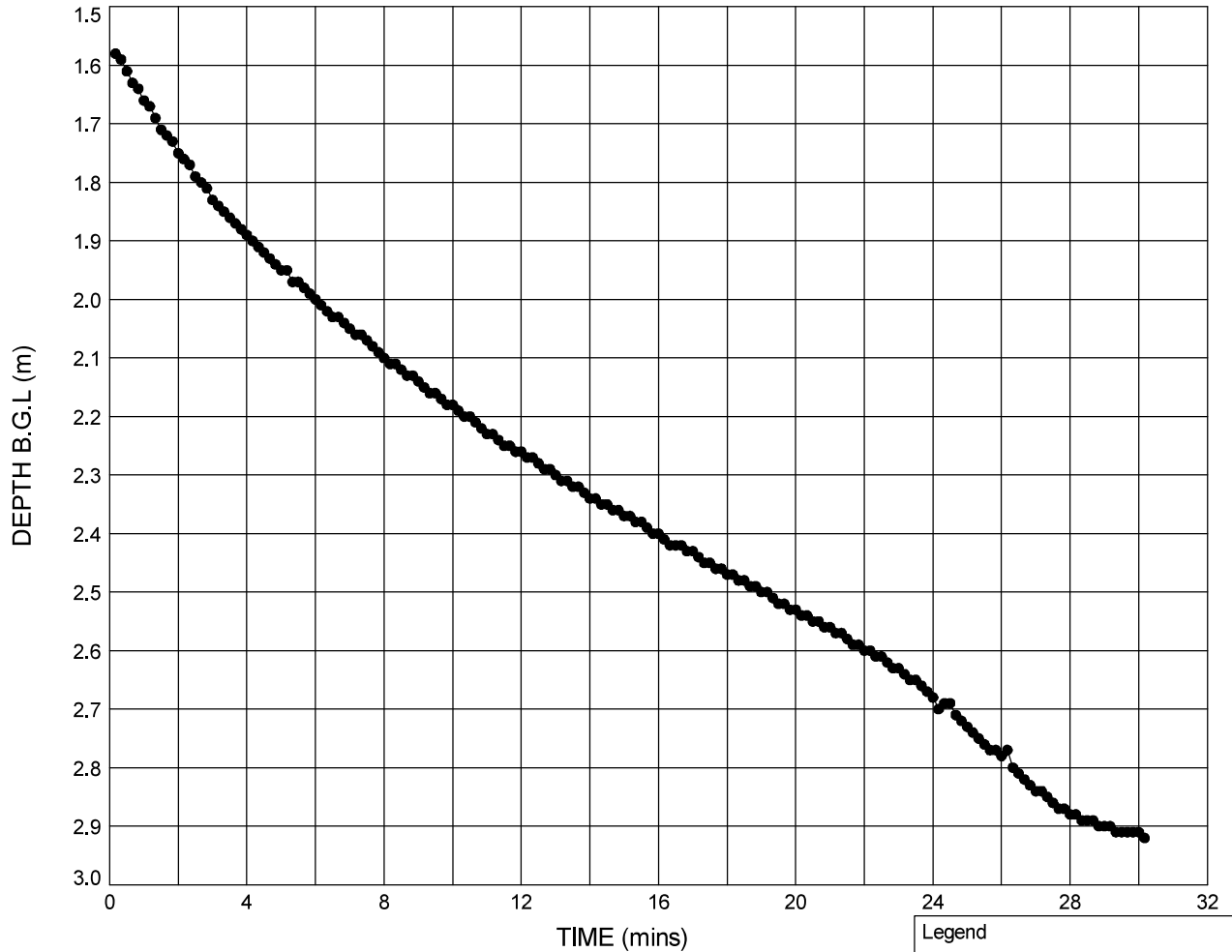
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP06

Ground Level (m AOD): **82.37**

National Grid Co-ordinates: **E:490860.0 N:150925.5**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

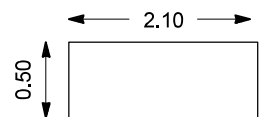


Pit start depth = 3 m
Pit final depth = 3 m
Effective depth, D_e = 1.42 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = 0.2237 m³
Surface area, a_{s50} = 4.7420 m²
Time, t_{p75-25} = 1110 secs
Infiltration rate, f = 4.25×10^{-5} m/s

Legend

● Test 1 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

16/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

FULL SCALE SOAKAWAY TEST

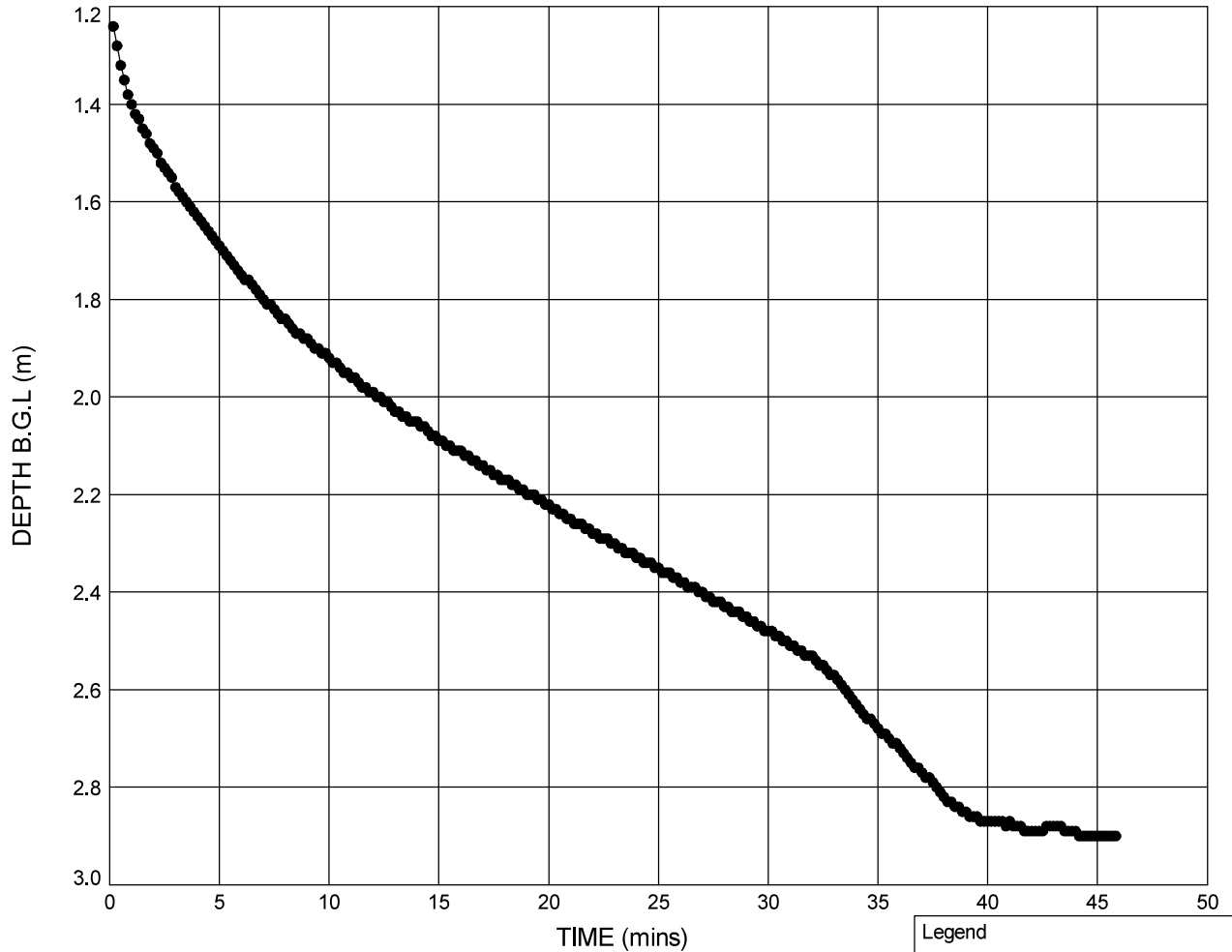
In accordance with BRE Digest 365

Soakaway Test - Position ID : TP06

Ground Level (m AOD): **82.37**

National Grid Co-ordinates: **E:490860.0 N:150925.5**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

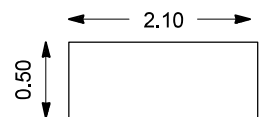


Pit start depth = 3 m
Pit final depth = 3 m
Effective depth, D_e = 1.76 m
Fill Porosity = 30 %
Effective storage volume, V_{p75-25} = 0.2772 m³
Surface area, a_{s50} = 5.6260 m²
Time, t_{p75-25} = 1670 secs
Infiltration rate, f = 2.95×10^{-5} m/s

Legend

● Test 2 (19.06.25)

Plan (Not to scale)



No Bearing Taken



Compiled By

Date

Checked By

Date

A. MARCELO

16/07/25

15/07/25

Contract

Contract Ref:

Shortland Farm, Ash

1923899

Appendix C - Site Layout



KEY

- Site boundary
- Development areas
- Open space areas
- Primary access route
- Existing Public Right of Way
- Pedestrian access to existing bus stops
- Emergency access zone



Land Use Parameter Plan
Shortland Farm, Guildford Road, Ash
25019 / SK15B

Scale 1:1000 @ A1 September 2025

Appendix D - Greenfield Runoff & Storage Estimate Calculations

Runoff Rates

- 1.1. The greenfield runoff rate has been calculated based on the anticipated extents of impermeable area within the site, circa 3.5632 ha
- 1.2. The greenfield runoff rate has been calculated as 12.70 l/s using IH124 method using Causeway Flow software as set out in figure below.

Pre-development discharge

Site Makeup	Greenfield	
Greenfield Method	IH124	
Positively Drained Area (ha)	3.632	
SAAR (mm)	714	Load
Soil Index	3	
SPR	0.40	
Region	6	
Betterment (%)	0	
	Calc	
QBar (l/s)	12.7	

Return Period (years)	Growth Factor	Q (l/s)
1	0.85	10.8
30	2.40	30.4
100	3.19	40.4

Figure 1: Greenfield Runoff Rate

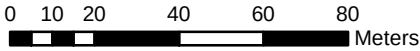
Storage Estimates

Storage Estimate

Return Period (years)	100	
Climate Change (%)	40	
Impermeable Area (ha)	3.995	Update
Peak Discharge (l/s)	12.700	
Infiltration Coefficient (m/hr) (leave blank if no infiltration)		Calc
Required Storage (m³)	Calc	
from	4024	
to	4685	

Figure 2: Quick Storage Estimates

Appendix E - Thames Water Sewer Mapping



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 before any works are undertaken. Crown copyright Reserved

Scale: 1:1789
Width: 500m
Printed By: SEswara1
Print Date: 21/10/2024
Map Centre: 490664,151041
Grid Reference: SU9051SE

Comments:

CDWS/CDWS Standard/2024_5063365

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
4101	83.92	80.54
8201	83.58	81.75
5201	84.24	80.57
5101	83.67	80.5
8001	79.87	77.89
9002	76.63	74.7
521C		
521B		
411A		
411B		
411C		
421A		
491A		

REFERENCE	COVER LEVEL	INVERT LEVEL
6201	84.11	81.04
8002		
7201	83.97	81.59
8202	83.52	81.94
8203	83.42	81.96
9004		
521A		
5202	87.01	85.29
511A		
4102	84.16	83.48
411D		
421B		
721A		

CDWS/CDWS Standard/2024_5063365



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 before any works are undertaken. Crown copyright Reserved

Scale: 1:2866
Width: 800m
Printed By: SEswara1
Print Date: 21/10/2024
Map Centre: 490664,151041
Grid Reference: SU9051SE

Comments:

CDWS/CDWS Standard/2024_5063365

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
6401		
2201	83.78	82.48
4101	83.92	80.54
0352	74.87	73.61
0301	74.17	72.33
0351	75.87	74.69
6201	84.11	81.04
8002		
7201	83.97	81.59
5303		
8202	83.52	81.94
8203	83.42	81.96
9002	76.63	74.7
9301	78.48	76.22
9001	73.14	71.19
5402	97.35	95
521A		
5202	87.01	85.29
311A		
411A		
411B		
301B		
221B		
301D		
011A		
001A		
011D		
5401	95.39	93.67
3102	82.31	77.97
411C		
421A		
401A		
391A		

REFERENCE	COVER LEVEL	INVERT LEVEL
6301	92.96	90.86
4302		
4301		
0002	71.33	69.3
0353	74.06	72.65
5302	93.45	89.51
8201	83.58	81.75
5201	84.24	80.57
5304		
5101	83.67	80.5
8001	79.87	77.89
5301	91.16	87.68
9004		
9003	75.12	73
0350	76.7	75.56
521C		
521B		
3101	81.16	77.63
3001	80.18	78.4
511A		
301A		
221A		
321A		
301C		
011B		
011C		
441A		
441D		
4102	84.16	83.48
411D		
421B		
491A		
721A		



Con29DW Commercial Drainage and Water Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

	Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
	Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
	Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
	Storm Sewer
	Sludge Sewer
	Foul Trunk Sewer
	Surface Trunk Sewer
	Combined Trunk Sewer
	Foul Rising Main
	Surface Water Rising Main
	Combined Rising Main
	Vacuum
	Thames Water Proposed
	Vent Pipe
	Gallery

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

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

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

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

	Air Valve		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

	Ancillary		Drop Pipe
	Control Valve		Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

	Inlet		Outfall
	Undefined End		

Other Symbols

Symbols used on maps which do not fall under other general categories.

	Change of Characteristic Indicator		Public / Private Pumping Station
	Invert Level		Summit

Areas

Lines denoting areas of underground surveys, etc.

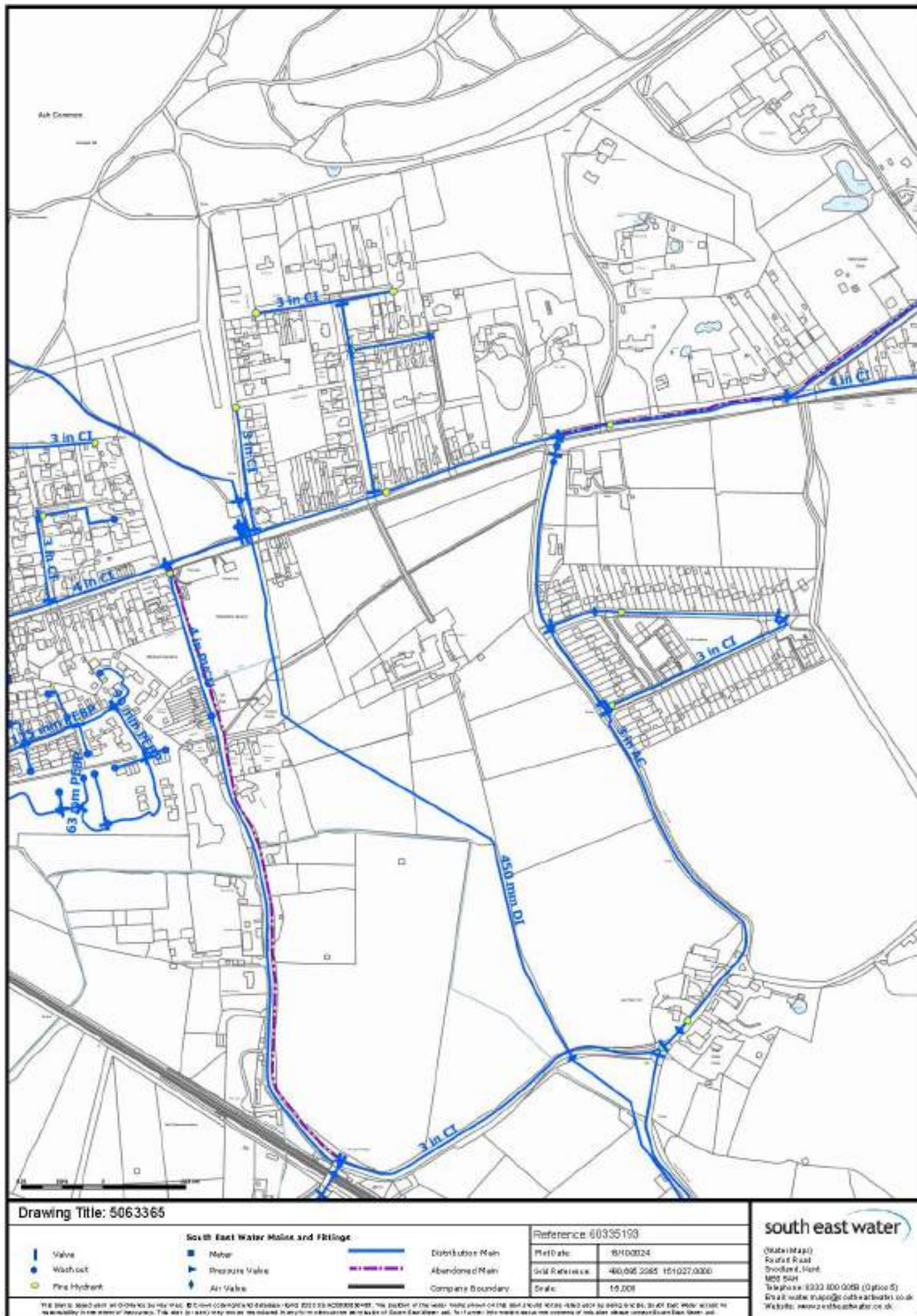
	Agreement
	Chamber
	Operational Site

Ducts or Crossings

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

5) 'na' or '0' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.



Daniel Buciak

From: DEVELOPER.SERVICES@THAMESWATER.CO.U
<DEVELOPER.SERVICES@THAMESWATER.CO.UK> on behalf of
DEVELOPER.SERVICES@THAMESWATER.CO.U
Sent: 23 September 2025 16:31
To: danielbuciak@aegaea.com
Cc: victoria@aegaea.com
Subject: RE: Foul Drainage Connection Enquiry -Land at Shortland Farm, Guildford Road,
Ash, Guildford, GU12 6DF

Hi,

Many thanks for your enquiry.

Existing MH 5101 on Guildford Road will be preferred but to be honest you can connect to either manhole.

It will be worthwhile checking the state of the MHs before you decide on which of the manholes to connect to.

Kind regards,

Dominic Alabi
On behalf of Ciara O'Connor

Technical Coordinator - Waste Connections
Tel: 0800 009 3921
Mobile: 07747642554
Email: developer.services@thameswater.co.uk
Clearwater Court, Vastern Road, Reading RG1 8DB

Original Text

From: Daniel Buciak <danielbuciak@aegaea.com>
To: developer.services@thameswater.co.uk <developer.services@thameswater.co.uk>
CC: Victoria Walker <victoria@aegaea.com>
Sent: 16.09.25 10:11:45
Subject: Foul Drainage Connection Enquiry -Land at Shortland Farm, Guildford Road, Ash, Guildford,
GU12 6DF

This e-mail originated from outside of Thames Water. Do not click links, open attachments or reply, unless you recognise the sender's e-mail address and know the content is safe. If in doubt, contact the Digital Service Desk. Report Phishing via the Report Message option.

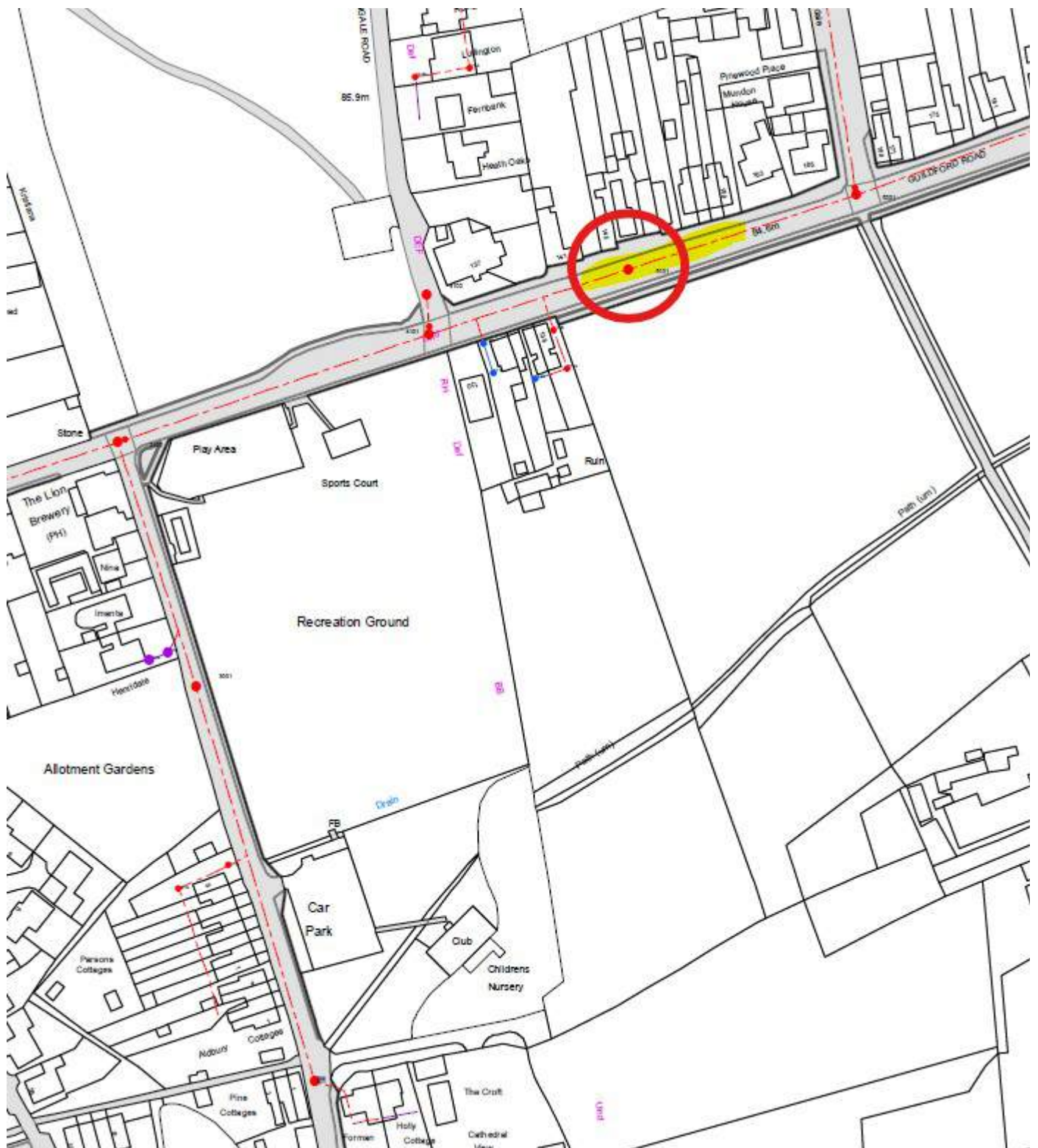
Dear Thames Water Developer Services Team,

We are developing a foul drainage strategy to support an outline planning application for a proposed residential development for up to 200 residential dwellings. I am writing to enquire about establishing a foul water connection to serve the proposed development. The proposed development is located at Land at Shortland Farm, Guildford Road, Ash, Guildford, GU12 6DF, Grid Reference: SU 90717 50945.

We anticipate the proposed development will require a foul pump station to serve the development due to site level constraints, the pump station is anticipated to be located to the south of the proposed development. We have identified existing Thames Water foul sewers along Guilford Road (north of the development) and Wyke Avenue to the east, as shown highlighted in the extract below. We anticipate the connection to serve the site would be made into existing manhole 5101 along Guilford Road, or into existing manhole 5101 in Wkye Avenue.

We would be grateful if you could advise on the proposed point of connection will be acceptable in principle and would welcome any comments you may have with regards to the proposals.

I look forward to hearing from you.



Appendix F - Drainage Layout

