MEC
Development Technical Consultants

FLOOD RISK & DRAINAGE

Land West of Fringford Road, Caversfield
Flood Risk Assessment
December 2023

Report Ref: 27877-FLD-0101

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REPORT REF: 27877-FLD-0101

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REGISTRATION OF AMENDMENTS

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EXECUTIVE SUMMARY

Site Address	Land West of Fringford Road, Caversfield, OX27 8TH, E:458408, N:225038
Site Description and Setting	The site area measures approximately 6.87ha and consists of an existing farm and agricultural land. The site is bordered by Aunt Ems Lane to the southwest, Fringford Road to the southeast, residential dwellings to the south and open green space to the north.
Proposed Development	Demolition of existing structures and erection of up to 99 dwellings, access, open space and associated works (outline, all matters reserved save for access).
Fluvial Flood Risk	The Flood Map for Planning shows the site lies within Flood Zone 1. This means that this area has a chance of flooding each year of less than 0.1%.
Surface Water Flood Risk	The Environment Agency Flood Risk from Surface Water Map indicates that a majority of the site is designated to be at very low risk from surface water flooding. There are areas at low risk of surface water towards the southeast parts of the site. Surface water flows generated on site will be collected by the proposed site-wide drainage infrastructure and conveyed to a proposed discharge point on site. Therefore, the risk of flooding will be managed at the development site post-development.
Surface Water Drainage Strategy	In accordance with the drainage hierarchy, surface water will be stored, treated, and discharged via gravity, at a controlled rate of 2.0l/s, into the existing public surface water sewer within Fringford Road. Surface water flows for a contributing area of 1.957ha will be conveyed to the proposed attenuation basin on-site. A storage volume of 1,759.4m^3 is required within the proposed attenuation basin and geo-cellular tank to allow sufficient water to discharge at 2.0l/s into the existing public surface water sewer within Fringford Road and cater for all events up to and including the 1%AEP40CC plus urban creep. The attenuation basin has been designed to accommodate a 1:4 gradient for the internal slopes with a 1:4 gradient for the external batter slopes. Additional drainage features such as swales, permeable paving and rain gardens will be used across the site and will provide extra storage on site. Permeable paving will act as a first treatment stage for any run-off and will ensure adequate surface water treatment is provided. However, these features have been excluded from the calculations at this stage. Due to the presence of perched groundwater, all attenuation features will be lined with an impermeable membrane to prevent any groundwater ingress.
Foul Water Drainage Strategy	The disposal of foul water from the site will be via the existing connection into the foul water sewer within Fringford Road at MH5901. Given the levels on site, foul water will discharge via gravity, subject to a formal S106 agreement. Further investigations into the condition and location of the existing foul connection into MH5901 should be undertaken via a detailed CCTV survey. If a connection cannot be made using the existing foul water connection, then a new proposed connection into the foul water sewer within Fringford Road will be made between MH5902 and MH5901. The peak foul flow rate arising as a result of the development was estimated as, approximately, 5.0l/s – assuming a foul load rate of 0.05 l/s/dwelling.
Conclusions	With the mitigation measures discussed within the report, the new development does not exacerbate flood risk in the wider area. Compliance with the NPPF is therefore ensured.
This summary should be read in conjunction with the full report and reflects an assessment of the site based on information received by MEC at the time of production.	

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APPENDICES

1.0 INTRODUCTION

1.1 MEC, has been commissioned by Richborough (hereafter referred to as 'the Client') to undertake a Flood Risk Assessment for a proposed residential development at Land West of Fringford Road, Caversfield (hereafter referred to as 'the Site'). A site location plan is provided in **Appendix A** and a sketch masterplan is contained within **Appendix B**.

1.2 This flood risk assessment is for the demolition of existing structures and erection of up to 99 dwellings, access, open space and associated works (outline, all matters reserved save for access). The proposed development is centred on OS grid reference E:458408, N:225038 and the total site area covers 6.87ha.

1.3 The assessment has been undertaken to ascertain the constraints of the development of the site and to access the impact of the design, with respect to flood risk.

1.4 The Flood Risk Assessment has been carried out in accordance with the requirements of the documents below. See **Appendix C** for additional policies and references.

- National Planning Policy Framework (NPPF)
- National Planning Practice Guidance on Flood Risk & Coastal Change (PPG)
- Environment Agency Flood Risk Standing Advice

1.5 The Local Planning Authority for Caversfield is Cherwell District Council (CDC) while the Lead Local Flood Authority is Oxfordshire County Council (OCC). The site falls within the Thames Water (TW) catchment.

1.6 The assessment has been prepared using our best engineering judgement however there are levels of uncertainty implicit in the historical data and methods of analysis. The report is based on the following information:

- British Geological Survey (BGS);
- Flood Map for Planning and the Long-Term Flood Risk Map from the Environment Agency and .gov.uk websites;
- Topographical Survey by MEC
- Cherwell Level 1 Strategic Flood Risk Assessment (SFRA) May 2017
- Cherwell Level 2 Strategic Flood Risk Assessment (SFRA) May 2017
- Phase I Geo-Environment Desk Study by MEC (ref: 27877-GEO-0401, August 2023)
- Soakage Testing by MEC (ref: 27877-CALC-0401)

Disclaimer

1.7 All comments and opinions contained in this report, including any conclusions, are based on the information available to MEC at the time of writing the report. The conclusions drawn by MEC could, therefore, differ if the information is found to be inaccurate, incomplete or misleading. MEC accepts no liability should this prove to be the case, or, if additional information exists or becomes available with respect to this site.

1.8 MEC has completed this report for the benefit of the individuals referred to in paragraph 1.1 and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from MEC.

1.9 MEC accepts no responsibility or liability for:

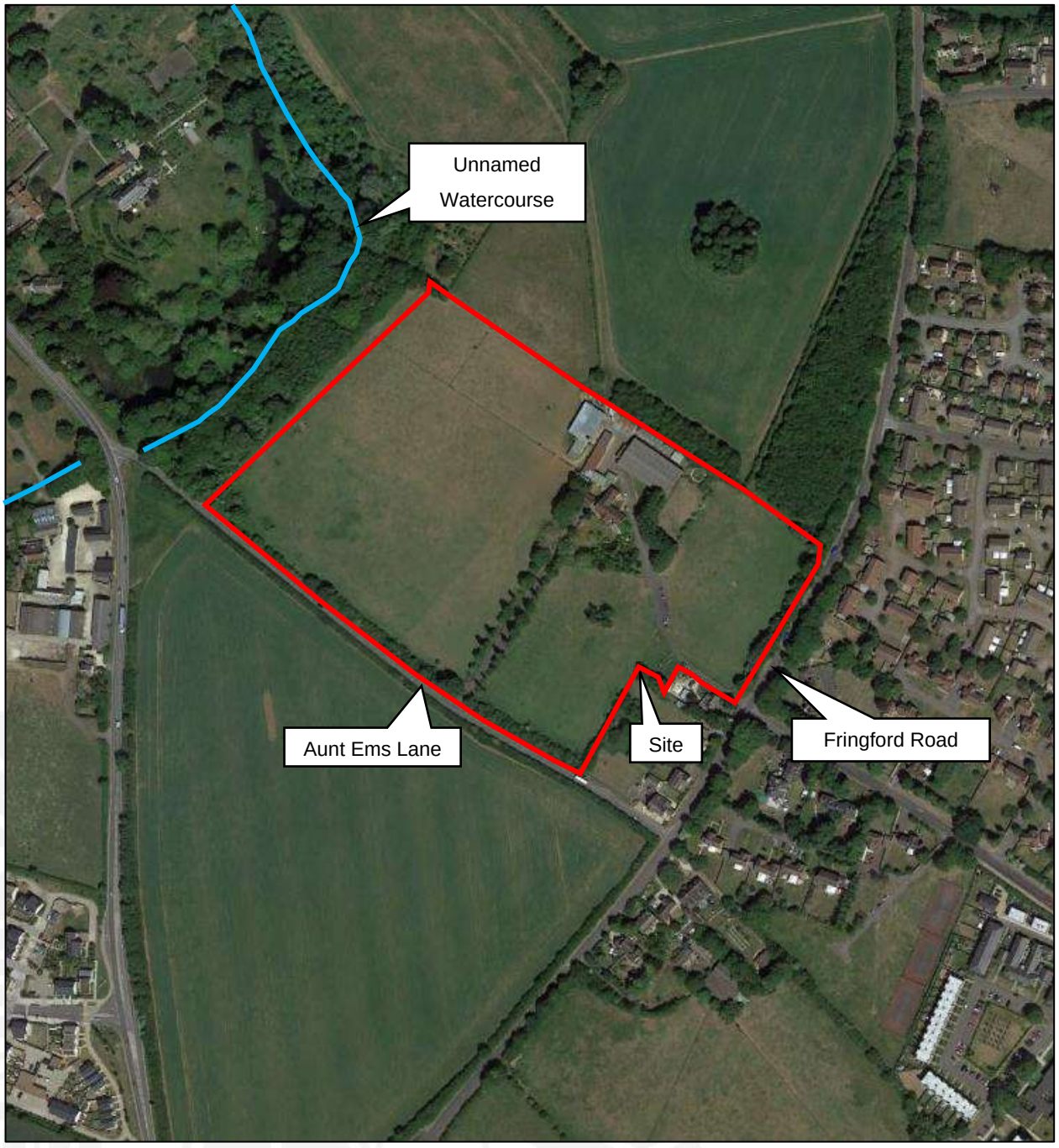
- The consequence of this documentation being used for any purpose or project other than that for which it was commissioned;
- The issue of this document to any third party with whom approval for use has not been agreed.

2.0 SITE DESCRIPTION

Site Location and Features

2.1 The site is located to the north of Bicester and the Ordnance Survey National Grid Reference (NGR) for the centre of the site is E:458408, N:225038. The site area measures approximately 6.87ha and consists of an existing farm and agricultural land. The site is bordered by Aunt Ems Lane to the southwest, Fringford Road to the southeast, residential dwellings to the south and open green space to the north.

Figure 2.1: Site Location Plan



Topographic Data

2.2 Full details of the topographical survey are included in **Appendix D**. The information indicates that the site generally slopes from the northwest to the southeast with levels ranging from around 87.72m AOD to 85.38m AOD.

Flood Zone Maps & Flood Defence Data

2.3 Information relating to the current flood risk to the application site has been obtained from the Environment Agency and.gov.uk websites. There is no recorded evidence of flood defences in the vicinity of the site.

Watercourses & Hydrology

2.4 The closest designated Main River, is the unnamed watercourse, located approximately 2.35km southeast. The closest watercourse is an unnamed river located approximately 40m northwest.

Historic Flooding

2.5 The EA historical map does not show any flood incidences within the vicinity of the site.

2.6 The SFRA states that the Thames Water (TW) DG5 register identifies that during the last 20 years sewer flooding has affected between 1-5 properties in the area, but no information that the flooding has affected the development site.

Geological Data

2.7 Information published by the British Geological Survey (BGS) and the MEC Phase I Reports (ref: 27877-GEO-0401) indicates that the site is directly underlain by bedrock strata of the Cornbrash Formation comprising limestone. The Forest Marble Formation, comprising limestone and mudstone is located within 10m to the north-west and may extend onto site.

2.8 The Environment Agency (EA) classifies the Cornbrash and Forest Marble Formation as a Secondary A aquifer.

2.9 The site is not located in a groundwater Source Protection Zone (SPZ) and groundwater abstractions are not recorded within 500m.

2.10 MEC excavated four trial pits on 31st July 2023 to undertake soil infiltration rate testing, see **Appendix E** for soakage results. The trial pits comprised of topsoil overlying weathered limestone bedrock of the Cornbrash Formation to a maximum depth of 1.74m bgl. A thickness of Made Ground is anticipated given the presence of South Lodge Riding Stables in the north-east and an infilled quarry and pond in the west and south-east respectively. The infiltration testing also confirmed the presence of an impermeable clay layer which was lying underneath the Cornbrash Formation and is allowing the ponding of percolating water.

Sewers

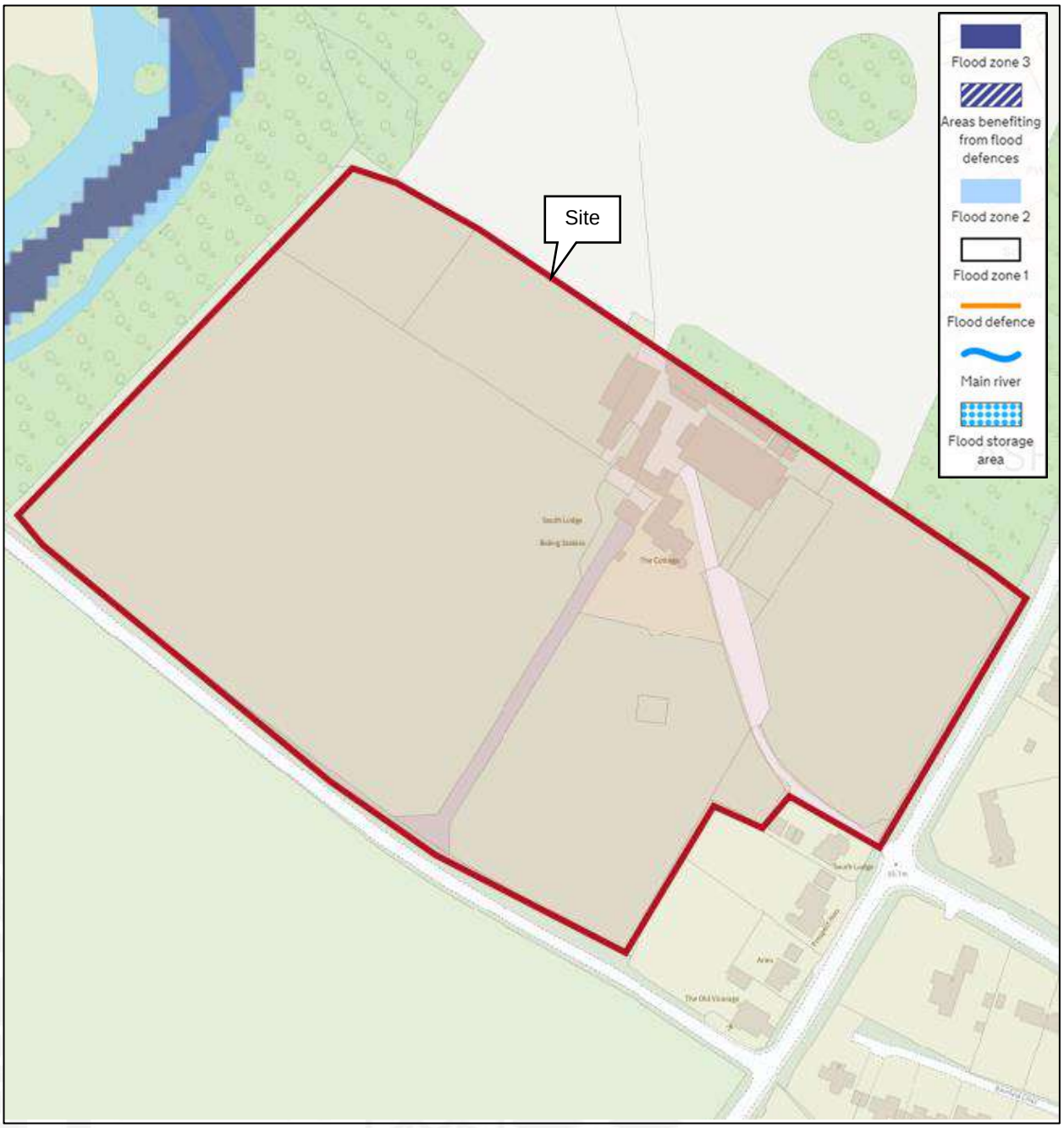
2.11 Sewer records and a developer enquiry were obtained from TW see **Appendix F**. The sewer records show there is an existing public surface water sewer and a public foul water sewer within Fringford Road. The records also show a surface water rising main not under the operation of TW within Fringford Road taking surface water north up Fringford Road and then east down Skimmingdish Lane.

3.0 FLOOD RISK TO SITE

Flood Zone Allocation

3.1 The Flood Map for Planning is shown in Figure 3.1. The map shows the site lies within Flood Zone 1 (FZ1). This means that this area has a chance of flooding each year of less than 0.1%.

Figure 3.1: Extract from Environment Agency's Flood Map for Planning (Rivers and Sea).



Surface Water Flooding Risk Allocation

3.2 The Environment Agency Flood Risk from Surface Water Map, refer to Figure 3.2, indicates that a majority of the site is designated to be at very low risk from surface water flooding. There are areas at low risk of surface water towards the southeast parts of the site. Surface water flows generated on site will be collected by the proposed site-wide drainage infrastructure and conveyed to a proposed discharge point on site. Therefore, the risk of flooding will be managed at the development site post-development.

Figure 3.2: Environment Agency's Flood Risk from Surface Water Map

Artificial Water Bodies Flood Risk

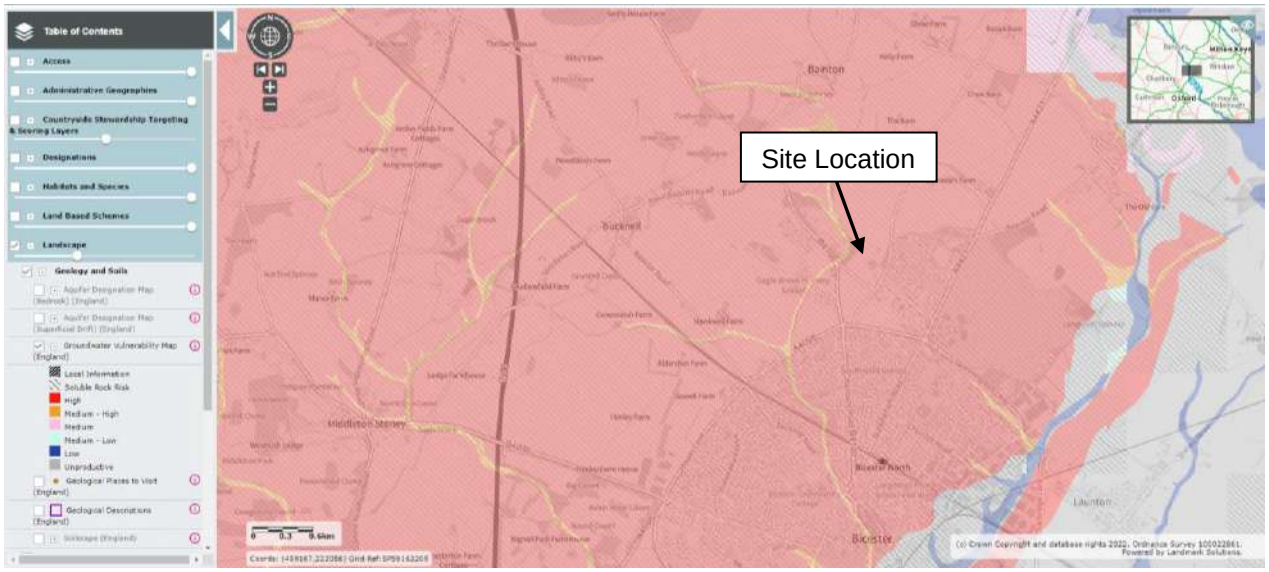
3.3 The Environment Agency Mapping also shows that the site is not at risk of reservoir or canal flooding, as such, the risk of flooding from artificial bodies is very low.

Groundwater Flood Risk

3.4 The Environment Agency classifies the Cornbrash and Forest Marble Formations as Secondary A Aquifers.

3.5 According to Magic Maps, the site has a high groundwater vulnerability. The area of high vulnerability is extents covering large areas of Bicester to the south as well as areas to north and west. Figure 3.3 shows the local groundwater vulnerability relative to the site.

Figure 3.3: Magic Maps Groundwater Vulnerability Map



3.6 Soil infiltration rate testing, see **Appendix E** confirmed the presence of an impermeable clay layer which was lying underneath the Cornbrash Formation. Due to the impermeable clay layer, the infiltration results were impacted by the presence of perched groundwater or damp soils towards the base of the test pits. The infiltration curves flatten out at depths ranging between 1.20m and 1.50m suggesting that the presence of perched groundwater or damp soils could be found between these depths.

3.7 Even though there is the presence of perched groundwater on site, it is unlikely that the perched groundwater will have the same hydrologic characteristics as natural groundwater as such the risk of groundwater flooding is a low risk on site.

Sewer Flood Risk

3.8 The SFRA states that the TW DG5 register identifies that during the last 20 years sewer flooding has affected between 1-5 properties in the area, but there is no information that the flooding has affected the development site. As such, the flood risk from public sewers can be considered as very low.

4.0 FLOOD RISK ASSESSMENT

Flood Risk Assessment Methodology & Objectives

4.1 It is recognised that developments that are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. Current guidance on development and flood risk identifies several key aims for development to ensure that it is sustainable in flood risk terms.

4.2 These aims are as follows:

- The development should not be at significant risk of flooding and should not be susceptible to damage due to flooding;
- The development should not be exposed to flood risk such that the health, safety and welfare of the users of the development, or the population elsewhere, are threatened;
- Safe access/egress to and from the development should be possible during flood events;
- The development should not increase flood risk elsewhere;
- The development should not prevent safe maintenance of watercourses or maintenance and operation of flood defences;
- The development should not be associated with an onerous or difficult operation and maintenance regime to manage flood risk. The responsibility for any operation and maintenance required should be clearly defined;
- Future users of the development should be made aware of any flood risk issues relating to the development;
- The development should not lead to the degradation of the environment; and
- The development should meet all of the above criteria for its entire lifetime, including consideration of the potential effects of climate change.

4.3 This Flood Risk Assessment is undertaken with due consideration of these sustainability aims and has been prepared to inform the proposed scheme.

Project Scope

4.4 In order to achieve the aims outlined above, this Flood Risk Assessment has been undertaken in accordance with current best-practice guidance, including the National Planning Practice Guidance. A scoping study was initially undertaken to identify all potential sources of flooding at the site, which may warrant further consideration. Any potential flooding issues identified in the scoping study have subsequently been considered within this Flood Risk Assessment. The aim of the scoping study is to review all available information and provide a qualitative assessment of the flood risk to the site and the impact of the site on flood risk elsewhere. The report has been undertaken with due regard to the EA's National Standing Advice on Development and Flood Risk.

Scoping Study

4.5 All potential sources of flooding must be considered for any proposed development.

4.6 Using the EA Flood Zone mapping, topographical survey and Ordnance Survey maps, a summary of the potential sources of flooding and a review of the potential risk posed by each source on the development area of the application site is presented in Table 4.1.

Table 4.1: Potential Risks Posed by Flooding Sources in accordance with the gov.uk Long-Term Flood Risk Map

Source	Risk			
	High	Medium	Low	Very low
Fluvial				✓
Tidal				✓
Surface Water				✓
Groundwater			✓	
Sewer				✓
Artificial water bodies				✓

Flood Risk Mitigation

4.7 It is vital that the correct mitigation is put in place to minimise the flood risk to the development. In accordance with the NPPF, this includes preventing harm from occurring to the users of the site as well as ensuring the development itself is protected. The below outlines further building mitigation measures that are recommended.

Surface Water Flood Risk Mitigation

4.8 The Environment Agency Flood Risk from Surface Water Map indicates that a majority of the site is designated to be at very low risk from surface water flooding. There are areas at low risk of surface water towards the southeast parts of the site. Detailed mapping shows that the only areas at low risk from surface water flooding will likely see flooding at depths of below 300mm and at a velocity of less than 0.25m/s.

4.9 Permeable paving will be utilised to avoid any ponding of surface water above ground. Given the above, surface water is likely to be collected by the proposed site-wide drainage infrastructure and conveyed to a proposed discharge point on site. Therefore, the risk of flooding will be managed at the development site post-development and the remaining risk will be very low.

Groundwater Mitigation

4.10 It is recommended that all dwellings within the southeastern corner of the site have suspended ground floor slabs to mitigate against the perched groundwater in case levels were to rise. Suspended ground floor slabs will create a void beneath the floor which will flood before the water rises to enter the house. The proposed attenuation basin should be lined with a suitable material to prevent groundwater ingress.

Vulnerability Classification of Proposed Development

4.11 The National Planning Practice Guidance (PPG): Flood Zone and Flood Risk Tables provide information on the vulnerability classification of various developments. The proposed residential development end use of this site falls in the "more vulnerable" classification. A comparison of the 'more vulnerable' use with the development proposals within Flood Zone 1 area shows development proposals are acceptable and in accordance with NPPF, as shown in Table 4.2.

Table 4.2: Flood risk vulnerability and flood zone 'compatibility' from Flood Risk and Coastal Change – Planning Practice Guidance

Flood Risk Vulnerability classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception test required	✓	✓
	Zone 3a	Exception test required	✓	x	Exception test required	✓
	Zone 3b	Exception test required	Exception test required	-	x	x

Sequential Test

4.12 According to the PPG: Flood Zone and Flood Risk, the Sequential Test gives preference for locating new development in low-risk areas from all sources of flooding, However, if there is no allocated land within low-risk areas which meets the policy aims of the published Local Authority Local Plan or Local Development Framework then other sites in higher flood risk categories can be considered for that development.

4.13 The proposed development lies within Flood Zone 1 and there is a low to very low risk of surface water flooding. Whilst a high groundwater vulnerability is identified, this is not specific to the site and covers an extensive area beyond the site boundary. Mitigation measures are proposed to ensure a sequential design approach is taken.

4.14 In accordance with the PPG, a sequential test is not required.

Exception Test

4.15 The proposed development is in accordance with NPPF and therefore, the exception test is not required.

5.0 SURFACE WATER MANAGEMENT STRATEGY

5.1 It is essential that the proposed development does not increase flood risk to adjacent land or downstream of the site, as well as protecting the development from flooding itself. To ensure that the flood risk is minimised, the drainage design will incorporate the following flood mitigation measures:

- Site levels will be designed 300mm above the adjacent road levels to direct all overland surface water flows away from the dwellings, by following the natural topography and any proposed green corridors.
- The proposed development will include a surface water drainage system that will intercept runoff generated within the development. This will minimise the risk of flooding to the new buildings and also reduce the incidence of overland flows.
- The surface water drainage system will convey flows to the attenuation basin and geo-cellular tank on site. The surface water flows generated within the development up to and including a 1%AEP40CC plus urban creep will be stored on-site and discharged at a controlled rate of 2.0l/s.

Surface Water Outfall

5.2 Surface water arising from developed sites should, as far as practical, be managed in a sustainable manner to mimic the surface water flows arising from the undeveloped site. When considering the surface water discharge the SuDS hierarchy needs to be adhered to. The SuDS hierarchy states that the options below must be adhered to in order of sustainability or evidenced otherwise before moving down to a less sustainable discharge method;

- Discharge at source (soakaway)
- Watercourse or waterbody
- Public Sewer

Discharge at Source

5.3 Information published by the British Geological Survey (BGS) and the MEC Phase I Reports (ref: 27877-GEO-0401) indicates that the site is directly underlain by bedrock strata of the Cornbrash Formation comprising limestone. The Forest Marble Formation, comprising limestone and mudstone is located within 10m to the north-west and may extend onto the site. Made Ground is anticipated to sit above the Cornbrash Formation, given the presence of South Lodge Riding Stables in the northeast and an infilled quarry and pond in the west and southeast respectively. Infiltration testing confirmed the presence of an impermeable clay layer which was lying underneath the Cornbrash Formation.

5.4 Soil infiltration rate testing was undertaken by MEC on 31st July 2023, see **Appendix E**. The results indicate that infiltration varies across the site depending on the extent of weathering and fracturing within the limestone bedrock. However, the results are impacted by the presence of perched groundwater or damp soils towards the base of the test pits, due to the impermeable clay layer.

5.5 In general, the infiltration curves flatten out at depths ranging between 1.20m and 1.50m suggesting that infiltration is concentrated within the shallower more weathered layers and limited within the base of the pit where fractures are ‘silted up’ and the materials are damp and/or water-bearing.

5.6 Tentative infiltration rates have been derived for SA02-SA04 ranging between 1.53 x 10^{-5} m/s and 3.79 x 10^{-5} m/s, however, these cannot be used for design purposes due to the presence of groundwater at shallow depth and only reflect infiltration into the pits sides within the stated depth ranges. Given the above infiltration is not a viable method of disposal for surface water from the site.

5.7 It is recommended that a deeper investigation is undertaken on-site, possibly involving rotary drilled boreholes, to confirm the potential for infiltration at greater depth.

Discharge to Watercourse

5.8 The closest designated Main River, is the unnamed watercourse, located approximately 2.35km southeast. The closest watercourse is an unnamed river located approximately 40m northwest. Any direct route to the unnamed water course would cross third-party land and as such, an alternative drainage strategy should be found.

Discharge to Sewer

5.9 Sewer records and a developer enquiry were obtained from TW see **Appendix F**. The sewer records show there is an existing public surface water sewer within Fringford Road. The records also show a surface water rising main not under the operation of TW within Fringford Road taking surface water north up Fringford Road and then east down Skimmingdish Lane. In accordance with the drainage hierarchy, surface water will discharge into the existing public surface water sewer within Fringford Road.

5.10 TW has confirmed within the developer enquiry that they have no objection to a proposed connection at a restricted rate of 2l/s into the existing public surface water sewer within Fringford Road.

Land Use

5.11 In order to calculate the drainage requirements an understanding of the land use on-site needs to be known. Table 5.1, below summarises the proposed land uses within the site. The site currently consists of agricultural land. The current land use has been calculated using the existing site plan and the post-development land use has been measured from the proposed layout.

Table 5.1: Land Use Summary

Land Use Type	Existing Site Areas		Proposed Site Areas	
	Ha	%	Ha	%
Impermeable Areas	0.669	10	1.722	25
Green Landscape / Permeable areas	6.201	90	5.148	75
TOTAL	**6.870**	**100**	**6.870**	**100**

Climate Change Allowances

5.12 The influence of climate change on rivers and watercourses is likely to increase the frequency of flood events and the overall volume of water that passes the site. When considering surface water runoff from the site, the increase in peak rainfall intensity varies over the lifetime of the development. Where residential developments with a lifetime beyond the 2070s are proposed the Flood Risk Assessments: Climate Change Allowances Guidance requires the use of the Upper-End Allowance for the 2070s epoch (2061 to 2125), the upper end gives an expected increase of 40%, refer to Table 5.2

Table 5.2: Peak Rainfall intensity allowance in small and urban catchments from the Flood Risk Assessments: Climate Change Allowances Guidance

	Total potential change anticipated for the '2050s' (2022 to 2060)		Total potential change anticipated for the '2070s' (2061 to 2125)	
Annual Exceedance Probability	Central	Upper End	Central	Upper End
3.3 % AEP	20%	35%	25%	35%
1 % AEP	20%	40%	25%	40%

Urban Creep Allowances

5.13 Urban creep is the conversion of permeable surfaces to impermeable ones over time, e.g., extensions to existing buildings. It has been shown that, over the lifetime of development, urban creep can increase impermeable areas by as much as 10%. An allowance of 10% for increases in the impermeable area due to urban creep over the lifetime of the development will be included within the drainage calculations. The impermeable area is therefore adjusted to 1.894ha.

Contributing Drainage Area

5.14 When designing the proposed drainage strategy for a site, the incoming volume of water to the drainage system needs to be quantified. The contributing drainage area considers both the impermeable and permeable areas generated by the development. Permeable areas will likely enter the drainage system during higher return events as the ground will already be saturated.

5.15 With a total developable area of 2.870ha, and a total impermeable area (without urban creep) of 1.722ha, the total permeable area for the site is 1.148ha. The amount of direct surface water runoff generated within permeable areas has been estimated by applying the SPR coefficient for the respective area. As such, a SPRHOST of 5.5% leads to an effective permeable area of 0.063ha.

5.16 In total, the contributing drainage area for the proposed site is 1.957ha, which comprises of 1.8946ha for the total impermeable area (with urban creep) and 0.063ha for the effective permeable area.

Discharge Rate

5.17 Existing runoff conditions have been calculated using the modified Rational Method to calculate Brownfield Discharge Rates. For an existing impermeable area of 0.669ha, the current peak discharge rate for a 50mm/hr peak storm intensity event has been calculated at 83.7l/s.

5.18 Existing greenfield runoff conditions for the developable area have been calculated using the FEH method within Flow Causeway. The QBAR rate for the developable area of 2.87ha, results in a QBAR of 0.9l/s. A discharge rate of 0.9l/s may create blockages in the pipes, as such, the proposed site will discharge at a practical minimum rate of 2l/s, which corresponds to a hydro-brake outlet diameter of approximately 66mm. The proposed discharge rate of 2l/s will provide a betterment of 98% from the existing rates. Confirmation of the greenfield runoff rate can be seen in **Appendix G**.

Drainage Strategy

5.19 The overall drainage strategy has been based on the land use table, discharge rates and the current site layout presented in **Appendix B**. In accordance with the National SuDS Standards, the strategy involves conveying surface water flows to an attenuation basin and geo-cellular tank on-site, which will discharge into the existing public surface water sewer within Fringford Road at a controlled rate of 2l/s.

5.20 Surface water flows for a contributing area of 1.957ha will be conveyed to the proposed attenuation basin and geo-cellar tank on-site. A storage volume of 1,759.4m^3 is required within the proposed drainage features to allow sufficient water to discharge at 2.0l/s into the existing public surface water sewer within Fringford Road and cater for all events up to and including the 1%AEP40CC plus urban creep. The attenuation basin has been designed to accommodate a 1:4 gradient for the internal slopes with a 1:4 gradient for the external batter slopes.

5.21 Additional drainage features such as swales, permeable paving and rain gardens will be used across the site and will provide extra storage on site. Permeable paving will act as a first treatment stage for any run-off and will ensure adequate surface water treatment is provided. However, these features have been excluded from the calculations at this stage.

5.22 Due to the presence of perched groundwater all drainage features will be lined with an impermeable membrane to prevent any groundwater ingress.

5.23 Detailed calculations for the proposed design can be seen in **Appendix G,** and a detailed drainage strategy based on the principles above is shown in drawing 27877_01_230_01c in **Appendix H.**

Site Area	Contributing Area	Existing Discharge Rate	QBAR Greenfield Runoff Rate	Proposed Discharge Rate	Betterment	Max Storage Requirements (1%AEP40CC
6.880ha	1.957ha	83.7l/s	0.9l/s	2.0l/s	98%	1,759.4m^3

Applicable SuDS Techniques

5.24 The National Standards for Sustainable drainage systems (Ref. 16) that deals with SuDS cover a whole range of sustainable approaches to surface water drainage management including:

- source control measures including rainwater recycling and drainage;
- filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns;
- filter drains and porous pavements to allow rainwater and run-off to infiltrate into permeable material below ground and provide storage if needed; and
- basins and ponds to hold excess water after rain and allow controlled discharge that avoids flooding.

5.25 Each of the five SuDS considerations listed above is discussed below in Table 5.4, with reference to their suitability for the proposed development.

Table 5.4: Suitability of SuDS techniques

	COMPONENT	SUITABILITY	REASON
Source Control	Rainwater Harvesting	Yes	Water butts could be used to store run-off from roofs before discharge into the drainage system. Any storage is not to be included in calculations.
	Green Roofs	No	This would not be appropriate given the scope and scale of the development.
	Bio-retention Systems/ Rain Gardens	Yes	Can be used as additional SuDS features alongside internal access roads. These features might however be limited to non-adoptable internal access roads.
Proprietary Systems	Proprietary bio-retention systems	No	More appropriate SuDS features can be accommodated within the development and are preferred.
Infiltration Devices	Permeable Paving	Yes	Permeable paving could be used within private roads and parking areas.
	Infiltration trenches/ Soakaways	No	Unsuitable for infiltration due to ground conditions.
Filtration	Open Swales, Filter Strips/ Drains	Yes	Swales can be used for conveyance, alongside storage and treatment, before discharge.
Retention/ Detention	Detention Basin, Attenuation Pond/ Tanks	Yes	The proposed attenuation basin and geo-cellular tank will provide surface water storage before discharging from the site.

Surface Water Quality

5.26 The SuDS Manual CIRIA document C753 (Ref. 10), indicates the minimum treatment indices appropriate for contributing pollution hazards for different land use classifications. To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index (for each contaminant) that equals or exceeds the pollution hazard index (see Table 5.5).

5.27 Surface water runoff from residential roofs will have a very low pollution hazard level, while the residential parking areas and highways will have a low pollution hazard level. The exact pollution hazard levels are shown in Table 5.5.

Table 5.5: Pollution Hazard Indices (Extract from CIRIA 753 Table 26.2)

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
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
Total	**-**	**0.7**	**0.6**	**0.45**

5.28 To provide the correct level of treatment, an assessment needs to be made of the mitigation provided by each SuDS feature. This is shown in Table 5.6 below;

Table 5.6: SuDS Mitigation Indices (Extract from CIRIA 753 Table 26.3)

	Mitigation indices		
Type of SuDS component	**Total Suspended Solids**	**Metals**	**Hydrocarbons**
Attenuation Basin	0.7	0.7	0.5
Permeable Paving	0.7	0.6	0.7
Swales	0.5	0.6	0.6
Rain Gardens	0.8	0.8	0.8
Total	**2.7**	**2.7**	**2.6**

5.29 For the very low and low pollution hazard levels generated at the site, the proposed attenuation basin, permeable paving, swales and rain gardens would provide sufficient treatment in accordance with the Simple Index Method.

Exceedance and Flow Routing

5.30 The risk of overland flooding from adjacent land to dwellings is very low. The design of levels and features on the site will follow best practice by ensuring any overland flow on the site is routed safely away from dwellings and to areas of lowest risk on site. Any surcharging and subsequent flooding of sewers on or in the vicinity of the site will also be mitigated by the flood routing described above. As such the risk of flooding on the site from exceedance events and flood flow routes is very low.

5.31 In accordance to the NPPF, the finished floor level of buildings will also be set to a minimum of 300mm above the adjacent road levels, or as much as reasonably practicable to comply with The Building Regulations.

Maintenance and Management

5.32 An integrated approach to the maintenance and management of SuDS systems is a requirement of the NPPF and by the Flood & Water Management Act 2010. The aim of a maintenance and management plan is to ensure that there is a clear understanding of drainage responsibilities and that a maintenance regime is implemented for all new drainage systems for the lifetime of the development, so they can continue to function as required.

5.33 The surface water drainage network is to be offered to TW for adoption. The attenuation basins have not been designed to an adoptable standard and therefore should remain within private ownership. However, this assumption can be visited at the detailed design stage, where an agreement can be sought with the sewerage undertaken to offer this component for adoption.

5.34 All private drainage systems, will be maintained by individual occupiers and landowners, or an appointed management company.

5.35 A proposed maintenance schedule which breaks down the maintenance requirements of the various proposed assets is shown in **Appendix I.**

6.0 FOUL WATER STRATEGY

6.1 According to The Building Regulations (2010), foul water drainage from new developments should be discharged into the following in order of priority:

- A public sewer, or;
- A private sewer communicating with a public sewer, or;
- A septic tank which has an appropriate form of secondary treatment, or;
- A cesspool.

6.2 Sewer records were obtained from TW see **Appendix F**. The sewer records show there is an existing public foul water sewer within Fringford Road.

6.3 The disposal of foul water from the site will be via the existing connection into the foul water sewer within Fringford Road at MH5901. Given the levels on site, foul water will discharge via gravity, subject to a formal Section 106 agreement.

6.4 Further investigations into the condition and location of the existing foul connection into MH5901 should be undertaken via a detailed CCTV survey. If a connection cannot be made using the existing foul water connection, then a new proposed connection into the foul water sewer within Fringford Road will be made between MH5902 and MH5901.

6.5 The peak foul flow rate arising as a result of the development was estimated as, approximately, 5.0l/s – assuming a foul load rate of 0.05 l/s/dwelling.

6.6 The foul drainage was designed to the standards of the Design and Construction Guidance and, therefore, it will be offered for adoption.

6.7 The proposed connection is shown on drawing 27877_01_230_01c in **Appendix H.**

7.0 CONCLUSION AND SUMMARY

7.1 MEC has been commissioned by Richborough to undertake a Flood Risk Assessment for a proposed residential development at Land West of Fringford Road, Caversfield. This assessment has been undertaken to ascertain the constraints of the development to the site and to assess the impact of the design, with respect to flood risk.

- The site is located within Flood Zone 1 and is therefore classed as 'more vulnerable' under the NPPF.
- The site is designated to be at very low risk from surface water flooding. There are areas at low risk of surface water towards the southeast parts of the site. Surface water flows generated on site will be collected by the proposed site-wide drainage infrastructure and conveyed to a proposed discharge point on site.
- The risk of flooding from all other sources is low
- Existing runoff conditions have been calculated using the modified Rational Method to calculate Brownfield Discharge Rates. For an existing impermeable area of 0.669ha, the current peak discharge rate for a 50mm/hr peak storm intensity event has been calculated at 83.7l/s.
- Existing greenfield runoff conditions for the developable area have been calculated using the FEH method within Flow Causeway. The QBAR rate for the developable area of 2.87ha, results in a QBAR of 0.9l/s.
- A discharge rate of 0.9l/s may create blockages in the pipes, as such, the proposed site will discharge at a practical minimum rate of 2l/s, which corresponds to a hydro-brake outlet diameter of approximately 66mm. The proposed discharge rate of 2l/s will provide a betterment of 98% from the existing rates.
- Surface water flows for a contributing area of 1.957ha will be conveyed to the proposed attenuation basin and geo-cellular tank on-site. A storage volume of 1,759.4m^3 is required within the proposed attenuation features to allow sufficient water to discharge at 2.0l/s into the existing public surface water sewer within Fringford Road and cater for all events up to and including the 1%AEP40CC plus urban creep. The attenuation basin has been designed to accommodate a 1:4 gradient for the internal slopes with a 1:4 gradient for the external batter slopes.
- Additional drainage features such as swales, permeable paving and rain gardens will be used across the site and will provide extra storage on site and will act as a first treatment stage for any run-off and will ensure adequate surface water treatment is provided.
- The disposal of foul water from the site will be via the existing connection into the foul water sewer within Fringford Road at MH5901. Given the levels on site, foul water will discharge via gravity, subject to a formal S106 agreement.
- Further investigations into the condition and location of the existing foul connection into MH5901 should be undertaken via a detailed CCTV survey. If a connection cannot be made using the existing foul water connection, then a new proposed connection into the foul water sewer within Fringford Road will be made between MH5902 and MH5901. The peak foul flow rate arising as a result of the development was estimated as, approximately, 5.0l/s – assuming a foul load rate of 0.05 l/s/dwelling.

7.2 With the above measures in place, the development of the site will not create any flood risk issues to the wider area.

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APPENDICES

APPENDIX A

DISCUSSION

Site boundary *(6.88ha)*

Rev.	Date	Description

Land west of Fringford Rd
CAVERSFIELD

Location Plan

Job ref:	Drawing number:	Revision:
354	L01	-

Scale:	Date:
1:1,500 @ A3	September 2021

part of
edge Placemaking Group Ltd
Company Reg No: 11447550 VAT No: 299072069

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Oxfordshire
OX9 3EW

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enquiries@edgeUD.co.uk
www.edgeUD.co.uk

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APPENDICES

APPENDIX B

PLANNING

- Site boundary
- 1 Proposed vehicular/cycle/pedestrian access
- 2 Proposed emergency/pedestrian & cycle access
- 3 Primary tree lined street
- 4 Secondary street
- 5 Village mews
- 6 Private lane/drive
- 7 Shared surface
- 8 Informal courtyard with agricultural theme
- 9 Historic track alignment
- 10 Cycle way
- 11 Play space (LEAP)
- 12 Natural play/ trail space
- 13 Sustainable drainage
- 14 Entrance green (wildflower planting)
- 15 Planted swale corridor
- 16 Existing vegetation retained and enhanced as necessary
- 17 Mown path
- 18 Open grassland
- 19 Community orchard
- 20 Garden Common
- 21 Natural open space
- 22 Soft development edge
- 23 Area to be fenced off for ecology/ wildlife
- 24 Drop bollards

Rev.	Date	Description

Land West of Fringford Road
CAVERSFIELD

Illustrative Masterplan

Job ref:	Drawing number:	Revision:
501	P07	-
Scale: 1:1,500 @ A3	Date: December 2023	

edge URBAN DESIGN

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APPENDICES

APPENDIX C

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Policies and References

National Planning Policy Framework

The National Planning Policy Framework (Ref. 4) sets out the Government's objectives for the planning system and how there should be a 'Presumption in Favour of Sustainable Development and the planning system should facilitate and promote sustainable patterns of development, avoiding flood risk and accommodating the impacts of climate change.

The document seeks to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Reference should also be made to the Planning Practice Guidance (Ref. 17) which provides additional guidance on flood risk.

For the purposes of applying the National Planning Policy Framework, areas at risk from all sources of flooding are included. For fluvial (river) and sea flooding, this is principally land within Flood Zones 2 and 3. It can also include an area within Flood Zone 1 in which the Environment Agency has notified the local planning authority of having critical drainage problems.

Key elements from the document include

"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk…"

"Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding."

"When determining any planning applications, local planning authorities should ensure flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific risk assessment. Development should only be allowed in areas at risk of flooding where in light of this assessment (and the sequential and exception tests) it can be demonstrated that:

a) *Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*

b) *The development is appropriately flood resistant and resilient*

c) *It incorporates sustainable drainage systems unless there is clear evidence that this would be inappropriate;*

d) *Any residual risk can be safely managed; and*

e) *Safe access and escape plan routes are included where appropriate, as part of an agreed emergency plan."*

Flood and Water Management Act 2010

The Flood and Water Management Act 2010 (Ref. 19) gained Royal Assent on the 8th April 2010. The Flood and Water Management Act is the government's newest legislation to help improve flood risk management and ensure the security of water supplies in England and Wales. The Act updates legislation to ensure better protection from flooding, manage water more sustainably, improve public services and secure water resources during periods of drought. The Flood and Water Management Act helps to reduce flood risk by:

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- Clarifying who is responsible for managing all sources of flood risk.
- Encourage more sustainable forms of drainage in new developments.
- Makes it easier to resolve misconnections to sewers.

The Flood and Water Management Act imparts significant new roles and responsibilities on local authorities. County or unitary authorities are now classed as lead local flood authorities (LLFAs) who have responsibilities for managing local flood risk. The responsibilities of a LLFA include:

- Prepare and maintain a strategy for local flood risk management in their areas, coordinating views and activity with other local bodies and communities through public consultation and scrutiny, and delivery planning.
- Maintain a register of assets – these are physical features that have a significant effect on flooding in their area.
- Investigate significant local flooding incidents and publish the results of such investigations.
- Issue consents for altering, removing or replacing certain structures or features on ordinary watercourses.
- Play a lead role in emergency planning and recovery after a flood event.

Planning Practice Guidance on Flood Risk & Coastal Change – March 2014, updated August 2021
The Government's new planning policy on sustainable drainage systems came into effect on 6 April 2015. It expects local planning policies and decisions on planning applications relating to major development (those of 10 dwellings or more; or equivalent non-residential or mixed development) to ensure that sustainable drainage systems for the management of run-off are put in place unless demonstrated to be inappropriate. Lead Local Flood Authorities (LLFAs) have also been made statutory consultees and new non-statutory guidance has been published under the changes.

The changes follow a joint Defra/DCLG consultation on delivering SuDS published in September 2014 in which the Government dropped all the key provisions of Schedule 3 of the Flood & Water Management Act 2010 and SuDS Approval Bodies (SABs) in favour of passing the oversight of SuDS from county councils (who are also LLFAs) to local planning authorities. According to the new planning policy, local planning authorities are expected, when considering planning applications:

- To consult the relevant lead local flood authority on the management of surface water,
- To satisfy themselves that the proposed minimum standards of operation are appropriate, and
- To ensure through the use of planning conditions or planning obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development.

The policy also states that the sustainable drainage system should be designed to ensure that the maintenance and operation requirements are economically proportionate.

Sustainable Drainage Systems - Non-statutory technical standards for sustainable drainage systems – 2015
The non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems to drain surface water have been published by Defra. The standards apply to systems that drain surface water from housing, non-residential or mixed use developments for the lifetime of the developments. The non-statutory technical standards are to be used in conjunction with the National Planning Policy Framework, and Planning Practice Guidance on Flood Risk & Coastal Change.

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The following documents have been referred to in this report:

1 The Building Regulations 2015, Approved Document H.
2 Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England ("the Code") - October 2019, updated June 2022.
3 Planning Practice Guidance – November 2016, updated August 2022.
4 National Planning Policy Framework - March 2012, updated December 2023
5 Civil Engineering Specification for the Water Industry, 7th Edition.
6 Flood Risk and Coastal Change Guidance – March 2014, updated August 2022.
7 Environment Agency Flood Risk Standing Advice.
8 Environment Agency 'Flood Risk Assessments – Climate Change Allowances' - February 2016., updated May 2022.
9 The SuDS Manual – CIRIA C753.
10 Interim Code of Practice for Sustainable Drainage Systems – National SuDS Working Group, July 2004.
11 Cranfield University Soilscapes Map - http://www.landis.org.uk/soilscapes/.
12 British Geological Survey – Geology of Britain viewer, http://mapapps.bgs.ac.uk /geologyofbritain/home.html.
13 FEH WebService – Centre for Ecology and Hydrology, https://fehweb.ceh.ac.uk/GB/map.
14 Design and analysis of urban storm drainage. The Wallingford Procedure Vol.1.
15 Institute of Hydrology Report No. 124 – Flood Estimation for small catchments.
16 Sustainable Drainage Systems – Non-statutory technical standards for sustainable drainage systems – March 2015.
17 Water Industry Act 1991.
18 Flood and Water Management Act 2010.

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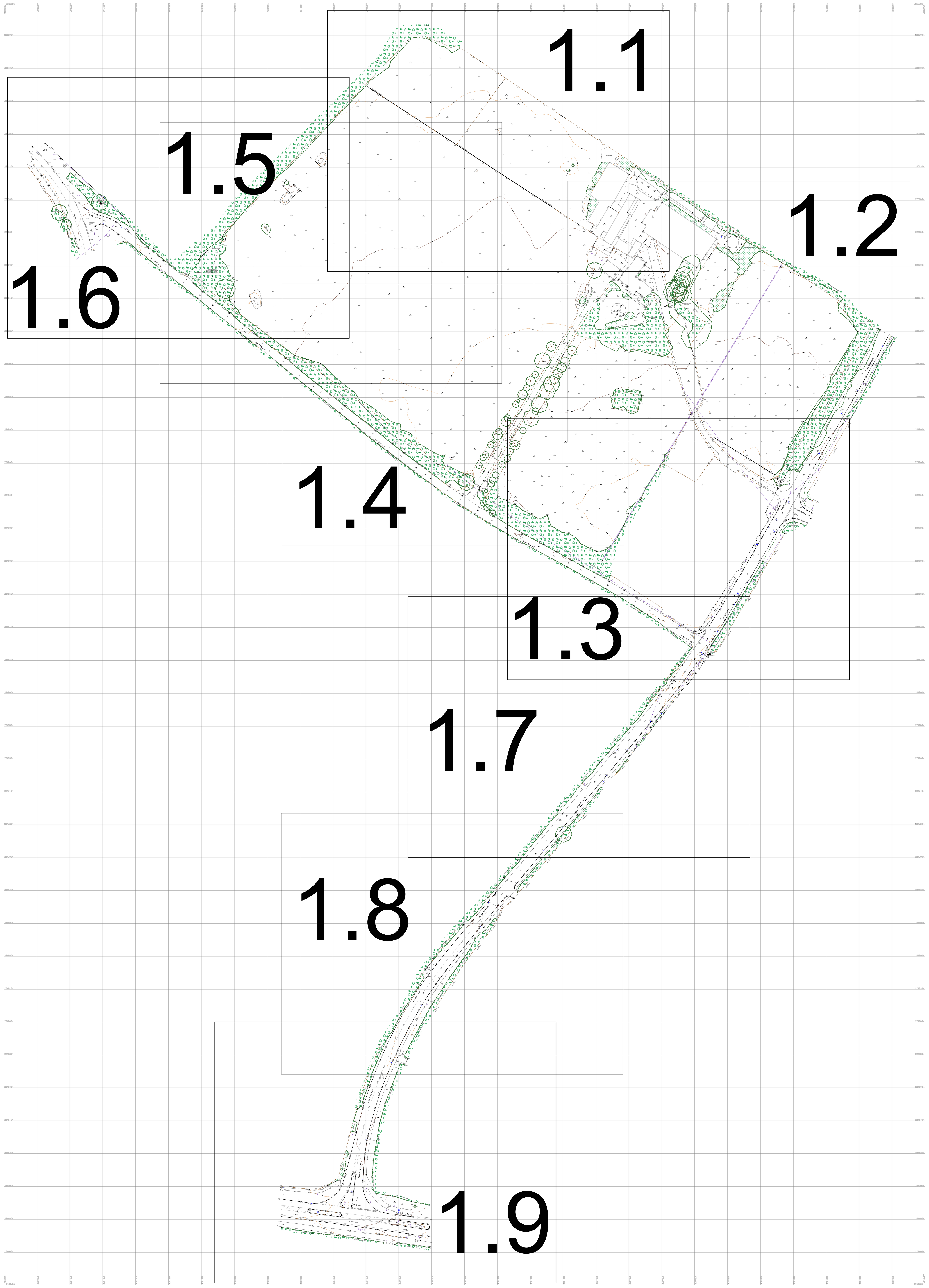
APPENDICES

APPENDIX D

Level Datum:	O.S (G.P.S Verified)
Grid Orientation:	O.S (G.P.S Verified)

Station Information:

Station	Easting (m)	Northing (m)	Level (m)	Description
ST1	458489.988	224954.703	85.691	Nail
ST2	458351.686	224929.338	86.184	Nail
ST3	458375.613	224968.923	86.032	Nail
ST4	458396.457	225002.929	86.357	Nail
ST5	458418.198	225044.075	86.732	Nail
ST6	458430.125	225051.404	86.914	Nail
ST7	458453.989	225076.280	86.980	Nail
ST8	458464.143	225035.083	86.626	Nail
ST9	458544.013	224918.805	85.805	Nail
ST10	458487.472	224827.177	85.614	Nail
ST11	458430.410	224763.622	85.611	Nail
ST12	458396.922	224723.089	85.662	Nail
ST13	458358.713	224678.370	86.004	Nail
ST14	458317.389	224627.909	86.473	Nail
ST15	458299.264	224578.490	86.631	Nail
ST16	458265.799	224488.223	87.532	Nail
ST17	458116.505	225092.881	86.396	Wooden Peg
ST18	458084.183	225130.446	85.856	Wooden Peg



N

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TOPOGRAPHICAL LEGEND

FEATURE LINES

BUILDING
BOTTOM OF BANK
BENCH
CHANNEL
CENTER LINE
LINE MARKING
CANOPY
CHANGE IN SURFACE
TOP OF KERB
DROP KERB
EDGE OF TREES
EDGE OF VEGETATION
FENCE
GATE
MISC
OVERHEAD LINES
RIVER EMBABKMENT
ROOTLINE
STEPS
TOP OF BANK
TRACK
TOP OF WALL
VERGE
WALL
WATER LINE
PIPELINE

FL	FLOODLIGHT
FP	FLAGPOLE
GAS	GAS
GPI	GAS PIPE INLET
IB	ILLUMINOUS BOLLARD
JB	JUNCTION BOX
LB	LITTER BIN
LBOX	LETTER BOX
LP	LAMP POST
MKR	MARKER POST
MW	MONITORING WELL
PMTR	PARKING METER
RE	RODDING EYE
RNB	ROAD NAME BOARD
SMKR	SERVICE MARKER
SP	SIGN POST
ST	STOP TAP
STY	STILE
TCB	TELEPHONE CALL BOX
TL	TRAFFIC LIGHT
TP	UTILITY POST
WSM	WATER SERVICE MARKER
WM	WATER METER
WO	WASH OUT
WPI	WATER PIPE INLET

ABBREVIATIONS

BED.LVL	BED LEVEL
INV.LVL	INVERT LEVEL
WL	WATER LEVEL
FENCE LVL	FENCE LEVEL
IFL	FLOOR LEVEL
THL	THRESHOLD LEVEL
WALL LVL	WALL LEVEL
VL	AVG TOP OF VEG
TC	AVG TOP OF TREES
TREE LVL	TOP OF TREE LEVEL
EL.	EAVES LEVEL
RL.	RIDGE LEVEL
RW	RETAINING WALL
AMF	ARMCO BARRIER
BWF	BARBED WIRE
CIF	CORRUGATED IRON
CLF	CHAIN LINK
CPF	CHESTNUT PALING
CPF	CONCRETE PANEL
IRF	IRON RAILING
IWF	INTERWOVEN
MF	METAL FENCE
PCF	POST & CHAIN
PIF	POST & IRON RAIL
PRF	POST AND RAIL
PWF	POST & WIRE
SPF	STEEL PALISADE
WMF	WIRE MESH FENCE
WPF	WOOD PANEL FENCE
AV	AIR VALVE
BOLL	BOLLARD
BT	BRITISH TELECOM
BUS	BUS STOP
CAMKR	CABLE MARKER
CCTV	CLOSED CIRCUIT CAMERA
CBOX	CONTROL BOX
CTV	CABLE TELEVISION
ELEC	ELECTRIC
ER	EARTH ROD
FH	FIRE HYDRANT

SYMBOLS

CHAMBER
GATE
TREE/BUSH/SAPLING
BH BOREHOLE
TRIAL PIT
P1 STAKEOUT

DRAINAGE

250Ø	PIPE DIAMETER (mm)
BG	BACK GULLY
CL	COVER LEVEL
DP	DOWN PIPE
GY	GULLY
IC	INSPECTION CHAMBER
IL	PIPE INVERT LEVEL
MH	MANHOLE
SO	SOFFIT LEVEL

COMBINED SEWAGE SYSTEM
FOUL SEWAGE SYSTEM
SURFACE SEWAGE SYSTEM
UKNOWN SEWAGE SYSTEM

SURFACE KEY

1	ASPHALT
2	GRASS
3	CONCRETE
4	UNMADE GROUND
5	MADE GROUND
6	VEGETATED GROUND
7	BLOCK PAVING/SETS
8	CONCRETE SLABS
9	TACTILE PAVING
10	TARMAC

STATIONS

100.000m	STATION LEVEL
MEC1	STATION AND NAME

REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
A	ADDED ADDITIONAL TOPO AREAS	GS	JD	AB	02.10.23
–	FIRST ISSUE	GS	JD	AB	31.08.23

PROJECT:
AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:
TOPOGRAPHICAL SURVEY
OVERVIEW

CLIENT:
RICHBOROUGH
ESTATES LTD

DRAWING NUMBER: 27877_06_170_01

REVISION:	SHEET SIZE:	SCALE:
A	A0	1:1000

STATUS: FOR INFORMATION

M-EC GEOMATICS

Telephone: 01530 264 753
Email: group@m-ec.co.uk
Website: www.m-ec.co.uk

File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg

Printed:24.10.2023

Level Datum:	O.S (G.P.S Verified)
Grid Orientation:	O.S (G.P.S Verified)

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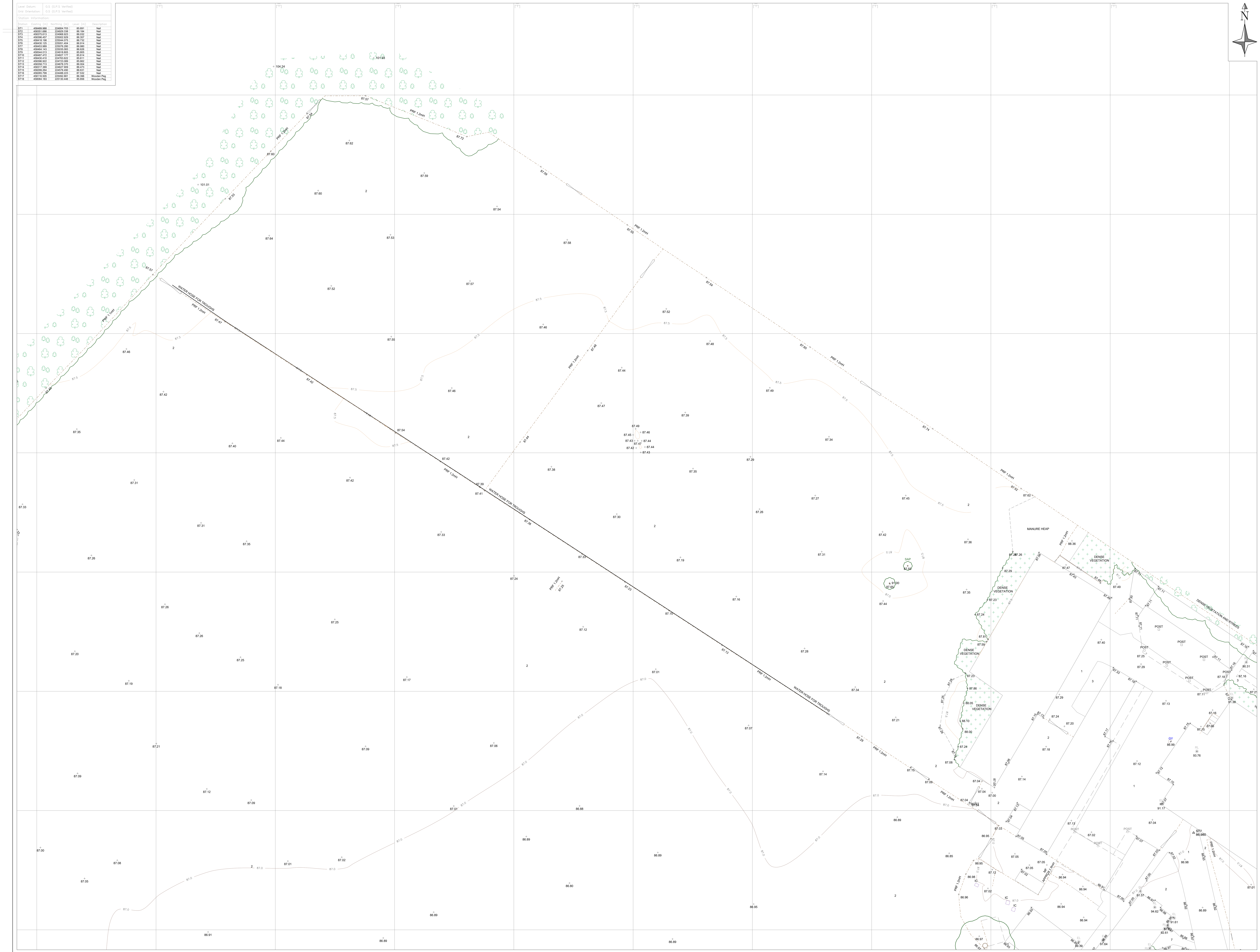

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TOPOGRAPHICAL LEGEND

FEATURE LINES

BUILDING
BOTTOM OF BANK
BENCH
CHANNEL
CENTER LINE
LINE MARKING
CANOPY
CHANGE IN SURFACE
TOP OF KERB
DROP KERB
EDGE OF TREES
EDGE OF VEGETATION
FENCE
GATE
MISC
OVERHEAD LINES
RIVER EMBABKMENT
ROOTLINE
STEPS
TOP OF BANK
TRACK
TOP OF WALL
VERGE
WALL
WATER LINE
PIPELINE

FL	FLOODLIGHT
FP	FLAGPOLE
GAS	GAS
GPI	GAS PIPE INLET
IB	ILLUMINOUS BOLLARD
JB	JUNCTION BOX
LB	LITTER BIN
LBOX	LETTER BOX
LP	LAMP POST
MKR	MARKER POST
MW	MONITORING WELL
PMTR	PARKING METER
RE	RODDING EYE
RNB	ROAD NAME BOARD
SMKR	SERVICE MARKER
SP	SIGN POST
ST	STOP TAP
STY	STILE
TCB	TELEPHONE CALL BOX
TL	TRAFFIC LIGHT
TP	UTILITY POST
WSM	WATER SERVICE MARKER
WM	WATER METER
WO	WASH OUT
WPI	WATER PIPE INLET

ABBREVIATIONS

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INV.LVL	INVERT LEVEL
WL	WATER LEVEL
FENCE LVL	FENCE LEVEL
IFL	FLOOR LEVEL
THL	THRESHOLD LEVEL
WALL LVL	WALL LEVEL
VL	AVG TOP OF VEG
TC	AVG TOP OF TREES
TREE LVL	TOP OF TREE LEVEL
EL.	EAVES LEVEL
RL.	RIDGE LEVEL
RW	RETAINING WALL
AMF	ARMCO BARRIER
BWF	BARBED WIRE
CIF	CORRUGATED IRON
CLF	CHAIN LINK
CPF	CHESTNUT PALING
CPF	CONCRETE PANEL
IRF	IRON RAILING
IWF	INTERWOVEN
MF	METAL FENCE
PCF	POST & CHAIN
PIF	POST & IRON RAIL
PRF	POST AND RAIL
PWF	POST & WIRE
SPF	STEEL PALISADE
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P1 STAKEOUT

DRAINAGE

250Ø	PIPE DIAMETER (mm)
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IL	PIPE INVERT LEVEL
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COMBINED SEWAGE SYSTEM
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SURFACE SEWAGE SYSTEM
UKNOWN SEWAGE SYSTEM

SURFACE KEY

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STATIONS

100.000m	STATION LEVEL
MEC1	STATION AND NAME

REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
A	ADDED ADDITIONAL TOPO AREAS	GS	JD	AB	02.10.23
–	FIRST ISSUE	GS	JD	AB	31.08.23

PROJECT:
AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:
TOPOGRAPHICAL SURVEY
SHEET 1 OF 9

CLIENT:
RICHBOROUGH
ESTATES LTD

DRAWING NUMBER: 27877_06_170_01.1

REVISION: A
SHEET SIZE: A0
SCALE: 1:200

STATUS: FOR INFORMATION

M-EC GEOMATICS
Telephone: 01530 264 753
Email: group@m-ec.co.uk
Website: www.m-ec.co.uk

File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg
Printed:24.10.2023

Level Datum:	O.S (G.P.S Verified)
Grid Orientation:	O.S (G.P.S Verified)

Station Information:

Station	Easting (m)	Northing (m)	Level (m)	Description
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ST3	458375.613	224968.923	86.032	Nail
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ST15	458299.264	224578.490	86.631	Nail
ST16	458265.799	224488.223	87.532	Nail
ST17	458116.505	225092.881	86.396	Wooden Peg
ST18	458084.183	225130.446	85.856	Wooden Peg

N

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100.000m	STATION LEVEL
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REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
A	ADDED ADDITIONAL TOPO AREAS	GS	JD	AB	02.10.23
–	FIRST ISSUE	GS	JD	AB	31.08.23

PROJECT:
AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:
TOPOGRAPHICAL SURVEY
SHEET 2 OF 9

CLIENT:
RICHBOROUGH
ESTATES LTD

DRAWING NUMBER: 27877_06_170_01.2

REVISION: A
SHEET SIZE: A0
SCALE: 1:200

STATUS: FOR INFORMATION

M-EC GEOMATICS

Telephone: 01530 264 753
Email: group@m-ec.co.uk
Website: www.m-ec.co.uk

File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg

Printed:24.10.2023

Level Datum:	O.S (G.P.S Verified)			
Grid Orientation:	O.S (G.P.S Verified)			
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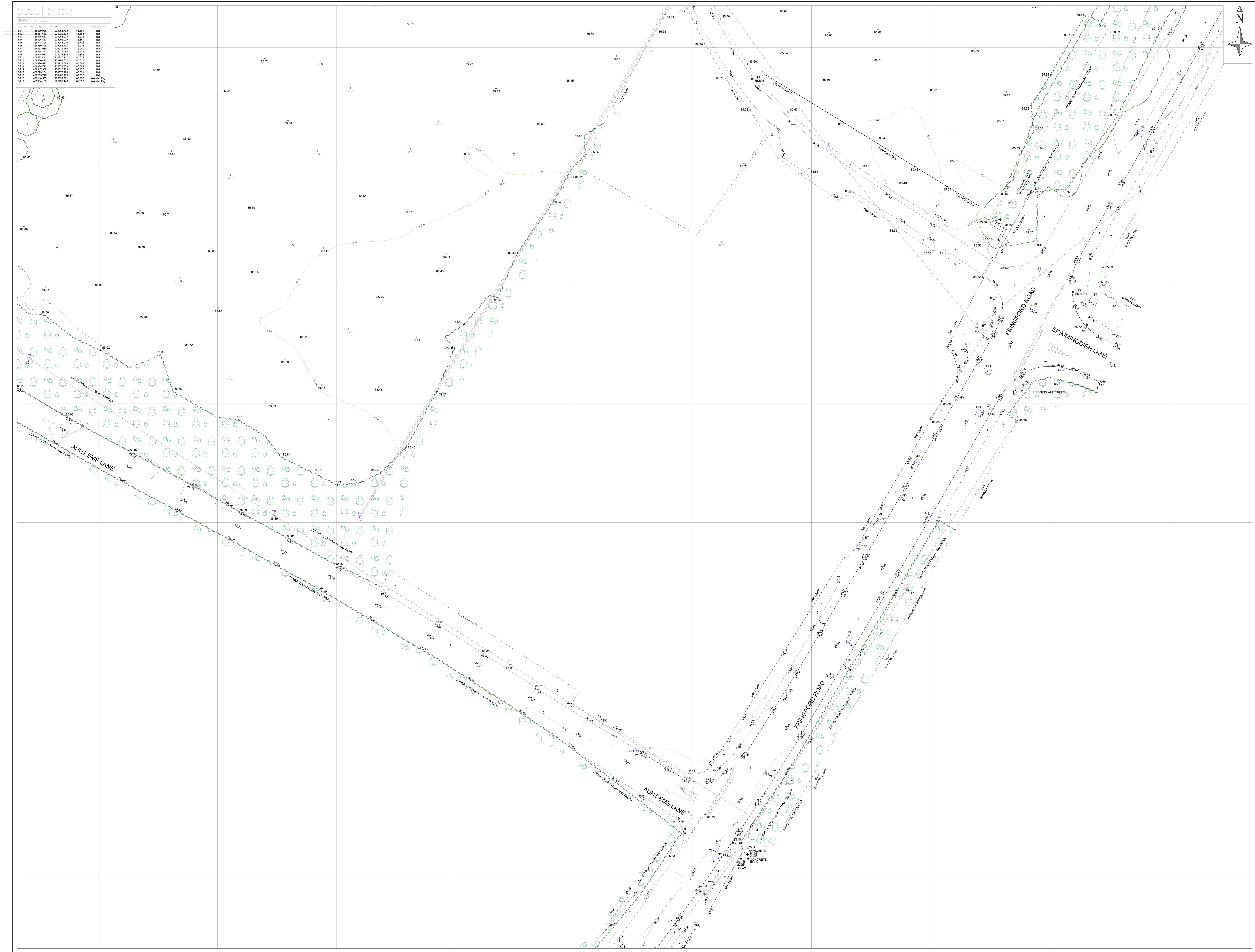

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A	ADDED ADDITIONAL TOPO AREAS	GS	JD	AB	02.10.23
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PROJECT:

AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:

TOPOGRAPHICAL SURVEY
SHEET 3 OF 9

CLIENT:

RICHBOROUGH
ESTATES LTD

DRAWING NUMBER: 27877_06_170_01.3

REVISION: A | SHEET SIZE: A0 | SCALE: 1:200

STATUS: FOR INFORMATION

M-EC GEOMATICS

Telephone: 01530 264 753
Email: group@m-ec.co.uk
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File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg
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Level Datum:	O.S (G.P.S Verified)
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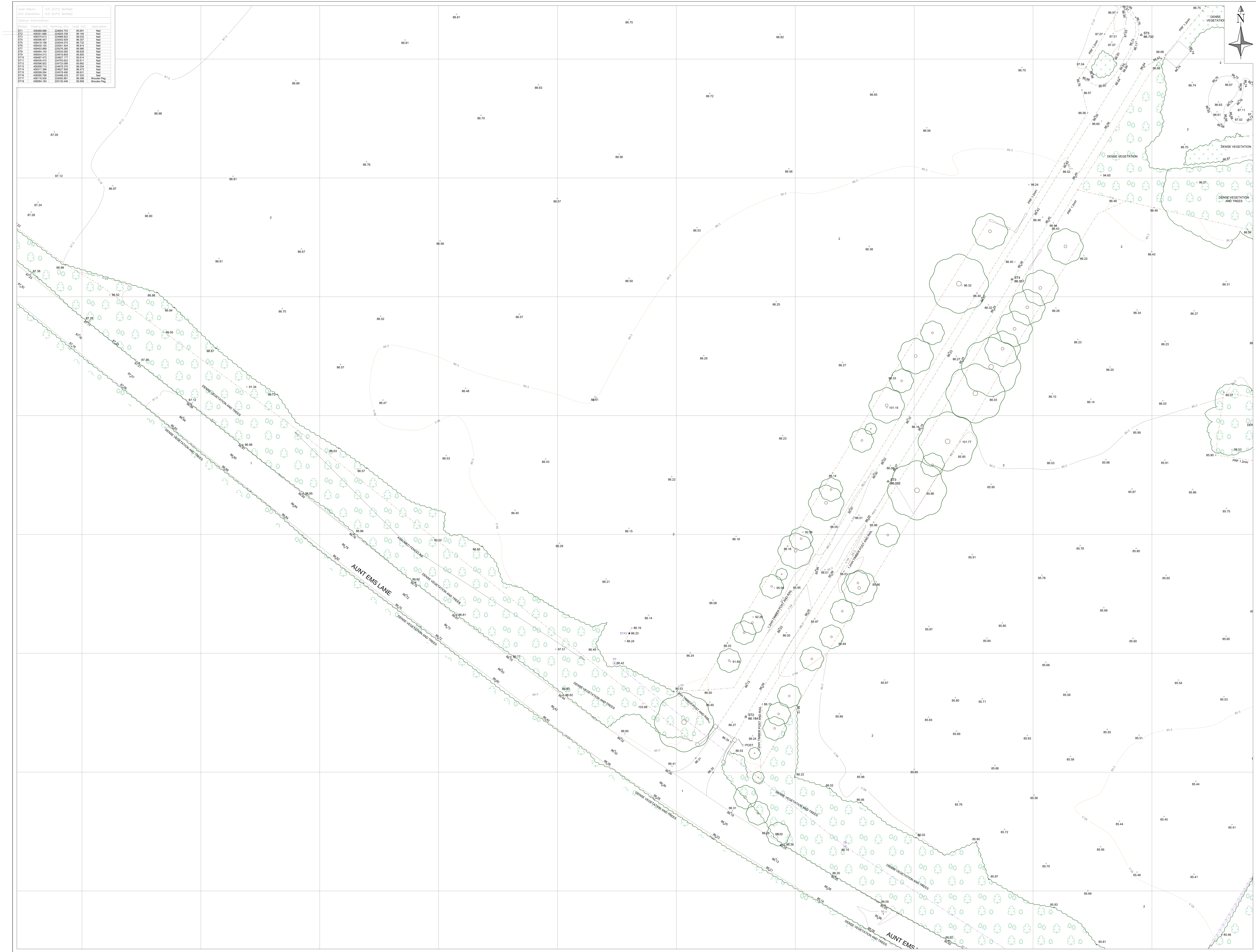

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CANOPY
CHANGE IN SURFACE
TOP OF KERB
DROP KERB
EDGE OF TREES
EDGE OF VEGETATION
FENCE
GATE
MISC
OVERHEAD LINES
RIVER EMBABKMENT
ROOTLINE
STEPS
TOP OF BANK
TRACK
TOP OF WALL
VERGE
WALL
WATER LINE
PIPELINE

FL	FLOODLIGHT
FP	FLAGPOLE
GAS	GAS
GPI	GAS PIPE INLET
IB	ILLUMINOUS BOLLARD
JB	JUNCTION BOX
LB	LITTER BIN
LBOX	LETTER BOX
LP	LAMP POST
MKR	MARKER POST
MW	MONITORING WELL
PMTR	PARKING METER
RE	RODDING EYE
RNB	ROAD NAME BOARD
SMKR	SERVICE MARKER
SP	SIGN POST
ST	STOP TAP
STY	STILE
TCB	TELEPHONE CALL BOX
TL	TRAFFIC LIGHT
TP	UTILITY POST
WSM	WATER SERVICE MARKER
WM	WATER METER
WO	WASH OUT
WPI	WATER PIPE INLET

ABBREVIATIONS

BED.LVL	BED LEVEL
INV.LVL	INVERT LEVEL
WL	WATER LEVEL
FENCE LVL	FENCE LEVEL
IFL	FLOOR LEVEL
THL	THRESHOLD LEVEL
WALL LVL	WALL LEVEL
VL	AVG TOP OF VEG
TC	AVG TOP OF TREES
TREE LVL	TOP OF TREE LEVEL
EL.	EAVES LEVEL
RL.	RIDGE LEVEL
RW	RETAINING WALL
AMF	ARMCO BARRIER
BWF	BARBED WIRE
CIF	CORRUGATED IRON
CLF	CHAIN LINK
CPF	CHESTNUT PALING
CPF	CONCRETE PANEL
IRF	IRON RAILING
IWF	INTERWOVEN
MF	METAL FENCE
PCF	POST & CHAIN
PIF	POST & IRON RAIL
PRF	POST AND RAIL
PWF	POST & WIRE
SPF	STEEL PALISADE
WMF	WIRE MESH FENCE
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DRAINAGE

250Ø	PIPE DIAMETER (mm)
BG	BACK GULLY
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IL	PIPE INVERT LEVEL
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SO	SOFFIT LEVEL

COMBINED SEWAGE SYSTEM
FOUL SEWAGE SYSTEM
SURFACE SEWAGE SYSTEM
UKNOWN SEWAGE SYSTEM

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STATIONS

100.000m	STATION LEVEL
MEC1	STATION AND NAME

REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
A	ADDED ADDITIONAL TOPO AREAS	GS	JD	AB	02.10.23
–	FIRST ISSUE	GS	JD	AB	31.08.23

PROJECT:
AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:
TOPOGRAPHICAL SURVEY
SHEET 4 OF 9

CLIENT:
RICHBOROUGH
ESTATES LTD

DRAWING NUMBER: 27877_06_170_01.4

REVISION: A
SHEET SIZE: A0
SCALE: 1:200

STATUS: FOR INFORMATION

M-EC GEOMATICS

Telephone: 01530 264 753
Email: group@m-ec.co.uk
Website: www.m-ec.co.uk

Printed:24.10.2023 File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg

Level Datum: O.S (G.P.S Verified)
Grid Orientation: O.S (G.P.S Verified)

Station Information:

Station	Easting (m)	Northing (m)	Level (m)	Description
ST1	458489.988	224954.703	85.691	Nail
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ST3	458375.613	224968.923	86.032	Nail
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ST5	458418.198	225044.075	86.732	Nail
ST6	458430.125	225051.404	86.914	Nail
ST7	458453.989	225076.280	86.980	Nail
ST8	458464.143	225035.083	86.626	Nail
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ST14	458317.389	224627.909	86.473	Nail
ST15	458299.264	224578.490	86.631	Nail
ST16	458265.799	224488.223	87.532	Nail
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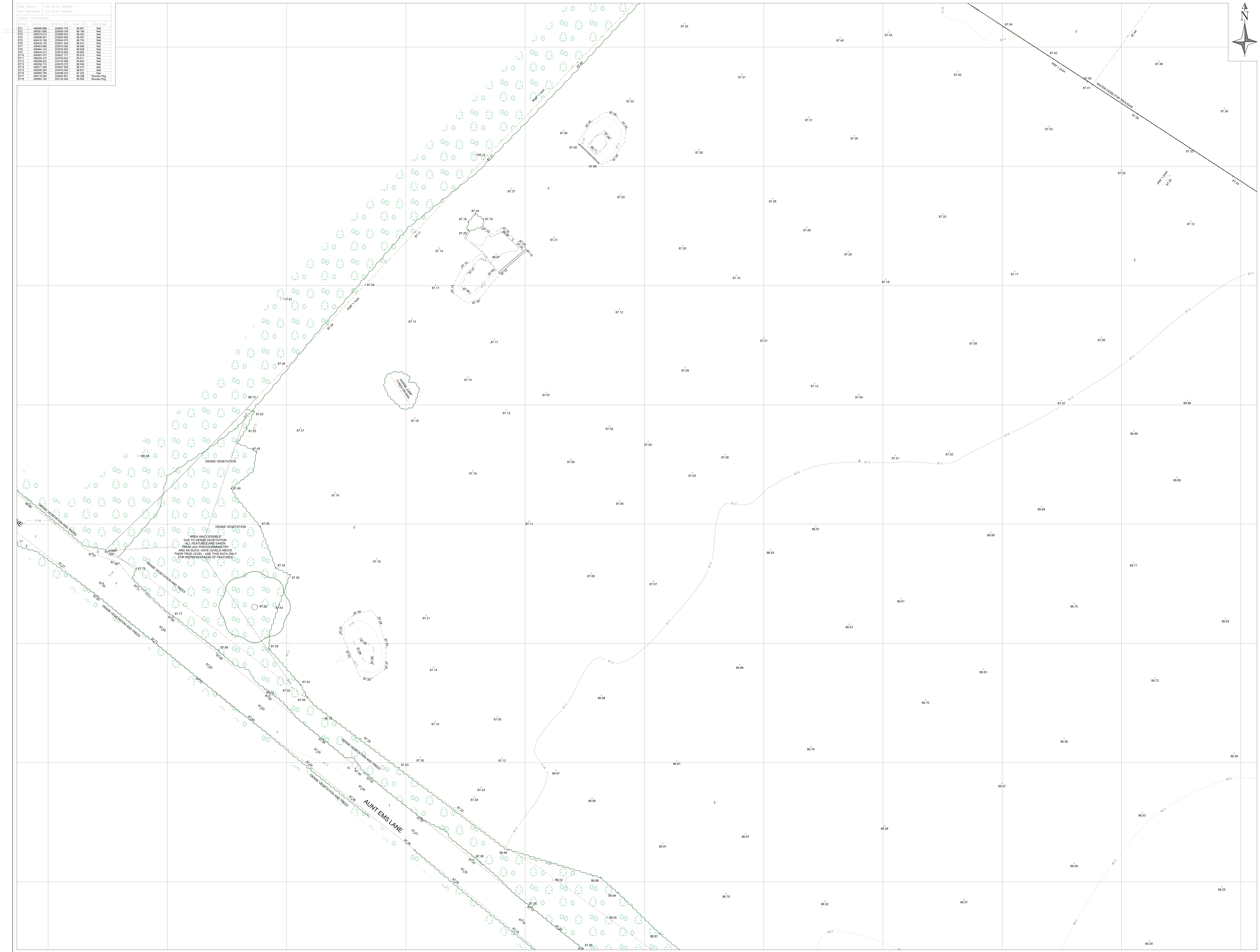

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TOPOGRAPHICAL LEGEND

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100.000m	STATION LEVEL
MEC1	STATION AND NAME

REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
A	ADDED ADDITIONAL TOPO AREAS	GS	JD	AB	02.10.23
–	FIRST ISSUE	GS	JD	AB	31.08.23

PROJECT:
AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:
TOPOGRAPHICAL SURVEY
SHEET 5 OF 9

CLIENT:
RICHBOROUGH
ESTATES LTD

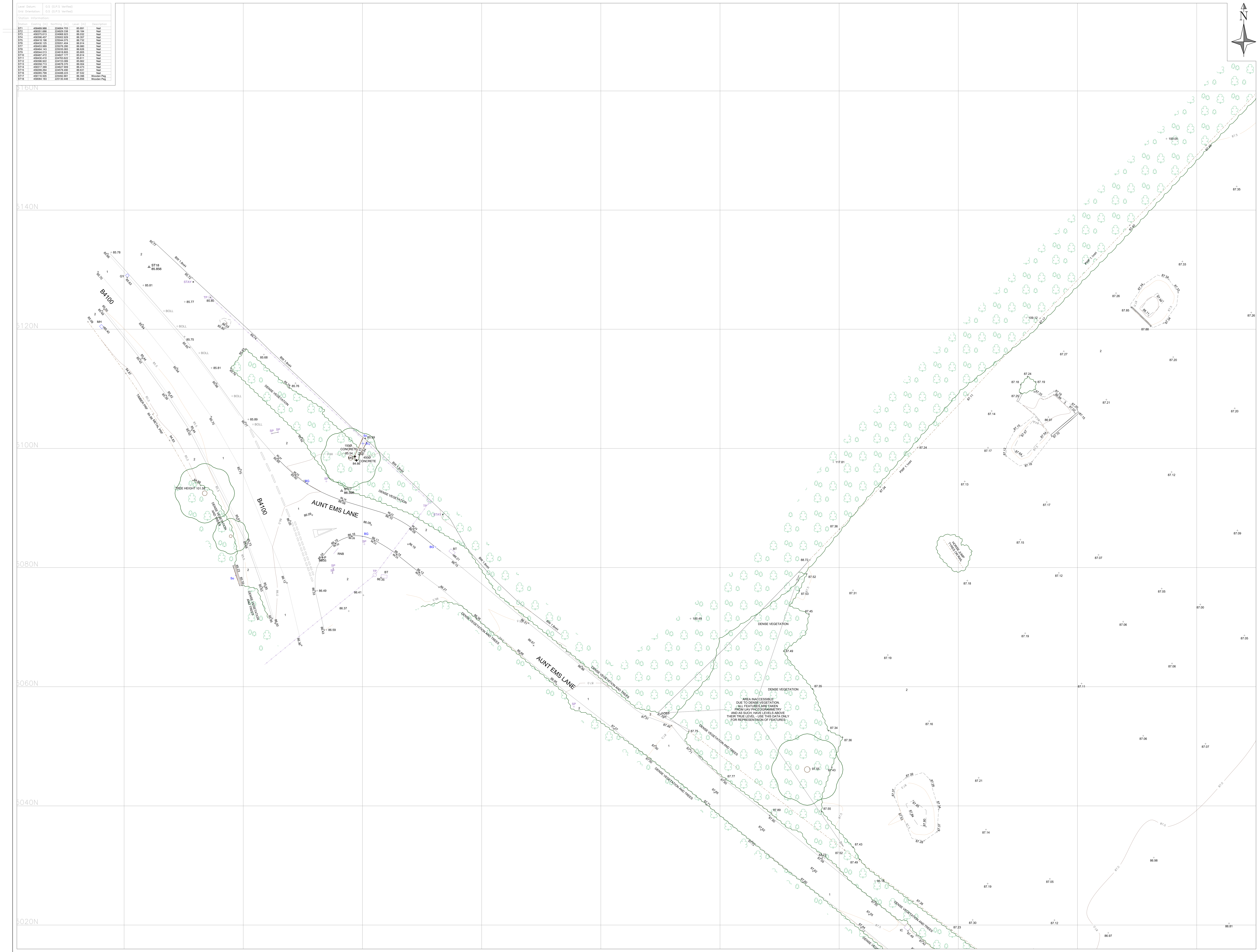
DRAWING NUMBER: 27877_06_170_01.5

REVISION:	SHEET SIZE:	SCALE:
A	A0	1:200

STATUS: FOR INFORMATION

M-EC GEOMATICS
Telephone: 01530 264 753
Email: group@m-ec.co.uk
Website: www.m-ec.co.uk

File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg
Printed:24.10.2023



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REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
–	FIRST ISSUE	GS	JD	AB	02.10.28

PROJECT:

AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:

TOPOGRAPHICAL SURVEY
SHEET 6 OF 9

CLIENT:

RICHBOROUGH
ESTATES LTD

DRAWING NUMBER: 27877_06_170_01.6

REVISION:	SHEET SIZE:	SCALE:
-	A0	1:200

STATUS: FOR INFORMATION

M·EC GEOMATICS

Telephone: 01530 264 753
Email: group@m-ec.co.uk
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File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg

Printed:24.10.2023

Level Datum:	O.S (G.P.S Verified)
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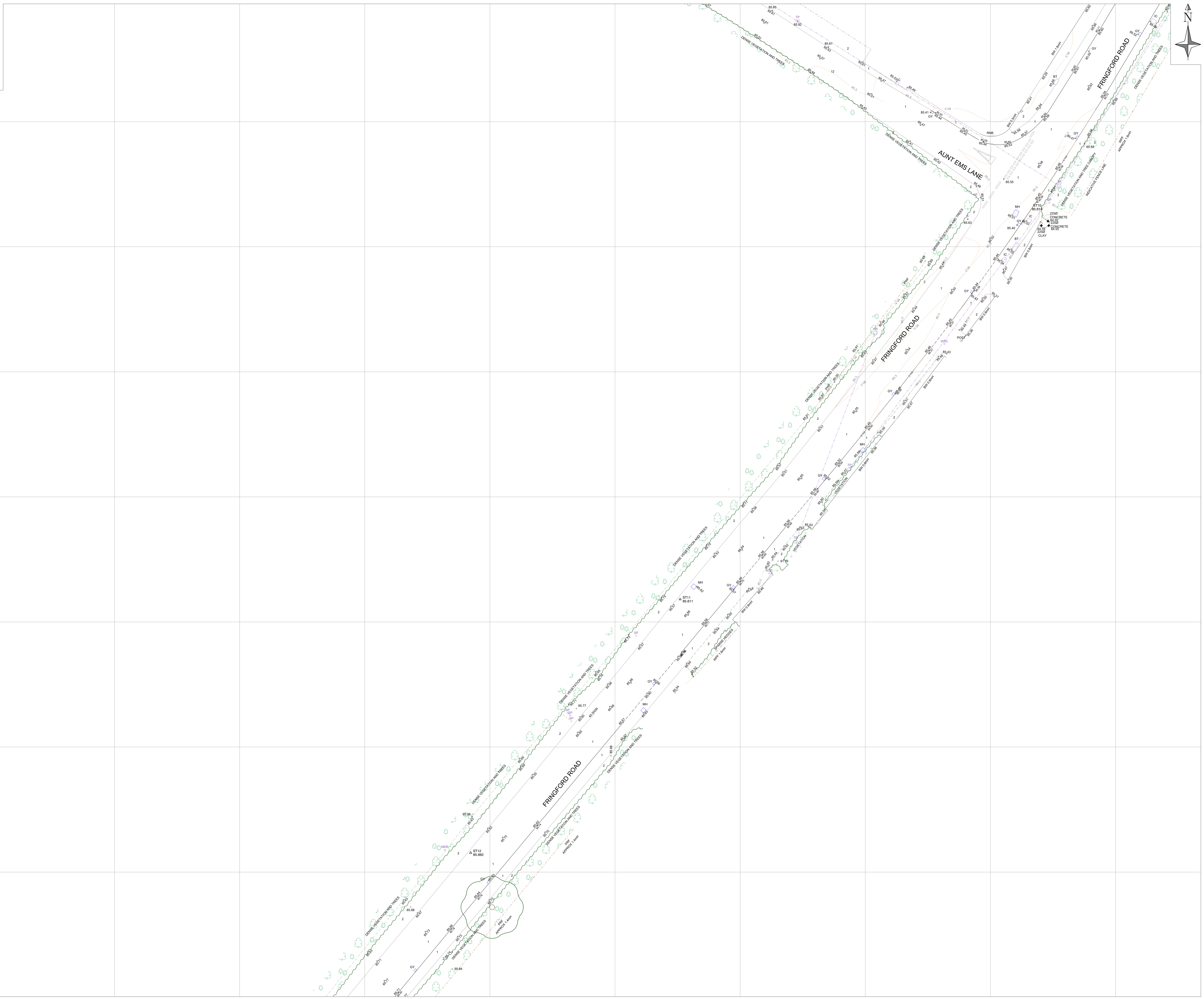

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WATER LINE
PIPELINE

FL	FLOODLIGHT
FP	FLAGPOLE
GAS	GAS
GPI	GAS PIPE INLET
IB	ILLUMINOUS BOLLARD
JB	JUNCTION BOX
LB	LITTER BIN
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LP	LAMP POST
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RE	RODDING EYE
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CPF	CHESTNUT PALING
CPF	CONCRETE PANEL
IRF	IRON RAILING
IWF	INTERWOVEN
MF	METAL FENCE
PCF	POST & CHAIN
PIF	POST & IRON RAIL
PRF	POST AND RAIL
PWF	POST & WIRE
SPF	STEEL PALISADE
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MEC1	STATION AND NAME

REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
–	FIRST ISSUE	GS	JD	AB	02.10.28

PROJECT:

AUNT EMS LANE
CAVERSFIELD

DRAWING TITLE:

TOPOGRAPHICAL SURVEY
SHEET 7 OF 9

CLIENT:

RICHBOROUGH
ESTATES LTD

DRAWING NUMBER: 27877_06_170_01.7

REVISION:	SHEET SIZE:	SCALE:
-	A0	1:200

STATUS: FOR INFORMATION

M-EC GEOMATICS

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Website: www.m-ec.co.uk

File Location: T:\M-EC Job Book\27877\drawings\06 geomatics\27877_06_170_01a topographical survey.dwg

Printed:24.10.2023

Level Datum:	O.S (G.P.S Verified)
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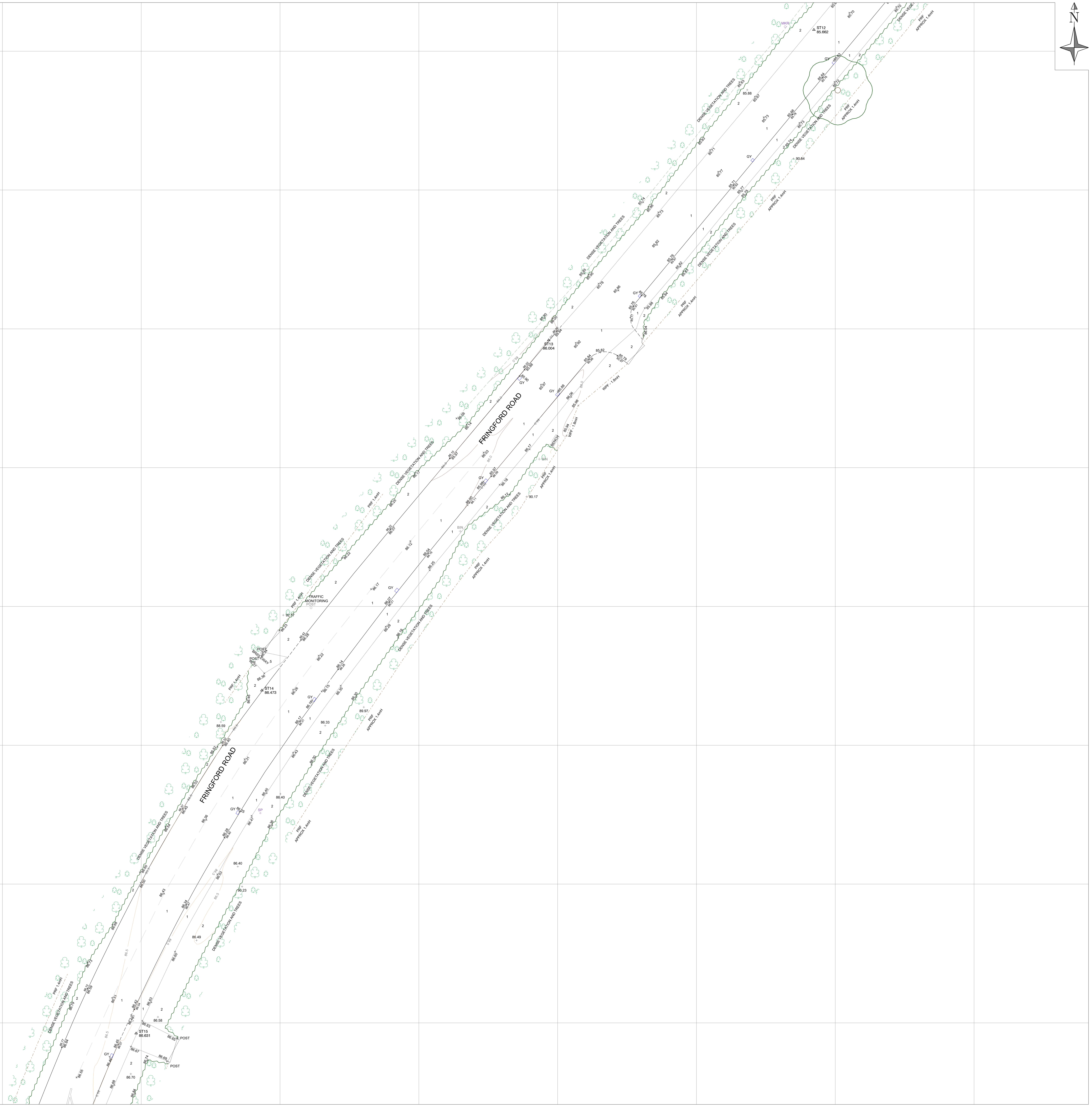

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TOPOGRAPHICAL SURVEY
SHEET 8 OF 9

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DRAWING NUMBER: 27877_06_170_01.8

REVISION: -
SHEET SIZE: A0
SCALE: 1:200

STATUS: FOR INFORMATION

M·EC GEOMATICS

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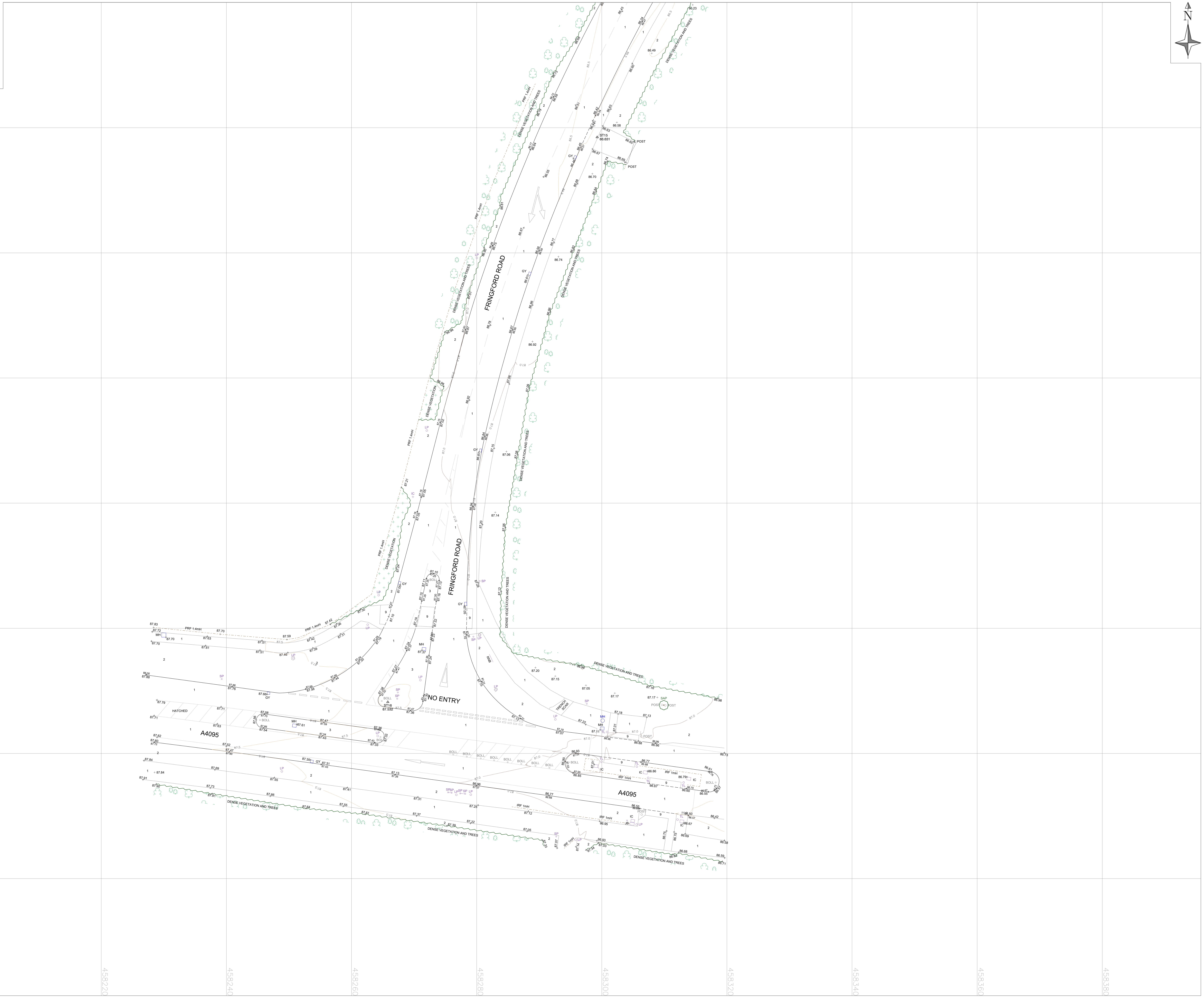

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MEC
Development Technical Consultants

APPENDICES

APPENDIX E

The Old Chapel, Station Road, Hugglescote, Leicestershire LE67 2GB
Telephone 01530 264753
Email group@m-ec.co.uk
www.m-ec.co.uk

MEC Development Technical Consultants

Doc. Ref.	27877-CALC-0401
Sheet	1 of 14
Engineer	DW
Date	03/08/2023
Revision	-

SOIL INFILTRATION CALCULATIONS FRONT SHEET

SCHEME	Land at Aunt Ems Lane, Caversfield
CLIENT	Richborough Estates Ltd
ASPECTS OF SCHEME TO BE DESIGNED	Soil Infiltration Rate Testing
CODES OF PRACTICE, DESIGN SPECIFICATIONS & BRITISH STANDARDS	Soil Infiltration Rate testing and calculations completed in general accordance with BRE Digest 365 utilising the gravel fill method.
NOTES	The results indicate that infiltration varies across the site dependent on the extent of weathering and fracturing within the limestone bedrock. The results are also impacted by the presence of perched groundwater or damp soils towards the base of the test pits. In general, the infiltration curves flatten out at depths ranging between 1.20m and 1.50m suggesting that infiltration is concentrated within the shallower more weathered layers and limited within the base of the pit where fractures are 'silted up' and the materials are damp and/or water bearing. Tentative infiltration rates have been derived for SA02-SA04 ranging between 1.53 and 3.79 x 10^{-5} m/s, however these cannot be used for design purposes due to the presence of groundwater at shallow depth and only reflect infiltration into the pits sides within the stated depth ranges. The results suggest that the limestones near surface are underlain by impermeable clay strata which is allowing the ponding of percolating water. Further deeper investigation is required, possibly involving rotary drilled boreholes, to confirm the potential for infiltration at greater depth.

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MEC Development Technical Consultants

INDEX

Pages	Calculations	Checked by	Approved By	Date
3	Exploratory Hole Location Plan			
4	SA01 – Test 1 Insufficient drainage to derive infiltration rate.			
5	SA02 – Test 1			
6	SA02 – Test 2 lowest result = 1.53 x 10^{-5} m/s			
7	SA02 – Test 3			
8	SA03 – Test 1			
9	SA03 – Test 2 lowest result = 2.49 x 10^{-5} m/s	DT	EM	03/08/2023
10	SA03 – Test 3			
11	SA04 – Test 1			
12	SA04 – Test 2 lowest result = 3.79 x 10^{-5} m/s			
13	SA04 – Test 3			
14	SA04 – Test 4			

M-EC
The Old Chapel
Station Road
Hugglescote
Leicestershire
LE67 2GB

EXPLORATORY HOLE LOCATION PLAN

Project: Aunt Ems Lane, Caversfield

File Ref: 27877

O.S. Grid Ref: 458372, 225038

Postcode: OX27 8TH

- Soakaway Test Location

- Site Boundary

Mewies Engineering Consultants Ltd
The Old Chapel, Station Road, Hugglescote, Leicestershire, LE67 2GB
Telephone 01530 264753 email group@m-ec.co.uk

MEC Development Technical Consultants

Scheme	**Aunt Ems Lane, Caversfield**	**Page No.**	4
Client	**Richborough Estates Ltd**	**Calcs by**	DW
Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

Soil Infiltration Test - Gravel Filled Method

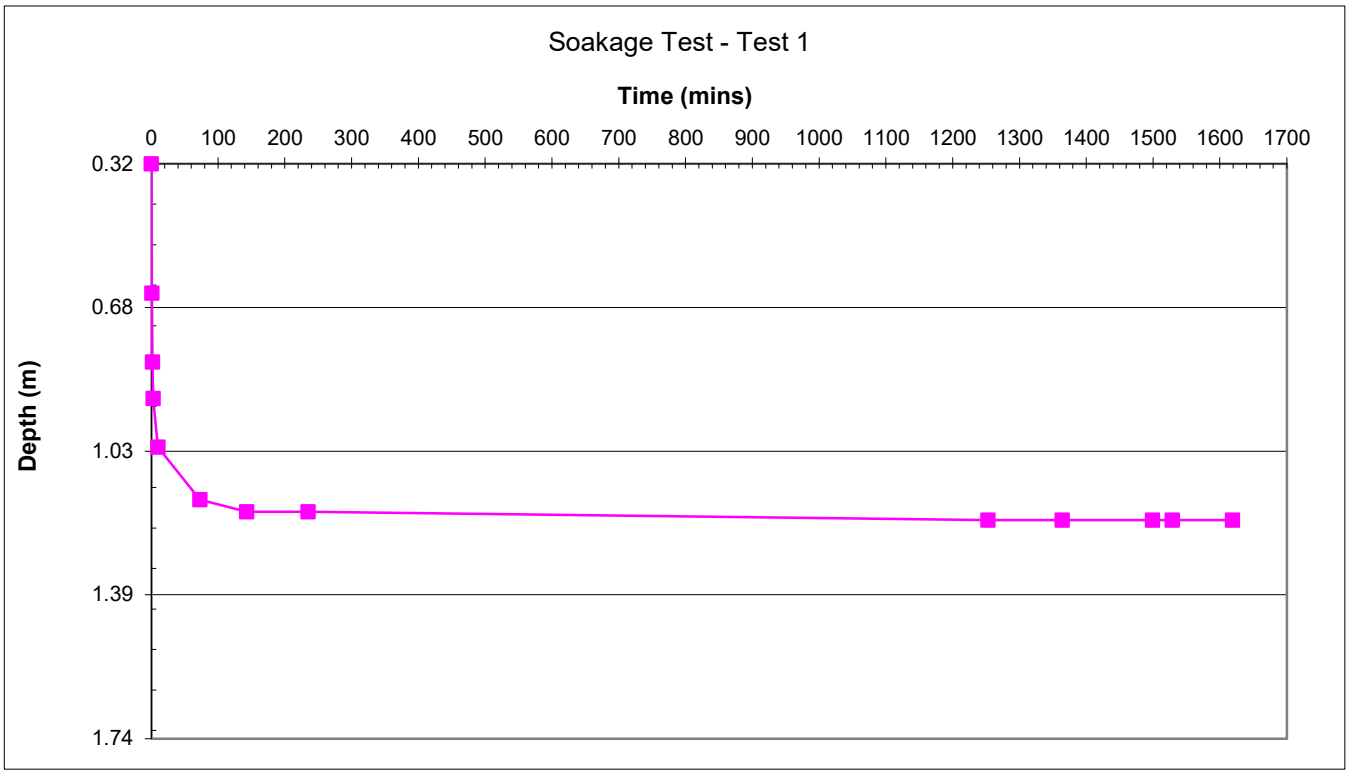
(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA01**	**Test 1**
Length	**2.00** m	
Width	**0.45** m	
Depth	**1.74** m	
Ground water level	**Seepage at 1.70m**	
Ground conditions	**0.00-0.25m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.25-0.35m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.35-1.74m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.32
1	0.64
2	0.81
3	0.90
10	1.02
73	1.15
143	1.18
235	1.18
1253	1.20
1364	1.20
1499	1.20
1529	1.20
1619	1.20

Effective storage depth =	1.42	m
75% effective storage depth =	1.07	m
(ie depth below GL) =	0.68	m
25% effective storage depth =	0.36	m
(ie depth below GL) =	1.39	m
effective storage depth 75%-25% =	0.71	m
Time to fall to 75% effective depth =	1.2	mins
Time to fall to 25% effective depth =	-	mins
Void Ratio =	40%	
V (75%-25%) =	0.26	m^3
a (50%) =	4.38	m^2
t (75%-25%) =	#VALUE!	mins

Insufficient drainage to derive an infiltration rate.



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Scheme	**Aunt Ems Lane, Caversfield**	**Page No.**	5
Client	**Richborough Estates Ltd**	**Calcs by**	DW
Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

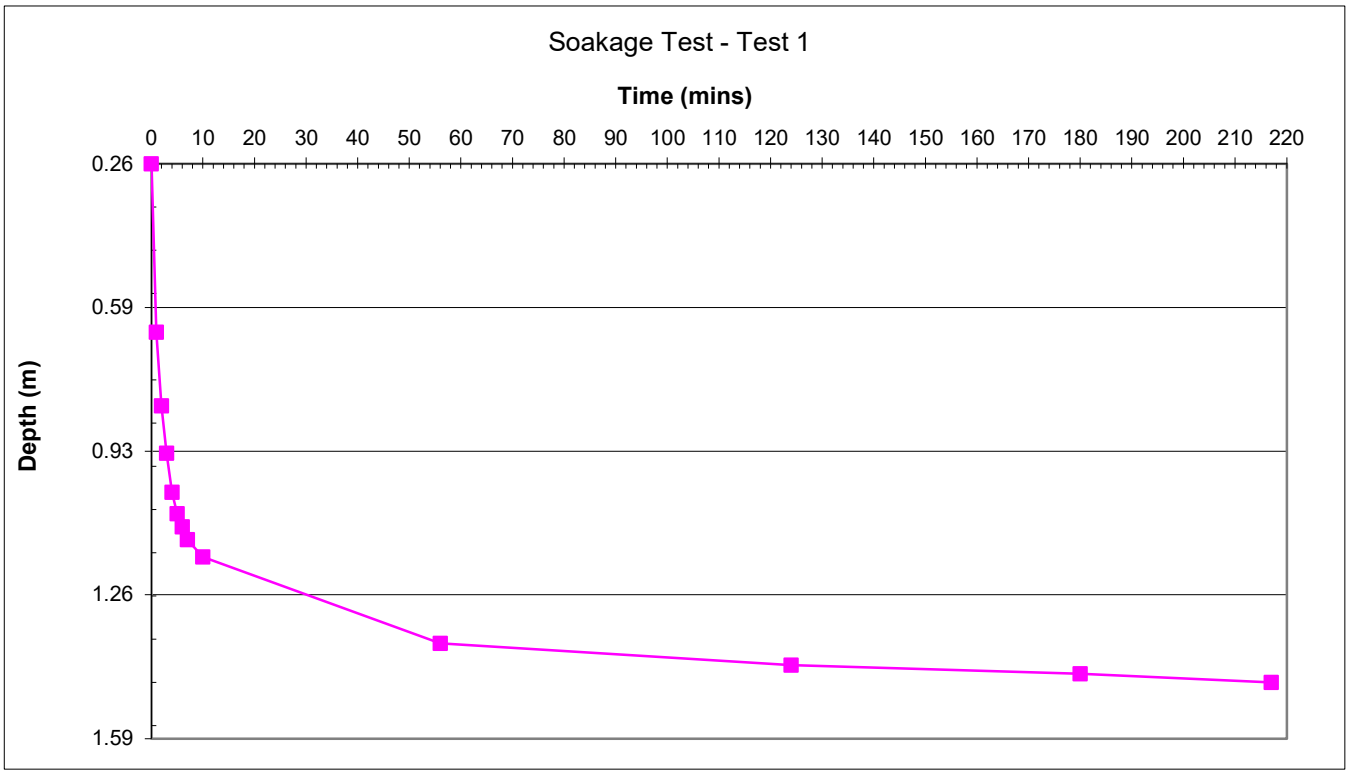
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref. **SA02** **Test 1**
Length **2.00** m
Width **0.45** m
Depth **1.59** m
Ground water level **Slight seepage at base of pit**
Ground conditions **0.00-0.30m Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
0.30-0.40m Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.
0.40-1.59m Weak, cream LIMESTONE.

Time (mins)	Depth to water (m bgl)
0	0.26
1	0.65
2	0.82
3	0.93
4	1.02
5	1.07
6	1.10
7	1.13
10	1.17
56	1.37
124	1.42
180	1.44
217	1.46

Effective storage depth =	1.33	m
75% effective storage depth =	1.00	m
(ie depth below GL) =	0.59	m
25% effective storage depth =	0.33	m
(ie depth below GL) =	1.26	m
effective storage depth 75%-25% =	0.67	m
Time to fall to 75% effective depth =	0.85	mins
Time to fall to 25% effective depth =	32	mins
Void Ratio =	40%	
V (75%-25%) =	0.24	m^3
a (50%) =	4.16	m^2
t (75%-25%) =	31.15	mins
SOIL INFILTRATION RATE =	**3.08E-05**	**m/s**



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Scheme	**Aunt Ems Lane, Caversfield**	**Page No.**	6
Client	**Richborough Estates Ltd**	**Calcs by**	DW
Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

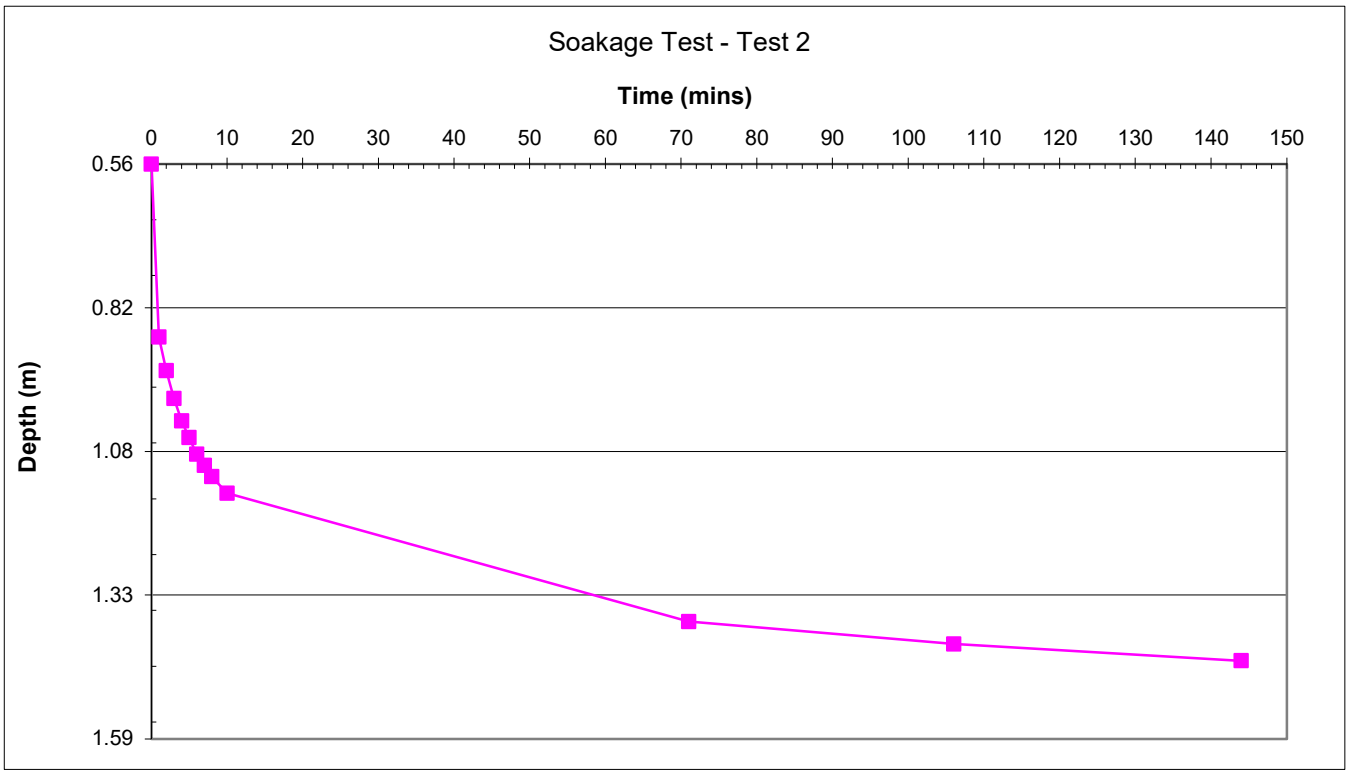
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA02**	**Test 2**
Length	**2.00** m	
Width	**0.45** m	
Depth	**1.59** m	
Ground water level	**Slight seepage at base of pit**	
Ground conditions	**0.00-0.30m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.30-0.40m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.40-1.59m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.56
1	0.87
2	0.93
3	0.98
4	1.02
5	1.05
6	1.08
7	1.10
8	1.12
10	1.15
71	1.38
106	1.42
144	1.45

Effective storage depth =	1.03	m
75% effective storage depth =	0.77	m
(ie depth below GL) =	0.82	m
25% effective storage depth =	0.26	m
(ie depth below GL) =	1.33	m
effective storage depth 75%-25% =	0.52	m
Time to fall to 75% effective depth =	0.85	mins
Time to fall to 25% effective depth =	60	mins
Void Ratio =	40%	
V (75%-25%) =	0.19	m^3
a (50%) =	3.42	m^2
t (75%-25%) =	59.15	mins
SOIL INFILTRATION RATE =	**1.53E-05**	**m/s**



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Scheme	**Aunt Ems Lane, Caversfield**	**Page No.**	7
Client	**Richborough Estates Ltd**	**Calcs by**	DW
Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

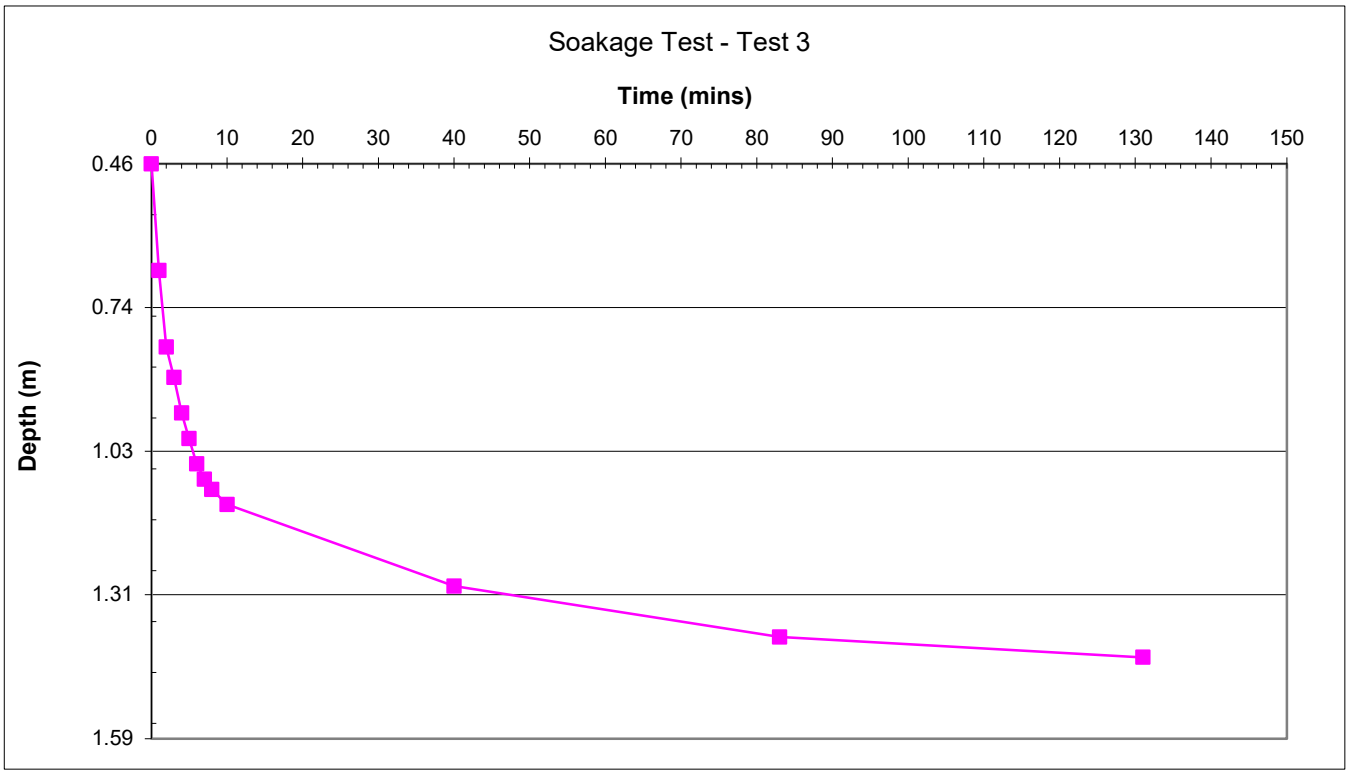
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA02**	**Test 3**
Length	**2.00** m	
Width	**0.45** m	
Depth	**1.59** m	
Ground water level	**Slight seepage at base of pit**	
Ground conditions	**0.00-0.30m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.30-0.40m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.40-1.59m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.46
1	0.67
2	0.82
3	0.88
4	0.95
5	1.00
6	1.05
7	1.08
8	1.10
10	1.13
40	1.29
83	1.39
131	1.43

Effective storage depth =	1.13	m
75% effective storage depth =	0.85	m
(ie depth below GL) =	0.74	m
25% effective storage depth =	0.28	m
(ie depth below GL) =	1.31	m
effective storage depth 75%-25% =	0.57	m
Time to fall to 75% effective depth =	1.5	mins
Time to fall to 25% effective depth =	49	mins
Void Ratio =	40%	
V (75%-25%) =	0.20	m^3
a (50%) =	3.67	m^2
t (75%-25%) =	47.50	mins
SOIL INFILTRATION RATE =	**1.95E-05**	**m/s**



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Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

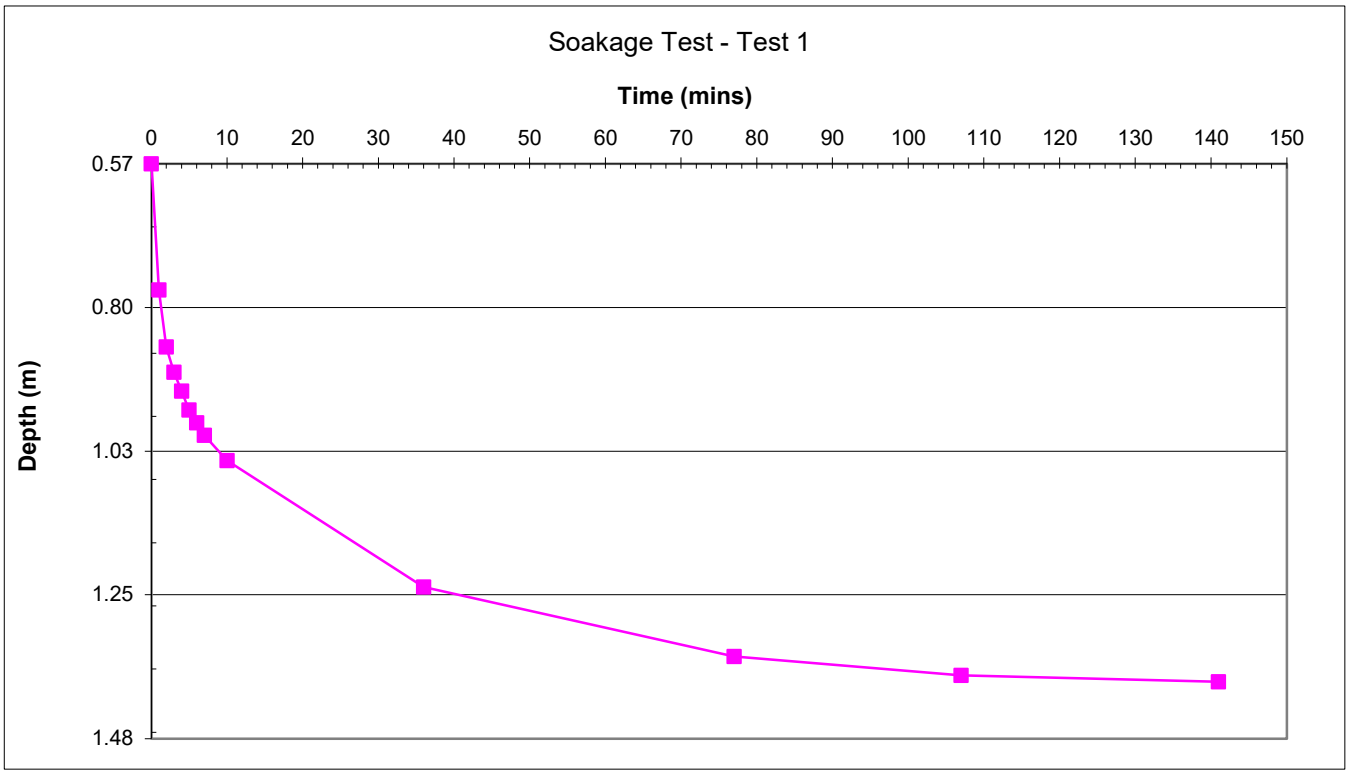
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA03**	**Test 1**
Length	**2.00** m	
Width	**0.60** m	
Depth	**1.48** m	
Ground water level	**Damp at base of pit**	
Ground conditions	**0.00-0.30m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.30-0.45m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.45-1.51m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.57
1	0.77
2	0.86
3	0.90
4	0.93
5	0.96
6	0.98
7	1.00
10	1.04
36	1.24
77	1.35
107	1.38
141	1.39

Effective storage depth =	0.91	m
75% effective storage depth =	0.68	m
(ie depth below GL) =	0.80	m
25% effective storage depth =	0.23	m
(ie depth below GL) =	1.25	m
effective storage depth 75%-25% =	0.46	m
Time to fall to 75% effective depth =	1.3	mins
Time to fall to 25% effective depth =	41	mins
Void Ratio =	40%	
V (75%-25%) =	0.22	m^3
a (50%) =	3.57	m^2
t (75%-25%) =	39.70	mins
SOIL INFILTRATION RATE =	**2.57E-05**	**m/s**



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Scheme	**Aunt Ems Lane, Caversfield**	**Page No.**	9
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Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

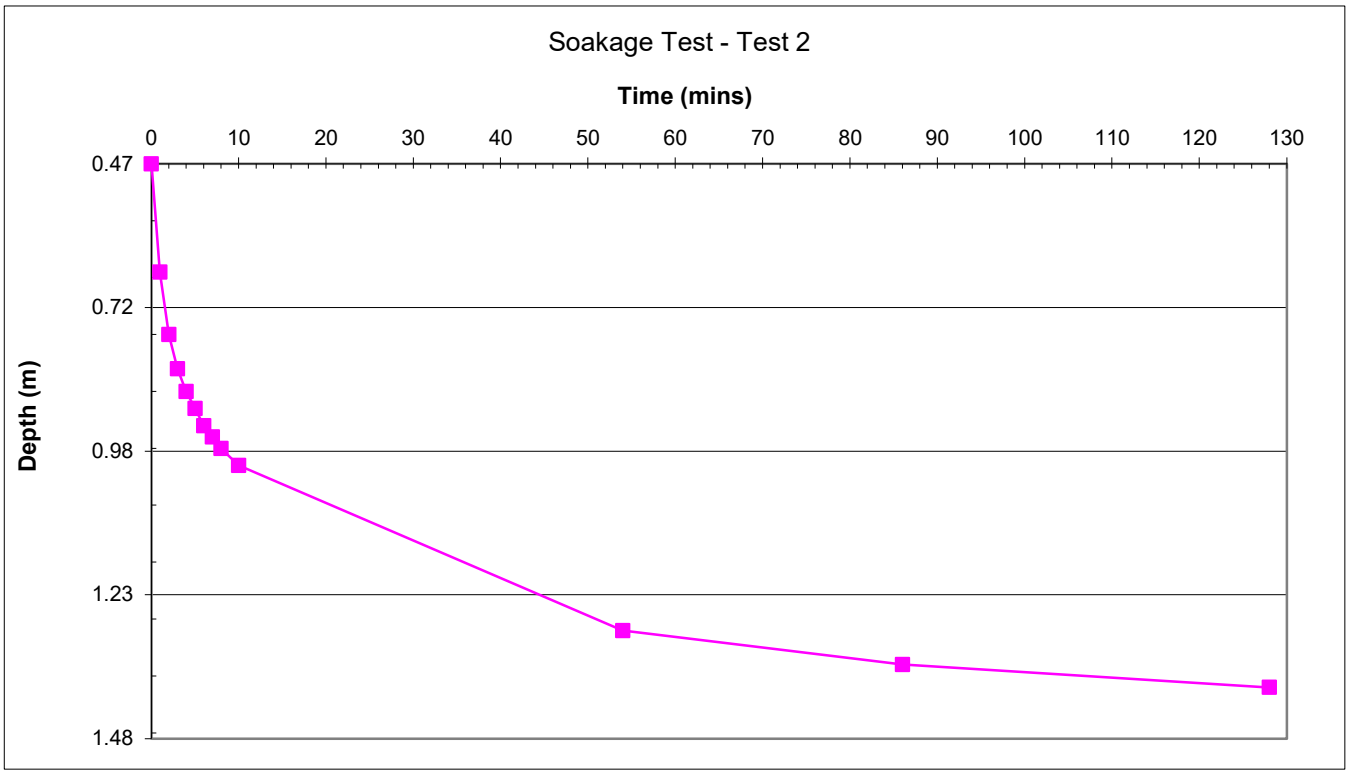
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA03**	**Test 2**
Length	**2.00** m	
Width	**0.60** m	
Depth	**1.48** m	
Ground water level	**Damp at base of pit**	
Ground conditions	**0.00-0.30m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.30-0.45m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.45-1.51m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.47
1	0.66
2	0.77
3	0.83
4	0.87
5	0.90
6	0.93
7	0.95
8	0.97
10	1.00
54	1.29
86	1.35
128	1.39

Effective storage depth =	1.01	m
75% effective storage depth =	0.76	m
(ie depth below GL) =	0.72	m
25% effective storage depth =	0.25	m
(ie depth below GL) =	1.23	m
effective storage depth 75%-25% =	0.51	m
Time to fall to 75% effective depth =	1.6	mins
Time to fall to 25% effective depth =	44	mins
Void Ratio =	40%	
V (75%-25%) =	0.24	m^3
a (50%) =	3.83	m^2
t (75%-25%) =	42.40	mins
SOIL INFILTRATION RATE =	**2.49E-05**	**m/s**



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Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

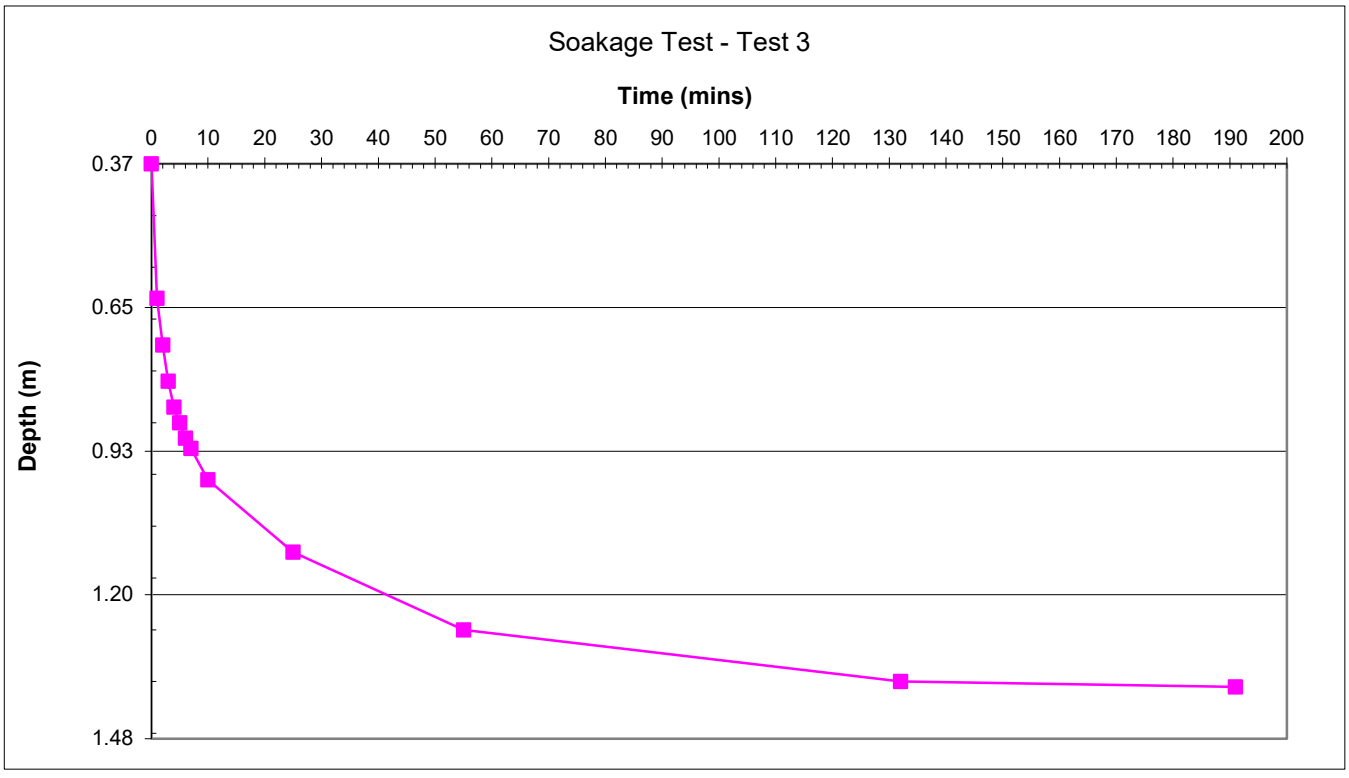
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA03**	**Test 3**
Length	**2.00** m	
Width	**0.60** m	
Depth	**1.48** m	
Ground water level	**Damp at base of pit**	
Ground conditions	**0.00-0.30m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.30-0.45m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.45-1.51m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.37
1	0.63
2	0.72
3	0.79
4	0.84
5	0.87
6	0.90
7	0.92
10	0.98
25	1.12
55	1.27
132	1.37
191	1.38

Effective storage depth =	1.11	m
75% effective storage depth =	0.83	m
(ie depth below GL) =	0.65	m
25% effective storage depth =	0.28	m
(ie depth below GL) =	1.20	m
effective storage depth 75%-25% =	0.56	m
Time to fall to 75% effective depth =	1.2	mins
Time to fall to 25% effective depth =	42	mins
Void Ratio =	40%	
V (75%-25%) =	0.27	m^3
a (50%) =	4.09	m^2
t (75%-25%) =	40.80	mins
SOIL INFILTRATION RATE =	**2.66E-05**	**m/s**



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Client	**Richborough Estates Ltd**	**Calcs by**	DW
Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

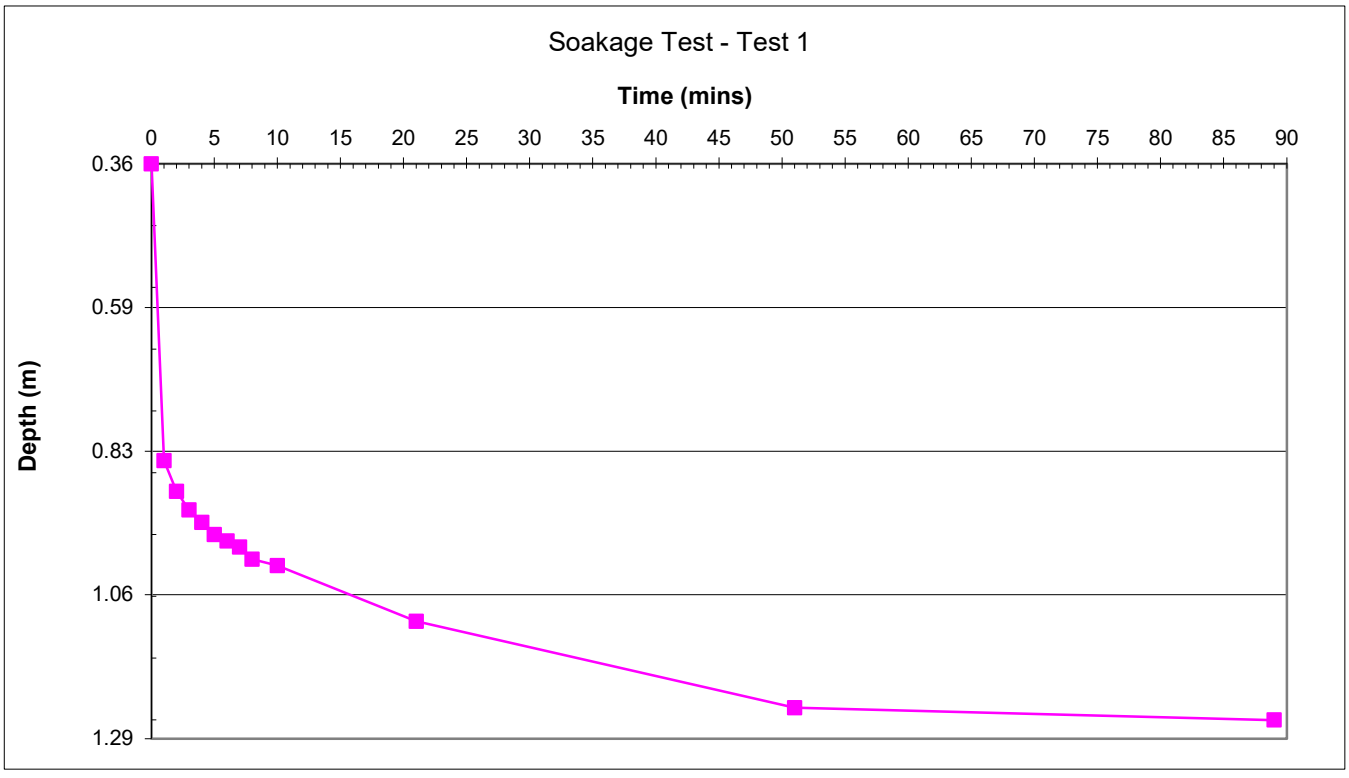
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA04**	**Test 1**
Length	**2.00** m	
Width	**0.60** m	
Depth	**1.29** m	
Ground water level	**Damp at base of pit**	
Ground conditions	**0.00-0.25m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.25-0.40m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.40-1.29m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.36
1	0.84
2	0.89
3	0.92
4	0.94
5	0.96
6	0.97
7	0.98
8	1.00
10	1.01
21	1.10
51	1.24
89	1.26

Effective storage depth =	0.93	m
75% effective storage depth =	0.70	m
(ie depth below GL) =	0.59	m
25% effective storage depth =	0.23	m
(ie depth below GL) =	1.06	m
effective storage depth 75%-25% =	0.47	m
Time to fall to 75% effective depth =	0.5	mins
Time to fall to 25% effective depth =	16	mins
Void Ratio =	40%	
V (75%-25%) =	0.22	m^3
a (50%) =	3.62	m^2
t (75%-25%) =	15.50	mins
SOIL INFILTRATION RATE =	**6.63E-05**	**m/s**



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Client	**Richborough Estates Ltd**	**Calcs by**	DW
Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

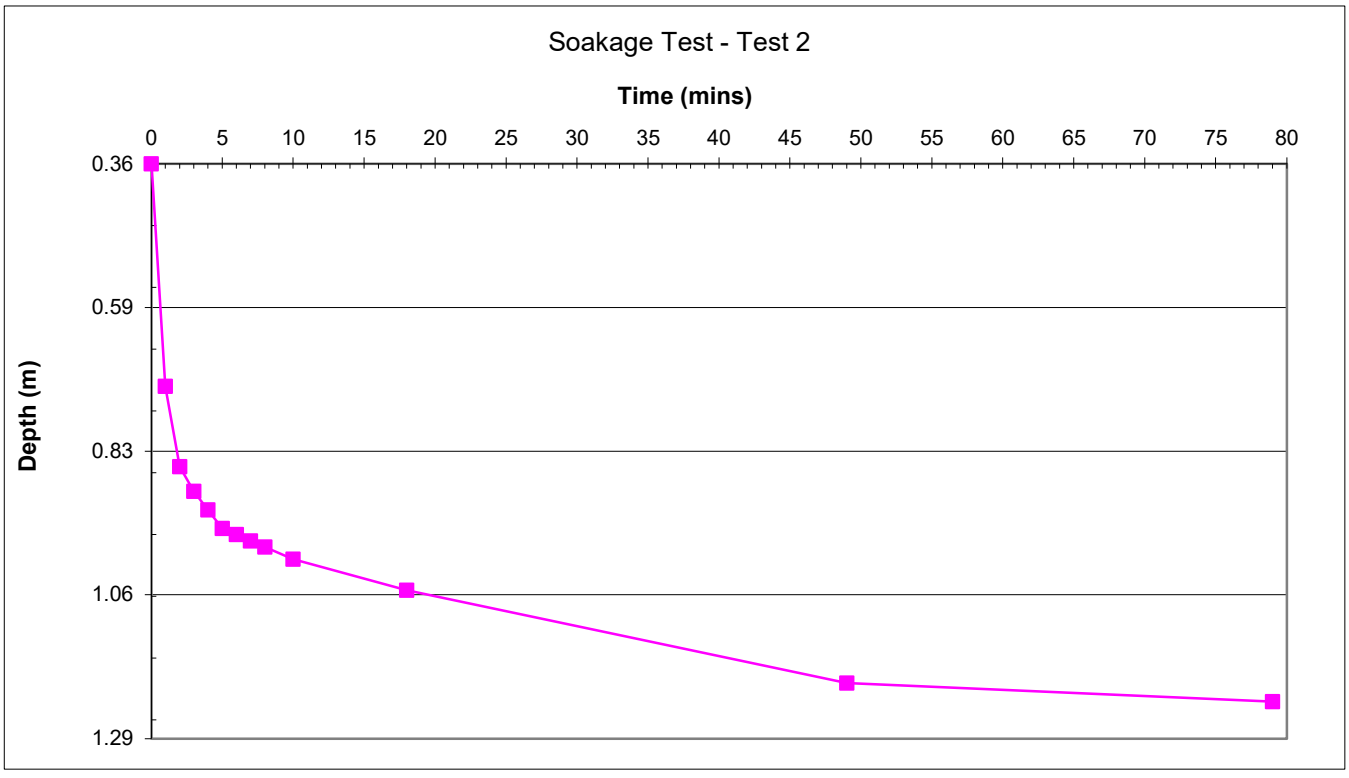
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA04**	**Test 2**
Length	**2.00** m	
Width	**0.60** m	
Depth	**1.29** m	
Ground water level	**Damp at base of pit**	
Ground conditions	**0.00-0.25m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.25-0.40m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.40-1.29m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.36
1	0.72
2	0.85
3	0.89
4	0.92
5	0.95
6	0.96
7	0.97
8	0.98
10	1.00
18	1.05
49	1.20
79	1.23

Effective storage depth =	0.93	m
75% effective storage depth =	0.70	m
(ie depth below GL) =	0.59	m
25% effective storage depth =	0.23	m
(ie depth below GL) =	1.06	m
effective storage depth 75%-25% =	0.47	m
Time to fall to 75% effective depth =	0.65	mins
Time to fall to 25% effective depth =	20	mins
Void Ratio =	40%	
V (75%-25%) =	0.22	m^3
a (50%) =	3.62	m^2
t (75%-25%) =	19.35	mins
SOIL INFILTRATION RATE =	**5.31E-05**	**m/s**



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		Date	02/08/23

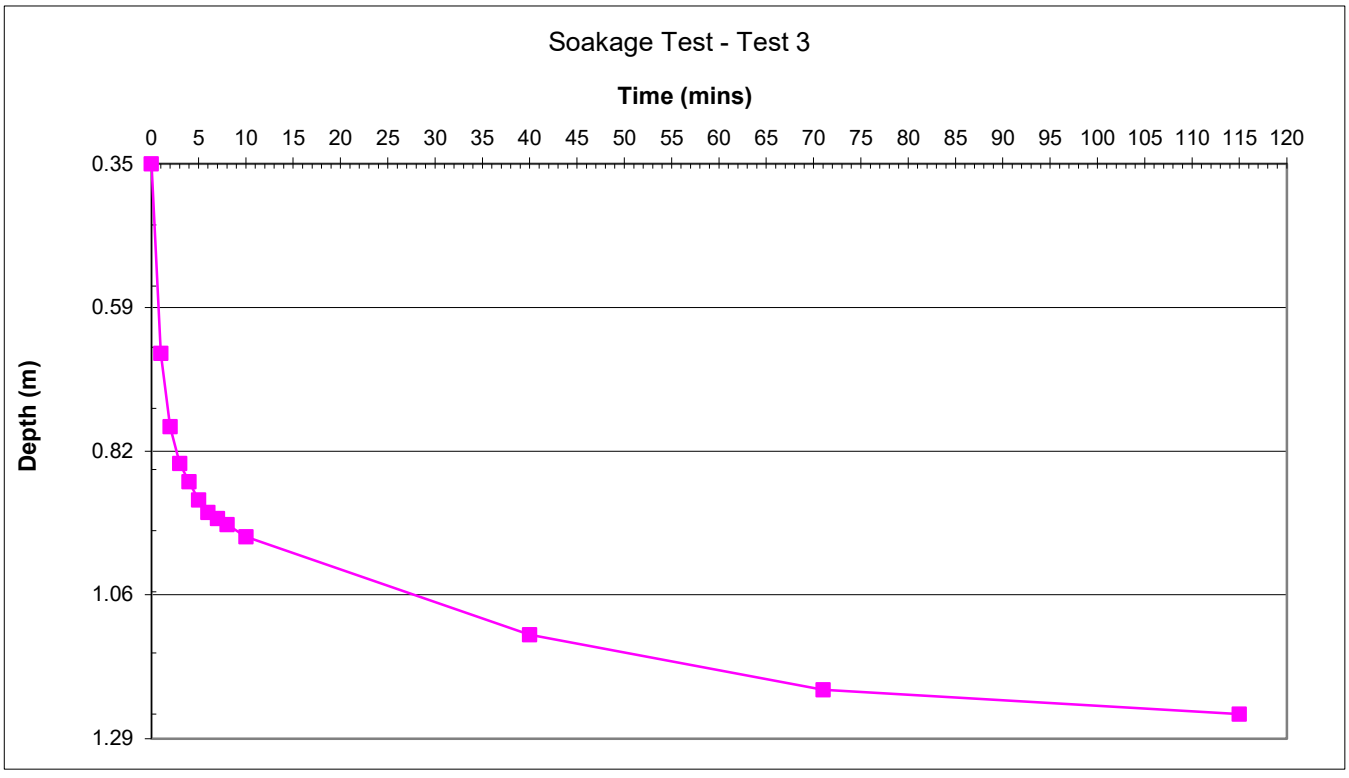
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA04**	**Test 3**
Length	**2.00** m	
Width	**0.60** m	
Depth	**1.29** m	
Ground water level	**Damp at base of pit**	
Ground conditions	**0.00-0.25m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.25-0.40m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.40-1.29m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.35
1	0.66
2	0.78
3	0.84
4	0.87
5	0.90
6	0.92
7	0.93
8	0.94
10	0.96
40	1.12
71	1.21
115	1.25

Effective storage depth =	0.94	m
75% effective storage depth =	0.71	m
(ie depth below GL) =	0.59	m
25% effective storage depth =	0.24	m
(ie depth below GL) =	1.06	m
effective storage depth 75%-25% =	0.47	m
Time to fall to 75% effective depth =	0.8	mins
Time to fall to 25% effective depth =	28	mins
Void Ratio =	40%	
V (75%-25%) =	0.23	m^3
a (50%) =	3.64	m^2
t (75%-25%) =	27.20	mins
SOIL INFILTRATION RATE =	**3.79E-05**	**m/s**



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Scheme	**Aunt Ems Lane, Caversfield**	**Page No.**	14
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Job ref.	**27877**	**Checked By**	DT
		Date	02/08/23

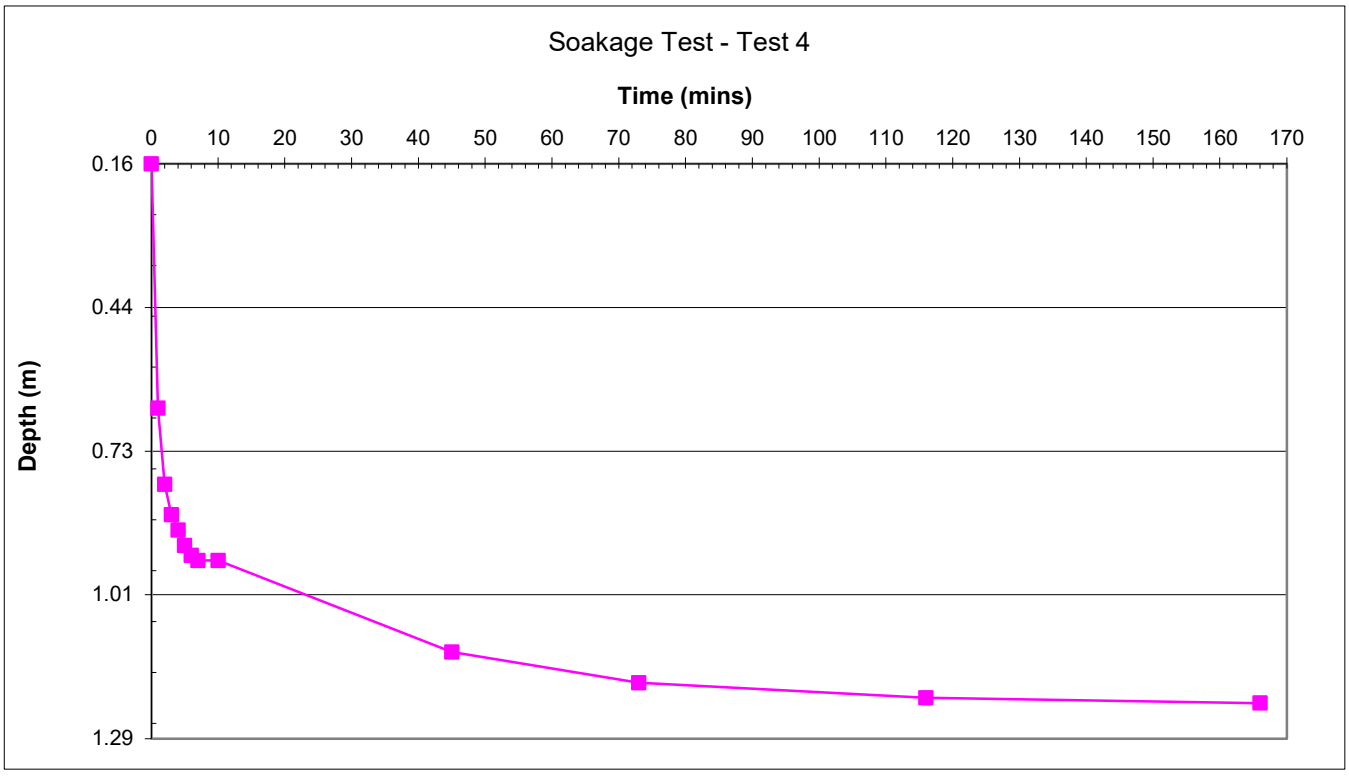
Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	**SA04**	**Test 4**
Length	**2.00** m	
Width	**0.60** m	
Depth	**1.29** m	
Ground water level	**Damp at base of pit**	
Ground conditions	**0.00-0.25m**	**Grass over brown, silty, sandy clay TOPSOIL with rare angular, fine to coarse limestone.**
	0.25-0.40m	**Brown, clayey, silty GRAVEL of angular, fine to coarse limestone.**
	0.40-1.29m	**Weak, cream LIMESTONE.**

Time (mins)	Depth to water (m bgl)
0	0.16
1	0.64
2	0.79
3	0.85
4	0.88
5	0.91
6	0.93
7	0.94
10	0.94
45	1.12
73	1.18
116	1.21
166	1.22

Effective storage depth =	1.13	m
75% effective storage depth =	0.85	m
(ie depth below GL) =	0.44	m
25% effective storage depth =	0.28	m
(ie depth below GL) =	1.01	m
effective storage depth 75%-25% =	0.57	m
Time to fall to 75% effective depth =	0.6	mins
Time to fall to 25% effective depth =	24	mins
Void Ratio =	40%	
V (75%-25%) =	0.27	m^3
a (50%) =	4.14	m^2
t (75%-25%) =	23.40	mins
SOIL INFILTRATION RATE =	**4.67E-05**	**m/s**



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APPENDICES

APPENDIX F

Mrs Emma Harris

Mewies Engineering Consultants Ltd
The Old Chapel
Station Road
Hugglescote
LE67 2GB

Wastewater pre-planning
Our ref DS6107844

05 September 2023

Pre-planning enquiry: Confirmation of sufficient capacity

Site Address: Aunt Ems Lane, Caversfield OX27 8TH

Dear Emma,

Thank you for providing information on your development.

Proposed site: Proposed General Housing (110), Total of 2 phases, Phase 1 (50), Phase 2 (51). Proposed Foul water discharge by gravity into FWMH5901. Proposed Surface Water discharge into a SWMH5903 at 2l/s.

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

The disposal hierarchy being:

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

Where connection to the public sewerage network is required to manage surface water flows we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and proven to be impracticable and if the flows are restricted to a total of 2 l/s then Thames Water would not have any objections to the proposal.

Please see the attached 'Planning your wastewater' leaflet for additional information.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you've any further questions, please contact me on number below.

Yours sincerely

Natalya Bacon
Developer Services – Adoptions Engineer
Helpdesk: 0800 009 3921
Clearwater Court, Vastern Road, Reading, RG1 8DB
Find us online at developers.thameswater.co.uk
Get advice on making your sewer connection correctly at connectright.org.uk

Residential
The Law Society's CON29DW
Drainage & Water Enquiry

Thames Water Property Searches

Index Property Information
PO Box 6715
Kenilworth
CV8 9FA

Search address supplied	South Lodge, Caversfield, Bicester, OX27 8TH
Your reference	JIM/CAR/RIC181/5
Our reference	DWS/DWS Standard/2021_4516062
Received date	4 October 2021
Search date	5 October 2021

Keeping you up-to-date

Why the CON29DW?

Mitigating risk - There are potential risks for homebuyers and they need qualified drainage and water information to make an informed purchasing decision.

Expert knowledge - Specialist teams, with years of experience working directly with drainage and water data, check and review each report.

Complete and consistent - Comprising 25 standard questions answered in full, from sewerage and water asset information to sewer flooding history and connection information, fully endorsed by The Law Society.

Peace of mind - Terms & Conditions are there to support you and your client and CON29DW reports are put together using the most up to date information available.

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

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

0800 009 4540

CON29DW RESIDENTIAL DRAINAGE & WATER SEARCH
DRAINAGE + WATER SEARCHES NETWORK DWSN
The Property Ombudsman

Residential

The Law Society's CON29DW
Drainage & Water Enquiry

Thames Water Property Searches

Question		Summary Answer
Maps		
1.1	Where relevant, please include a copy of an extract from the public sewer map.	Map Provided
1.2	Where relevant, please include a copy of an extract from the map of waterworks.	Map Provided
Drainage		
2.1	Does foul water from the property drain to a public sewer?	Not Connected
2.2	Does surface water from the property drain to a public sewer?	Not Connected
2.3	Is a surface water drainage charge payable?	No Charge
2.4	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	No
2.4.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?	No
2.5	Does the public sewer map indicate any public sewer within 30.48 metres(100 feet) of any buildings within the property?	No
2.5.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the 50metres of any buildings within the property?	No
2.6	Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
2.7	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	No
2.8	Is the building which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?	Not At Risk
2.9	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	2.048 Kilometres
Water		
3.1	Is the property connected to mains water supply?	Connected
3.2	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	No
3.3	Is any water main or service pipe serving or which is proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
3.4	Is the property at risk of receiving low water pressure or flow?	No
3.5	What is the classification of the water supply for the property?	Hard
3.6	Please include details of the location of any water meter serving the property.	See Details
Charging		
4.1.1	Who are the sewerage undertakers for the area?	Thames Water
4.1.2	Who are the water undertakers for the area?	Thames Water
4.2	Who bills the property for sewerage services?	Not Billed
4.3	Who bills the property for water services?	Thames Water
4.4	What is the current basis for charging for sewerage and/or water services at the property?	Metered
4.5	Will the basis for charging for sewerage and water services at the property change as a consequence of a change of occupation?	No

Search address supplied: South Lodge, Caversfield, Bicester, OX27 8TH

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

The following records were searched in compiling this report: - the Map of Public Sewers, the Map of Waterworks, Water and Sewer billing records, Adoption of Public Sewer records, Building Over Public Sewer records, the Register of Properties subject to Internal Foul Flooding, the Register of Properties subject to Poor Water Pressure and the Drinking Water Register. Thames Water Utilities Ltd (TWUL), Clearwater Court, Vastern Road, Reading RG1 8DB, holds all of these.

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

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

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

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

(iv) compensation payments

Interpretation of CON29DW Drainage and Water Search

Appendix 1 contains definitions of terms and expressions used in this report.

For your guidance:

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

As a minimum standard Thames Water Property Searches will:

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

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

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

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

Maps

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

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

For your guidance:

- The Water Industry Act 1991 defines Public Sewers as those which Thames Water have responsibility for. Other assets and rivers, watercourses, ponds, culverts or highway drains may be shown for information purposes only.
- The company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.
- Assets other than public sewers may be shown on the copy extract, for information.

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

A copy of an extract of the map of waterworks is included, showing water mains, resource mains or discharge pipes in the vicinity of the property.

For your guidance:

- The "water mains" in this context are those, which are vested in and maintainable by the water company under statute.
- Assets other than public water mains may be shown on the plan, for information only.
- Water companies are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Drainage

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

Records indicate that foul water from the property does not drain to a public sewer.

For your guidance:

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

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

Records indicate that surface water from the property does not drain to a public sewer. If the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Developer.

For your guidance:

- Sewerage Undertakers are not responsible for any private drains that connect the property to the public sewerage system, and do not hold details of these.
- The property owner will normally have sole responsibility for private drains serving the property. These private drains may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- In some cases, 'Sewerage Undertakers' records do not distinguish between foul and surface water connections to the public sewerage system.
- At the time of privatisation in 1989, Sewerage Undertakers were sold with poorly-kept records of sewerage infrastructure. The records did not always show which properties were connected for surface water drainage purposes. Accordingly, billing records have been used to provide an answer for this element of the drainage and water search.
- Due to the potential inadequacy of 'Sewerage Undertakers' infrastructure records with respect to surface water drainage, it is the customer's responsibility to inform the Sewerage Undertaker that they do not receive the surface water drainage service. If on inspection, the buyer finds that surface water from the property does not drain to a public sewer, then the property may be eligible for a rebate of the surface water drainage charge. For further information, please contact Thames Water on Tel: 0800 316 9800, or refer to the website at www.thameswater.co.uk.
- If surface water from the property does not drain to the public sewerage system, the property may have private facilities in the form of a soakaway or private connection to a watercourse.
- An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

2.3 – Is a surface water drainage charge payable?

Records indicate that a surface water charge is not applicable at this property. If the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Developer.

For your guidance:

- If surface water from the property drains to a public sewer, then a surface water drainage charge is payable.
- Where a surface water drainage charge is currently included in the property's water and sewerage bill but, on inspection, the buyer finds that surface water from the property does not drain to a public sewer, then the property may be eligible for a rebate of the surface water drainage charge. For further information, please contact Thames Water on Tel: 0800 316 9800 or refer to the website www.thameswater.co.uk.

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

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

For your guidance:

- Thames Water has a statutory right of access to carry out work on its assets. Employees of Thames Water or its contractors may, therefore, need to enter the property to carry out work.
- Please note if the property was constructed after 1st July 2011 any sewers and/or lateral drain within the boundary of the property are the responsibility of the householder.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public sewer running within the boundary of the property may restrict further development. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

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

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

For your guidance:

- Private pumping stations installed before 1 July 2011 will be transferred into the ownership of the sewerage undertaker.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public Pumping station running within the boundary of the property may restrict further development. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

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

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

For your guidance:

- The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

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

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

For your guidance:

- Private pumping stations installed before 1 July 2011 will be transferred into the ownership of the sewerage undertaker.
- The presence of a public pumping station within 50 metres of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

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

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

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

For your guidance:

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

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

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

For your guidance:

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

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

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

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

For your guidance:

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

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

The nearest sewage treatment works is BAINTON ROAD (BUCKNELL) STW (PRIVATE) which is 2.048 kilometres to the west of the property.

For your guidance:

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

Water

3.1 – Is the property connected to mains water supply?

Records indicate that the property is connected to mains water supply.

For your guidance:

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

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

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

For your guidance:

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

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

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

For your guidance:

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

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

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

For your guidance:

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

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

The water supplied to the property has an average water hardness of 100.3mg/l calcium which is defined as HARD by ThamesWater.

For your guidance:

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

Thames Water Hardness Category	Calcium (mg/l)	Calcium Carbonate (mg/l)	English Clarke degrees	French degrees	General/ German degrees
Soft	0 to 40	0 to 100	0 to 7	0 to 10	0 to 5.6
Medium	41 to 80	101 to 200	8 to 14	11 to 20	5.7 to 11.2
Hard	Over 80	Over 200	Over 14	Over 20	over 11.2

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

Records indicate that the property is served by a water meter, which is not located within the dwelling-house which is or forms part of the property.

For your guidance:

- Where a meter does not serve the property and the customer wishes to consider this method of charging, they should contact the water undertakers mentioned in Question 4.1.2.

Charging

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

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

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

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

4.2 – Who bills the property for sewerage services?

The property is not billed for sewerage services.

4.3 – Who bills the property for water services?

The property is billed for water services by:

Thames Water Utilities Limited
Clearwater Court
Vastern Road
Reading
Berkshire
RG1 8DB

Tel: 0800 9808 800
Website: www.thameswater.co.uk.

4.4 – What is the current basis for charging for sewerage and/or water services at the property?

The property is charged based on actual volumes of water measured through a water meter ("metered supply").

For your guidance:

- Water and sewerage companies' full charges are set out in their charges schemes which are available from the company free of charge upon request.
- The Water Industry Act 1991 Section 150, The Water Resale Order 2001 provides protection for people who buy their water or sewerage services from a person or company instead of directly from a water or sewerage company. Details are available from the Office of Water Services (OFWAT) website is www.ofwat.gov.uk.
- Where charges are given these are based on the data available at the time of the report.
- The Company may install a meter at the premises where a buyer makes a change of use of the property or where the buyer uses water for:
    - Watering the garden other than by hand (this includes the use of sprinklers).
    - Automatically replenishing a pond or swimming pool with a capacity greater than 10,000 litres.
    - A bath with a capacity in excess of 230 litres.
    - A reverse osmosis unit.

4.5 – Will the basis for charging for sewerage and water services at the property change as a consequence of a change of occupation?

There will be no change in the current charging arrangements as a consequence of a change of occupation.

For your guidance:

- Water and sewerage companies' full charges are set out in their charges schemes which are available from the company free of charge upon request.
- The Water Industry Act 1991 Section 150, The Water Resale Order 2001 provides protection for people who buy their water or sewerage services from a person or company instead of directly from a water or sewerage company. Details are available from the Office of Water Services (OFWAT) website is www.ofwat.gov.uk.
- It is policy to meter all new water connections. This would result in charges being levied according to the measured tariff.
- The Company may install a meter at the premises where a buyer makes a change of use of the property or where the buyer uses water for:
    - Watering the garden other than by hand (this includes the use of sprinklers).
    - Automatically replenishing a pond or swimming pool with a capacity greater than 10,000 litres.
    - A bath with a capacity in excess of 230 litres.
    - A reverse osmosis unit.

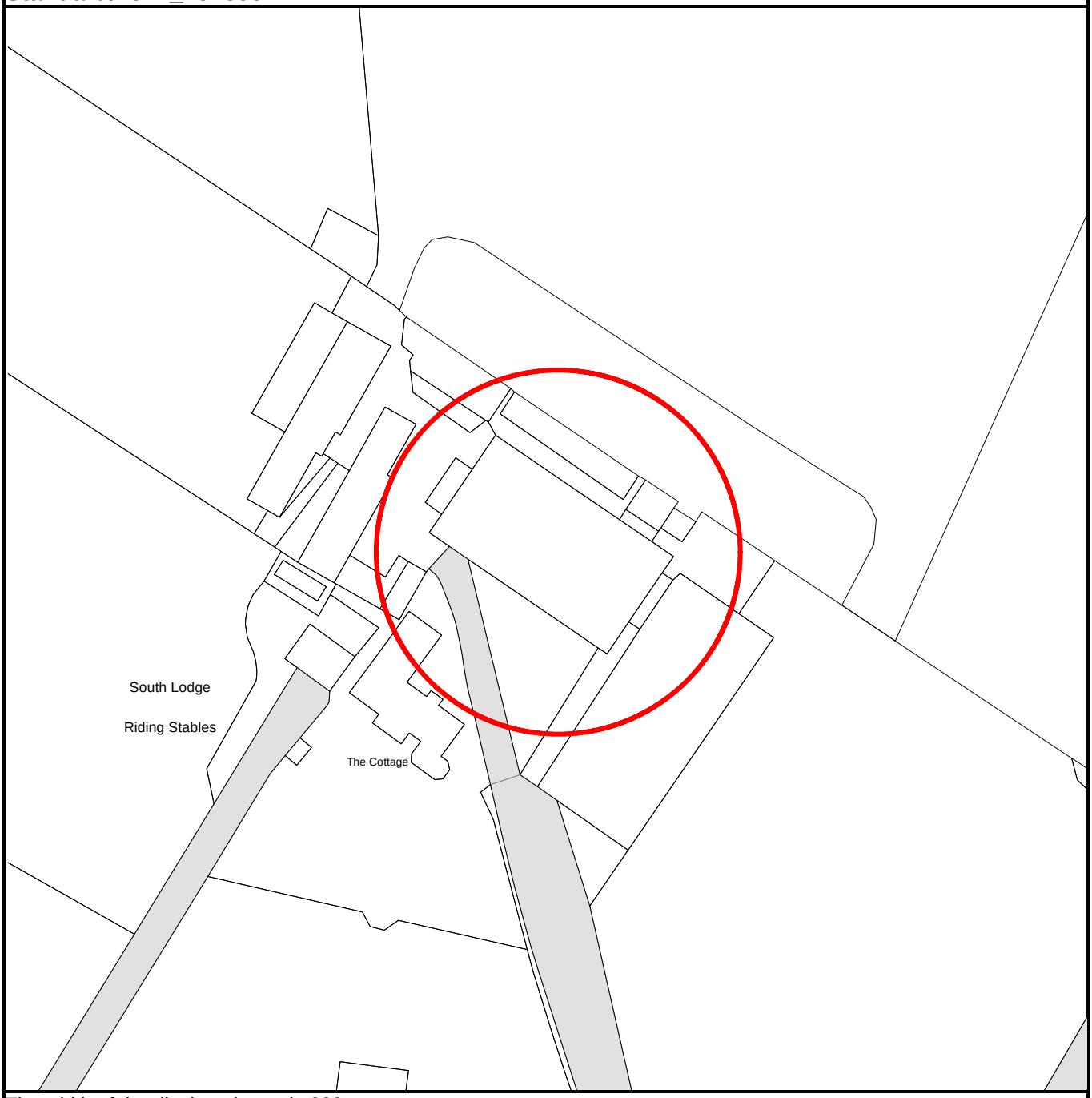
Payment for this Search

A charge will be added to your suppliers account.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information.

All prices are in accordance with the standard terms of Property Searches; discounts are available, please contact us on 0800 009 4540 to obtain further details.

Residential CON29DW Drainage & Water Search Sewer Map-DWS/DWS Standard/2021_4516062

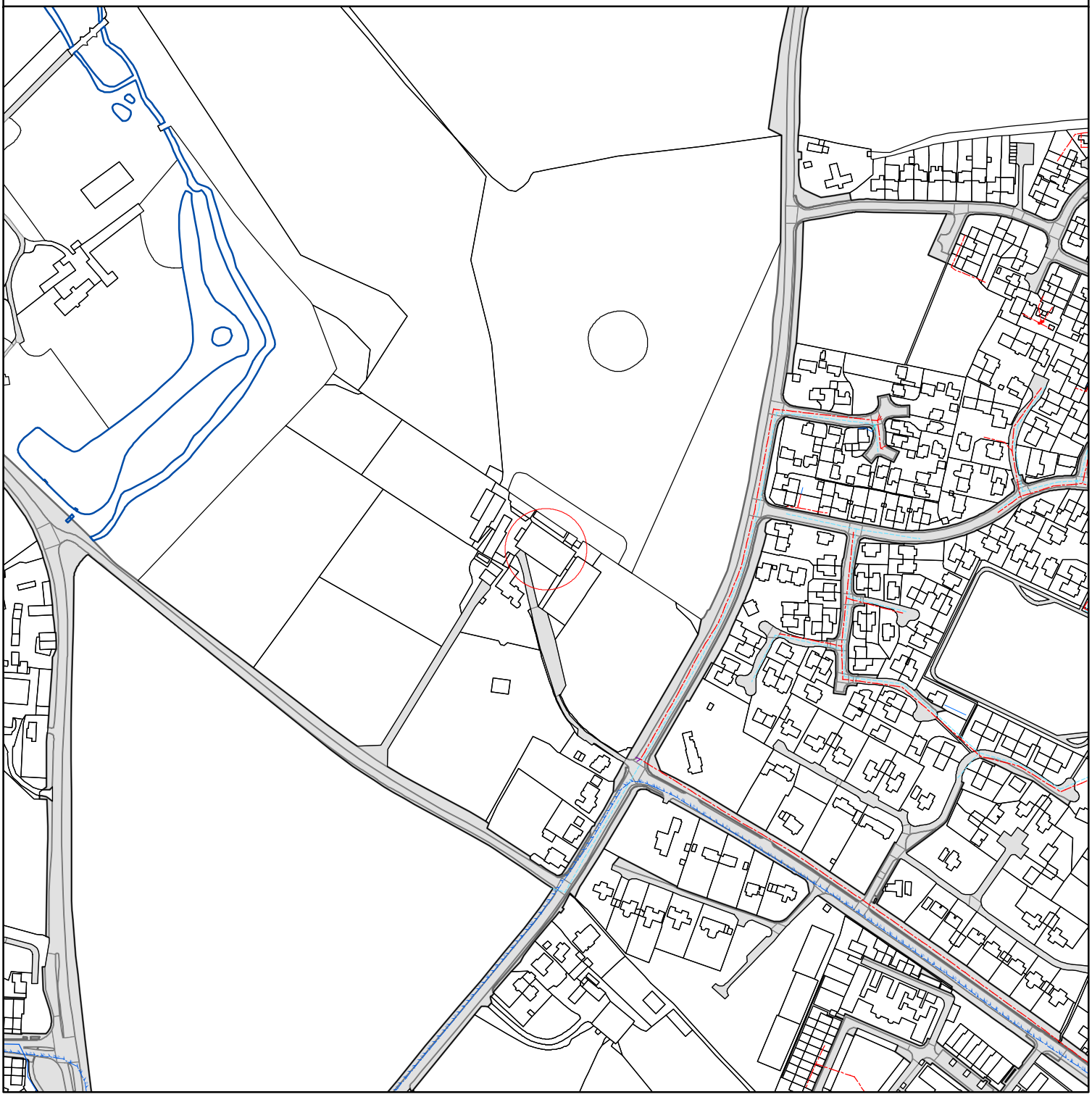


The width of the displayed area is 200m

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 with the sanction of the Controller of H.M Stationary Office License Number 10019345

DWS/DWS Standard/2021_4516062



0 25 50 100 150 200 Meters

Scale:	1:4038
Width:	800m
Printed By:	Rveldhur
Print Date:	05/10/2021
Map Centre:	458471,225078
Grid Reference:	SP5825SW

Comments:

Residential Drainage & Water Search Sewer Key

Public Sewer Pipes (Operated & 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, watercourses or a treatment works.

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).

Biosolids: 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. Line style / colour and direction of fleck indicate sewer purpose and direction of flow within the pipe.

Vacuum: A foul sewer designed to remove foul sewerage under pressure (vacuum sewers cannot accept direct new connections).

Proposed Foul Sewer

Proposed Surface Water Sewer

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

Foul Sewer: Any foul sewer that is not owned by Thames Water.

Surface Water Sewer: Any surface water sewer that is not owned by Thames Water.

Combined Sewer: Any combined 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.

Abandoned Sewer: A disused sewer. Usually filled with cement mixture or removed from the ground.

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.

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.

2) All measurements on the plans are metric.

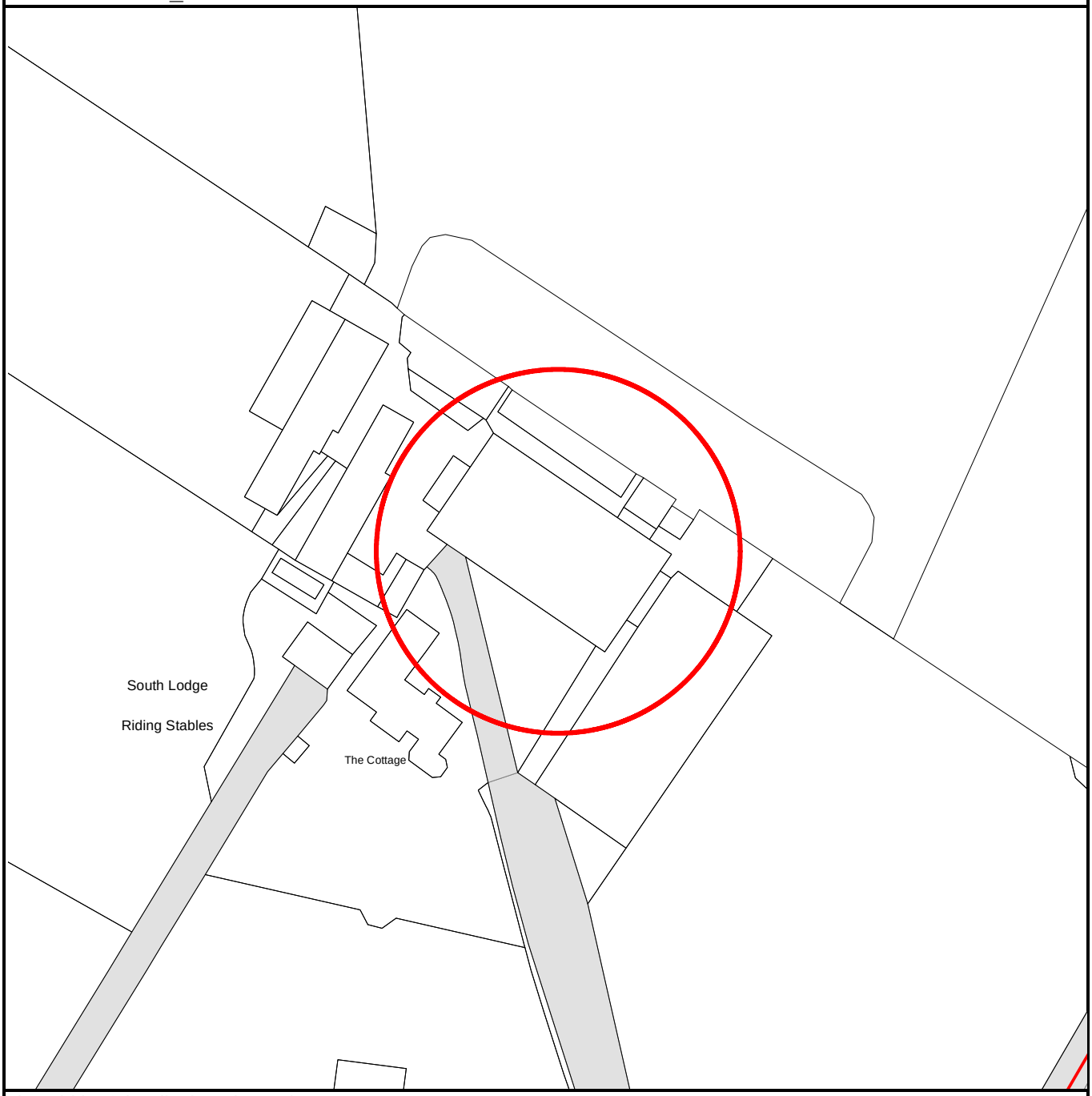
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.

4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

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

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. 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 present on the plan, please contact a member of Property Searches on 0800 009 4540.

Residential CON29DW Drainage & Water Search Water Map-DWS/DWS Standard/2021_4516062

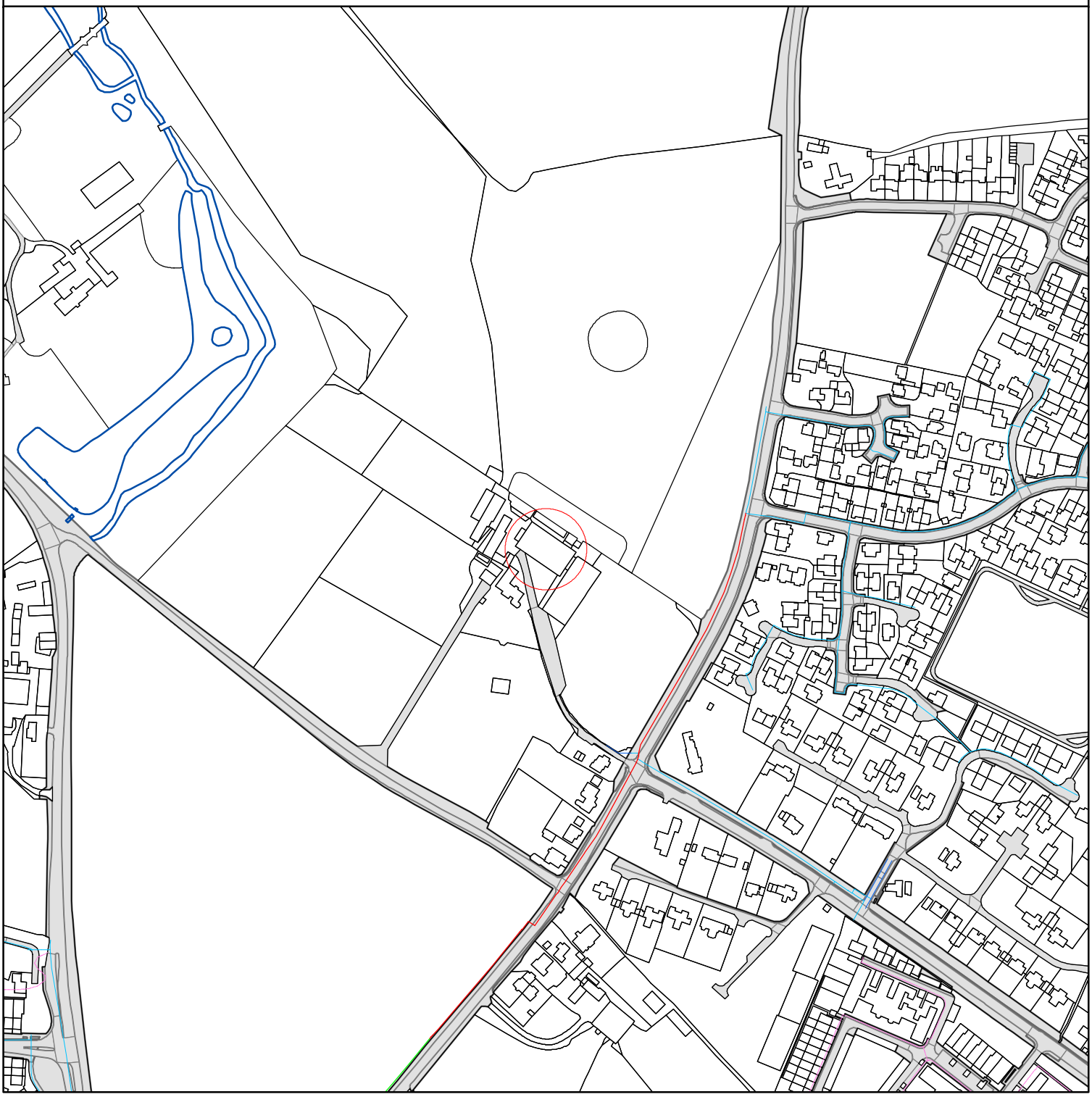


The width of the displayed area is 200m

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 with the sanction of the Controller of H.M Stationary Office License Number 10019345

DWS/DWS Standard/2021_4516062



0 25 50 100 150 200 Meters

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:	1:4038
Width:	800m
Printed By:	Rveldhur
Print Date:	05/10/2021
Map Centre:	458471,225078
Grid Reference:	SP5825SW

Comments:

Residential Drainage & Water Search Water Key

Public Water Pipes (Operated & Maintained by Thames Water)

4" — **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16" — **Trunk Main:** A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY — **Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE — **Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED — **Metered Pipe:** A metered pipe indicates that the pipe in question supplies water for a single property or group of properties and that the quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

Depth of Water Pipes (Normal Cover)

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Pipe fittings and controls (Operated & Maintained by Thames Water)

Hydrant: A point on a water main which is used by the fire services or operational purposes by Thames Water.

Meter: Used to measure water flowing through a water main for domes metering or operational purposes by Thames Water.

General Purpose Valve: Valves allowing control of water flow or pressure witl the system.

Air Valve: A valve which allows the release of trapped air within a water pipe.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Private Main: Indicates that the water main in question is not owned by Tham Water. These mains normally have text associated with them indicating t diameter and ownership of the pipe.

Other Water Company or Unknown Main: Occasionally other water compa water pipes may overlap the border of our clean water coverage area. The mains are denoted in purple and in most cases have the owner of the pi displayed along them.

Note:
Most private pipe work and assets i.e. stopcocks, are not shown on our plans (in t past this information had not been recorded).

Appendix 1 - terms and expressions in this report

"the 1991 Act" means the Water Industry Act 1991**(1)**;

"the 2000 Regulations" means the Water Supply (Water Quality) Regulations 2000**(2)**;

"the 2001 Regulations" means the Water Supply (Water Quality) Regulations 2001**(3)**;

"adoption agreement" means an agreement made or to be made under section 51A(1) or 104(1) of the 1991 Act**(4)**;

"bond" means a surety granted by a developer who is a party to an adoption agreement;

"bond waiver" means an agreement with a developer for the provision of a form of financial security as a substitute for a bond;

"calendar year" means the twelve months ending with 31st December;

"discharge pipe" means a pipe from which discharges are made or are to be made under section 165(1) of the 1991 Act;

"disposal main" means (subject to section 219(2) of the 1991 Act) any outfall pipe or other pipe which—

(a) is a pipe for the conveyance of effluent to or from any sewage disposal works, whether of a sewerage undertaker or of any other person; and

(b) is not a public sewer;

"drain" means (subject to section 219(2) of the 1991 Act) a drain used for the drainage of one building or of any buildings or yards appurtenant to buildings within the same curtilage;

"effluent" means any liquid, including particles of matter and other substances in suspension in the liquid;

"financial year" means the twelve months ending with 31st March;

"lateral drain" means—

(a) that part of a drain which runs from the curtilage of a building (or buildings or yards within the same curtilage) to the sewer with which the drain communicates or is to communicate; or

(b) (if different and the context so requires) the part of a drain identified in a declaration of vesting made under section 102 of the 1991 Act or in an agreement made under section 104 of that Act**(5)**;

"licensed water supplier" means a company which is the holder for the time being of a water supply licence under section 17A(1) of the 1991 Act**(6)**;

"maintenance period" means the period so specified in an adoption agreement as a period of time—

(a) from the date of issue of a certificate by a sewerage undertaker to the effect that a developer has built (or substantially built) a private sewer or lateral drain to that undertaker's satisfaction; and

(b) until the date that private sewer or lateral drain is vested in the sewerage undertaker;

"map of waterworks" means the map made available under section 198(3) of the 1991 Act**(7)** in relation to the information specified in subsection (1A);

"private sewer" means a pipe or pipes which drain foul or surface water, or both, from premises, and are not vested in a sewerage undertaker;

"public sewer" means, subject to section 106(1A) of the 1991 Act**(8)**, a sewer for the time being vested in a sewerage undertaker in its capacity as such, whether vested in that undertaker—

(a) by virtue of a scheme under Schedule 2 to the Water Act 1989**(9)**;

(b) by virtue of a scheme under Schedule 2 to the 1991 Act**(10)**;

(c) under section 179 of the 1991 Act**(11)**; or

(d) otherwise;

“public sewer map” means the map made available under section 199(5) of the 1991 Act**(12)**;

“resource main” means (subject to section 219(2) of the 1991 Act) any pipe, not being a trunk main, which is or is to be used for the purpose of—

(a) conveying water from one source of supply to another, from a source of supply to a regulating reservoir or from a regulating reservoir to a source of supply; or

(b) giving or taking a supply of water in bulk;

“sewerage services” includes the collection and disposal of foul and surface water and any other services which are required to be provided by a sewerage undertaker for the purpose of carrying out its functions;

“sewerage undertaker” means the company appointed to be the sewerage undertaker under section 6(1) of the 1991 Act for the area in which the property is or will be situated;

“surface water” includes water from roofs and other impermeable surfaces within the curtilage of the property;

“water main” means (subject to section 219(2) of the 1991 Act) any pipe, not being a pipe for the time being vested in a person other than the water undertaker, which is used or to be used by a water undertaker or licensed water supplier for the purpose of making a general supply of water available to customers or potential customers of the undertaker or supplier, as distinct from for the purpose of providing a supply to particular customers;

“water meter” means any apparatus for measuring or showing the volume of water supplied to, or of effluent discharged from any premises;

“water supplier” means the company supplying water in the water supply zone, whether a water undertaker or licensed water supplier;

“water supply zones” in relation to a calendar year means the names and areas designated by a water undertaker within its area of supply that are to be its water supply zones for that year; and

“water undertaker” means the company appointed to be the water undertaker under section 6(1) of the 1991 Act for the area in which the property is or will be situated.

In this report, references to a pipe, including references to a main, a drain or a sewer, shall include references to a tunnel or conduit which serves or is to serve as the pipe in question and to any accessories for the pipe.

(**1**) 1991 c. 56.

(**2**) S.I. 2000/3184. These Regulations apply in relation to England.

(**3**) S.I. 2001/3911. These Regulations apply in relation to Wales.

(**4**) Section 51A is inserted by section 92(2) of the Water Act 2003 (c. 37). Section 104(1) is amended by section 96(4) of that Act.

(**5**) To which there are various amendments made by sections 102 and 104 by section 96 of the Water Act 2003.

(**6**) Inserted by section 56 of and Schedule 4 to the Water Act 2003.

(**7**) Subsection (1A) is inserted by section 92(5) of the Water Act 2003.

(**8**) Section 106(1A) is inserted by section 99 of the Water Act 2003.

(**9**) 1989 c. 15.

(**10**) To which there are various amendments made by section 101(1) of and Schedule 8 to the Water Act 2003.

(**11**) To which there are various amendments made by section 101(1) of and Schedule 8 to the Water Act 2003.

(**12**) Section 199 is amended by section 97(1) and (8) of the Water Act 2003.

CON29DW DRAINAGE & WATER ENQUIRY (DOMESTIC)
TERMS AND CONDITIONS

The Customer and the Client are asked to note these terms, which govern the basis on which the drainage and water report is supplied.

Definitions

"Apparatus" means the public assets shown on the Company's map keys relevant to the Report.
"Client" means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property.
"Company" means the company who produces the Report, being Thames Water Utilities Limited, a company registered in England and Wales with company number 02366661 and whose registered office is at Clearwater Court, Vastern Road, Reading, Berkshire, RG1 8DB.
"Customer" means the person, company, firm or other legal body placing the Order, either on their own behalf as Client, or, as an agent for a Client.
"Order" means any request completed by the Customer requesting the Report from the Company.
"Property" means the address or location supplied by the Customer in the Order.
"Report" means the drainage and/or water report prepared by the Company in respect of the Property, including any maps provided as part of such reports.

1. Agreement

1.1 The Company agrees to supply the Report to the Customer and the Client subject to these terms and conditions. The scope and limitations of the Report are described in clause 2 of these terms. Where the Customer is acting as an agent for the Client then the Customer shall be responsible for bringing these terms to the attention of the Client.

1.2 The Customer and the Client agree that the placing of an Order for a Report and the subsequent provision of a copy of the Report to the Client indicates their acceptance of these terms.

2. The Report

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

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

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

2.3 The information contained in the Report is based upon the accuracy of the address supplied by the Customer or Client when placing the Order.

2.4 The Report provides information as to the indicative location and connection of existing services and other information in relation to drainage and water enquiries and should not be relied on for any other purpose.

2.5 The Report is produced only for use in relation to individual domestic property transactions which require the provision of drainage and water information and cannot be used for commercial development of domestic properties, development of land or commercial properties for intended occupation by third parties. Where a Report is required for commercial development of domestic properties, development of land or commercial properties for intended occupation by parties, the Customer can order a different report, and different terms shall apply.

2.6 The customer shall only use the Report for the purpose for which it is supplied in accordance with these terms.

2.7 In providing the Customer with the Report, the Company shall comply with the Drainage & Water Searches Network (DWSN) Standards.

3. Disclaimers

3.1 Without prejudice to any other terms set out herein, the Company accepts responsibility for any inaccuracy in the location of Apparatus, or missing Apparatus contained in the maps within the Report provided that such inaccuracies or errors arise as a direct result of the negligence of the Company and the existence of which the Company should reasonably have been aware.

3.2 For the purposes of the Report, the Company will not seek to rely on any statements and/or disclaimer shown on any maps which seeks to limit its liability in relation to the accuracy and/or location of Apparatus where any inaccuracies or errors arise as a direct result of the negligence of the Company and the existence of which the Company should reasonably have been aware.

4. Liability

4.1 The Company shall not be liable to the Customer or Client in contract, tort, negligence, breach of statutory duty, misrepresentation or otherwise for any inaccuracies, mistakes or omissions in the Report unless any such liability arises as a direct consequence of the Company's negligence and the existence of which the Company should reasonably have been aware.

4.2 Notwithstanding clause 4.1 above, the Company shall accept liability for (a) death or personal injury arising from its negligence, (b) fraud or fraudulent misrepresentation, and (c) any other liability which cannot be excluded or limited by law.

4.3 Subject to clause 4.2 above, the Company's total liability to the Customer or Client, whether for breach of contract, tort, negligence, breach of statutory duty, misrepresentation or otherwise, arising under or in connection with these terms and conditions and/or the provision of a Report shall be limited to £10 million in aggregate.

5. Copyright and Confidentiality

5.1 The Customer and the Client acknowledge that the Report is confidential and is intended for the personal use of the Client. The copyright and any other intellectual property rights in the Report shall remain the property of the Company and/or its licensors. No intellectual or other property rights are transferred or licensed to the Customer or the Client except to the extent expressly provided in these terms.

5.2 The Customer or Client is entitled to make copies of the Report for their own internal purposes, but may only copy Ordnance Survey mapping or data contained in or attached to the Report if they have an appropriate licence from the originating source of that mapping or data.

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

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

5.5 The enquiries in the Report are protected by copyright by the Law Society of 113 Chancery Lane, London WC2A 1PL and must not be used for any purpose outside the context of the Report.

5.6 The Customer and the Client agree to indemnify the Company against any losses, costs, claims and damage suffered by the Company as a result of any breach by either of them of the terms of clauses 5.1 to 5.5 inclusive.

6. Payment

6.1 Unless otherwise stated, all prices are inclusive of VAT. The Customer shall pay for the price of the Report specified by the Company, without any set off, deduction or counterclaim. Unless otherwise agreed between the parties, the Company must receive payment for the Report in full before the Report is produced. Where the parties agree that payment is not required in advance, the Customer must pay for the Report in full within 14 days of the date of the invoice, unless otherwise agreed in writing between the parties.

7. Cancellation Rights

As a consumer

7.1 Where the Customer is an individual consumer (and not acting for purposes wholly or mainly relating to his or her trade, business, craft or profession), the Customer has specific legal rights relating to cancellation of any Order the Customer may place. The Customer may cancel his or her Order at any time within 14 days after the day on which the contract is entered into ("**Cancellation Period**").

7.2 To exercise the right to cancel, the Customer must inform the Company in writing of his or her decision to cancel this contract.

7.3 Where the Customer is ordering a Report as a consumer, due to the Customer's cancellation rights, the Company will not process the Order or provide the Report to the Customer before the end of the Cancellation Period unless the Customer provides his or her express consent and acknowledges that he or she will lose the right to cancel the contract under regulation 29(1) of the Consumer Contracts (Information, Cancellation, and Additional Charges) Regulations 2013

7.4 In addition to these rights, where the Company is able to, it will cancel any Order in accordance with its cancellation policy, which can be found on the Company's website.

As a business

7.5 The Cancellation Period does not apply to the Customer's Order if the Customer is placing the Order wholly or mainly for purposes relating to their trade, business, craft or profession.

7.6 If the Customer cancels the Order other than in accordance with this clause the Customer may be liable for fees as detailed in the Company's cancellation policy which can be found on the Company's website.

8. Complaints

8.1 The Company's complaints procedure is available on the Company's website.

8.2 If the Customer follows the Company's complaints procedure but is dissatisfied with the response, the Customer may refer the complaint for consideration under The Property Ombudsman Scheme (TPOs). Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

9. General

9.1 These terms are the only terms and conditions that shall apply to any Order and the provision of a Report by the Company to the Customer and shall constitute the entire agreement between the Customer and the Company and supersede, replace and extinguish any previous arrangement, understanding or agreement between the parties relating to such Report.

9.2 In the event of any conflict of inconsistency between any information on the Company's website describing the features of the Report and these terms, then these terms shall prevail.

9.3 Where the Customer is acting wholly or mainly in the normal course of his or her trade, business, craft or profession, the Client is entitled to the benefit of these terms. Save as provided in this clause 9.3, it is not intended that any other person who is not a party to these terms has any right to enforce any term of these terms under the Contracts (Rights of Third Parties) Act 1999.

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

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

9.6 Nothing in these terms and conditions shall in any way restrict the Customer or the Client's statutory or any other rights of access to the information contained in the Report.

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

Payment Terms and Conditions

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

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

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

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

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

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0800 009 4540** quoting your invoice number starting CBA or ADS / OSS.	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

CommercialDW
Drainage & Water Enquiry

Thames Water Property Searches

Index Property Information
PO Box 6715
Kenilworth
CV8 9FA

Search address supplied	South Lodge, Caversfield, Bicester, OX27 8TH
Your reference	JIM/CAR/RIC181/5
Our reference	CDWS/CDWS Standard/2021_4513117
Received date	30 September 2021
Search date	4 October 2021

Keeping you up-to-date

Commercial Drainage and Water Enquiry

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

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

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

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

0800 009 4540

CON29DW COMMERCIAL DRAINAGE & WATER SEARCH

DRAINAGE + WATER SEARCHES NETWORK DWSN

CommercialDW
Drainage & Water Enquiry

Thames Water Property Searches

Question		Summary Answer
Maps		
1.1	Where relevant, please include a copy of an extract from the public sewer map.	Map Provided
1.2	Where relevant, please include a copy of an extract from the map of waterworks.	Map Provided
Drainage		
2.1	Does foul water from the property drain to a public sewer?	See Details
2.2	Does surface water from the property drain to a public sewer?	See Details
2.3	Is a surface water drainage charge payable?	See Details
2.4	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	No
2.4.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?	No
2.5	Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	See Details
2.5.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the 50metres of any buildings within the property?	No
2.6	Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
2.7	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	No
2.8	Is the building, which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?	Not At Risk
2.9	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	1.973 Kilometres
Water		
3.1	Is the property connected to mains water supply?	See Details
3.2	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	No
3.3	Is any water main or service pipe serving, or which is proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
3.4	Is the property at risk of receiving low water pressure or flow?	See Details
3.5	What is the classification of the water supply for the property?	See Details
3.6	Is there a meter installed at this property?	No
3.7	Please include details of the location of any water meter serving the property.	See Details

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

Search address supplied: South Lodge, Caversfield, Bicester, OX27 8TH

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

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

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

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

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

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

(iv) and compensation payments

Maps

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

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

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

A copy of an extract of the map of waterworks is included, showing water mains, resource mains or discharge pipes in the vicinity of the property.

Drainage

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

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

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

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

2.3 Is a surface water drainage charge payable?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The nearest sewage treatment works is BAINTON ROAD (BUCKNELL) STW (PRIVATE) which is 1.973 kilometres to the west of the property.

Water

3.1 Is the property connected to mains water supply?

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

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

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

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

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

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

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

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

The water supplied to the property has an average water hardness of 100.3mg/l calcium which is defined as HARD by ThamesWater.

3.6 Is there a meter installed at this property?

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

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

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

Charging

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

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

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

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

4.2 Who bills the property for sewerage services?

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

4.3 Who bills the property for water services?

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

Trade Effluent

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

No.

Wayleaves, Easements, Manhole Cover and Invert levels

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

No.

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

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

Payment for this Search

A charge will be added to your suppliers account.

CommercialDW Drainage and Water Enquiry Sewer Map- CDWS/CDWS Standard/2021_4513117

The width of the displayed area is 500m

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

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
5001	86.42	84.71
6003	n/a	n/a
6001	86.73	84.97
6002	n/a	n/a
4801	n/a	n/a
5801	n/a	n/a
5901	85.75	83.93
5903	n/a	n/a
5902	86.19	84.32
6802	85.62	83.47

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.

Sewer Key - Commercial Drainage and Water Enquiry

Public Sewer Types (Operated & Maintained by Thames Water)

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

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

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

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

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

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

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

Control Valve

Drop Pipe

Ancillary

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.

Outfall

Undefined End

Inlet

Other Symbols

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

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

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

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.

2) All measurements on the plans are metric.

3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.

4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

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

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. 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 present on the plan, please contact a member of Property Searches on 0800 009 4540.

CommercialDW Drainage and Water Enquiry Water Map-CDWS/CDWS Standard/2021_4513117

The width of the displayed area is 500m

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.

Waterworks Key - Commercial Drainage and Water Enquiry

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

For your guidance:

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

As a minimum standard Thames Water Property Searches will:

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

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

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

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

Question 1.1

For your guidance:

- The Water Industry Act 1991 defines Public Sewers as those which Thames Water have responsibility for. Other assets and rivers, watercourses, ponds, culverts or highway drains may be shown for information purposes only.
- The company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.
- Assets other than public sewers may be shown on the copy extract, for information.

Question 1.2

For your guidance:

- The “water mains” in this context are those, which are vested in and maintainable by the water company under statute.
- Assets other than public water mains may be shown on the plan, for information only.
- Water companies are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Question 2.1

For your guidance:

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

Question 2.2

For your guidance:

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

Question 2.3

For your guidance:

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

Question 2.4

For your guidance:

- Thames Water has a statutory right of access to carry out work on its assets. Employees of Thames Water or its contractors may, therefore, need to enter the property to carry out work.
- Please note if the property was constructed after 1st July 2011 any sewers and/or lateral drain within the boundary of the property are the responsibility of the householder.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public sewer running within the boundary of the property may restrict further development. The Company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the Company, or its contractors, needing to enter the property to carry out work.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.4.1

For your guidance:

- Private pumping stations installed before 1st July 2011 will be transferred into the ownership of the sewerage undertaker.
- From the 1st October 2016 private pumping stations which serve more than one property have been transferred into public ownership but may not be recorded on the public sewer map.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public pumping station within the boundary of the property may restrict further development. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.5

For your guidance:

- This is because there are no buildings from which to measure the distance to any public sewers.
- The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.5.1

For your guidance:

- Private pumping stations installed before 1st July 2011 will be transferred into the ownership of the sewerage undertaker.
- From the 1st October 2016 private pumping stations which serve more than one property have been transferred into public ownership but may not be recorded on the public sewer map.
- The presence of a public pumping station within 50 metres of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.6

For your guidance:

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

Question 2.7

For your guidance:

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

Question 2.8

For your guidance:

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

Question 2.9

For your guidance:

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

Question 3.1

For your guidance:

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

Question 3.2

For your guidance:

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

Question 3.3

For your guidance:

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

Question 3.4

For your guidance:

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

Question 3.5

For your guidance:

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

Thames Water Hardness Category	Calcium (mg/l)	Calcium Carbonate (mg/l)	English Clarke degrees	French degrees	General/ German degrees
Soft	0 to 40	0 to 100	0 to 7	0 to 10	0 to 5.6
Medium	41 to 80	101 to 200	8 to 14	11 to 20	5.7 to 11.2
Hard	Over 80	Over 200	Over 14	Over 20	over 11.2

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

Question 3.6

For your guidance:

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

Question 3.7

For your guidance:

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

Question 5.1

For your guidance:

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

Question 6.1

For your guidance:

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

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

Definitions

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

Agreement

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

The Report

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

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

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

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

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

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

Liability

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

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

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

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

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

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

Copyright and Confidentiality

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

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

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

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

Payment

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

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

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

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

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

Cancellations or Alterations

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

Delivery

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

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

General

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

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

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

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

Terms and Conditions

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

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

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

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

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

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

Ways to pay your bill

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

MEC
Development Technical Consultants

APPENDICES

APPENDIX G

The Old Chapel Station Road Hugglescote Leicestershire LE67 2GB
Telephone 01530 264753
Email group@m-ec.co.uk
www.m-ec.co.uk

MEC Development Technical Consultants

Project No	27877-CALC-0101
Sheet	1 of 8
Engineer	R.Chafer
Date	December 2023
Revision	-

DESIGN CALCULATIONS FRONT SHEET

SITE	Land West of Fringford Road, Caversfield, OX27 8TH, E:458408, N:225038
SCHEME	Demolition of existing structures and erection of up to 99 dwellings, access, open space and associated works (outline all matters reserved save for access).
CLIENT	Richborough
ASPECTS OF SCHEME TO BE DESIGNED	1. Brownfield run-off rate calculations 2. Greenfield run-off rate calculations 3. Surface Water Sewer design. 4. 1 in 2, 1 in 30 year + 35% climate change and 1 in 100 year + 45% climate change design simulations.
CODES OF PRACTICE, DESIGN SPECIFICATIONS & BRITISH STANDARDS	1. Design and analysis of urban storm drainage. Wallingford Procedure Vol. 1. 2. Sustainable Drainage Systems - Non-statutory technical standards for sustainable drainage systems – 2015 3. The SuDS Manual – CIRIA C753.
NOTES	In accordance with the National SuDS Standards, the strategy involves conveying surface water flows to an attenuation basin and geo-cellular tank on-site, which will discharge into the existing public surface water sewer within Fringford Road at a controlled rate of 2l/s. Existing runoff conditions have been calculated using the modified Rational Method to calculate Brownfield Discharge Rates. For an existing impermeable area of 0.669ha, the current peak discharge rate for a 50mm/hr peak storm intensity event has been calculated at 83.7l/s. Existing greenfield runoff conditions for the developable area have been calculated using the FEH method within Flow Causeway. The QBAR rate for the developable area of 2.87ha, results in a QBAR of 0.9l/s. A discharge rate of 0.9l/s may create blockages in the pipes, as such, the proposed site will discharge at a practical minimum rate of 2l/s, which corresponds to a hydro-brake outlet diameter of approximately 66mm. The proposed discharge rate of 2l/s will provide a betterment of 98% from the existing rates. Drainage design calculations were carried out within Flow Causeway.

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The Old Chapel Station Road Hugglescote Leicestershire LE67 2GB
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MEC Development Technical Consultants

Brownfield Run-off Calculation

Project: **Aunt Ems Lane, Caversfield, OX27 8TH,**

File Ref: **27877**

O.S. Grid Ref: **E:458408, N:225038**

The Rational Method equation used to calculate peak stormwater runoff rate is:

$$Q = 2.78\ CiA$$

Where;

Q = The peak stormwater runoff rate from the drainage area (L/S).

2.78 = Conversion factor to use standard units.

C = Runoff coefficient for drainage area (A).

i= The intensity of the design storm for peak runoff calculation (mm/hr).

A = The area of the watershed that drains to the point for which the peak runoff rate is calculated (ha).

The following figures will be used to calculate the peak runoff for the site;

C = 0.9, as not all run-off will discharge from the site.

i= 50 mm/hr

A = 0.669 ha

Peak run-off for the site;

$$Q = 2.78\ X\ 0.9\ X\ 50\ X\ 0.669$$

$$\boldsymbol{Q = 83.69\ l/s}$$

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	200.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Storage Features	1.957	4.00	85.500	1200	458536.224	224953.768	1.300
Hydrobrake			85.500	1200	458547.999	224955.866	1.400
Outfall			86.000	1200	458558.909	224950.662	2.021

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Storage Features	Hydrobrake	11.960	0.600	84.200	84.100	0.100	119.6	225	4.17	169.7
1.001	Hydrobrake	Outfall	12.088	0.600	84.100	83.979	0.121	100.0	150	4.37	169.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	1.194	47.5	900.3	1.075	1.175	1.957	0.0
1.001	1.005	17.8	900.3	1.250	1.871	1.957	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	11.960	119.6	225	Circular_Default Sewer Type	85.500	84.200	1.075	85.500	84.100	1.175
1.001	12.088	100.0	150	Circular_Default Sewer Type	85.500	84.100	1.250	86.000	83.979	1.871

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	Storage Features	1200	Manhole	Adoptable	Hydrobrake	1200	Manhole	Adoptable
1.001	Hydrobrake	1200	Manhole	Adoptable	Outfall	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Storage Features	458536.224	224953.768	85.500	1.300	1200				
						0	1.000	84.200	225
Hydrobrake	458547.999	224955.866	85.500	1.400	1200	1	1.000	84.100	225
									
						0	1.001	84.100	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Outfall	458558.909	224950.662	86.000	2.021	1200	1	1.001	83.979	150

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	0.8
Summer CV	0.750	Drain Down Time (mins)	240	30 year (l/s)	1.8
Winter CV	0.840	Additional Storage (m³/ha)	0.0	100 year (l/s)	2.3
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	FEH	Growth Factor 100 year	2.48
Positively Drained Area (ha)	2.870	Betterment (%)	0
SAAR (mm)	638	QMed	0.8
Host	1	QBar	0.9
BFIHost	0.960	Q 2 year (l/s)	0.8
Region	1	Q 30 year (l/s)	1.8
QBar/QMed conversion factor	1.111	Q 100 year (l/s)	2.3
Growth Factor 2 year	0.90		

Node Hydrobrake Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	84.100	Product Number	CTL-SHE-0066-2000-1100-2000
Design Depth (m)	1.100	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node Storage Features Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	84.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	704.9	0.0	0.400	895.5	0.0	0.800	1103.2	0.0	1.200	1327.9	0.0
0.100	751.0	0.0	0.500	945.8	0.0	0.900	1157.8	0.0	1.300	1379.7	0.0
0.200	798.1	0.0	0.600	997.2	0.0	1.000	1213.5	0.0			
0.300	846.2	0.0	0.700	1049.6	0.0	1.100	1270.2	0.0			

Node Storage Features Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	84.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1020.0	0.0	0.800	1020.0	0.0	0.801	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	Storage Features	1410	84.441	0.241	16.3	430.2173	0.0000	SURCHARGED
960 minute winter	Hydrobrake	945	84.438	0.338	5.7	0.3825	0.0000	SURCHARGED
15 minute summer	Outfall	1	83.979	0.000	1.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	Storage Features	1.000	Hydrobrake	4.9	0.215	0.103	0.4757	
960 minute winter	Hydrobrake	Hydro-Brake®	Outfall	1.9				109.6

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	Storage Features	1440	84.897	0.697	42.4	1319.4570	0.0000	SURCHARGED
1440 minute winter	Hydrobrake	1440	84.894	0.794	5.4	0.8981	0.0000	SURCHARGED
15 minute summer	Outfall	1	83.979	0.000	1.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	Storage Features	1.000	Hydrobrake	5.4	0.283	0.113	0.4757	
1440 minute winter	Hydrobrake	Hydro-Brake®	Outfall	1.9				158.1

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	Storage Features	1440	85.193	0.993	55.3	1759.4030	0.0000	SURCHARGED
1440 minute winter	Hydrobrake	1440	85.184	1.084	5.7	1.2265	0.0000	SURCHARGED
15 minute summer	Outfall	1	83.979	0.000	1.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	Storage Features	1.000	Hydrobrake	5.7	0.262	0.119	0.4757	
1440 minute winter	Hydrobrake	Hydro-Brake®	Outfall	2.0				171.1

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APPENDICES

APPENDIX H

NOTES:

1. DO NOT SCALE THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SPECIALIST DESIGN DRAWINGS AND DETAILS.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
4. THIS DRAWING IS FOR STRATEGY PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.
5. DESIGN BASED ON EXISTING LEVELS AND SUBJECT TO CHANGE WITH EXTERNAL WORKS DESIGN / CONFIRMATION OF FFLS.
6. DRAINAGE STRATEGY IS SUBJECT TO AGREEMENT WITH RELEVANT THIRD PARTIES, INCLUDING ENVIRONMENT AGENCY, LOCAL PLANNING AUTHORITY, LEAD LOCAL FLOOD AUTHORITY AND WATER AUTHORITY.
7. CONCRETE PROTECTION TO BE PROVIDED TO ANY PIPES WITH COVER LOWER THAN 1200mm WITHIN CARRIAGEWAY AND 900mm IN NON-TRAFFICKED OPEN SPACE. ALL PIPES WITH A COVER DEPTH BELOW 900mm WILL REQUIRE A STRUCTURAL ASSESSMENT.
8. THE DRAINAGE STRATEGY WILL NEED UPDATING IF THE LAYOUT IS REVISED.
9. SURFACE WATER FLOWS FROM THE SITE WILL DISCHARGE VIA GRAVITY INTO THE EXISTING SURFACE WATER SEWER WITHIN FRINGFORD ROAD AT MH5903, SUBJECT TO AGREEMENT WITH THAMES WATER.
10. FOUL WATER FLOWS GENERATED ON SITE WILL OUTFALL INTO THE EXISTING FOUL WATER SEWER WITHIN FRINGFORD ROAD AT MH5901, VIA THE EXISTING FOUL WATER CONNECTION FROM THE SITE, SUBJECT TO AGREEMENT WITH THAMES WATER.
11. A CCTV SURVEY IS REQUIRED TO CONFIRM THE EXACT LEVELS OF THE SURFACE WATER SEWER WITHIN FRINGFROD ROAD.

KEY

- SITE BOUNDARY
- PROPOSED PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE FOUL WATER SEWER
- EXISTING PUBLIC SURFACE WATER SEWER
- EXISTING PUBLIC FOUL WATER SEWER
- EXISTING SURFACE WATER SEWER RISING MAIN
- AREA OF GRASSLAND TO BE RETAINED
- PROPOSED ATTENUATION BASIN
- PROPOSED GEO-CELLULAR TANK
- PROPOSED SWALES 3.5m WIDE, 0.5m DEEP
- PROPOSED CONNECTION PIPE BETWEEN ATTENUATION BASIN AND TANK
- EXISTING DITCH NETWORK 0.5m DEEP
- PROPOSED CULVERTED SECTION OF EXISTING DITCH NETWORK
- DIRECTIONAL ARROWS OF DITCH NETWORK
- OVERLAND FLOW ARROWS
- PROPOSED PERMEABLE PAVING

REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
C	NEW SITE LAYOUT	RC	ZJ	AB	06.12.23
B	UPDATES TO DESIGN BASED ON NEW SITE LAYOUT	RC	ZJ	AB	23.10.23
A	EDITS BASED ON CLIENT COMMENTS	RC	ZJ	AB	07.09.23
-	FIRST ISSUE	RC	ZJ	AB	01.09.23

PROJECT:
LAND WEST OF FRINGFORD ROAD CAVERSFIELD

DRAWING TITLE:
OUTLINE DRAINAGE STRATEGY

CLIENT:
RICHBOROUGH

DRAWING NUMBER:
27877_01_230_01

REVISION:	SHEET SIZE:	SCALE:
C	A1	1:1000

STATUS:
FOR INFORMATION / APPROVAL

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File Location: T:\M-EC Job Book\27877\drawings\01 hydrology\27877_01_230_01.c drainage strategy.dwg
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APPENDICES

APPENDIX I

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MAINTENANCE AND MANAGEMENT

A proposed maintenance plan is shown in the table below and breaks down the maintenance requirements of the various proposed assets in accordance with the CIRIA C753 SuDS Manual guidance.

Table 1.1: Proposed Maintenance Regime

Drainage Asset	Responsible Organisation	Maintenance Work	Frequency
Pipework / Manholes	Private Ownership / Management Company	Inspect pipework and clear blockages	Annually or after severe storms.
		Inspect manholes and clear blockages	
		Repair any defects in the network	
		Inspect flow control, ensure operating freely and pivoting bypass door and penstock valve operating correctly	
Headwalls	Private Ownership / Management Company	Inspect the structure and remove any debris/litter on the structure.	Annually or after severe storms
		Replace malfunctioning parts or structures	As required
Catchpits	Private Ownership / Management Company	Inspect structure and remove any debris/litter on structure	Annually or after severe storms
		Replace malfunctioning parts or structures	As required
Gullies	Private Ownership / Management Company	Inspect structure and remove any debris/litter on structure	Annually or after severe storms
		Replace malfunctioning parts or structures	As required
Flow Control Chamber	Private Ownership / Management Company	Inspect structure and remove excessive silt build-up	Monthly during construction and then annually or after severe storms
		Inspect pipework and manholes also clear blockages	Annually or after severe storms
		Inspect manholes and clear blockages	
		Inspect flow control, ensure operating freely and pivoting bypass door and penstock valve operating correctly	
		Replace malfunctioning parts or structures	
		Inspect for evidence of poor operation	6 monthly
		Inspect sediment accumulation rates and establish appropriate removal frequencies	
		Test control structure to ensure operating as per original design	5 yearly
		Inspect filter media and establish appropriate replacement frequencies	
		Inspect sediment accumulation rates and establish appropriate removal frequencies	

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Swales	Private Ownership / Management Company	Remove litter and debris	Monthly then as required
		Cut grass – to retain grass height within the specified design range	
		Manage other vegetation and remove nuisance plants	
		Inspect inlets, outlets and overflows for blockages and clear if required	
		Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	
		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
		Reseed areas of poor vegetation growth, alter plant types to better suit conditions if required	As required or if bare soil is exposed over 10% more of the swale treatment area
		Repair erosion or other damage by re-turfing or reseeding	As required
		Relevel uneven surfaces and reinstate design levels	
		Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	
		Remove build-up of sediment on upstream gravel trench, flow spreader or at top of the filter strip	
		Remove and dispose of oil or petrol residues using safe standard practices	
Permeable Pavements	Private Ownership / Management Company	Brushing and vacuuming (standard cosmetic sweep over the whole surface)	Once a year after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging of manufacturer's recommendations.
		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 sweeping	
		Remediate any landscaping which, through vegetation maintenance of soil slip, has been raised to within 50 mm of the level of the paving	
		Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users and replace lost jointing material	

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		Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required
		Initial inspection	Monthly for 3 months after installation
		Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	3 monthly, 48 hours after large storms in first 6 months
		Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
		Monitor inspection chambers	
Attenuation Storage Tanks	Private Ownership / Management Company	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months then annually
		Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
		For systems where rainfall infiltrates into the tank from above, check the surface of the filter for blockages by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
		Remove the sediment from pre-treatment structures and/or internal forebays	
		Repair/rehabilitate inlets, outlets, overflows and vents	As required
		Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
		Survey inside of the tank for sediment build-up and remove if necessary	Every 5 years or as required
Attenuation/Detention Basins	Private Ownership / Management Company	Remove litter and debris	Monthly
		Cut grass – for spillways and access routes	
		Cut grass – meadow grass in and around the basin	
		Manage other vegetation and remove nuisance plants	
		Inspect inlets, outlets and overflows for blockages, and clean if required	
		Inspect banksides, structures for silt accumulation. Establish appropriate silt removal frequencies	
		Check any penstocks and other mechanical devices	Annually
		Tidy all dead growth before the start of the growing season	
		Remove the sediment from inlets, outlets and forebay	
		Manage wetland plants in outlet pool – where provided	

- CIVIL ENGINEERING
- TRANSPORT
- FLOOD RISK & DRAINAGE
- STRUCTURES
- GEO-ENVIRONMENTAL
- ACOUSTIC AIR
- UTILITIES
- GEOMATICS
- LIGHTING
- EXPERT WITNESS

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