



**Land off Duke's Park,
Woodbridge,
Suffolk**

**Flood Risk Assessment
and
Surface Water Drainage Strategy**

Report for



November 2015

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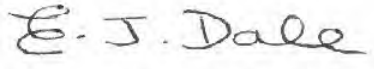
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EXECUTIVE SUMMARY

The proposal is for the construction of a new residential development on the land off Duke's Park, Woodbridge, Suffolk. The scheme is comprised of traditional housing with gardens, access roads and associated infrastructure.

This Flood Risk Assessment has considered the flood risk posed to the development from a variety of flood risk sources, as defined by the National Planning Policy Framework (NPPF) and the local Strategic Flood Risk Assessment (SFRA). The development lies outside of fluvial flood risk areas, holding a Flood Zone 1 (low risk) classification. Therefore, the site passes the requirements of the Sequential Test and the Exception Test is not required. The report has also found the site to be at low risk from tidal, sewer, and artificial sources.

The site is predominantly at very low risk of surface water flooding. However, there is an area shown to be at medium/high risk on the Environment Agency maps; this flooding is associated with the unnamed watercourse on site. A 5m easement either side of this watercourse will ensure that the risk of surface water flooding to the developable area is low.

Although the information from the Environment Agency and the Strategic Flood Risk Assessment indicates that the site is at low risk of groundwater flooding. Shallow groundwater was encountered during the infiltration tests. Provided foundations can be constructed at times when groundwater is suitable low (or can be controlled through dewatering) and designed such that the damp proof membrane level is raised sufficiently above expected peak groundwater levels, then the risk from this source is considered to be low.

There is no residual flood risk from the development site to the surrounding area as drainage proposals will restrict storm water flow rates. The development does not therefore increase the risk of surface water flooding to other adjacent properties. Out of chamber or gully flooding for the extreme 100 year plus climate change event may potentially occur within the development site and is classed as exceedance flows. Flood water from such events will be contained within the site but away from the residential dwellings.

Surface Water Drainage Strategy

The outline surface water drainage strategy is to control the surface water discharge from the development, to mimic the pre development greenfield runoff rates prior to discharge into the unnamed watercourse. This watercourse ultimately discharges into the River Fynn, 500m to the south of the site. This will generate attenuation volumes, which will be retained in a detention basin.

Sustainable Drainage Systems (SuDS) in the form of Prevention, Source Control and Site Control methods will be considered and where appropriate incorporated. A surface water drainage strategy and outline strategy plan forms part of this report.



1.0 INTRODUCTION

1.1 This report has been prepared by Hydrock Consultants Limited (Hydrock) on behalf of our client Gladman Developments Ltd, in support of an outline planning application to be submitted to Suffolk Coastal District Council for a proposed residential development located on land off Duke's Park, Woodbridge, Suffolk.

1.2 Local Planning Authorities are advised by the Government's National Planning Policy Framework (*NPPF*) to consult the Environment Agency (EA) and Lead Local Flood Authority (LLFA) on development proposals in areas at risk of flooding and/or for sites greater than 1 hectare in area. The EA would require a Flood Risk Assessment to be submitted in support of the planning application for the proposed development.

To satisfy any potential concerns the EA and LLFA may have with the proposed residential development on land off Duke's Park, Woodbridge, Suffolk, this report has been prepared to assess the requirements of the *NPPF* through:

- Providing an assessment of whether the site is likely to be affected by flooding and whether it would increase flood risk elsewhere;
- Assessing whether the proposed development is appropriate in the suggested location;
- Detailing any measures necessary to mitigate any flood risk identified, to ensure that the proposed development and occupants would be safe, and that flood risk would not be increased elsewhere.

The report considers the requirements for undertaking a Flood Risk Assessment as stipulated in the *NPPF*. Only those requirements that are appropriate to a development of this nature have been considered in the compilation of this report.

This report has been prepared in accordance with current EA and LLFA policy. The responses to the pre-development enquiries are included in Appendix B of this report.

2.0 DEVELOPMENT DESCRIPTION AND LOCATION

2.1 Site Location

2.1.1 The site is described in Table 1.

Table1: Site Referencing Information

Item	Brief Description
Site Name	Land off Duke's Park, Woodbridge, Suffolk
Site Address and Location	Land off Duke's Park, Woodbridge, Suffolk. Nearest postcode is IP12 4TF
District Council	Suffolk Coastal District Council
Approximate Grid Reference	OS: 625694E 247787N
General Locality	The site is located on the south east edge of Woodbridge town, approximately 10km to the northeast of Ipswich, Suffolk.

2.2 Existing Site Description

Figure 1: Site Location





2.2.1 Area

The total site area is 12.67ha. The proposed developable area is approximately 7.70ha.

2.2.2 Existing Land Use and Access

The land is currently used as an agricultural field. There is an unnamed watercourse, approximately 1.5m wide, which runs from north to south in the east of the site.

The existing site access is via Top Street, through a metal gate in the north of the site or via the properties to the south west of the site.

2.2.3 Boundaries and Surrounding Land

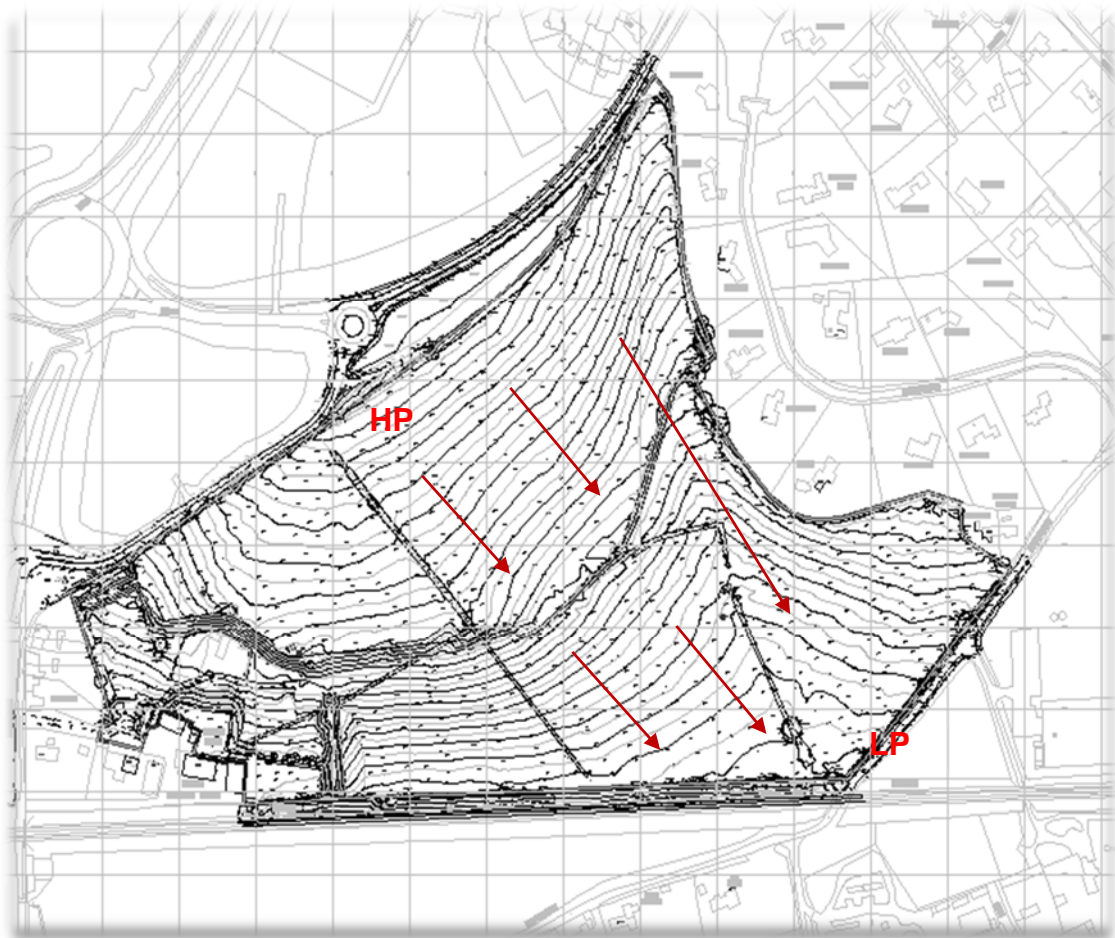
The north of the site is bound by the B1438 (Ipswich Road) and Top Street. The south of the site is bound by a railway line. The southeast of the site is bound by Sandy Lane. The north east of the site is bound by residential properties on Duke's Park.

2.2.4 Elevation and Topography

A site specific topographical survey has been undertaken and indicates that the site elevation is between approximately 30.0m Above Ordinance Datum (AOD) in the north of the site to approximately 8.0m AOD in the south eastern corners of the site. The north of the site has a steeper topography, with a track cut in to the slope along the centre of the site that runs west to east and creates a boundary between the northern and southern fields.

A copy of the topographical survey is included in Appendix A, and an extract of it is shown below in Figure 2.

Figure 2: Extract of Topographical Survey



2.3 Proposed Development

- 2.3.1 The proposed development is for the construction of a residential development including associated highways and public open spaces. The main access will be from B1438 (Ipswich Road) and a second access point will be from Top Street. Further details can be found in the development framework plan submitted with the application.
- 2.3.2 The generally accepted development design life for a residential development in the UK is 100 years. This assessment therefore considers flood risk over the period 2015 to 2115.



3.0 PLANNING POLICY AND CONSULTATION

3.1 National Planning Policy Framework (NPPF)

- 3.1.1 The flood maps provided by the Environment Agency (EA) locate the site within Flood Zone 1 i.e. land defined as having an annual probability of fluvial flooding of less than 1 in 1000 in any year (<0.1%). As a requirement of the National Planning Policy Framework (NPPF) 2012, Annex D, the proposed development has to satisfy the requirements of the Sequential Test and where applicable, the Exception Test.

3.1.2 Sequential Test

Under the NPPF (2012), Zone 1 is defined as low probability flood risk. The proposal is for a residential development with highway infrastructure, which in line with Table 2 is classified as 'More Vulnerable'. Thus, according to the criteria in Table 3 (Flood Risk Vulnerability and Flood Zone 'Compatibility'), the site is classed as a More Vulnerable development within Flood Zone 1 and as such, the 'Development is Appropriate'. Therefore, the Sequential Test is passed.

3.1.3 Exception Test

As the Sequential Test is passed, the Exception Test is not required.

3.2 Strategic Flood Risk Assessment (SFRA)

- 3.2.1 SFRA's assess the risk associated with all types of flooding and provide the information required to identify the amount of development permitted in an area; how drainage systems in the area should function and also how risks in vulnerable areas can be reduced and/or mitigated. The NPPF states that Regional Planning Bodies (RPB's) or Local Planning Authorities (LPA's) should prepare SFRA's in consultation with the EA.
- 3.2.2 Suffolk Coastal and Waveney District Councils commissioned Scott Wilson in January 2009 to undertake a Strategic Flood Risk Assessment (SFRA) of these districts. Also, Suffolk Local Risk Management Partnership in conjunction with AECOM prepared the Suffolk Local Flood Risk Management Strategy it was completed in December 2012 in accordance with the Planning Policy Statement 25 guidance. The partners in the study were all the district councils within Suffolk County Council, all relevant Independent Drainage Boards, Water Boards and the Environment Agency. The purpose of the SFRA was to assess and map all known sources of flood risk, taking into account future climate change predictions.
- 3.2.3 A summary of the main elements from the SFRA associated with the district is detailed below. The full report can be obtained from the Suffolk Coastal District Council website.



- The SFRA provides a detailed understanding of flood risks across all areas and cover specifically the main areas from all sources.
- Full sequential and exception tests to be carried out (where applicable).
- Development should be designed so that there is no flooding to the development in a 1 in 30 year event and so that there is no property flooding in a 1 in 100 year plus climate change event.
- Surface water management including the use of Sustainable Drainage Systems (SuDS) should be incorporated.
- No flooding incidences identified at the site and the 1 in 100 year plus climate change flood level for Woodbridge is 5.11m AOD.

3.3 Statutory Authority Correspondence

- 3.3.1 In compiling this report, liaison has taken place with the relevant authorities. Correspondence has been received from the Environment Agency. Listed below is a summary of this correspondence with the full response located in Appendix C.
- 3.3.2 Mr Andrew Hunter, Sustainable Places Planning Advisor at the Environment Agency confirmed that the site lies within Flood Zone 1 (low probability of flooding). Further site investigation will be a requirement in order to confirm the suitability of otherwise of the site for SuDS solutions in order to attenuate surface water runoff to the greenfield runoff rate for all events up to the 1 in 100 year return period, including climate change. There should be a consideration for green and blue infrastructure on the site, green infrastructure supports natural and ecological processes, blue infrastructure concerns the management and development of water sources and resources. The Water Framework Directive (WFD) sets a target for all surface and groundwater bodies to reach 'good status' by 2015 (or later dates of 2021 or 2027 subject to the criteria set out in the Directive). It will be important to demonstrate that the proposed development will not result in any deterioration to the status of water bodies under the WFD.
- 3.3.3 Mr Graham Philpott, Mapping Technician at Suffolk County Council, provided a pluvial flood risk map for the site (contained within Appendix B). It was confirmed that these flood maps are supplied to the Council by the Environment Agency on an annual basis. If any development is proposed within the area predicted to be at risk of surface water flooding, it would be necessary to demonstrate how the predicted flooding would be mitigated to ensure it does not affect the proposed development or neighbouring land/properties.



4.0 DEFINITION OF FLOOD HAZARD

4.1 Sources of Information

- 4.1.1 The NPPF requires the developer to consider the impact of runoff generated by the proposed development onto the downstream catchment and to assess the risk of runoff from the surrounding area impacting on the development's footprint. Furthermore, the report is to consider flood risk from all other sources. The following section defines the flood risk receptors and anticipated flood risk.

Table 2: Sources of information used in the identification of flood risk

Source of Information	Details
Environment Agency	Indicative Flood Map
Suffolk Coastal District Council	Strategic Flood Risk Assessment
Anglian Water	Sewer Records
Hydrock	Phase 1 Desk Study (Ref: R/14106.001)

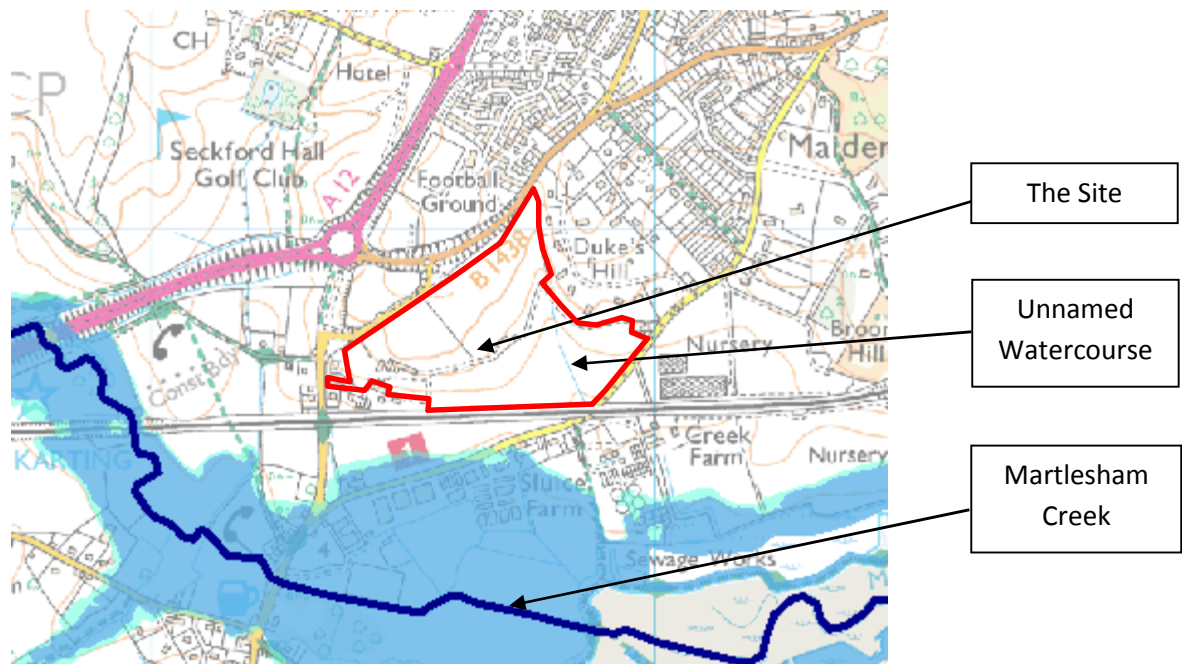
4.2 Flooding from the Sea (Tidal)

- 4.2.1 The site does not lie along a coastline and does not have a tidal river flowing nearby. Therefore, the site is at low risk from tidal flooding.

4.3 Flooding from Rivers (Fluvial)

- 4.3.1 There is an unnamed watercourse located on site in the east, this watercourse is culverted beneath the railway and ultimately discharges into the River Fynn which flows from 500m to the west of the site to Martlesham Creek, approximately 500m to the southeast of the site. Martlesham Creek forms the confluence of the River Fynn and River Deben which ultimately flows into the North Sea, approximately 12km south of the site. There are also several drainage ditches located approximately 250m to the south of the site, which ultimately drain into the River Fynn.
- 4.3.2 Figure 3 locates the site on the Environment Agency's indicative floodplain map and demonstrates that the development site lies outside the current statistical fluvial floodwater model footprint generated by any local watercourses i.e. probability of annual fluvial flooding at the boundary less than 1 in 1000 (>0.1%) in any one year. Therefore, the risk of fluvial flooding at the site is considered to be low.

Figure 3: The Environment Agency's Indicative 100-year Floodplain Map



- EA's 100-year indicative Floodplain
- EA's 1000-year Indicative Floodplain

4.4 Flooding from Groundwater

- 4.4.1 The Hydrock Phase 1 Desk Study (Ref: R14106-001) indicates the occurrence of the Kesgrave Catchment Subgroup which is classified as a Secondary A Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The Crag Formation is also present which is classified as a Principal Aquifer, characterised by high intergranular permeability deposits, in hydraulic continuity with the Upper Chalk when unconformable in the west of the outcrop or providing a water resource when the Chalk is saline and confined beneath the London Clay. The Thames Group (London Clay) is classified as an Unproductive Aquifer; these are rock layers with low permeability that have negligible significance for water supply or river base flow.
- 4.4.2 A further consultation of the Environment Agency Groundwater flood maps and the information within the SFRA indicates that the site is at low risk of surface water flooding.
- 4.4.3 Shallow groundwater was encountered during the infiltration tests. Provided foundations can be constructed at times when groundwater is suitably low (or can be controlled through dewatering) and designed such that the damp proof membrane level is raised sufficiently



above expected peak groundwater levels, then the risk from this source is considered to be low.

4.5 Flooding from the Land (Surface water)

- 4.5.1 The overland flow would naturally route towards the nearest watercourse, with the exact route taken being defined by the local topography. The site slopes towards the unnamed watercourse, and therefore any surface water runoff from the site will flow into this watercourse and be conveyed to the south of the site. Any surface water runoff from the north, west and east will be intercepted by highway drainage and conveyed away from the site. The railway line along the southern boundary is raised above the site there is a drainage ditch located within their boundary that collects land drainage.
- 4.5.2 A further consultation of the Environment Agency surface water floodplain map (figure 4 below) indicates that the site is predominantly at very low risk of surface water flooding. However, there is an area at medium/high risk of surface water flooding associated with the unnamed watercourse on site. This is also shown by the pluvial flood risk map provided by Suffolk County Council (Appendix B). A 5m easement will be applied to either side of the unnamed watercourse to ensure that the risk of surface water flooding to the developable area is low.

Figure 4: The Environment Agency's Indicative Surface Water Floodplain Map



-  High Risk
-  Medium Risk
-  Low Risk



- 4.5.3 In light of the available information, the risk of surface water flooding to the developable area is considered to be low. Furthermore, the development site will include new roads and driveways laid to falls, in line with best practice guidance to direct surface water runoff to the nearest highway channel and gully and away from the residential buildings.

4.6 Flooding from Sewers / Highway Drains

- 4.6.1 The review of the Anglian Water (AW) Sewer Records indicates there are no surface water sewers within the development site. However, there is a 300mm water main within the western part of the site, this is low risk but caution should be taken whilst working within this area and the appropriate Anglian Water easement must be applied. There are no public foul water sewers within the site. The full extent of the existing Anglian Water Sewers can be identified further in Appendix C.

- 4.6.2 Therefore, the risk of flooding from sewers and highway drains is considered to be low.

4.7 Flooding from Artificial Sources

- 4.7.1 There are no identified artificial sources in close proximity to the site. Therefore, the flood risk from artificial sources is considered to be low.



5.0 ASSESSMENT OF FLOOD RISK ON DEVELOPMENT SITE (PROBABILITY)

5.1 Summary

5.1.1 Table 3 considers each of the sources and defines in tabular format the Probability of Flood Risk associated to each and the likely impacts.

Table 3: Sources of information used in the identification of flood risk

Source	Probability of Flood Risk	Impacts	Remarks / Mitigation
Tidal	Low	Low	Development site is not in close proximity for it to be tidally influenced.
Fluvial	Low	Low	The site is located within Flood Zone 1.
Surface (Overland Flood Flow)	Medium/High	Low	The majority of the site is considered to be at very low risk of surface water flooding. However, there is an area at medium/high risk associated with the unnamed watercourse. A 5m easement will be applied to both sides of this watercourse as mitigation.
Sewers	Low	Low	There are no surface water or foul water sewers within the site. The appropriate Anglian Water easement will be applied to the watermain in the west of the site.
Groundwater	Low	Low	Shallow groundwater was encountered during infiltration testing. Therefore the mitigation measures detailed in section 4.4 should be adhered to.
Artificial Sources	Low	Low	There are no artificial sources in close proximity



6.0 SURFACE WATER DRAINAGE STRATEGY

6.1 External Consultation

- 6.1.1 The Environment Agency have confirmed that greenfield runoff rates are to be mimicked up to the 1 in 100 year return period for the proposed development.

6.2 Existing Surface Water Runoff

- 6.2.1 The existing runoff from the site flows into the unnamed watercourse in the east of the site, which ultimately flows into the River Fynn.
- 6.2.2 As the proposed development is on greenfield land, greenfield runoff rates should be applied. These can be found in Table 4 below. These greenfield runoff rates have been derived using Micro Drainage Source Control Software: Rural Runoff Calculator, which is based on The Institute of Hydrology Report IH 124/ICP SuDS method of estimating greenfield runoff rates.

Table 4: Existing Runoff Rates

Greenfield Runoff Rates			
Area (Ha)	1 Year (l/sec)	30 Year (l/sec)	100 Year (l/sec)
7.70	19.0	52.6	77.9

- 6.2.3 Refer to Appendix E for the existing drainage infrastructure drawing, covering the development site and surrounding area.

6.3 Geology

- 6.3.1 A review of the Hydrock Desk Study indicates that the northern part of the site is underlain by the Kesgrave Catchment Subgroup. This stratum is comprised of fluvial, lacustrine and organic deposits of the pre-diversionary River Thames, and the pre-glacial soils developed on such deposits. The Crag Formation also underlies the north of the site and is comprised of coarse-grained, poorly sorted, cross-bedded abundantly shelly sands. The Thames Group (London Clay) underlies the south of the site and is comprised of silty clay/mudstone, silty sands and sandy clayey silts of marine origin. The whole site is underlain by the Woolwich and Reading Beds Formation, these are Glauconitic sands at base, overlain by grey clays and sands with brackish fauna. There are also subcrops of Upper Chalk beneath the entire site; these are chalk with or without flint and discrete limestone.



6.3.2 The geology of the site indicates that soakaways may be a potential option. However, further infiltration testing confirmed that they are not a viable SuDS technique (Appendix G).

6.4 Sustainable Drainage Systems

6.4.1 SuDS Objectives

Sustainable drainage developed in line with the ideals of sustainable development is collectively referred to as Sustainable Drainage Systems (SuDS). At a particular site, these systems are designed both to manage the environmental risks resulting from the urban runoff, and to contribute wherever possible to environmental enhancement. SuDS objectives are therefore to minimise the impacts from the development on the quantity and quality of the runoff and maximise amenity and biodiversity opportunities (CIRIA C697, 2007).

6.4.2 SuDS Design Themes

A strong design theme is essential if the maximum aesthetic benefits are to be gained from the SuDS approach. At a more local scale the SuDS should link with the individuals plot structure, planting, public open space requirements and amenity areas, gaining multiple benefits from a limited area of land.

6.4.3 The SuDS Management Train

The 'Management Train Approach' should be central to the surface water drainage strategy of the proposed site. The main objective is the control of runoff as near to the source as possible, protecting downstream habitats and further enhancing the amenity value of the site. This concept uses a hierarchy of drainage techniques to incrementally reduce pollution, flow rates and volumes of storm water discharge from the site, and is as follows.

1. **Prevention** – The use of good site design and housekeeping measures to prevent runoff and pollution.
2. **Source Controls** – Control of runoff at source or as close to source as possible e.g. soakaways, green roofs, pervious pavements.
3. **Site Control** – Management of water in a local area and can include below ground storage / attenuation, detention basins, large infiltration devices.
4. **Regional Control** – Management of water from a site or various sites and can include wetlands and balancing ponds. The drainage techniques for this development will seek to include where possible Prevention, Source Control and Site Control Measures.



6.4.4 SuDS Site Constraints

SuDS techniques are not suitable for all sites; therefore an assessment of the existing site is required so that SuDS limitations can be determined.

- i. **Land Use Characteristics** – The size and type of development enables a range of prevention, source control and site control SuDS devices to be considered both above and below ground.
- ii. **Site Characteristics** – Based on further infiltration tests (Appendix G), infiltration is not considered to be a viable SuDS technique.
- iii. **Catchment Characteristics** – The site is classified as 'Greenfield'. Current guidance would limit the discharge rate from the post developed site to not exceed existing discharge rates.
- iv. **Environmental and Amenity Performance** – The inclusion of SuDS within the overall development is a key driver in providing both amenity and habitat creation. These will also assist in offsetting the loss of pre developed natural habitat. Maintenance plans will be prepared for all SuDS devices.

6.4.5 SuDS Design Philosophy

The SuDS philosophy for the development site is the promotion of prevention, source control and site control techniques.

The following design philosophy is proposed:

- Surface water treatment using the 'Management Train' approach to remove and isolate contamination at all SuDS facilities prior to conveyance to the local watercourse.
- Surface water discharge into the unnamed watercourse at the lower point of the site at a controlled rate.
- Prevention measures by the potential inclusion of water butts.
- Source control measures by the potential inclusion of permeable paving.
- Site Control features in the form of a detention basin to accommodate the additional surface water runoff generated by the development site.
- Aim to limit where possible the impermeable fraction of the development.



6.4.5 Prevention and Source Control – Principles and Objectives

The main objective of prevention and source control is the control of runoff as near to source as possible. Application of these techniques will require reduction of impermeable areas and techniques to restrict the runoff rates.

Prevention measures to be considered where possible at part of the overall approach to the management train at this site. Typical examples are given in the SuDS Manual (Ciria C697) and are briefly described below. It must be noted that the effectiveness of each system is dependent on the final design as well as the actual site conditions.

Water Butts – Plastic or Glass Reinforced Plastic (GRP) tanks are placed at the base of rainwater down pipes to collect rainwater runoff from the roof areas. This water can then be used by the residents for watering both indoor and outdoor plants and soft landscaping.

Permeable Surfacing – Block paved and or specialised tar macadam provides a porous surfacing for the external areas that allows water to infiltrate through and into the underlying layers. Water is temporally stored and it either infiltrates to ground or is retained for controlled release into the drainage system.

Swales – Swales are linear grassed ditches that provide conveyance and storage of surface water runoff. They can be inexpensive to construct as they are very similar to normal landscaping areas, but require land.

6.4.6 Site Control – Principles and Objectives

Site control features such as ponds and basins can be designed to attenuate storm runoff and provide conditions for settlement of suspended solids. The benefits are that they satisfy the full range of SuDS requirements in terms of reducing the quantity of water, improving the quality of water and also providing the bio diversity enhancements.

Detention Basins – Detention Basins or dry ponds remain dry during periods of low rainfall and are located to receive runoff from conveyance systems prior to discharge to the watercourses/ditches at controlled flow rates. Basins can be sized to allow storage of excess flows until they can drain. Discharge will generally be controlled via vortex flow control device or reduced sized orifice plate as appropriate. Some removal of pollutants would occur in a detention basin by filtration through vegetated soils.

Balancing Ponds – Balancing ponds (or wet ponds) are similar to detention basins, but include a permanently wet area during periods of low rainfall. The volume of water stored is in addition to any volume to be retained as part of any flood defence purpose, and provides amenity value and treatment to surface water runoff. The quality of runoff is improved prior



to discharge to watercourses from settlement of suspended solids and biological action on fuel/oil discharge.

Conventional Piped Drainage – Conventional piped drainage would be in areas of the proposed scheme where 'over-the-edge' drainage is unsuitable. This would typically be at areas where kerbs are required due to road user safety reasons such as at roundabouts or marshalling yards. Surface water runoff would be collected via conventional trapped gullies or combined kerb drainage systems, before discharging appropriately into SuDS units.

6.5 Surface Water Drainage Strategy

6.5.1 Surface water arising from a developed site should as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account. This is in line with current guidance and site specific recommendations from the EA.

6.5.2 In light of the findings from the SuDS review in Section 6.4, the following surface water drainage strategy will be implemented.

1. Due to the increase in impermeable areas from the pre development situation, the SuDS management train approach will be incorporated.
2. Prevention measures will be the initial means of retaining the runoff.
3. Rainwater runoff from roofs and hard paved areas will be directed through the prevention measures above and then via a new Anglian Water adopted gravity network within the highways to an onsite detention pond located in the south eastern area of the site. The new on site pond will account for the additional surface water runoff generated by the site and prevent increased discharge to the downstream watercourse for the extreme events.
4. Discharge from the development will be restricted to greenfield rates to mimic the pre-development scenario.

6.6 Surface Water Drainage Proposals

6.6.1 Surface water runoff from the roof and external areas will be directed to the below ground gravity network. This water is considered to be generally clean and with limited contamination, and may be discharged directly to the new drainage infrastructure and SuDS Facilities. Silt is to be prevented from entering the drainage system by the use of trapped



gullies, channels with silt traps, infiltration trenches with silt traps or by the use of Sustainable Drainage techniques.

- 6.6.2 Although it is envisaged that prevention measures may be included in the final scheme, for outline calculations purposes an Anglian Water adopted gravity network will serve the residential plots, highways, and direct runoff to a 'Site Control' detention basin prior to discharge. The discharge rate from the basin will be restricted to the equivalent existing greenfield runoff rates as calculated based on the site. Taking into account the existing greenfield discharge rates, and assuming no preventative measures are incorporated and no infiltration to ground is possible, then the worst case attenuation volumes are defined in Table 5 below.
- 6.6.3 A hydraulic model will be created using drainage design software as part of the further preliminary drainage design, which will define pipe sizes through the site and attenuation volumes. It is noted that these rates and volumes are preliminary for this outline assessment and are likely to alter at detailed design stage when more site specific information is made available. The outline attenuation volumes in Table 5 have been derived using Micro Drainage Source Control Software.
- 6.6.4 The proposed impermeable area for this site (quoted in Table 5 below) is based on 55% of the developable area, taken from the Development Framework Plan submitted with the application. 55% of these areas offers a conservative outline design, whilst also ensuring any permeable areas of the proposed site are also considered. Hydrock drawing C14106/101 in Appendix D provides further information.

Table 5: Outline Attenuation Volumes

Estimated Impermeable Area (ha)	Approximate Attenuation Volumes		
	1 Year (19.0l/s)	30 Year (52.6l/s)	100 Year + 30% Climate Change (77.9l/s)
4.23	542m ³	1321m ³	2225m ³

- 6.6.5 It is anticipated that all new drainage will be put up for adoption by the local sewage authority, in this case Anglian Water. The proposed drainage layout will be designed in accordance with Sewers for Adoption 7th Edition (SfA). SuDS Guidance will be taken from Ciria C697.
- 6.6.6 It is a requirement of SfA that the drainage systems be designed not to flood any part of the site in a 1 in 30 year return period design storm (3.33% annual probability of occurrence). The below ground surface water drainage design may require that some areas of the hard



standing areas experience minor flooding in extreme conditions beyond the 30 year design criterion. This is classed as Exceedance Flooding or Secondary Storage and is common for this type of development. Any such flood water will be directed away from residential units, where it will discharge into the drainage infrastructure as water levels recede. All exceedance flood water will be retained on site up to the 100 year return period to prevent flood impact to the adjoining neighbours. All drainage designs will include the appropriate climate change allowance, in this case a 30% increase in rainfall.

6.7 Pollution Control

- 6.7.1 Silt is to be prevented from entering the drainage system by the use of trapped gullies, channels with silt traps, French drains with silt traps or by the use of Sustainable Drainage techniques.



7.0 MANAGEMENT MEASURES, OFFSITE IMPACTS AND RESIDUAL RISK

7.1 Flood Risk Management Measures

- 7.1.1 This assessment has found that the site is at low risk of flooding from tidal, fluvial, sewers and artificial sources.
- 7.1.2 The site is predominantly at very low risk of surface water flooding. However, there is an area shown to be at medium/high risk on the Environment Agency maps; this flooding is associated with the unnamed watercourse on site. A 5m easement either side of this watercourse will ensure that the risk of surface water flooding to the developable area is low.
- 7.1.3 Although the information from the Environment Agency and the Strategic Flood Risk Assessment indicates that the site is at low risk of groundwater flooding. Shallow groundwater was encountered during the infiltration tests. Provided foundations can be constructed at times when groundwater is suitable low (or can be controlled through dewatering) and designed such that the damp proof membrane level is raised sufficiently above expected peak groundwater levels, then the risk from this source is considered to be low.
- 7.1.4 The surface water drainage strategy for the new development site is to direct all the surface water runoff from the new residential development to new surface water networks that flow south east to correspond with the natural ground falls. A detention basin will be situated on the network to retain the excess rainwater due to the outflow restriction set by the pre development greenfield runoff rates. The new private surface water networks will be designed in line with current British Standard guidance up to the 100 year storm return period including an allowance for climate change. Beyond the 30 year criterion, minor out of chamber flooding may occur with flood water directed away from the residential buildings where it will then be directed back in to the drainage network as the pipe water levels recede. No flood water will be allowed to discharge off the development site.
- 7.1.5 The use of SuDS with controlled (restricted) outflows to the unnamed watercourse in line with the required runoff rates will help mitigate any flood risk impact to the surrounding areas.
- 7.1.6 The new drainage system will be put up for adoption by Anglian Water with the highway drainage adopted by the local highway authority. As such both bodies will be responsible for maintaining the gullies and drain cleansing to ensure that the surface water drainage system will always operate at its maximum efficiency. Any SuDS features will be maintained by a private management company.



7.2 Off-Site Impacts

- 7.2.1 By including SuDS into the drainage system and by mimicking the pre-development peak runoff rate at its point of discharge, this will reduce surface water flooding impact onto the downstream catchments.
- 7.2.2 As there is no flood displacement or increased rate of runoff as part of this proposal into the adjacent watercourse, the proposed development will therefore not increase flood risk in this locality.
- 7.2.3 Access and egress arrangements to and from the new development should flooding occur will be through the main access off Ipswich Road and the second access point off Top Street.

7.3 Residual Risk

- 7.3.1 Flood risk to people and property can be managed but it can never be completely removed; a residual risk remains after flood management or mitigation measures have been put in place. This relates to a rainfall event beyond what can be fully quantified. Should this occur then some out of chamber flooding to the onsite sewer network could occur. This will be explored as part of any future adoption agreement of the infrastructure with Anglian Water.

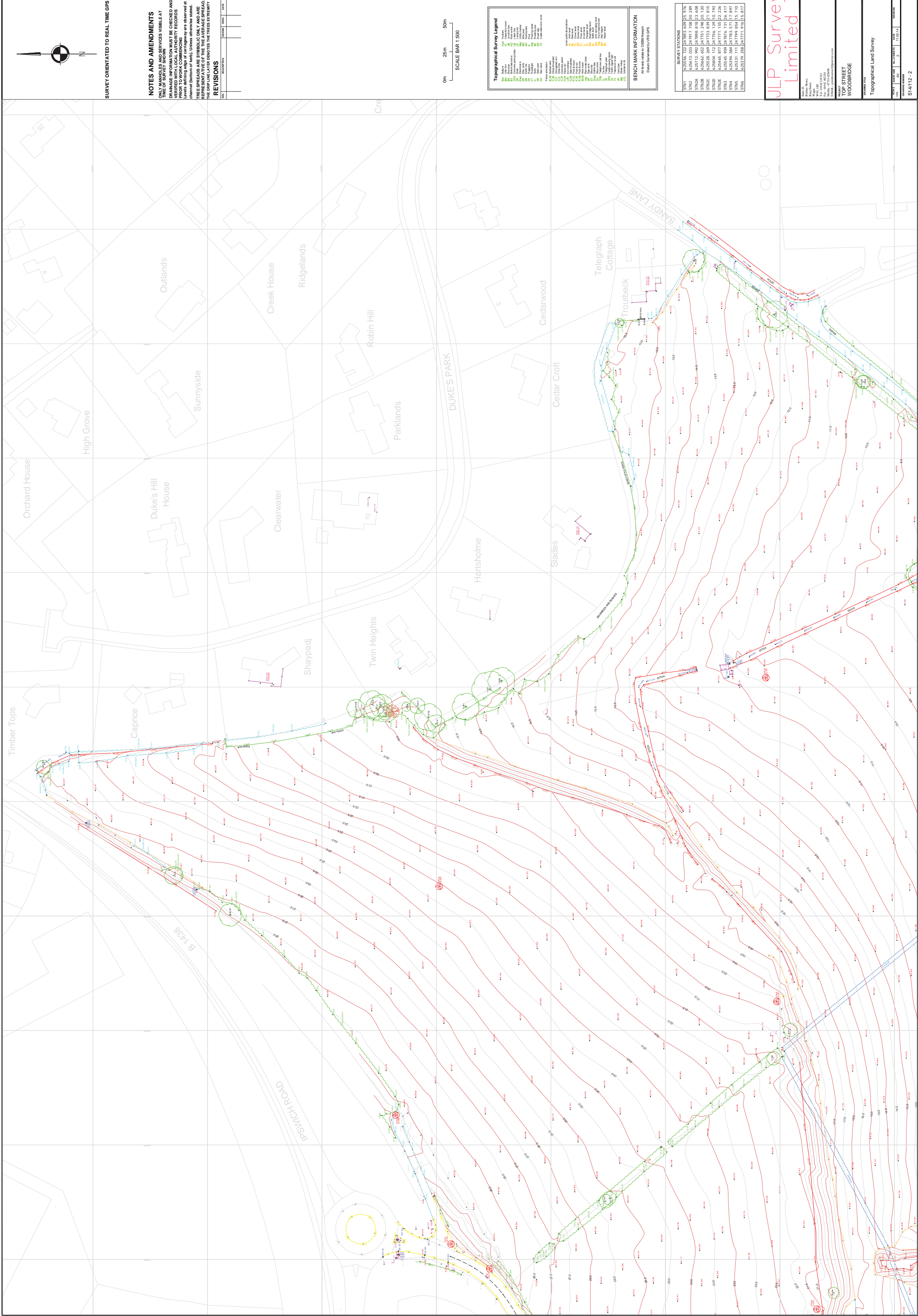
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Appendix A – Topographical Survey

CONTENTS	
Identifier	Name
JLP Surveys Limited	Topographical Land Survey Drawing No. S14/112 Sheet 1
JLP Surveys Limited	Topographical Land Survey Drawing No. S14/112 Sheet 2

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SURVEY ORIENTATED TO REAL TIME GPS

NOTES AND AMENDMENTS

ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN

DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING

Levels (bottom edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated,

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE AVERAGE SPREAD. THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

REVISIONS

REV.	DESCRIPTION	DRAWN	CHKD.	DATE

[illegible]

BENCH MARK INFORMATION
All levels relate to OSBM Newlyn
Datum Generated by VRS GPS

SURVEY STATIONS	
STN1	625556, 722 247893, 609 255, 976
STN2	625613, 033 247917, 708 308, 289
STN2A	625672, 992 247898, 818 233, 608
STN2B	625662, 652 247751, 298 202, 120
STN2C	625538, 269 247733, 839 231, 815
STN2D	625804, 212 247756, 120 793
STN2E	625445, 877 247771, 155 922, 226
STN3	625545, 939 247876, 731 266, 417
STN4	625394, 584 247883, 571 17, 897
STN5	625331, 111 247799, 856 15, 710
STN6	625337, 258 247771, 976 155, 817

JLP Surveys
Limited

Suite 25,
Railway House,
King Street,
Wigan
WN1 1BT
Tel: 01942 240313
Fax: 01942 402210
Mobile: 07710 428498
EMAIL: petros@wigan.gov.uk

PROJECT
TOP STREET
WOODBIDGE

DRAWING TITLE

Topographical Land Survey

SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1/8" = 1'-0"	A0	2	11.03.14	

DRAWING NUMBER

S14/112 - 2



Appendix B – Statutory Authority Correspondence

CONTENTS	
Identifier	Name
Environment Agency	Pre Development Enquiry Response Email and guidance notes
Suffolk County Council	Pre Development Enquiry Response Email

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Ms Sophie Eaton
Hydrock
St. Baldreds Hall
239 Ashley Road
Hale
ALTRINCHAM
WA15 9NE

Our ref: AE/2014/117342/01-L01
Your ref: .
Date: 05 March 2014

Dear Ms Eaton

**PRELIMINARY OPINION: CIRCA: 250 RESIDENTIAL UNITS ON GREENFIELD SITE
DUKE'S PARK WOODBRIDGE**

We refer to your email dated 10 February 2014 and the accompanying completed enquiry form and location plan relating to the above development proposal. We are able to provide some general advice on the development of the land concerned, but more detailed advice falls within our planning advice charging regime. Further information about this service is provided at the end of the letter. This letter therefore constitutes our Preliminary Opinion of the proposals.

Flood Risk – Surface Water Management

The development site lies in Flood Zone 1 which is the area of low flood probability as defined in the Technical Guidance to the National Planning Policy Framework (NPPF). In the case of development sites within Flood Zone 1 with an area 1 hectare or greater, applicants are required under Table 1 in the Technical Guidance to the NPPF to support their application with a Flood Risk Assessment.

Sufficient information will need to be provided by the applicant to support planning considerations for the management of surface water arising from the development. Particular regard should be given to the objectives of paragraph 103 of the National Planning Policy Framework (NPPF), namely "to ensure flood risk is not increased elsewhere" and that the development "gives priority to the use of sustainable drainage systems" have been adequately addressed and that there is reasonable confidence that suitable controls can reasonably be expected to be met through the requirements of a reserved matter planning condition requiring detailed drainage system design to be forwarded and agreed by the LPA prior to the commencement of development.

The primary considerations that we would wish to see addressed in an outline

application is that there is reasonable confidence that:

1. There is a clearly identified pathway for surface water to reach a receiving wider drainage system from the site.
2. If infiltration has been demonstrated to be unviable, then a maximum allowable discharge rate should have been calculated for the site based upon the rate that surface water would leave the site in its pre-development state.
3. Calculations have been carried out to assess the volumes of water that will be generated by the development in excess of the pre-development run-off rates for a range of storm frequencies and that measures have been identified to demonstrate that there will be no constraint to managing this exceedance volume within the boundaries of the site.

In the case of a full planning application detailed Flood Risk Assessment work should be carried out including demonstration, among other things, of greenfield rate, infiltration testing in order to demonstrate the suitability or otherwise of infiltration techniques, sizing of storage areas and capacity of drainage scheme to handle up to the 1 in 100 year critical storm event inclusive of climate change.

Green & Blue Infrastructure

A consideration of both green and blue infrastructure is an important component in the adaptation to climate change. Green infrastructure is regarded as comprising 'a network of multi-functional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities'.

Blue infrastructure (e.g. rivers, streams, ponds, wetlands) concerns the management and development of water sources and resources. It forms an integral component of green infrastructure; its primary function is to convey water but it also has an important range of secondary functions including biodiversity and amenity.

Green infrastructure is capable of being incorporated within all scales of development including individual properties and neighbourhoods. Types of green infrastructure including green walls, green roofs, providing a bird box for every apartment / house, and incorporating a built-in growing plot on apartment balconies can be used at the level of individual buildings. Other wider approaches include maximising areas of water, providing a range of environmental conditions (including moist, dry, and semi natural habitats), and incorporating nectar rich vegetation to benefit butterflies.

There are many benefits associated with green and blue infrastructure and the adaptation to the impacts of climate change, including:

- Reducing the impact of urban run-off by reducing surface flow;
- Safeguarding areas for biodiversity and creating or retaining links between urban and rural areas;
- Improve water quality and attenuation; and
- Provide shading to buildings and outdoor spaces;

Establishing ecological corridors and networks helps to form more ecologically resilient landscapes. The ability to design a joined up strategic approach green and blue

infrastructure network provide important connectivity to allow species to move around which will be important in the adaptation to climate change.

Designing and incorporating green and blue infrastructure into all scales of development, will form an important part in adapting to the impacts of climate change. We would encourage you to consider opportunities for incorporating green and blue infrastructure within the development.

Further guidance can be found on the Town and Country Planning Association website at <http://www.tcpa.org.uk/pages/climate-change-adaptation-by-design.html>

Foul Water Disposal

We expect developments discharging domestic sewage to connect to the public foul sewer where it is reasonable to do so. The developer will need to clarify which waste water treatment works will receive waste water from the development and whether there will be issues with the capacity of the network or of the receiving waste water treatment works, or with the effluent quality from the treatment works.

The Water Framework Directive (WFD) sets a target for all surface and ground water bodies to reach 'good status' by 2015 (or later dates of 2021 or 2027 subject to criteria set out in the Directive). It will be important to demonstrate that the proposed development will not result in any deterioration to the status of water bodies under the WFD.

We recommend the developer checks the Haven Gateway Water Cycle Study for information on waste water treatment capacity and consults with the sewerage undertaker, Anglian Water, on any issues identified. Given the scale of the development we would have reservations about the use of non-mains drainage for this site and there is no guarantee that we would issue any environmental permit.

The development should not be occupied until effective wastewater treatment capacity for the development is in place and operational.

Land Contamination

We do not consider this site a priority, therefore we will not be providing detailed site-specific advice or comments with regards to land contamination issues for this site.

The applicant should address risks to the water environment from contamination at the site, following the requirements of the National Planning Policy Framework and the Environment Agency [Guiding Principles for Land Contamination](#)

Sustainable Development

In order to minimise the use of resources and the production of waste, we suggest the development incorporates principles of sustainable construction and design.

This can include the use of passive systems using natural light, air movement and thermal mass, as well as using energy produced from renewable sources. In addition to this, there is the opportunity to install water efficient and water saving devices in the proposed development. Water butts, low flush toilets and efficient appliances would be

obvious measures but there may be opportunities for more innovative technologies such as grey water recycling.

Pollution Control

Prior to being discharged into any watercourse, surface water sewer or soakaway system, all surface water drainage from parking areas and hard standings susceptible to oil contamination shall be passed through an oil separator designed and constructed to have a capacity and details compatible with the site being drained. Roof water shall not pass through the interceptor. All washdown and disinfectant waters shall be discharged to the foul sewer. Any detergents entering oil separators may render them ineffective.

Only clean, uncontaminated surface water should be discharged to any soakaway, watercourse or surface water sewer.

Review of Documentation and Further Work

If the applicant requires additional advice from us ahead of submitting a planning application to the Council then we do offer a voluntary charged-for-service. As part of the service we can provide a dedicated project manager to act as a single point of contact to coordinate any problems, data requests or review technical documents such as the preliminary contaminated risk assessment that the applicant will need to prepare.

If the applicant wishes us to provide advice under our charged for service we will set up a Project Agreement and send an offer letter to the applicant which, among other things, will provide advice of our estimated costs and provide a programme of the review work. The Project Agreement will detail the terms and conditions of the review work. If the applicant is happy to go down the charged for service route, they should advise us and we will make the necessary arrangements.

Whilst we have identified some potential issues with the proposed development, notably surface water management, we are keen to work with the applicant in resolving these so that we do not have to raise an objection at the formal planning application stage.

Please note that this response is based on the information provided at this time and if this changes in the future we would need to consider our position again.

We trust that our comments are helpful.

Yours sincerely



Andrew Hunter
Sustainable Places - Planning Advisor

Direct dial 01473 706749

Direct fax 01473 271320

Direct e-mail andrew.hunter@environment-agency.gov.uk

Eleanor Dale

From: Jason Skilton <Jason.Skilton@suffolk.gov.uk>
Sent: 05 October 2015 07:43
To: Eleanor Dale
Cc: Graham Philpott
Subject: RE: LLFA for Woodbridge C14106

Dear Ms Dale,

The pluvial flood maps are supplied to use by the EA on an annual bases. These are I believe are from originally lidar data and are updated by EA when new modelling data is received.

You can proposed development within a predicted surface water flood area, but you would have to demonstrate how you would mitigate the predicted flooding to the proposed development and not affect neighbouring land/properties.

Kind Regards

Jason Skilton
Flood & Water Engineer
Suffolk County Council

Tel: 01473 260411
Fax: 01473 216864

From: Eleanor Dale [<mailto:EleanorDale@hydrock.com>]
Sent: 29 September 2015 13:55
To: Graham Philpott
Cc: Automate - Manchester
Subject: RE: LLFA for Woodbridge C14106

Dear Graham,

Many thanks for your email to my colleague below and the flood map provided. Could you please confirm how the pluvial flood map was created? It seems to follow the same pattern as the Environment Agency surface water floodplain map? Does the entire developable area have to be outside of the 1 in 100 year extent? As we would usually only ensure the developable area is outside of the areas shown as medium/high risk on the Environment Agency maps.

Regards,

Eleanor

Eleanor Dale
Infrastructure Engineer

Hydrock
St Baldred's Hall, 239 Ashley Road, Hale, Cheshire WA15 9NE
Office: 0161 233 0746
Mobile: 07469856545
www.hydrock.com



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From: Graham Philpott [<mailto:Graham.Philpott@suffolk.gov.uk>]

Sent: 12 January 2015 15:21

To: Sophie Eaton <SophieEaton@hydrock.com>

Subject: LLFA for Woodbridge C14106

[\[DetachPipe\] ATT00001.txt.zip \(476 Bytes\)](#)

[\[DetachPipe\] 2015-01-12 B1438NearTopStreetPluvial.pdf.zip \(947 KB\)](#)

[\[DetachPipe\] image003.jpg.zip \(3 KB\)](#)

[\[DetachPipe\] image002.jpg.zip \(859 Bytes\)](#)

[\[DetachPipe\] image001.png.zip \(2 KB\)](#)

Dear Ms Eaton,

Please find attached the fluvial flood risk map for your Woodbridge site as requested.

Regards

Graham Philpott
Mapping Technician
Flood & Water Management
Highway Network Management
Economy, Skills & Environment

Suffolk County Council
Endeavour House
8 Russell Road
Ipswich
Suffolk
IP1 2BX

Floods No: 01473 260929, 9am-5pm, Mon-Fri

Email floods@suffolk.gov.uk

From: Jason Skilton

Sent: 07 January 2015 08:25

To: SophieEaton@hydrock.com

Cc: Graham Philpott

Subject: FW: LLFA for Woodbridge C14106

Importance: High

Dear Ms Eaton,

Your enquire has been passed to the Flood & Water Management Team within Suffolk County Council.

We will provide you with a map of the requested area showing the records we hold in relation to pluvial and fluvial flooding, plus any recorded incidents of flooding.

You should have a reply within the next 10 days.

Regards

Jason Skilton
Flood & Water Engineer

Suffolk County Council
Endeavour House
8 Russell Rd
Ipswich
Suffolk
IP1 2BX

Tel 01473 260411
Fax 01473 216864
Email Jason.skilton@suffolk.gov.uk

From: Jeff Horner
Sent: 06 January 2015 17:34
To: Jason Skilton
Subject: FW: LLFA for Woodbridge C14106
Importance: High

From: Jane Burch
Sent: 06 January 2015 17:18
To: Jeff Horner
Subject: FW: LLFA for Woodbridge C14106
Importance: High

Please will you respond to this email. thanks

Jane Burch
Flood & Coastal Policy Manager
Suffolk County Council, Endeavour House,
8 Russell Road, Ipswich, IP1 2BX
Tel: 01473 264782
Mobile: 07595 091325
email: jane.burch@suffolk.gov.uk

www.greensuffolk.org/flooding

From: Sophie Eaton [<mailto:SophieEaton@hydrock.com>]
Sent: 06 January 2015 16:51
To: Jane Burch
Cc: automate
Subject: FW: LLFA for Woodbridge C14106

Hi Jane,

Further to Nicolas' email below, please could you provide me with the information requested or the details of someone who would better be able to help me?

Kind Regards,

Sophie

Sophie Eaton

Office Administrator

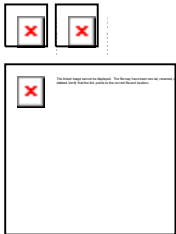
Hydrock

St Baldred's Hall, 239 Ashley Road, Hale, Cheshire WA15 9NE

Office: (0161) 233 0746

Email: SophieEaton@Hydrock.com

www.hydrock.com



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From: Nicolas Raffel

Sent: 23 September 2014 11:18

To: jane.burch@suffolk.gov.uk

Cc: automate

Subject: LLFA for Woodbridge C14106

Dear Jane,

Hope all is well.

We are undertaking a site specific flood risk assessment for a site off Dukes Park, Woodbridge, Suffolk, that will form part of a planning application for a proposed development at the site.

This assessment will be in accordance with the relevant guidelines, including National Planning Policy Framework guidance and Environment Agency guidance.

Can you provide us with information on whether there are any flooding issues or historical flooding in the area of interest and whether you have any parameters above what the environment agency would ask for?

Or if not forward this onto the person who would.

The proposed development is for private residential housing and have attached the location plan.

Many thanks

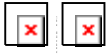
Nicolas

Nicolas Raffel
Technical Assistant

Hydrock

St Baldred's Hall, 239 Ashley Road, Hale, Cheshire WA15 9NE
Office: 0161 233 0746

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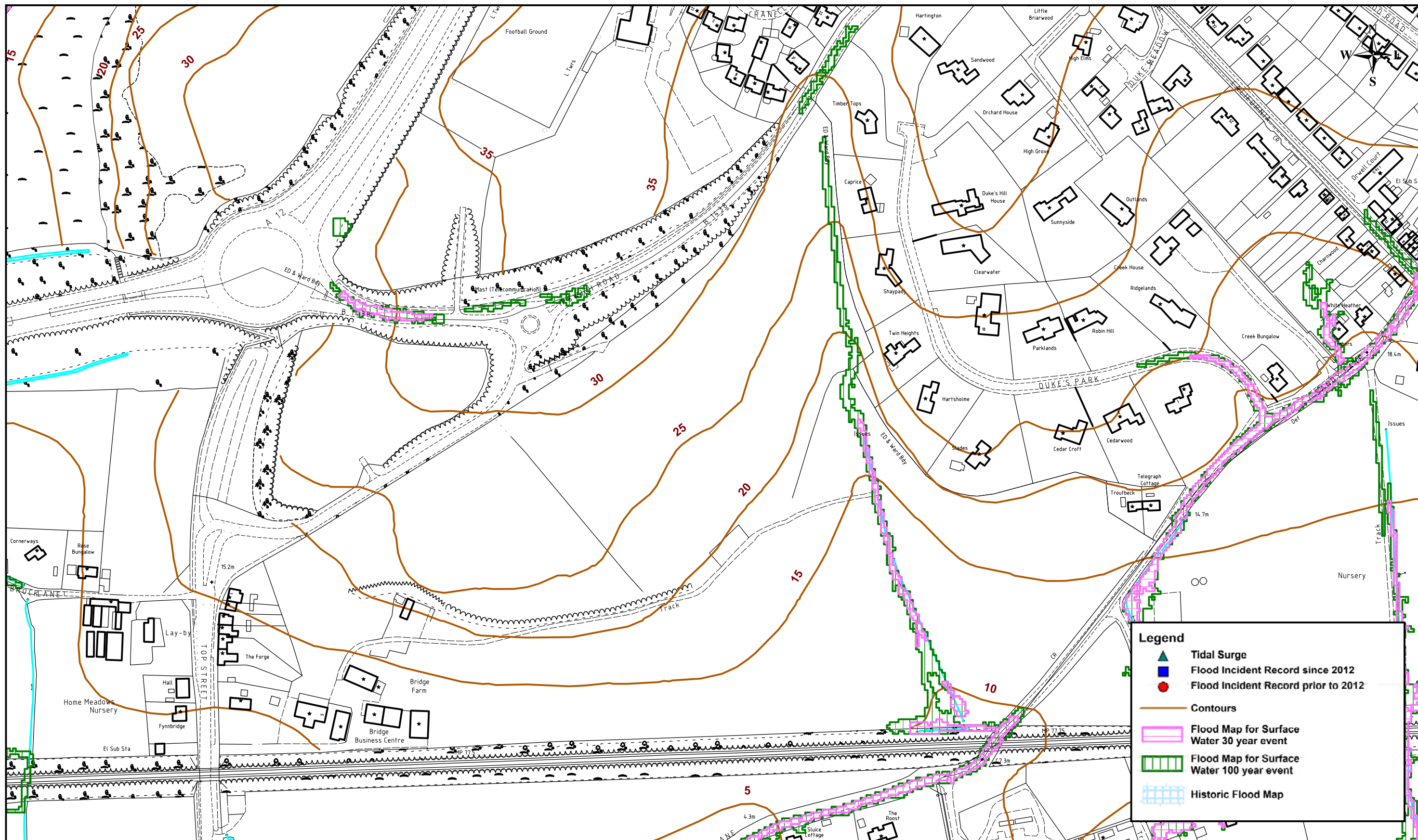
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Lucy Robinson. Director of Economy, Skills & Environment.
Endeavour House, 8 Russell Road, Ipswich, Suffolk. IP1 2BX.

Scale 1:2500

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Ordnance Survey 100023395.



Surface Water Flood Risk for - Woodbridge, Suffolk. IP12 4DD, IP12 4RB & IP12 4SA.
(There are no Fluvial records for this site).

* Please note this map should not be used to assess flood risk for individual properties, it should only be viewed at a local area scale to give an approximate flood extent. For example small drainage ditches may not have been incorporated into these flood maps which can influence flood risk.

DATE 12/01/2015

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Appendix C – Anglian Water Sewer Records

CONTENTS	
Identifier	Name
Anglian Water	Sewer Records

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Order Reference: B1045997-3
Produced on: 11 February 2014

COMMERCIALDW Plus Drainage and Water Enquiry

The information in this document refers to:

Land adjacent to
Dukes Park
WOODBIDGE

This document was ordered by:

Searchflow Ltd
42 Kings Hill Avenue
Kings Hill
West Malling
Kent
ME19 4AJ

Customer reference: 20315602000

This document was produced by: Geodesys, PO Box 485, Huntingdon, PE29 6YB. For any queries relating to this report please contact our customer services team on 0845 070 9109, quoting order reference: B1045997-3.

Interpretation of Drainage and Water Search

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

Enquiries and Responses

The records were searched by Sharon Bish (Anglian Water Services Ltd. trading as Geodesys) who has no, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.

The report was completed by Sharon Bish (Anglian Water Services Ltd. trading as Geodesys) who has no, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.

This was requested on 10 February 2014 and completed on 11 February 2014

Geodesys, has a robust and uniformly efficient complaints process. Formal complaints and queries can be made, by telephone on 0845 070 9109, in writing to Geodesys, Osprey House, 1 Percy Road, Huntingdon, Cambs, PE29 6SZ or by e-mail to customer.services@geodesys.com

Our standard terms and conditions for Commercial Drainage and Water Enquiries apply to this report. They are included in this search and are available on our website.

On 1 October 2011 ownership of private sewers and lateral drains changed in accordance with The Water Industry (schemes for Adoption of Private Sewers) Regulations 2011. The contents of this search may not reflect these changes. Please visit www.anglianwater.co.uk/sewersswitchover for more details.

Geodesys Complaints Process

While we make every effort to ensure searches are dispatched in an accurate and timely way, we understand that from time to time things don't go as planned.

If you have any queries, or need to raise a complaint, please contact our dedicated Customer Service team on 0845 070 9109 as soon as possible, so we can look into it for you.

If you do raise a complaint, you can expect the following high level of service:

- We will confirm we have received your complaint within one working day and will send you a copy of our complaints process so you know what to expect.
- Following a full review, we will send you a written response, within 10 working days.
- If you want us to liaise with a third party on your behalf, just let us know.
- We will keep you informed of our progress if the investigation takes longer than we expect.
- Once you have our response, if you are still unhappy, please let us know and we can escalate your complaint. Ultimately, in the unlikely event that we cannot reach a settlement, you can refer your complaint to The Property Ombudsman: (tel) 01722 333 306 or (email) admin@tpos.co.uk. We will co-operate fully with the Ombudsman during an investigation and comply with his final decision.

Important Consumer Protection Information from the PCCB

This search has been produced by Geodesys, a trading name of Anglian Water Services Limited, which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- Provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom.
- Sets out minimum standards which firms compiling and selling search reports have to meet.
- Promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals.
- Enables consumers and property professionals to have confidence in firms which subscribe to the Code, their products and services.

The Code's core principles

Firms which subscribe to the Search Code will:

- Display the Code logo prominently on their search reports.
- Act with integrity and carry out work with due skill, care and diligence.
- At all times maintain adequate and appropriate insurance to protect consumers.
- Conduct business in an honest, fair and professional manner.
- Handle complaints speedily and fairly.
- Ensure that all search services comply with the law, registration rules and standards.
- Monitor their compliance with the Code.



Complaints

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

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

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

Please ask your search provider if you would like a copy of the Search Code.

Order Summary Page

Question	Answer
1 Where relevant, please include a copy of an extract from the public sewer map	Map Included
2 Where relevant, please include a copy of an extract from the map of waterworks	Map Included
3 Does foul water from the property drain to a public sewer?	Land/Plot
4 Does surface water from the property drain to a public sewer?	Land/Plot
5 Is a surface water drainage charge payable?	No
6 Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	No
7 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	No
8 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?	Land/Plot
9 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?	Not Applicable
10 Is any building within the property at risk of internal flooding due to overloaded public sewers?	No
11 Please state the distance from the property to the nearest boundary of the nearest sewage treatment works	See Details
12 Is the property connected to mains water supply?	Land/Plot
13 Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	Yes
14 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?	Land/Plot
15 Is the property at risk of receiving low water pressure or flow?	No
16 Please include details of a water quality analysis made by the water undertaker for the water supply zone in respect of the most recent calendar year	See Details
17 Please include details of any departures, authorised by the Secretary of State under Part 6 of the 2000 Regulations from the provisions of Part 3 of those Regulations.	See Details
18 Please include details of the location of any water meter serving the property	See Details
19 Who are the sewerage and water undertakers for the area?	Anglian Water Services Limited & Anglian Water Services Limited
20 Who bills the property for sewerage services?	Land/Plot
21 Who bills the property for water services?	Land/Plot
22 What is the current basis for charging for sewerage and water services at the property?	Land/Plot
23 Is there any easement giving Anglian Water the right of access to defined assets located within the boundary of the property?	No
24 Are there any trade effluent consents relating to this site/property	No

Question 1 Where relevant, please include a copy of an extract from the public sewer map

Answer 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.

Informative Public Sewers are defined as those for which the Sewerage Undertaker holds statutory responsibility under the Water Industry Act 1991.
Anglian Water Services Limited 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.
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.
Assets other than public sewers may be shown on the copy extract for information.

Question 2 Where relevant, please include a copy of an extract from the map of waterworks

Answer 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.

Informative The map of the waterworks has been supplied by:
Anglian Water Services Limited
PO Box 770
Lincoln
LN5 7WX
Tel: 08457 145 145
www.anglianwater.co.uk
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, please refer to Question 23.
The enclosed extract of the public water main record shows 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 3 Does foul water from the property drain to a public sewer?

Answer 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.

Informative Anglian Water Services Limited is not responsible for any private drains and sewers that connect the property to the public sewerage system, and does not hold details of these. The property owner will normally have sole responsibility for private drains serving the property.
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 4 Does surface water from the property drain to a public sewer?

Answer 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.

Informative Anglian Water Services Limited is not responsible for private drains and sewers 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.
If on inspection the buyer finds that the property is not connected for surface water drainage, the property may be eligible for a rebate of the surface water drainage charge. Details can be obtained from the company tel: 0800 169 3271.
If surface water 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.

Question 5 Is a surface water drainage charge payable?

Answer Records confirm that a surface water drainage charge is not payable for the property.

Informative Where surface water from a property does not drain to the public sewerage system no surface water drainage charges are payable. Where surface water charges are payable but upon inspection the property owners believe that surface water does not drain to the public sewerage system, application can be made to the water company to end surface water charges (freephone 0800 169 3271 for more details).

Question 6 Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?

Answer The public sewer map included indicates that there are no public sewers, disposal mains or lateral drains within the boundaries of the property. However, on 1 October 2011, private sewers that serve a single property and lie outside the boundary of that property, were transferred into public ownership. Therefore there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map but which may prevent or restrict development of the property.

Informative The boundary of the property has been determined by reference to the Ordnance Survey record. The presence of a public sewer running within the boundary may restrict further development. Anglian Water 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. Sewers 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 that these details are checked with the developer, if any. On 1 October 2011 all foul Section 104 sewers laid before 1 July 2011 were transferred into public ownership, excluding those that discharge to a privately owned sewage treatment or collection facility. All surface Section 104 sewers that do not discharge to a public watercourse were also transferred. Our mapping records are currently being reviewed and updated and may not yet reflect this change, therefore there may be additional public sewers, disposal mains or lateral drains which are not yet recorded on the public sewer map or public sewers that still show as Section 104 sewers.

Question 7 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

Answer The public sewer map indicates that there are no public sewers within 30.48 metres (100 feet) of a building within the property. However, it has not always been a requirement for such public sewers to be recorded on the public sewer map. It is therefore possible for unidentified sewers or public sewers to exist within the boundaries of the property. However, on 1 October 2011 private sewers were transferred into public ownership, therefore there may be additional lateral drains and/or public sewers which are not recorded on the public sewer map but are also within 30.48 metres (100 feet) of a building within the property.

Informative The measure is estimated from the Ordnance Survey record, between any building within the boundary of the property and the nearest public sewer. Sewers 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 that these details are checked with the developer. On 1 October 2011 all foul Section 104 sewers laid before 1 July 2011 were transferred into public ownership, excluding those that discharge to a privately owned sewage treatment or collection facility. All surface Section 104 sewers that do not discharge to a public watercourse were also transferred. Our mapping records are currently being reviewed and updated and may not yet reflect this change, therefore there may be additional public sewers, disposal mains or lateral drains which are not yet recorded on the public sewer map or public sewers that still show as Section 104 sewers.

Question 8 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?

Answer Records confirm that 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.

Informative This enquiry is of interest to purchasers of new properties 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 public drains and sewers for which they will hold maintenance and renewal liabilities.
On 1 October 2011 all foul Section 104 sewers laid before 1 July 2011 were transferred into public ownership, excluding those that discharge to a privately owned sewage treatment or collection facility. All surface Section 104 sewers that do not discharge to a public watercourse were also transferred. Our mapping records are currently being reviewed and updated and may not yet reflect this change, therefore there may be additional public sewers, disposal mains or lateral drains which are not yet recorded on the public sewer map or public sewers that still show as Section 104 sewers.

Question 9 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?

Answer The company's records confirm that there is not a statutory agreement or consent in respect of building over/near a public sewer at this property. For historical reasons the company may not be aware of some agreements or consents which have been entered into by the local authority. Whilst an 'agreement' may not exist, current Building Regulation guidance permits building over/near sewers in certain circumstances. Consent without an agreement may have been issued by Anglian Water or independently by the Building Control Body. As long as the extension has a valid building regulations certificate then this should prove adequate assurance to the purchaser.

Informative Anglian Water Services Limited is obliged to maintain its sewers. If any problem were to arise, Anglian Water Services Limited would investigate the problem and 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. In advance of any problem it is difficult to predict the effect the works would have on the property. Similarly, the position as to liability of both the property owner and Anglian Water Services Limited would need to be ascertained.
On 1 October 2011 private sewers were transferred into public ownership, therefore there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map but which may further prevent or restrict development of the property.

Question 10 Is any building within the property at risk of internal flooding due to overloaded public sewers?

Answer The property is not recorded as being at risk of internal flooding due to overloaded public sewers. On 1 October 2011 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 Anglian Water may not be aware of. For further information it is recommended that enquiries are made of the vendor as to any previous flooding occurrences.

Informative A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (eg. Flat gradient, small diameter). Flooding as a result of temporary problems such as blockage, 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 reported 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 Anglian Water Services Limited. This report excluded flooding from private sewers and drains and Anglian Water Services Limited makes no comment upon this matter.

Question 11 Please state the distance from the property to the nearest boundary of the nearest sewage treatment works

Answer The nearest sewage treatment works is 0.24 kilometres to the South East of the property. The name of the sewage treatment works is WOODBRIDGE-CREEK FM STW (Anglian Water Services Ltd).

Informative 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, therefore, that there may be a private sewage treatment works closer than the one detailed above that has not been identified.

Question 12 Is the property connected to mains water supply?

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

Question 13 Are there any water mains, resource mains or discharge pipes within the boundaries of the property?

Answer The map of waterworks indicates that there are water mains, resource mains or discharge pipes within the boundaries of the property.

Informative The boundary of the property has been determined by reference to the Ordnance Survey record.
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 14 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?

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

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

Question 15 Is the property at risk of receiving low water pressure or flow?

Answer 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.

Informative "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 reported 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 10 metres head on the customer's side of the main stop tap (mst). 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 10 metres head on the customers' side of the mst is appropriate. For three or more properties the appropriate flow should be calculated from the standard loadings provided in BS6700 or 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. Water Undertakers should exclude from the reported DG2 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: Water Undertakers should not report under DG2 low pressures caused by planned maintenance. It is not intended that water undertakers identify the number of properties affected in each instance. However, water undertakers must maintain sufficiently accurate records to verify that low pressure incidents that are excluded from DG2 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 PRVs 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 incident of a 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 DG2 figures.

Question 16 Please include details of a water quality analysis made by the water undertaker for the water supply zone in respect of the most recent calendar year

Answer The analysis confirmed that all tests met the standards prescribed by the 2000 Regulations or the 2001 Regulations.

Informative Anglian Water investigates all infringements of drinking water quality standards thoroughly and takes appropriate corrective actions to resolve any problems. If there was any risk to public health from the quality of drinking water supplied, the Company would inform customers immediately, advise them not to drink the water until the risk had been removed and would take appropriate steps to advise and protect their customers.
The information provided above is based on a full calendar year. For more up to date and detailed information please see the water quality report provided at the back of this search. You can also visit www.anglianwater.co.uk, or telephone 0845 070 9109 or write to Geodesys, PO Box 485, Huntingdon, Cambridgeshire, PE29 6YB.
Water companies have a duty to provide wholesome water that meets the standards of the Water Supply (Water Quality) Regulations 2000. Water quality is normally tested at the tap used for domestic consumption, usually the kitchen. However, the owner/occupier is responsible for any deterioration in water quality that is a result of the supply pipe and the plumbing within the property and results in the standards not being met.
In England and Wales these regulations implement the requirements of the European Drinking Directive 98/83/EC. The 2000 Regulations impose standards for a range of parameters, which are either health based to ensure the water is safe to drink or ensure the water is aesthetically acceptable. They also require that drinking water should not contain any element, organism or substance (whether or not a parameter) at a concentration or value which would be detrimental to public health.
If there are concerns that lead pipes within the property may be causing high levels of lead in your drinking water please contact your water company for further advice (Telephone Anglian Water Customer Services on: 08457 145 145).
The water company undertakes a monitoring programme to establish water quality that includes random sampling from properties. It will notify the consumers of any failures to meet the water quality standards that are due to the condition or maintenance of the supply pipe and the plumbing within the property.
Samples are taken from a random selection of addresses within a water supply zone and the results of these samples represent the zonal performance. Water Quality zones are allowed to have a population equivalent of up to 86,000 and can cover large geographical areas. There is only a small possibility that the results of samples reported were taken from the property in question. The data collected by the company is subject to external review by the drinking water inspectorate (DWI) and by local and health authorities. In addition to reviewing quality data the DWI also carry out audits during which any area of the company's operations can be examined.

Question 17 Please include details of any departures, authorised by the Secretary of State under Part 6 of the 2000 Regulations from the provisions of Part 3 of those Regulations.

Answer There are no such authorised departures for the water supply zone.

Informative Authorised departures are not permitted if the extent of the departure from the standard is likely to constitute a potential danger to human health.
Please contact your water company if you require further information.

Question 18 Please include details of the location of any water meter serving the property

Answer Records indicate that this enquiry relates to a plot of land or recently built property. It is recommended that the charging proposals are checked with the developer.

Question 19 Who are the sewerage and water undertakers for the area?

Answer Anglian Water Services Limited, PO Box 770, Lincoln, LN5 7WX, Tel: 08457 145 145, www.anglianwater.co.uk is the sewerage undertaker for the area and Anglian Water Services Limited, PO Box 770, Lincoln, LN5 7WX, Tel: 08457 145 145, www.anglianwater.co.uk is the water undertaker for the area.

Question 20 Who bills the property for sewerage services?

Answer Records indicate that this enquiry relates to a plot of land or a recently built property. It is recommended that the charging proposals are checked with the developer.

Question 21 Who bills the property for water services?

Answer Records indicate that this enquiry relates to a plot of land or a recently built property. It is recommended that the charging proposals are checked with the developer.

Question 22 What is the current basis for charging for sewerage and water services at the property?

Answer Records indicate that this enquiry relates to a plot of land or a recently built property.

Informative Water and sewerage companies full charges are set out in their charge schemes which are available from the company free of charge upon request.

Unless we consider it impracticable to fit a Meter, we will require a Meter to be fitted to our specification to measure the volume of water supplied for charging purposes to all Non-Household premises or to any other premises where the principal use of the premises is not as a person's home. (For the purposes of assessing whether the principal use of the premises is otherwise than as a person's home account will be taken of whether a business is registered for V.A.T. purposes at the premises.)

Non-Household Customers will be charged for fitting a Meter.

Non-Household Measured Tariffs will automatically apply and be fixed in respect of all Non-Household Premises to which a Meter has been fitted to our specification to measure the volume of water supplied for charging purposes. Otherwise, the Unmeasured Tariffs will apply.

Mixed use premises are premises used partly as a person's house or dwelling and partly for business purposes, eg. a supply serving both a farmhouse occupied as a sole or principal dwelling and a farm; or, a shop and a flat occupied as a sole or principal dwelling.

If the principal use of the premises is for business purposes, measured charges will apply as if the whole of the premises were Non-Household premises. If the principal use of the premises is as a person's sole or principal dwelling, measured charges will apply when fixed in accordance with our Meter policy for Household Customers. Otherwise, Customers will be charged unmeasured tariffs.

Occupiers of Mixed Use Premises may choose whether the premises are charged under Household Charges or Non-Household Charges. Choosing to pay Non-Household Charges will not affect your statutory rights if you are occupying the premises as your home or as your sole or principal dwelling, but may otherwise affect your entitlement, eg. for a leakage rebate.

If at a later date separate supplies are provided to separate parts of the premises, those parts will be charged according to their use, ie. Household or Non-Household.

Question 23 Is there any easement giving Anglian Water the right of access to defined assets located within the boundary of the property?

Answer Records indicate that the property is not subject to such an agreement.

Informative This question relates to private agreements between Anglian Water 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 Anglian Water 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 Anglian Water 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 Anglian Water's rights or title, or an agreement or representation that Anglian Water is prepared to vary or discharge any of its rights or title.

As a general rule, easement widths are as follows:

Pipe Diameter	Width or Strip
Up to 149mm	4.5m
150 - 449mm	6.0m
450 - 749mm	9.0m
750 and above	12.0m

If you require a copy of an agreement please contact Savills, Trinity Court, Trinity Street, Peterborough, PE1 1DA. A fee may be charged for this service. Please quote the date of the Report plus the Report Reference. You may also make contact either by telephone on 01733 209932 or by email to AWSEstates@savills.com

Question 24 Are there any trade effluent consents relating to this site/property

Answer Records indicate that there are no trade effluent consents relating to this site/property.

Informative The Trade effluent consent applies to premises in the vicinity of the premises the subject of this search, but it is for the applicant to satisfy itself as to the suitability of the consent for its client's requirements.
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.
The occupier of any trade premises in the area of Anglian Water Services Limited may only discharge any trade effluent proceeding from those premises into Anglian Water Services Limited's sewers if he does so with Anglian Water Services Limited's consent.
Please note any existing consent is dependant on the business being carried out at the property and will not transfer automatically upon change of ownership.
For further information, including copies of consent, please contact Anglian Water, Water Quality and Environmental Performance Department, Environmental Standards Team, Anglian House, Ambury Road South, Huntingdon, Cambridgeshire, PE29 3NZ or telephone 01480 323971.
Currently the charges for the provision of documents are :-
Administration Fee per request £16.00 (excluding VAT);
Price per copy document £2.00 (excluding VAT)

APPENDIX 1

GENERAL INTERPRETATION

(1) In this Schedule-

"the 1991 Act" means the Water Industry Act 1991(a);

"the 2000 Regulations" means the Water Supply (Water Quality) Regulations 2000(b);

"the 2001 Regulations" means the Water Supply (Water Quality) Regulations 2001(c);

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

"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 any buildings or yards appurtenant to buildings within the same curtilage;

"easement" means the rights relating to a pipe or pipes granted to the water undertaker or sewerage undertaker by an agreement. This is to be distinguished from statutory rights arising from the service of a statutory notice;

"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 (e);

"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(f);

"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;

"non-household premises" means premises used, or intended for use, for commercial purposes;

"map of waterworks" means the map made available under section 198(3) of the 1991 Act (g) 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(h), 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(i);
- (b) by virtue of a scheme under Schedule 2 to the 1991 Act (j);
- (c) under Section 179 of the 1991 Act (k); or
- (d) otherwise;

"public sewer map" means the map made available under Section 199(5) of the 1991 Act (l);

"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;

"trade effluent" means any effluent which is wholly or partly produced in the course of any trade or industry carried on at trade premises;

"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;

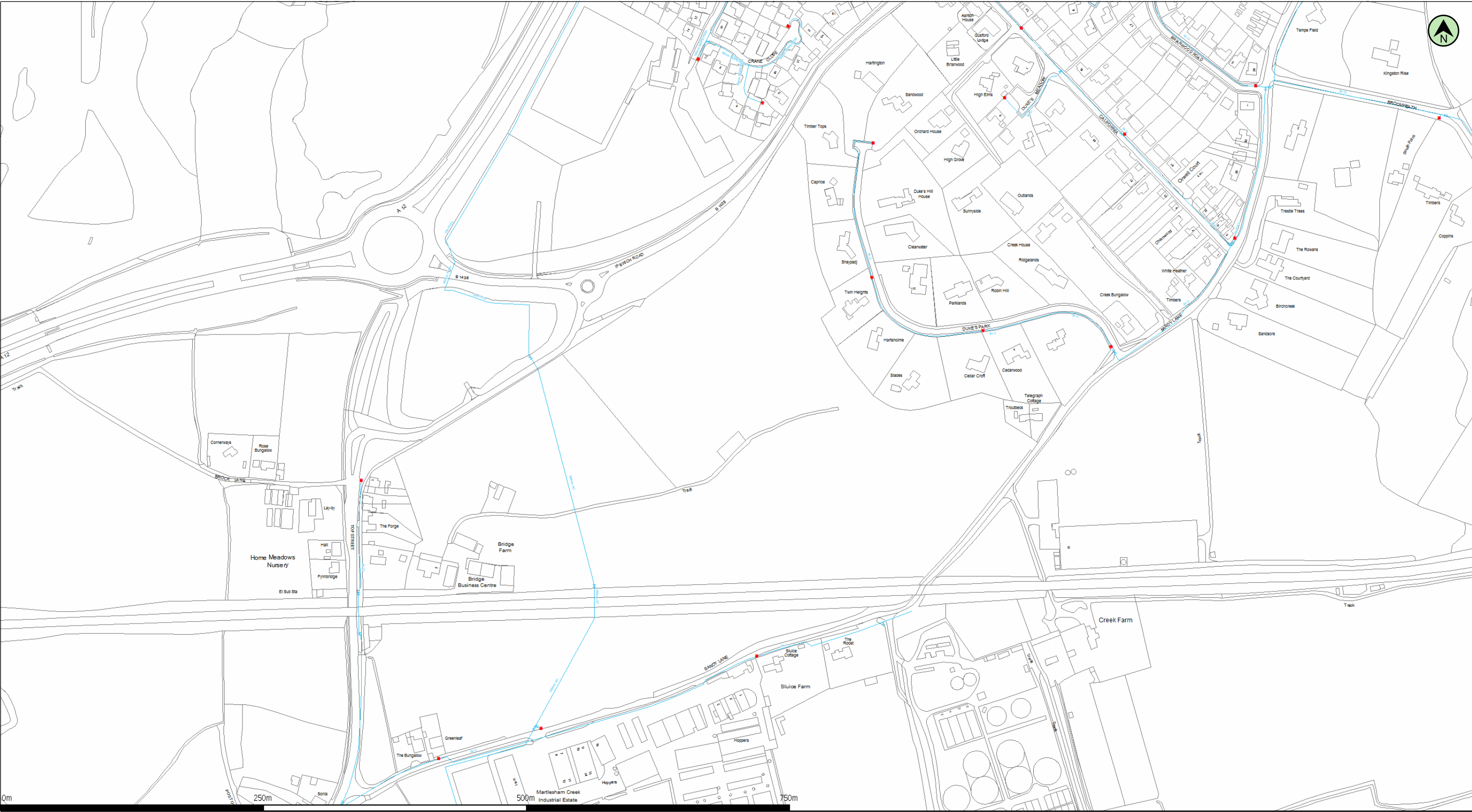
"water supplier" means the Company supplying water in the water supply zone, whether a water undertaker or licensed water supplier;

"water supply zone" 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.

(2) In this Schedule, 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.

- (a) 1991 c.56.
- (b) S.I. 2000/3184. These Regulations apply in relation to England.
- (c) S.I. 2001/3911. These Regulations apply in relation to Wales.
- (d) Section 51A was inserted by Section 92(2) of the Water Act 2003 (c. 37). Section 104(1) was amended by Section 96(4) of that Act.
- (e) Various amendments have been made to Sections 102 and 104 by section 96 of the Water Act 2003.
- (f) Inserted by Section 56 of and Schedule 4 to the Water Act 2003.
- (g) Subsection (1A) was inserted by Section 92(5) of the Water Act 2003.
- (h) Section 106(1A) was inserted by Section 99 of the Water Act 2003.
- (i) 1989 c.15.
- (j) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
- (k) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
- (l) Section 199 was amended by Section 97(1) and (8) of the Water Act 2003.



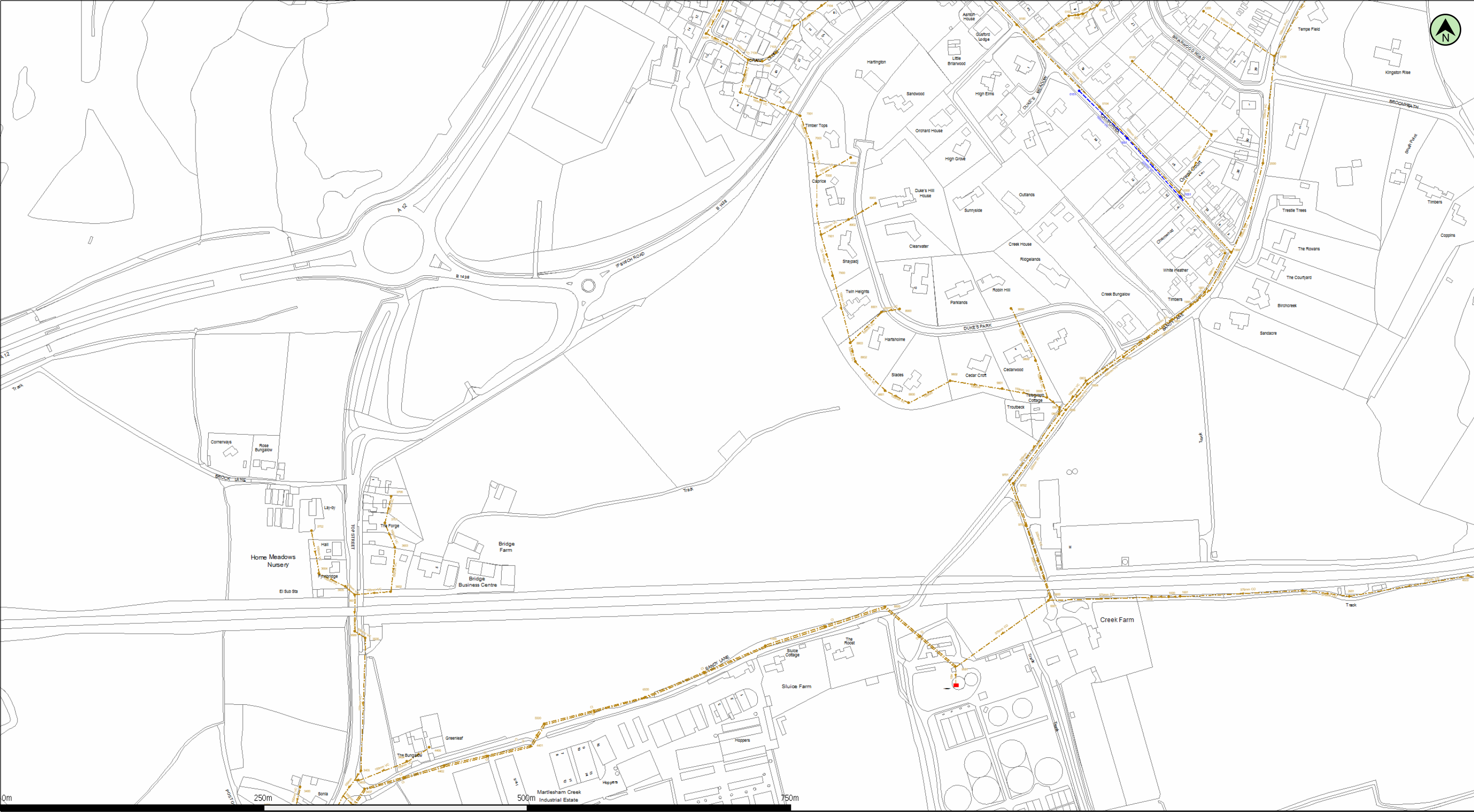
(c) Crown Copyright and database rights 2011 Ordnance Survey 100018507 Date: 10/02/14 Scale: 1:3500 Map Centre: 625705,247819 Title: B1045997-3 Clean Water Plan A3

This plan must be used in conjunction with the search results attached. The information shown on this drawing is based on the data currently recorded but the position must be regarded as approximate. Service pipes, private sewers and drains are not generally shown. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever is accepted for any error or omission. This information is valid for the date printed. This plan is produced by Anglian Water Services Ltd. trading as GEODESYS from Ordnance Survey digital map data which is protected by Crown copyright and remains the property of Ordnance Survey, (c)Crown copyright, 100018507. This map data is to be used for the purposes of viewing the location of Anglian Water 'plant' only. Any other use of the map data or further copies are not permitted.

Potable Water		Fitting	
Raw Water		Hydrant	
Decommissioned Water			



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Date: 10/02/14

Scale: 1:3500

Map Centre: 625705,247819

Title: B1045997-3

Waste Water Plan A3

This plan must be used in conjunction with the search results attached. The information shown on this drawing is based on the data currently recorded but the position must be regarded as approximate. Service pipes, private sewers and drains are not generally shown. As from 1st October 2011 ownership of private sewers and lateral drains will change in accordance with The Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The contents of this map do not reflect these changes. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever is accepted for any error or omission. This information is valid for the date printed. This plan is produced by Anglian Water Services Ltd. trading as GEODESYS from Ordnance Survey digital map data which is protected by Crown copyright and remains the property of Ordnance Survey, (c)Crown copyright, 100018507. This map data is to be used for the purposes of viewing the location of Anglian Water 'plant' only. Any other use of the map data or further copies are not permitted.

Foul Sewer		Outfall	
Surface Sewer		(Colour denotes effluent type)	
Combined Sewer		Inlet	
		(Colour denotes effluent type)	
Final Effluent		Manhole	
Rising Main		(Colour denotes effluent type)	
Private Sewer		Sewage Treatment Works	
(Colour denotes effluent type)			
Decommissioned Sewer		Pumping Station	
(Colour denotes effluent type)			



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Drinking Water Quality Report for the Pettistree Public Water Supply Zone

Report period: January 2013 to September 2013

Your drinking water supply

Anglian Water's region is divided into 160 water supply areas called Public Water Supply Zones, each providing our customers with an excellent drinking water supply. We carry out around 146,000 tests each year on drinking water samples taken from customer taps. The number of drinking water samples we take, and the tests we carry out, are specified in the current Water Supply (Water Quality) Regulations and our regulator, the Drinking Water Inspectorate, carry out regular audits to make sure we comply with these regulations.

During the period of this report, all samples taken in this Public Water Supply Zone fully met all the legal limits specified in the current Water Supply (Water Quality) Regulations.

Source:

Your drinking water supply comes from a groundwater source (borehole).

Hardness:

Your drinking water supply is classified as very hard. We've included the following information to help you set your domestic appliances, the hardness has been shown in different units below:

Calcium (mg/l)	Calcium carbonate (mg/l)	Degrees Clark (°C)	Degrees French (°f)	Degrees German (°dH)	millimoles (mmol/l of Ca)
178.8	447	31.111	44.7	25.39	4.47

(mg/l = milligrammes per litre or the same as parts per million)

Fluoride:

We don't add fluoride to your drinking water supply, but there is naturally occurring fluoride present in all drinking water supplies.

Chlorine:

Disinfection is important to ensure there are no harmful organisms in the water. We use chlorine to disinfect drinking water supplies. We don't add ammonia in this process, so your drinking water supply is not chloraminated.

Lead:

If you live in a house built before 1970, you may have lead pipework. If you think you may have lead pipework, call our Lead Advice Line on 0845 070 3445 to arrange for a free lead test.

Drinking water sample results:

The results of tests carried out on drinking water samples taken from customer taps in this Public Water Supply Zone for the period are shown in the following table:

Parameter	Legal Limit	Units	Number of samples taken	Minimum	Average	Maximum	Number of samples not meeting legal limit
MICROBIOLOGICAL PARAMETERS							
Clostridium perfringens	0	No. per 100 ml	4	0	0	0	0
Coliform bacteria	0	No. per 100 ml	30	0	0	0	0
Colony counts (2day)	No abnormal change	No. per 1 ml	13	0	0	0	0
Colony counts (3day)	No abnormal change	No. per 1 ml	13	0	0	0	0
E. coli	0	No. per 100 ml	30	0	0	0	0
Enterococci	0	No. per 100 ml	5	0	0	0	0
CHEMICAL PARAMETERS							
1,2 dichloroethane	3	µg/l	4	<0.024	<0.096	<0.12	0
Aluminium	200	µg/l Al	5	<2	<2	<2	0
Ammonium	0.5	mg/l NH ₄	6	<0.009	<0.009	<0.009	0
Antimony	5	µg/l Sb	5	<0.33	<0.33	<0.33	0
Arsenic	10	µg/l As	5	0.27	0.32	0.51	0
Benzene	1	µg/l	4	<0.048	<0.057	<0.06	0
Benzo(a)pyrene	0.01	µg/l	5	<0.001	<0.001	<0.001	0
Boron	1	mg/l B	4	0.055	0.073	0.089	0
Bromate	10	µg/l BrO ₃	4	<0.15	<0.38	1.06	0
Cadmium	5	µg/l Cd	5	<0.007	<0.007	<0.007	0
Calcium	No legal limit applies	mg/l Ca	1	154	154	154	0
Chloride	250	mg/l Cl	4	92.1	95.1	99.3	0
Chlorine (free)	No legal limit applies	mg/l	30	0.02	0.29	0.59	0
Chlorine (total)	No legal limit applies	mg/l	30	0.07	0.41	0.69	0
Chromium	50	µg/l Cr	5	<1.5	<2.1	2.7	0
Colour	20	mg/l Pt/Co	6	<0.34	<0.39	0.5	0
Conductivity	2500	µS/cm @ 20 °C	7	921	937	965	0
Copper	2	mg/l Cu	5	0.009	0.049	0.086	0
Cyanide	50	µg/l CN	4	<1	<1	<1	0
Fluoride	1.5	mg/l F	5	0.309	0.318	0.329	0
Hardness: Total	No legal limit applies	mg/l Ca	1	178.8	178.8	178.8	0
Iron	200	µg/l Fe	5	<6	<7	10	0
Lead	25	µg/l Pb	5	0.118	0.503	0.898	0
Magnesium	No legal limit applies	mg/l Mg	1	15.2	15.2	15.2	0
Manganese	50	µg/l Mn	5	<1	<1	<1	0
Mercury	1	µg/l Hg	4	<0.029	<0.029	<0.029	0
Nickel	20	µg/l Ni	5	<0.146	<0.185	0.34	0
Nitrate	50	mg/l NO ₃	5	0.433	0.836	1.3	0
Nitrite	0.5	mg/l NO ₂	5	<0.005	<0.005	<0.005	0
Nitrite/Nitrate	1		5	0.008	0.016	0.026	0
Odour	Acceptable to consumers and no abnormal change	Dilution No.	6	0	0	0	0
PAH - sum of 4	0.1	µg/l	5	0	0	0.001	0
pH (Hydrogen ion)	6.5 - 9.5	pH value	6	7.21	7.34	7.52	0
Phosphorus	No legal limit applies	µg/l P/l	29	<16	<48	315	0
Selenium	10	µg/l Se	5	<0.43	<0.52	0.87	0
Sodium	200	mg/l Na	5	46.4	48	49.9	0
Solvents - sum of 2	10	µg/l	4	0	0	0	0
Sulphate	250	mg/l SO ₄	4	133	139	145	0
Taste	Acceptable to consumers and no abnormal change	Dilution No.	6	0	0	0	0
Temperature	No legal limit applies	°C	30	4.6	9.2	15.2	0
Tetrachloromethane	3	µg/l	4	<0.042	<0.071	<0.08	0
Total organic carbon (TOC)	No abnormal change	mg/l C	4	1.24	1.47	1.67	0
Trihalomethanes: Total	100	µg/l	5	0	21.1	41.6	0
Turbidity	4	NTU	13	0.06	0.08	0.13	0
PESTICIDES							
Atrazine	0.1	µg/l	4	<0.002	<0.002	<0.002	0
Chlorotoluron	0.1	µg/l	4	<0.003	<0.003	<0.003	0
Diuron	0.1	µg/l	4	<0.006	<0.006	<0.006	0
Isoproturon	0.1	µg/l	4	<0.003	<0.003	<0.003	0
Linuron	0.1	µg/l	4	<0.003	<0.005	0.01	0

Monuron	0.1	µg/l	4	<0.005	<0.005	<0.005	0
Pesticides - Total	0.5	µg/l	4	0	0.004	0.012	0
Prometryne	0.1	µg/l	4	<0.003	<0.003	<0.003	0
Propazine	0.1	µg/l	4	<0.002	<0.003	0.004	0
Simazine	0.1	µg/l	4	<0.004	<0.004	<0.004	0
Terbutryne	0.1	µg/l	4	<0.002	<0.002	<0.002	0
Trietazine	0.1	µg/l	4	<0.002	<0.002	<0.002	0

GLOSSARY							
Parameter	What it means					Legal limit	
1,2-dichloroethane	Used in industrial processes. Trace amounts may be found in some water sources. Removed by water treatment.					3 µg/l	
Acrylamide	A monomer not found naturally in water but found in polyacrylamide which can be used for water treatment. Use of polyacrylamide is tightly controlled.					0.1 µg/l	
Alkalinity	Alkalinity is the amount of calcium and magnesium salts dissolved in the water. Known as temporary hardness and removed by boiling.					No legal limit applies	
Aluminium	Naturally present in some water sources. Can be used in water treatment processes but is then removed. Anglian Water do not use aluminium in any water treatment process.					200 µg/l	
Ammonium (ammonia and ammonium ions)	Naturally present in most water sources. Can be added as part of the disinfection process to maintain chlorine in the distribution system (known as chloramination).					0.5 mg/l	
Antimony	Not found naturally in drinking water. Traces found in water are likely to be due to contact with brass fittings or lead solder.					5 µg/l	
Arsenic	Low levels can occur naturally in some groundwater sources. Arsenic is removed by water treatment.					10 µg/l	
Benzene	Used in the petrochemical and plastics industry. May be present in water sources due to industrial pollution but is removed by treatment.					1 µg/l	
Benzo(a)pyrene	One of several compounds known as poly aromatic hydrocarbons (PAHs). Coal tar was historically used to line water mains to prevent corrosion; trace levels can be found in drinking water where coal tar linings are still present.					0.01 µg/l	
Boron	Low levels may occur naturally in some water sources. Industrial discharges or detergents in treated sewage effluents can increase levels in surface waters.					1 mg/l	
Bromate	May occasionally be detected in groundwater sources caused by industrial pollution. Can also be formed by the reaction of naturally occurring bromide with oxidants (such as ozone) used in the disinfection of drinking water.					10 µg/l	
Cadmium	Low levels may occur naturally in some groundwater sources. Cadmium is removed by water treatment.					5 µg/l	
Calcium	Occurs naturally in water as it passes through mineral deposits and rock strata.					No legal limit applies	
Chloride	A common component of salt and found naturally in most water sources.					250 mg/l	
Chlorine (free) Chlorine (total)	Anglian Water disinfects all water supplies using chlorine. The concentration of chlorine used is carefully controlled to ensure disinfection of the water is maintained whilst minimising any taste or odour issues for customers.					No legal limit applies	
Chromium	Rarely found in drinking water. Traces may be found if water has passed through rock strata containing naturally occurring chromium.					50 µg/l	
<i>Clostridium perfringens</i>	Organisms found in the gut of warm blooded animals. Their presence in treated water indicates possible contamination and requires investigation.					0 per 100 ml	
Coliform bacteria	Organisms found in the environment (soil, water and vegetation). Their presence in treated water indicates possible contamination and requires investigation.					0 per 100 ml	
Colony counts - 2 day at 37°C - 3 day at 22°C	Are a measure of naturally occurring harmless bacteria found in drinking water.					No. per 1ml - No abnormal change	
Colour	Slight tingeing of the water can occur naturally in some water sources. It is removed by water treatment.					20 mg/l Pt/Co scale	
Conductivity	A measure of the amount of naturally occurring dissolved inorganic substances in water.					2500 µS/cm at 20°C	
Copper	Rarely found in water sources. Can occur in drinking water which has been in contact with copper pipes and fittings in households. May cause blue/green staining.					2.0 mg/l	
<i>Cryptosporidium</i>	A parasite that can cause severe gastroenteritis. Continuous monitoring is carried out at any water treatment works classified as being at significant risk.					No legal limit applies	
Cyanide	Rarely found in drinking water. Traces may be found if water has passed through rock strata containing naturally occurring cyanide.					50 µg/l	
<i>E. coli</i> and Enterococci	Organisms found in the gut of warm blooded animals. Their presence in treated water indicates possible contamination and requires investigation.					0 per 100 ml	
Epichlorohydrin	Not found naturally in water but found in polyamine which can be used for water treatment. Use of polyamines is tightly controlled.					0.1 µg/l	
Fluoride	Occurs naturally in many water sources at varying concentrations. Fluoride is added to some drinking water supplies at the request of the local Health Authority.					1.5 mg/l	
Gross alpha activity Gross beta activity	Both of these are measured as part of the calculation of the Total Indicative Dose (TID) for radiation (see below).					0.1 Bq/l 1 Bq/l	
Hardness (total)	Hardness is due to the calcium and magnesium salts dissolved in the water. The geology of the Anglian Water area means all our water is hard.					No legal limit applies	
Iron	Naturally occurring in many water sources. Can be present in drinking water due to the corrosion of iron water mains. Can also be used in water treatment processes but is then removed.					200 µg/l	
Lead	Lead is very occasionally found in water sources. It is more usually found in drinking water due to contact with lead pipes in properties built before 1970. Anglian Water dose					25 µg/l to 2013. Then 10 µg/l on and after	

	phosphate to water supplies in areas where lead could leach from pipework, but the only permanent solution for householders is replacement of any lead pipework.	25/12/2013.
Magnesium	Occurs naturally in water as it passes through mineral deposits and rock strata.	No legal limit applies
Manganese	Occurs naturally in many water sources and is removed by water treatment.	50 µg/l
Mercury	Rarely found in drinking water. Traces may be found if water has passed through rock strata containing naturally occurring mercury.	1 µg/l
Nickel	Occurs naturally in some groundwater sources. It can be found in drinking water due to contact with modern nickel coatings on domestic taps and fittings.	20 µg/l
Nitrate	Occurs naturally in most water sources. Increased levels in water sources can occur as a result of fertiliser use. Dilution with low nitrate water sources and water treatment reduces nitrate levels.	50 mg/l
Nitrite	Occurs naturally at low levels in some water sources but is removed by treatment. It is sometimes produced as a by-product when ammonia and chlorine are used together to disinfect the water.	0.5 mg/l (at customer taps), 0.1 mg/l (at water treatment works)
Odour	A measure of the aesthetic quality of drinking water. Unusual odours or tastes may indicate a problem which needs investigating.	Acceptable to consumers and no abnormal change
Pesticides – organochlorine compounds (aldrin, dieldrin, heptachlor, heptachlor epoxide)	Persistent in the environment but no longer used in the UK. Treatment processes are used to remove any pesticide residues where present.	0.03 µg/l
Pesticides – other than organo chlorine compounds	Traces of pesticides can occasionally be found in water sources as a result of agricultural and non agricultural use of pesticides in the environment. Treatment processes are used to remove any pesticide residues where present. Monitoring is carried out for the most widely used pesticides in the area of supply.	0.1 µg/l
Pesticides - total	This is the sum of the concentrations of the individual pesticides detected.	0.5 µg/l
pH (hydrogen ion)	A measure of the acidity or alkalinity of water; pH values below 7 are acidic, 7 is neutral and above 7 are alkaline. A low pH can result in pipe corrosion.	6.5 (min) - 9.5
PAHs (sum of 4)	Polycyclic aromatic hydrocarbons (PAHs) may be found in drinking water where coal tar was historically used to line water mains to prevent corrosion. Those measured are benzo (b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene.	0.1 µg/l (sum of 4)
Phosphorus	Occurs naturally in water but can be added during water treatment in the form of phosphate to minimise the pick up of lead from lead pipework.	No legal limit applies
Potassium	Occurs naturally in water as it passes through mineral deposits and rock strata.	No legal limit applies
Selenium	Rarely found in drinking water. Traces may be found if water has passed through rock strata containing naturally occurring selenium.	10 µg/l
Sodium	Low levels occur naturally in many water sources. Domestic water softeners can increase the sodium concentration. Softened water should not be used for drinking, cooking and preparing babies' feeds.	200 mg/l
Solvents (tetrachloroethane and trichloroethene)	This standard is the sum of both solvents. Traces may be found in water sources due to industrial pollution. Solvents are removed using specialist treatment.	10 µg/l for the sum of both
Sulphate	Occurs naturally in many water sources after contact with mineral deposits and rock strata.	250 mg/l
Taste	A measure of the aesthetic quality of drinking water. Unusual odours or tastes may indicate a problem which needs investigating.	Acceptable to consumers and no abnormal change
Temperature	This is a measure of the water temperature when samples are taken.	No legal limit applies
Tetrachloromethane	A solvent sometimes found in water sources due to industrial pollution. Solvents are removed using specialist treatment.	3 µg/l
Total Indicative Dose (TID)	TID is the effective dose of radiation exposure the body may receive through drinking water. It is required to be measured if the gross alpha or gross beta activities (see above) exceed the screening values.	0.1 mSv/year
Total Organic Carbon (TOC)	A measure of the total amount of organic matter in the water.	No abnormal change
Trihalomethanes (THMs) (total)	Can be formed during the disinfection of water supplies if chlorine reacts with naturally occurring organic substances.	100 µg/l
Tritium	Tritium is a radioactive isotope of hydrogen which is found naturally in water at very low levels.	100 Bq/l
Turbidity	This is a measure of the cloudiness of the water.	4 NTU at customer taps 1 NTU at water treatment works
Vinyl chloride	Not found naturally in water. May be found in water pipes containing polyvinyl chloride (PVC). Concentrations are strictly controlled by product specification.	0.5 µg/l
Further information can be found on the Anglian Water and Drinking Water inspectorate websites: www.anglianwater.co.uk www.dwi.gov.uk		

Units	
<	Below the limit of detection of our analysis
mg/l	Milligrammes per litre or parts per million
µg/l	Microgrammes per litre or parts per billion
Pt/Co	Platinum/Cobalt
µS/cm	Micro Siemens per centimetre
Bq/l	Becquerel per litre
mSv/year	Micro Sieverts per year
NTU	Nephelometric Turbidity Units

COMMERCIALDW Plus

Terms and Conditions

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

Definitions

'Company' means Anglian Water Services Limited trading as GEODESYS who produce the Report; its registered office being at Anglian House, Ambury Rd, Huntingdon, Cambridgeshire PE29 3NZ, and whose principal place of trading is at Osprey House, 1 Percy Road, Huntingdon, Cambridgeshire PE29 6SZ, company number 2366656.

'Order' means any request for a report made by a customer

'Report' means the drainage and water report prepared by the Company in respect of the Property/ies.

'Product' means the Report(s) requested in the Order, in respect of one or more Properties (subject to a maximum of three) which are adjacent to each other.

'Property/ies' means the address/es or location(s) supplied by the Customer in the Order.

'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.

'Client' means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property/ies.

'Purchaser' means the actual or potential purchaser of the Property/ies including their mortgage lender.

Where more than one Report is prepared hereunder the "Report" shall be construed in the plural where the context so requires.

1.0 Agreement

1.1 **The Company 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 and/or the Purchaser then the Customer shall be responsible for bringing these terms to the attention of the Client and the Purchaser.

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

2.0 The Report

Whilst the Company will use reasonable care and skill in producing the Report, it is provided to the Customer, the Client and the Purchaser 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, the Client or the Purchaser 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 should always be obtained from appropriate experts and professionals.

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

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

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 of apparatus 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 the company's apparatus.

2.6 **In providing search reports and services we will comply with the Search Code.**

3.0 Liability

3.1 **The Company shall not be liable to the Customer, the Client or the Purchaser 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 the Company's reasonable control or the acts or omissions of any third party.**

3.2 **Where a Report is requested for an address falling within a geographical area where two different companies separately provide Water and Sewerage Services, then it shall be deemed that liability for the information given by either company will remain with the company providing the data in respect of the accuracy of the information supplied.** A company supplying information which has been provided to it by another company for the purposes outlined in this agreement 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.

For more information, please contact us on:

0845 070 9109
www.geodesys.com

CommDW-plus TCs v5 - July 2013

Ref:20315602000

3.3 **Each Report is produced for use in relation to individual commercial property transactions where the property is used solely for carrying on a trade or business, the property is intended to be developed for commercial gain or the property is not a single residential, domestic property.**

The Company's entire liability (except to the extent provided by clause 3.4) in respect of all causes of action arising by reason of or in connection with the Product (whether for breach of contract, negligence or any other tort under statute or statutory duty or otherwise at all) shall be limited to £10 million for the Product irrespective of the number of Reports provided hereunder. In any event, the Company shall not have any liability in contract, negligence or any other tort or for breach of statutory duty or otherwise in respect of any loss of profit, loss of revenue, loss of opportunity, or anticipated savings or any indirect or consequential loss or damage that may be suffered by the Customer, Client or Purchaser howsoever arising. The plans attached to the Report are provided pursuant to the Company's statutory duty to make such plans available for inspection (notwithstanding the provisions of this clause) and attention is drawn to the notice on the plan(s) attached to the Report which applies to the plan(s) and its contents.

3.4 **Nothing in these terms shall exclude the Company's liability for death or personal injury arising from its negligence.**

4.0 Copyright and Confidentiality

4.1 **The Customer, the Client and the Purchaser acknowledge that the Report is confidential and is intended for the personal use of the Client and the Purchaser.** The copyright and any other intellectual property rights in the Report shall remain the property of the Company. No intellectual or other property rights are transferred or licensed to the Customer, the Client or the Purchaser except to the extent expressly provided herein.

4.2 **The Customer, the Client or the Purchaser is entitled to make copies of the Report 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.**

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

4.4 **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.**

4.5 **The Customer, the Client and the Purchaser agree to indemnify the Company against any losses, costs, claims and damage suffered by the Company as a result of any breach by them of the terms of paragraphs 4.1 to 4.4 inclusive.**

5.0 Payment

5.1 **Unless otherwise stated all prices are inclusive of VAT.** The Customer shall pay the price of the Report specified by the Company, without any set off, deduction or counterclaim.

5.2 **Payment must be received in advance unless an account has been set up with the Company.** In these cases, payment terms will be as agreed with the Company, but in any event any invoice must be paid within 30 days.

5.3 **The Company reserves the right to increase fees on reasonable prior written notice at any time.**

6.0 Data Protection

6.1 **The Company will process any personal data you provide to it in accordance with the Data Protection Act 1998.** Any personal information you provide to the Company may be used for the purposes for which the information is provided and to assist with our debt recovery processes. The Company may also disclose it to other companies in the Anglian Water Group (being Anglian Water Group Limited and its subsidiary companies) and their sub-contractors in connection with those purposes, but it will not be processed for other purposes or disclosed to other third parties without your express permission. The Company may also utilise any information it collects so that it is able to correctly administer, develop and improve the business and services it provides to customers.

7.0 General

7.1 **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.

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

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

7.4 **These terms and conditions may be enforced by the Customer, the Client and the Purchaser but no other third party.**

7.5 **Before you agree to these Terms and Conditions, please note it is your responsibility to ensure your client/customer is aware of them and that any objections are raised accordingly.**



GEODESYS
LAND & PROPERTY INFORMATION

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Appendix D – Hydrock Drawings

CONTENTS	
Identifier	Name
Hydrock	Drainage Strategy C14106/101

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Appendix E – Hydraulic Calculations


Existing Drainage

Existing Greenfield runoff rates


Proposed Drainage


- I. 1 year summary Attenuation Volumes
- II. 30 year summary Attenuation Volumes
- III. 100 year summary Attenuation Volumes (Including the 30% allowance for Climate Change)

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<p style="text-align: center;"><u>ICP SUDS Mean Annual Flood</u></p> <p style="text-align: center;">Input</p> <p>Return Period (years) 1 Soil 0.400</p> <p>Area (ha) 7.700 Urban 0.000</p> <p>SAAR (mm) 600 Region Number Region 5</p> <p style="text-align: center;">Results 1/s</p> <p>QBAR Rural 21.9</p> <p>QBAR Urban 21.9</p> <p>Q1 year 19.0</p> <p>Q1 year 19.0</p> <p>Q30 years 52.6</p> <p>Q100 years 77.9</p>		
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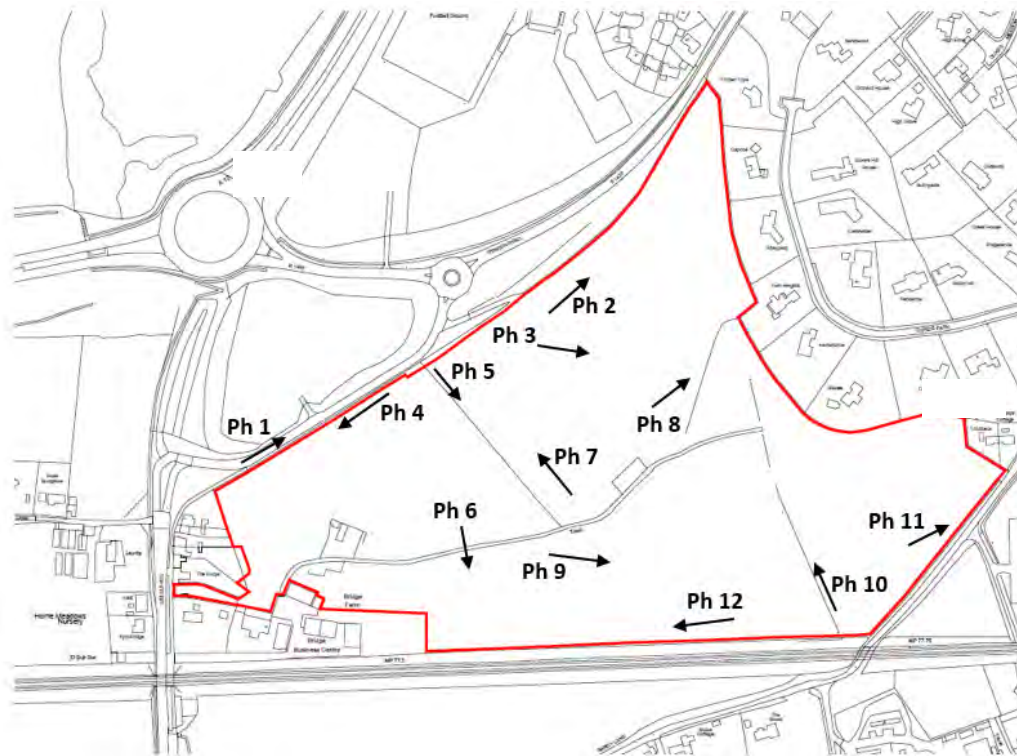
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<table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Flow (l/s)</th> <th>Depth (m)</th> <th>Flow (l/s)</th> <th>Depth (m)</th> <th>Flow (l/s)</th> </tr> </thead> <tbody> <tr><td>0.100</td><td>6.6</td><td>1.000</td><td>16.1</td><td>2.400</td><td>24.5</td></tr> <tr><td>0.200</td><td>17.3</td><td>1.200</td><td>17.6</td><td>2.600</td><td>25.4</td></tr> <tr><td>0.300</td><td>18.5</td><td>1.400</td><td>18.9</td><td>3.000</td><td>27.2</td></tr> <tr><td>0.400</td><td>18.9</td><td>1.600</td><td>20.2</td><td>3.500</td><td>29.3</td></tr> <tr><td>0.500</td><td>18.8</td><td>1.800</td><td>21.3</td><td>4.000</td><td>31.3</td></tr> <tr><td>0.600</td><td>18.5</td><td>2.000</td><td>22.4</td><td>4.500</td><td>33.1</td></tr> <tr><td>0.800</td><td>17.4</td><td>2.200</td><td>23.5</td><td>5.000</td><td>34.8</td></tr> </tbody> </table>			Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	6.6	1.000	16.1	2.400	24.5	0.200	17.3	1.200	17.6	2.600	25.4	0.300	18.5	1.400	18.9	3.000	27.2	0.400	18.9	1.600	20.2	3.500	29.3	0.500	18.8	1.800	21.3	4.000	31.3	0.600	18.5	2.000	22.4	4.500	33.1	0.800	17.4	2.200	23.5	5.000	34.8																
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																													
0.100	6.6	1.000	16.1	2.400	24.5																																																													
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©1982-2014 XP Solutions																																																																		

Hydrock Consultants Ltd		Page 5																								
	Land adjacent to Duke's Park Woodbridge Suffolk																									
Date 29/10/2015 File 100year + CC.srcx	Designed by EJD Checked by PG																									
XP Solutions	Source Control 2014.1.1																									
<p style="text-align: center;"><u>Hydro-Brake Optimum® Outflow Control</u></p> <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>5.500</td><td>36.4</td><td>7.000</td><td>40.9</td><td>8.500</td><td>45.0</td></tr><tr><td>6.000</td><td>38.0</td><td>7.500</td><td>42.3</td><td>9.000</td><td>46.2</td></tr><tr><td>6.500</td><td>39.5</td><td>8.000</td><td>43.7</td><td>9.500</td><td>47.5</td></tr></table> <p style="text-align: center;"><u>Orifice Overflow Control</u></p> <p style="text-align: center;">Diameter (m) 0.147 Invert Level (m) 10.000 Discharge Coefficient 0.600</p>			Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	5.500	36.4	7.000	40.9	8.500	45.0	6.000	38.0	7.500	42.3	9.000	46.2	6.500	39.5	8.000	43.7	9.500	47.5
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																					
5.500	36.4	7.000	40.9	8.500	45.0																					
6.000	38.0	7.500	42.3	9.000	46.2																					
6.500	39.5	8.000	43.7	9.500	47.5																					
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Appendix F – Site Photographs

Photograph Location Plan



Photograph 1: Looking north along Top Street.



Photograph 2: looking north along the northern boundary.



Photograph 3: Looking south east from the northern boundary.



Photograph 4: Looking west along the northern boundary.



Photograph 5: Looking south from the northern boundary



Photograph 6: Looking to the south west corner of the development



Photograph 7: Looking towards the northern boundary from centre of site



Photograph 8: The eastern boundary from the centre of the site



Photograph 9: Looking at the southern boundary from centre of site



Photograph 10: Looking north at stream from southern boundary



Photograph 11: Looking east along southern boundary



Photograph 12: Looking west along the southern boundary



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Appendix G – Infiltration Test Results

CONTENTS	
Identifier	Name
Hydrock	Infiltration Assessment R/14106/005

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Document ref: R/14106/005

26 March 2015

Gladman Developments
Gladman House
Alexandria Way
Congleton Business Park
Congleton
Cheshire
CW12 1LB

For the attention of Emma Tutton

Dear Emma,

Re: Land Adjacent to Duke's Park, Woodbridge – Infiltration Assessment

1.0 Introduction

In March 2015, Hydrock Consultants Limited (Hydrock) was commissioned by Gladman Developments Limited to undertake a preliminary ground investigation comprising trial pits with infiltration tests at a site known as Land Adjacent to Duke's Park, Woodbridge, Suffolk, as shown on the Site Location Plan provided by the Client and included at Annex A.

Hydrock has previously undertaken a Phase I desk study for the site, the findings of which are presented in Hydrock Report R/14106/001.

It is understood that the site is to be developed for a residential end-use, comprising housing with gardens, access roads and associated infrastructure.

This letter report presents the results of the testing and provides appropriate interpretation and comments.

2.0 Site Description

The site covers approximately 12.37ha and predominantly comprises agricultural land. A car parking area containing unwanted/clamped cars and waste such as tyres, burnt household waste and vegetation present in the west of the site. A small allotment is present in the western corner, and an approximately 1.5m wide stream runs north to south through the east of the site.

The site generally slopes towards the south, with a heavily burrowed, short, steep slope separating the north of the site from the south.

3.0 Investigation Rationale

Infiltration testing was carried out at the site on 17th March 2015. A total of three trial pits (TP01-TP03) were excavated, all of which were used for soakaway tests. The trial pit locations are shown on the Infiltration Test Location Plan, (Drawing 14106/D003) included at Annex B. The logs for the trial pits are also included at Annex B.

The Phase I desk study indicates that the north of the site is underlain by the Kesgrave Catchment Subgroup, which in turn is underlain by the strata of the Crag Group which outcrops in the centre, east and west of the site. These strata are in turn underlain by the Thames Group, which outcrops in the south of the site.

The three soakaway tests undertaken were positioned to target areas identified for potential future soakaway drainage across the study site in future developments.

4.0 Ground Conditions

The ground conditions encountered during the investigation are summarised in Table 1 below.

Table 1: Ground Conditions

Strata	Description	Depth to top (m bgl)	Depth to base, where proven (m bgl)
Topsoil	Clayey SAND, locally gravelly or slightly gravelly.	Ground Level	0.60 – 0.70
Kesgrave Catchment Subgroup	Interbeds of clayey SAND or clayey gravelly SAND and sandy gravelly CLAY. Thin layer of black sandy silty peat at TP02 (0.9-1.3m bgl) and TP03 (0.7-0.8m bgl).	0.60 – 0.70	1.80 - > 2.40 (Base not proven)
Thames Group (TP01 only)	Clayey SILT.	1.80	> 2.30 (base not proven)

The trial pits were terminated at depths of between 2.05 and 2.40m bgl within the Kesgrave Catchment Subgroup, which were found to extend further to the south than indicated on the BGS plans, or Thames Group.

No discernible groundwater flows were observed during the excavation of the trial pits. However, wet arisings were recorded in all three pits from depths of 1.2m bgl (TP01), 0.6m bgl (TP02) and 0.8m bgl (TP03).

5.0 Results

Soil infiltration tests were performed at depths of between 1.10m and 2.40m bgl, in general accordance with BRE 365 Soakaway Design.

At one test location (TP01) infiltration was found to be slow, being too low to permit representative infiltration rates to be calculated. At TP02 and TP03, water levels within the test pits increased overall, presumably due to groundwater ingress. As such, infiltration rates were again unable to be calculated.

The results of the infiltration tests are included at Annex C.

6.0 **Summary and Conclusions**

The three infiltration tests undertaken across the Land adjacent to Duke's Park, Woodbridge site were positioned to target identified areas of potential future soakaway drainage.

The static water level within TP01 and slow rise of water levels within TP02 and TP03 were indicative of a shallow groundwater table within the sands.

In conclusion, if the ground conditions encountered at the trial pit locations excavated during the current investigation are typical of those beneath the site generally, it is unlikely that soakaway drainage would be a viable option at the site.

We trust the above meets your requirements, however, if you have any queries or require any additional information, please do not hesitate to contact us.

Yours sincerely
for **Hydrock**



Anita Singh
Graduate Geo-environmental Consultant
anitasingh@hydrock.com



Regional Director
scottelliott@hydrock.com

Encl.

Annex A – Site Location Plan

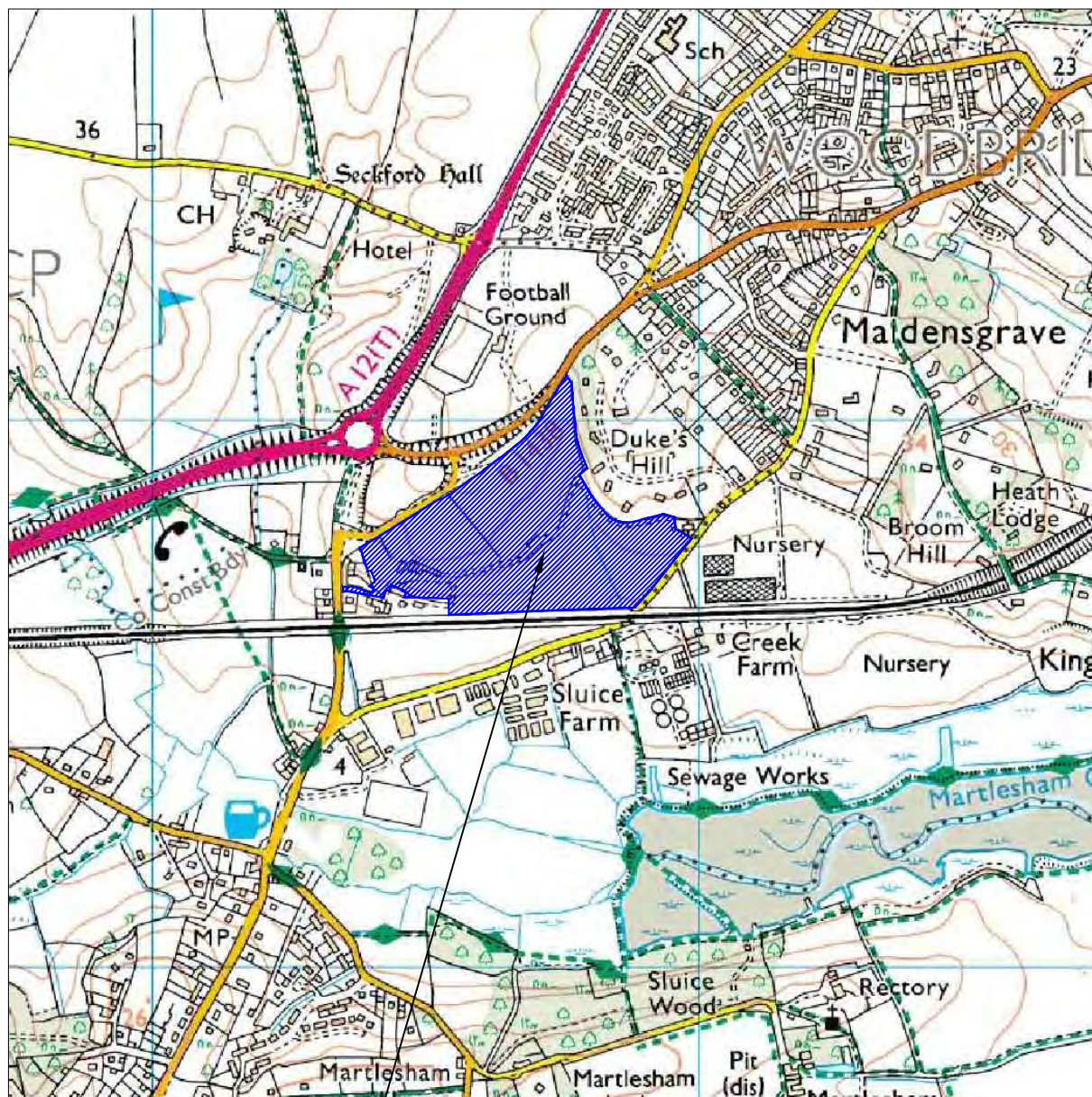
Annex B – Exploratory Hole Location Plan & Logs

Annex C – Infiltration Test Data





Annex A

Site Location Plan



The Site

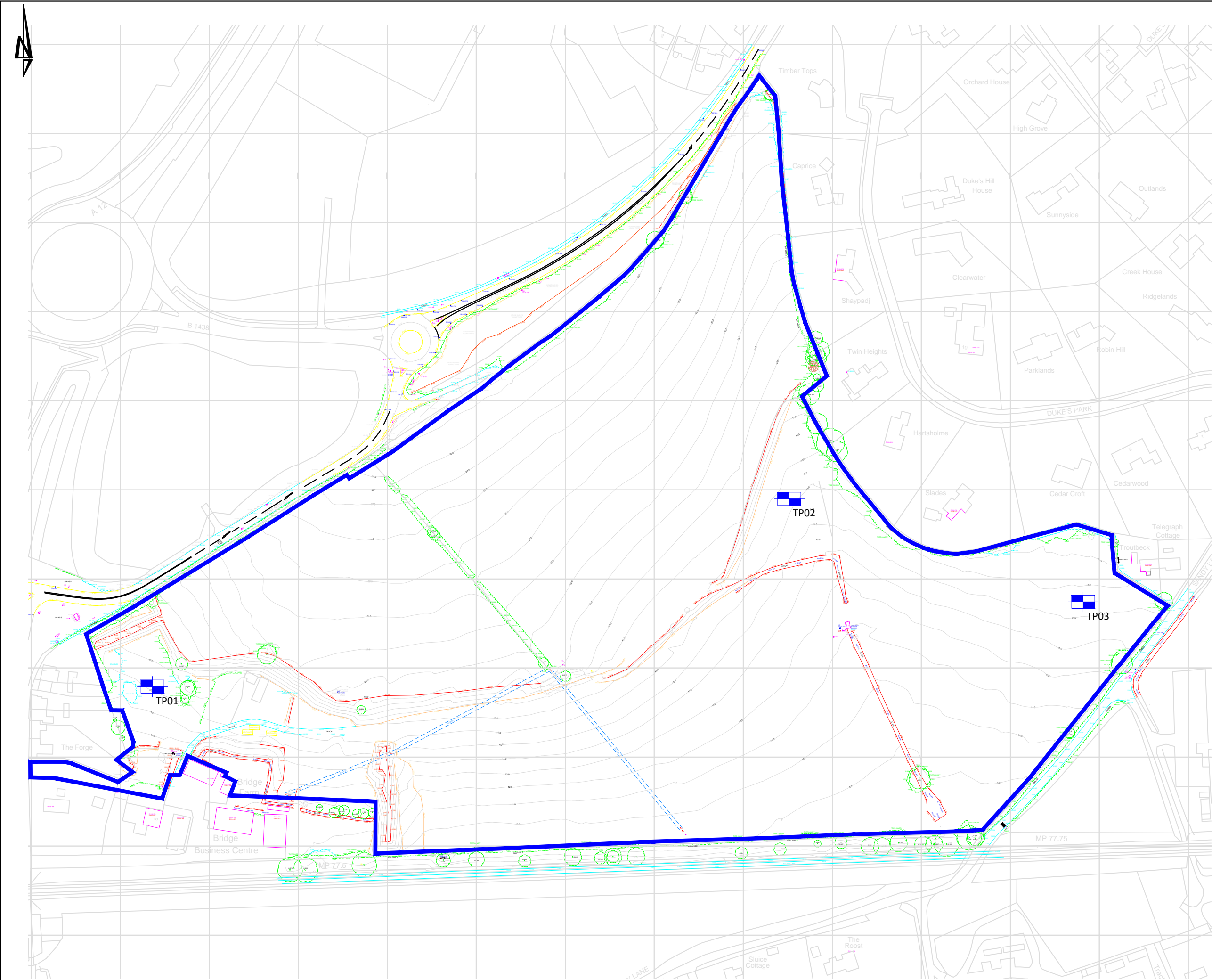
Contains Ordnance Survey data © Crown
copyright and database right 2013

<table><tr><td>C</td><td>17/11/15</td><td>Updated study area boundary</td><td>WS</td><td>TW</td></tr><tr><td>B</td><td>05/11/15</td><td>Updated study area boundary</td><td>CH</td><td>AB</td></tr><tr><td>A</td><td>18/07/14</td><td>Updated red line boundary</td><td>RP</td><td>AB</td></tr><tr><td>Rev</td><td>Date</td><td>Description</td><td>By</td><td>Ckd</td></tr></table>					C	17/11/15	Updated study area boundary	WS	TW	B	05/11/15	Updated study area boundary	CH	AB	A	18/07/14	Updated red line boundary	RP	AB	Rev	Date	Description	By	Ckd	Project		Client		<div></div> <div><p>Unit 3, Hawthorn Park Holdenby Road Spratton Northampton NN6 8LD TEL: 01604 842 888 FAX: 01604 842 666 E-Mail: northampton@hydrock.com or visit www.hydrock.com</p></div>	
					C	17/11/15	Updated study area boundary	WS	TW																					
					B	05/11/15	Updated study area boundary	CH	AB																					
					A	18/07/14	Updated red line boundary	RP	AB																					
Rev	Date	Description	By	Ckd																										
DUKE'S PARK, WOODBIDGE		Drawing Status																												
Title		INFORMATION																												
Site Location Plan		Job No. C14106																												
		Drawn RP	Checked AB	Scale at A4 1:12,500	Date 18/02/14	Issue Date 18/02/14	Drawing No. 14106/D001	Revision C																						




Annex B

Exploratory Hole Location Plan & Logs




Notes: Test locations are approximate and not to scale.

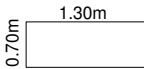
Key:



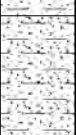

 TP03

Infiltration test location

A	17/11/15	Amended study area boundary	WS	TW
Rev	Date	Description	By	Ckd
Architect :				
<div><div>Hydrock Consultants Ltd 4 Lakeside Festival Park Stoke-on-Trent ST1 5RY T +44 (0)1782 261919 stoke@hydrock.com www.hydrock.com</div></div>				
Client :				
GLADMAN DEVELOPMENTS LIMITED				
Project Title:				
Land Adjacent to Duke's Park, Woodbridge				
Drawing Title:				
Infiltration Test Location Plan				
Drawing Status:				
FINAL				
Hydrock Job No:				
C/14106				
Drawn	Checked	Scale @ A3	Date	Issue Date
AS	SE	1:2000	16/03/15	19/03/15
Drawing Number:				Revision:
14106/D004				A

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Project Name Land Adjacent to Duke's Park, Woodbridge	Project No. C14106	Co-ords: - Level: -	Date 17/03/2015
Location: Suffolk	Dimensions: 		Scale 1:25
Client: Gladman Developments Limited	Trial Pit Stability : Unstable		Plant Used: JCB 3CX

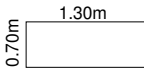
Samples & In Situ Testing			Legend	Depth (m)	Stratum Description	Level (m AOD)
Depth (m)	Type	Results				
					Brown-grey clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)	
				0.70	Brown-grey clayey SAND with rootlets. Sand is fine to coarse. (KESGRAVE CATCHMENT SUBGROUP)	
				1.20	Brown-grey clayey gravelly SAND with rootlets and tree roots. Sand is fine to coarse. Gravel is fine to coarse sub-angular to sub-rounded and of flint and limestone. (KESGRAVE CATCHMENT SUBGROUP)	
				1.60 1.80	Soft yellow-brown mottled blue-black sandy gravelly CLAY with tree roots. Sand is fine to coarse. Gravel is fine to coarse angular and of flint and limestone. (KESGRAVE CATCHMENT SUBGROUP)	
					Soft to firm grey-blue clayey SILT. (THAMES GROUP)	
				2.30	Trial pit complete at 2.30 m	







Remarks: Several collapses within the sands.

HSV = Hand Shear Vane reading (kPa)
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
AJ = Amber Jar
PT = Plastic Tub
V = Vial

Groundwater: Wet arisings after 1.2m.

Logged By : AS Checked By : TW

Project Name Land Adjacent to Duke's Park, Woodbridge	Project No. C14106	Co-ords: - Level: -	Date 17/03/2015
Location: Suffolk		Dimensions: 	Scale 1:25
Client: Gladman Developments Limited		Trial Pit Stability : Unstable	Plant Used: JCB 3CX

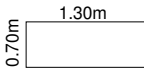
Samples & In Situ Testing			Legend	Depth (m)	Stratum Description	Level (m AOD)
Depth (m)	Type	Results				
					Brown-grey clayey SAND with occasional gravel and rootlets. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular and of flint. (TOPSOIL)	
				0.60	Dark grey clayey gravelly SAND. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular and of flint. (KESGRAVE CATCHMENT SUBGROUP)	
				0.90	Black sandy slightly gravelly PEAT/SILT with rootlets. Sand is fine. Gravel is fine to medium sub-rounded and of mixed lithology, predominantly flint. (KESGRAVE CATCHMENT SUBGROUP)	
				1.30	Grey clayey gravelly SAND. Sand is fine. Gravel is fine to medium sub-angular to rounded and of flint. (KESGRAVE CATCHMENT SUBGROUP)	
				1.55	Soft grey sandy SILT with tree roots and rootlets. Sand is fine. (KESGRAVE CATCHMENT SUBGROUP)	
				1.90	Beige-yellow clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse sub-angular and of flint. (KESGRAVE CATCHMENT SUBGROUP)	
				2.40	Trial pit complete at 2.40 m	




Remarks: Several small collapses within sands followed by catastrophic collapse of the entire pit.

HSV = Hand Shear Vane reading (kPa)
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
AJ = Amber Jar
PT = Plastic Tub
V = Vial

Groundwater: Wet arisings after 0.6m.

Logged By : AS Checked By : TW

Project Name Land Adjacent to Duke's Park, Woodbridge	Project No. C14106	Co-ords: - Level: -	Date 17/03/2015
Location: Suffolk		Dimensions: 	Scale 1:25
Client: Gladman Developments Limited		Trial Pit Stability : Unstable	Plant Used: JCB 3CX

Samples & In Situ Testing			Legend	Depth (m)	Stratum Description	Level (m AOD)
Depth (m)	Type	Results				
					Brown clayey gravelly SAND. Sand is fine to medium. Gravel is fine to medium sub-angular to sub-rounded and of mixed lithology. (TOPSOIL)	
				0.70	Black sandy PEAT/SILT with tree roots. Sand is fine. (KESGRAVE CATCHMENT SUBGROUP)	
				0.80	Grey clayey slightly gravelly SAND. Sand is fine to coarse. Gravel is fine rounded to sub-rounded and of quartzite and flint. Large tree roots present throughout. (KESGRAVE CATCHMENT SUBGROUP)	
				2.05	----- Trial pit complete at 2.05 m -----	

Remarks: A small number of minor collapses within the sands.

HSV = Hand Shear Vane reading (kPa)
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
AJ = Amber Jar
PT = Plastic Tub
V = Vial

Groundwater: Wet arisings after 0.8m.

Logged By : AS Checked By : TW



Annex C

Infiltration Test Results

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Land Adjacent to Duke's Park, Woodbridge

Client: Gladman Developments Limited

Test Location	TP01	Date of start of testing	17/03/2015	Date at end of testing	17/03/2015
----------------------	------	---------------------------------	------------	-------------------------------	------------

Test Run 1				Test Run 2				Test Run 3			
Pit Dimensions (m)				Pit Dimensions (m)				Pit Dimensions (m)			
Length		1.300m		Length				Length			
Width		0.700m		Width				Width			
Depth		2.300m		Depth				Depth			
Fill Depth		1.180m		Fill Depth		0.000m		Fill Depth		0.000m	
Max Volume		1.074m³		Max Volume		0.000m³		Max Volume		0.000m³	
Gravel used to backfill Test Pit		No		Gravel used to backfill Test Pit		No		Gravel used to backfill Test Pit		No	
Method of Calculation		DATA		Method of Calculation		DATA		Method of Calculation		DATA	
Time to soakaway				Time to soakaway				Time to soakaway			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	0.00	1.120	0				0				0
1	0.01	1.120	60				0				0
1	0.02	1.120	120				0				0
1	0.03	1.120	180				0				0
1	0.04	1.120	240				0				0
1	0.05	1.120	300				0				0
1	0.06	1.120	360				0				0
1	0.07	1.120	420				0				0
1	0.10	1.120	600				0				0
1	0.11	1.120	660				0				0
1	0.12	1.120	720				0				0
1	0.13	1.120	780				0				0
1	0.14	1.120	840				0				0
1	0.17	1.110	1020				0				0
1	0.25	1.110	1500				0				0
1	0.35	1.110	2100				0				0
1	1.00	1.110	3600				0				0
1	2.00	1.110	7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0
25% water depth		1.415m		25% water depth		0.000m		25% water depth		0.000m	
50% water depth		1.710m		50% water depth		0.000m		50% water depth		0.000m	
75% water depth		2.005m		75% water depth		0.000m		75% water depth		0.000m	
25% time (seconds)		No Result		25% time (seconds)				25% time (seconds)			
75% time (seconds)		No Result		75% time (seconds)				75% time (seconds)			
V _{p 75-25}		0.5369m³		V _{p 75-25}		0.0000m³		V _{p 75-25}		0.0000m³	
a _{p 50} (Actual area from test)		5.6500m²		a _{p 50} (Actual area from test)		0.0000m²		a _{p 50} (Actual area from test)		0.0000m²	
t _{p 75 - 25}		No Result		t _{p 75 - 25}				t _{p 75 - 25}			
Soil Infiltration Rate		No Result		Soil Infiltration Rate		N/A		Soil Infiltration Rate		N/A	

Note: No groundwater flows observed, but wet arisings after 1.2m bgl. Several collapses at Time = 0.17.

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Land Adjacent to Duke's Park, Woodbridge
Client: Gladman Developments Limited

Test Location	TP02	Date of start of testing	17/03/2015	Date at end of testing	17/03/2015
----------------------	------	---------------------------------	------------	-------------------------------	------------

[illegible]

Note: No groundwater flows observed, but wet arisings after 0.6m bgl. Trial pit unstable - test terminated after 20 minutes due to catastrophic collapse of the trial pit.

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Land Adjacent to Duke's Park, Woodbridge
Client: Gladman Developments Limited

Client:	Gladman Developments Limited				
Test Location	TP03	Date of start of testing	17/03/2015	Date at end of testing	17/03/2015

[illegible]

Note: No groundwater flows observed, but wet arisings after 0.8m bgl.

