Byrne Group

38 – 42 Hampton Road, Teddington, London

Flood Risk Assessment

132519-R1(1)-FRA

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RSK

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RSK GENERAL NOTES

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1 INTRODUCTION

RSK Land and Development Engineering Ltd (RSK) was commissioned by Indigo Planning on behalf of the Byrne Group (the "client") to undertake a Flood Risk Assessment (FRA) of 38-42 Hampton Road in Teddington, London (hereafter termed "the site").

The assessment is in support of the planning submission for prior approval for a change of use development from offices (B1a) to residential (C3), with minor alterations to external areas.

The assessment has been prepared in accordance with the National Planning Policy Framework (NPPF) (Ref. 1) and associated Planning Practice Guidance (PPG) (Ref. 2), the Interim Code of Practice for Sustainable Drainage (Ref. 3) and BS 8533-2011 Assessing and Managing Flood Risk in Development Code of Practice (Ref. 4), with site-specific advice from the Environment Agency (EA), the Local Planning Authority (LPA), the planners and the client.

The NPPF sets out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. The key definitions are:

- "Areas at risk of flooding" means land within Flood Zones 2 and 3; or land within Flood Zone 1 which has critical drainage problems and which has been notified to the local planning authority by the EA; and
- "Flood risk" means risk from all sources of flooding including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

For this site, the key aspects that require the assessment are:

- The EA's Flood Map shows that the site falls within Flood Zone 1;
- The site is located in Critical Drainage Area 'Group 8_006' in the London Borough of Richmond upon Thames;
- The site is underlain by superficial deposits designated a principal aquifer; and
- The site occupies an area of approximately 0.3ha.

The comments given in this report and opinions expressed are subject to RSK Group Service Constraints provided in **Appendix A**.

2 CONTEXT AND SCOPE OF WORK

A key element of project development is to prepare a FRA to establish the flood risk associated with the proposed development and to propose suitable mitigation, if required, to reduce the risk to a more acceptable level.

The scope of work relating to a FRA is based on the guidance provided in Section 10 of the NPPF and the PPG.

A site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. The scope of this assessment therefore comprises the following elements:

- To review architect plans, planning information and other studies to determine existing site conditions;
- To obtain information on the hydrology and hydrological regime in and around the site;
- To obtain the views of the EA including scope, location and impacts;
- To determine the extent of new flooding provision and the influence on the site;
- To assess the impact on the site from climate change effects and anticipated increases in rainfall over a 100 year period for residential uses; and
- To prepare a report including calculations and summaries of the source information and elements reviewed.

3 SITE DESCRIPTION

3.1 Location

The site is located on Hampton Road (A313) in Teddington, within the London Borough of Richmond upon Thames. The site can be located at National Grid Reference TQ 15088 71151.

The site is accessed from Hampton Road to the south and exited via Anlaby Road to the west. The site is bound to the north and east by residential properties.

A site location plan is shown as **Figure 1**.

3.2 Land use

The existing site plan is shown as **Figure 2** and is represented by the red line bounded area. The red line site occupies a total area of approximately 3080m^2.

The site currently comprises a four-storey office building located centrally. The main vehicular access to the site is off Hampton Road to the southeast. The access road runs the length of the southern boundary, extending around the eastern side of the building and part way along the northern section of the site. Car parking spaces are located off the access road to the south, east and north of the building. The remainder of the site is covered by areas of soft landscaping.

3.3 Topography

A site-specific topographic survey was carried out by Site Engineering Surveys Ltd, as contained in **Appendix B**. The survey shows that the site generally falls to the southeast corner adjacent to Hampton Road.

External ground levels fall from 13.4m AOD in the driveway to the southwest of the building and 13.1m AOD to the north of the building to 11.9m AOD at the site entrance on Hampton Road. There is 300mm fall from the site exit to Anlaby Road.

External ground levels step down between approximately 0.67m and 1.87m around all sides of the building to give access to the lower ground floor level.

3.4 Geology

Based on published geological records for the area (British Geological Survey online mapping and paper map No. 270), the site exhibits the following geology:

- Superficial Geology: The eastern half of the site is underlain by the Kempton Park Gravel Formation (sand and gravel). The western half of the site is underlain by the Taplow Gravel Formation (sand and gravel).
- Bedrock Geology: The London Clay Formation (clay and silt).

3.5 Hydrology

There are no known water features on the site.

The closest surface watercourse to the site is the Longford River, approximately 800m to the southeast of the site in Bushy Park. The Longford River is an artificial channel that diverts water from the River Colne (12 miles to the west) to Bushy Park and Hampton Court Palace, where it outfalls to the River Thames.

In the northern part of Bushy Park closest to the site, Upper Lodge Water Gardens comprise of a collection of pools, cascades, basins and a canal, which are connected to the Longford River.

The River Thames is located approximately 1.35km to the northeast of the site at its closest point. The Thames is classified as a Main River.

3.6 Hydrogeology

Hydrogeological information was obtained from the EA's online mapping service.

The superficial deposits are designated a principal aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability meaning that they usually provide a high level of water storage and may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

The London Clay Formation is an aquiclude, which prevents the flow of water, therefore is unproductive strata. These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The site falls within a Groundwater Vulnerability Zone classified as Major Aquifer High.

The site is not located within a Groundwater Source Protection Zone.

3.7 History

Reference to online historical maps indicates that the site has been developed since at least the 1960s.

4 DEVELOPMENT PROPOSALS

The development proposal for the site is a prior approval planning application under permitted development rights for the change of use of the existing building from offices (B1a) to 28 no. residential dwellings (C3).

In addition, there will be minor alterations to the access road and the number and configuration of the car parking spaces.

Additional parking along the southern boundary and in the northeast of the site (both on existing areas of soft landscaping) equates to an increase in impermeable area of approximately 75m^2. Approximately 205m^2 of the access road to the north of the building will be returned to soft landscaping. Overall there is a net increase in permeable area of approximately 130m^2.

The proposed site layout is shown as **Figure 3**. A full set of architectural plans is contained in **Appendix C**.

5 LEGISLATION AND POLICY CONTEXT

5.1 National policy

Table 5.1: National legislation and policy context

Legislation	Key provisions
National Planning Policy Framework (2012)	The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.
Planning Practice Guidance (2014)	The NPPF is supported by online PPG notes, launched on the 6th March 2014, to provide additional guidance on flood risk.
Flood and Water Management Act 2010 (Ref. 5)	The Flood and Water Management Act (FWMA) aims to implement the findings of the 2007 Pitt Review and co-ordinate control of drainage and flood issues. There are a number of increased responsibilities within the Act that affect adoption of Sustainable Drainage Systems (SuDS) features and the role of the Environment Agency to expand on the mapping data they provide. The implementation of SuDS features has many beneficial impacts on the treatment of surface water during remediation works.
Water Resources Act 1991 (Ref. 6)	Section 24 – The EA is empowered under this Act to maintain and improve the quality of 'controlled' waters Section 85 – It is an offence to cause or knowingly permit pollution of controlled waters Section 88 – Discharge consents are required for discharges to controlled waters
Water Framework Directive (2000) (Ref. 7)	The Water Framework Directive (WFD) requires all inland and coastal waters to reach 'good' chemical and biological status by 2015. Flood risk management is unlikely to have a significant impact on chemical water quality except where maintenance works disturb sediment (such as de-silting) or where pollutants are mobilised from contaminated land by floodwaters. The main impact of the WFD on flood risk management, both now and in the future, relates to the ecological quality of water bodies. Channel works, such as straightening and deepening, or flood risk management schemes that modify geomorphological processes can change river morphology. The WFD aims to protect conservation sites identified by the EC Habitats Directive and Birds Directive that have water-related features, by designating them as 'protected sites'.

5.2 Regional Policy – The London Plan

Table 5.2: The London Plan policy context

Document	Key Provisions
The London Plan (2011) (Ref. 8)	**Policy 5.12 Flood Risk Management:** Development proposals must comply with the FRA and management requirements set out in PPS25 over the lifetime of the development. Proposals must have regard to measures proposed in the Thames Estuary 2100 (TE2100) Plan and the relevant Catchment Flood Management Plan (CFMP). Developments which are required to pass the PPS25 Exception Test will need to address flood resilient design and emergency planning by demonstrating that: • The development will remain safe and operational under flood conditions; • A strategy of safe evacuation and/ or safely remaining in the building is followed under flood conditions; • Key services including electricity, water etc. will continue to be provided under flood conditions. and • Buildings are designed for quick recovery following a flood. **Policy 5.13 Sustainable Drainage:** Development should use SuDS unless there are practical reasons for not doing so. Development should aim to achieve Greenfield runoff rates and ensure that surface water runoff is managed as close to its source as possible in line with the drainage hierarchy, as below: 1. Store rainwater for later use. 2. Use infiltration techniques, such as porous surfaces in non-clay areas. 3. Attenuate rainwater in ponds or open water features for gradual release to a watercourse. 4. Attenuate rainwater by storing in tanks or sealed water features for gradual release to a watercourse. 5. Discharge rainwater direct to a watercourse. 6. Discharge rainwater to a surface water drain. 7. Discharge rainwater to the combined sewer. Drainage should be designed and implemented in ways that deliver other policy objectives of the London Plan, including water use efficiency and quality, biodiversity, amenity and recreation.
Revised Early Minor Alterations to the London Plan (2013) (Ref. 9)	**Amendments to Policy 5.12 Flood Risk Management:** Strategic: A. The Mayor will work with all relevant agencies including the EA to address current and future flood issues and minimise risks in a sustainable and cost effective way. Planning decisions: B Development proposals must comply with the flood risk assessment and management requirements set out in the NPPF and the associated Technical Guidance on flood risk over the lifetime of the

Document	Key Provisions
	development and have regard to measures proposed in TE2100 – see paragraph 5.55 and CFMPs. C Developments which are required to pass the Exceptions Test set out in the NPPF and the Technical Guidance will need to address flood resilient design and emergency planning by demonstrating that: a. The development will remain safe and operational under flood conditions; b. A strategy of either safe evacuation and/or safely remaining in the building is followed under flood conditions; c. Key services including electricity, water etc will continue to be provided under flood conditions; and d. Buildings are designed for quick recovery following a flood. D Development adjacent to flood defences will be required to protect the integrity of existing flood defences and wherever possible should aim to be set back from the banks of watercourses and those defences to allow their management, maintenance and upgrading to be undertaken in a sustainable and cost effective way. LDF preparation: E In line with the NPPF and the Technical Guidance, boroughs should, when preparing LDFs, utilise Strategic Flood Risk Assessments (SFRAs) to identify areas where particular flood risk issues exist and develop actions and policy approaches aimed at reducing these risks, particularly through redevelopment of sites at risk of flooding and identifying specific opportunities for flood risk management measures.
Supplementary Planning Guidance on Sustainable Design and Construction (2006) (Ref. 10)	**Policy SPG 2.4.4 Water Pollution and Flooding:** Essential Standards: • Use of SuDS wherever practical; and • Achieve 50% attenuation of the undeveloped site's surface water runoff at peak times. Preferred Standard: • Achieve 100% attenuation of the undeveloped site's surface water runoff at peak times. These standards are based on the principles of: • Incorporating SuDS; • Protecting water quality; • Identifying potential sources of flooding and assessing their possible impacts both now and in the future; and • Adopting principles of flood resistant design.

5.3 Local policy – London Borough of Richmond upon Thames Local Plan

Table 5.2: Current adopted local policy and provisions

Policy Document	Key provisions
Core Strategy (2009) (Ref. 11)	**CP1 Sustainable Development** Development will need to incorporate sustainable flood measures to protect vulnerable areas from flooding of the River Thames and its tributaries. **CP3 Climate Change** Development should be designed to take into account the future impacts of climate change.
Development Management Plan (2011) (Ref. 12)	**Policy DM SD 6: Flood Risk** Development will apply the Sequential Test and, if appropriate, the Exception Test. **Policy DM SD 7: Sustainable Drainage** Development will follow the drainage hierarchy when disposing of surface water and must utilise SuDS wherever practical. Any runoff must be reduced to Greenfield runoff rates wherever feasible. When discharging runoff to a public sewer, developers must check that capacity exists within the network. **Policy DM SD 9: Protecting Water Resources and Infrastructure** Developments must achieve a high standard of water efficiency.

6 SOURCES OF INFORMATION

6.1 Environment Agency

6.1.1 Flood zone maps

The latest EA Flood Map (reproduced as **Figure 4**) indicates that the site falls within Flood Zone 1 (low risk of flooding).

6.2 Relevant studies

Table 6.1: Relevant studies

Study	Comments
London Borough of Richmond upon Thames Strategic Flood Risk Assessment (2010) (Ref. 13)	The principle aim of a Strategic Flood Risk Assessment (SFRA) is to map all forms of local flood risk in order to provide an evidence base to locate new development. It also aims to provide appropriate policies for the management of flood risk, and identify the level of detail required for site-specific FRAs. The SFRA contains information and maps detailing flood sources and risks.
London Borough of Richmond upon Thames Preliminary Flood Risk Assessment (2011) (Ref. 14)	Preliminary Flood Risk Assessments (PFRAs) are produced by Lead Local Flood Authorities (LLFAs) in England and Wales. A Preliminary Flood Risk Assessment (PFRA) is the first part of the planning cycle for flood risk management as set out in the Flood Risk Regulations (2009), which implement the requirements of the European (EU) Floods Directive (2007). The EU Floods Directive aims to provide a consistent approach to managing flooding across Europe. The PFRA considers local sources of flooding that the LLFA is responsible for: ordinary watercourses, surface water, groundwater and sewers where flooding is wholly or partially caused by rainwater or other precipitation entering or affecting the system. Information is gathered from existing sources on past floods and flood models to identify Flood Risk Areas.
London Borough of Richmond upon Thames Surface Water Management Plan (2011) (Ref. 15)	Surface Water Management Plans (SWMPs) are projects to investigate local flooding issues such as flooding from sewers, drains, groundwater, and runoff from land, small watercourses and ditches that occurs as a result of heavy rainfall. They aim to identify options to reduce local flooding and include a realistic action plan to implement or deliver the agreed management measures.
Thames Catchment Flood Management Plan 2009 (Ref. 16)	Catchment Flood Management Plans (CFMPs) give an overview of the flood risk from inland sources across each river catchment and recommend ways of managing those risks now and over the next 50-100 years. The EA is responsible for producing CFMPs.

6.3 Drainage

6.3.1 Public sewer

Public sewer details have been referenced from Thames Water's Asset Location Plan, as contained in **Appendix D**. The plan shows that the site is served by a separate surface water and foul sewer network.

Surface water and foul sewers of 225mmØ run parallel in Kent Drive and Anlaby Road. These sewers upsize respectively to 300mmØ sewers in Hampton Road, and convey flows to the east.

6.3.2 Private drainage

The topographic survey shows a number of surface water sewers on site that collect runoff from the existing building and hardstanding areas and appear to ultimately drain to the public sewer network in Hampton Road. In the absence of a CCTV survey, this cannot be confirmed.

6.3.3 Internal Drainage Boards

There are no known Internal Drainage Boards operating in the area.

7 SOURCES OF FLOOD RISK

7.1 Criteria

In accordance with the NPPF, a prediction of the flood sources and levels is required along with the effects of climate change from the present for the design life of the development (in this case assumed to be 100 years for an educational establishment). To consider the effects of climate change, industry best practice recommends consideration of a 30% increase in rainfall intensity and 20% increase in peak river flows over this timeframe.

The flood risk elements that need to be considered for any site are defined in BS 8533 as the "Forms of Flooding" and are listed as:

- Flooding from the Sea (tidal flood risk);
- Flooding from Rivers (fluvial flood risk);
- Flooding from the Land (overland pluvial flood risk);
- Flooding from Groundwater;
- Flooding from Sewers (sewer and drain exceedance, pumping station failure etc); and
- Flooding from Reservoirs, Canals and other Artificial Structures.

The following section reviews each of these in respect of the subject site.

7.2 Flooding from the sea (tidal flood risk)

The site is located upstream of the tidal limit of the River Thames at Teddington Lock therefore is **not** at risk of tidal flooding.

7.3 Flooding from rivers (fluvial flood risk)

The site is located in Flood Zone 1 and at low risk of fluvial flooding from Main Rivers (i.e. the River Thames). Flood Zone 1 equates to land assessed as having less than a 1 in 1000 year (0.1%) annual probability of fluvial flooding in any given year.

There are no known records of flooding associated with the Longford River.

The risk of fluvial flooding at the site is considered **low**.

7.3.1 Climate Change

Fluvial flooding is likely to increase as a result of climate change. A greater intensity and frequency of precipitation is likely to raise river levels and increase the likelihood of a river overtopping its banks. However, given the distances of fluvial watercourses from the site, such occurrences will not affect the site.

7.4 Flooding from the land (overland pluvial flood risk)

If intense rain is unable to soak into the ground or be carried through manmade drainage systems, for a variety of reasons, it can run-off over the surface causing localised flooding, before reaching a river or other watercourse. Generally, where there is impermeable surfacing or where the ground infiltration capacity is exceeded, surface water runoff will occur. Overland flow can be exacerbated in areas of steep ground.

The wider area comprises relatively low density development to the north, east and west, which is assumed to drain to the surrounding surface water sewers. There are no significant topographic gradients. The large area of parkland to the south drains naturally to permeable superficial deposits. Any overland flows resulting from an exceedance of the infiltration capacity would follow the fall in topography to the south and east towards the River Thames, i.e. away from the site.

The site itself contains areas of soft landscaping and a larger grassed area to the east. Any overland flow from these areas is likely to be caught by the drainage system serving the building and hard standing areas on site or, if not, flow overland to Hampton Road via the site entrance in the southeast.

The PFRA contains no records of surface water flooding on Hampton Road during the July 2007 floods. The SWMP illustrates an incident of surface water flooding to the north of the site, however, given that there are no significant flow routes in close proximity to the site, this incident was likely to be an isolated incident.

The EA's Risk of Flooding from Surface Water map (**Figure 5**) indicates that the site is at very low risk of surface water flooding. The SWMP indicates a flood depth of less than 0.1m on site during a 1 in 100 year plus climate change rainfall event.

The risk of surface water flooding at the site is considered **low**.

7.4.1 Climate change

Surface water flooding is likely to increase as a result of climate change in a similar ratio to fluvial flooding. Increased intensity and frequency of precipitation is likely to lead to reduced infiltration and increased overland flow.

7.5 Flooding from groundwater

Groundwater flooding tends to occur following longer periods of sustained high rainfall. Higher rainfall means that more water could infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high to areas where the ground level is low. During very wet periods, with additional groundwater flowing towards these areas, the water table can rise and break the surface causing localised groundwater flooding.

Given that the site is underlain by permeable superficial deposits of sands and gravels, which are designated a principal aquifer, shallow groundwater within these deposits could potentially rise to break the surface following prolonged rainfall events. In addition, there is evidence in the wider area of groundwater flooding occurring some distance from the River Thames as a result of water finding a pathway through the gravels during high river levels.

As part of the SWMP, URS Scott Wilson produced an Intermediate Assessment of Groundwater Flooding Susceptibility in the borough. Their historic assessment of groundwater flooding incidents, based on EA records, contain no records of flooding on site. Nearby, two incidents were reported to the north of Hampton Road to the west of the site: 1) basement flooding of a residential property on Kings Road in 2003; and 2) rising water reported under a residential property on Oxford Road in 2000. Both locations are underlain by the Taplow Gravel Formation and are within approximately 330m of the site.

Within the same report, the Increased Potential for Elevated Groundwater map indicates that the eastern part of the site (underlain by the Kempton Park Gravel Formation) is at increased potential for elevated groundwater.

Irrespective of the exact classification of superficial deposits, the site is located in an area at potential risk of groundwater flooding due to the underlying permeable superficial deposits. The lower ground floor of the site building could be particularly susceptible to flooding as it is set at a lower level than the surrounding land. Overall, the risk of groundwater flooding to the site is considered **low** to **medium**. However, it is unlikely that the groundwater level in the shallow aquifer will break the surface and cause the site and building to flood. No significant structural changes are proposed as part of the change of use development which could otherwise increase the potential for groundwater to break the surface.

7.5.1 Climate change

Climate change could increase the risk of groundwater flooding as a result of increased precipitation filtering into the groundwater body. If winter rainfall becomes more frequent and heavier, groundwater levels may increase. Higher winter recharge may however be balanced by lower recharge during the predicted hotter and drier summers. This is less likely to cause a significant change to flood risk than from other sources, since groundwater flow is not as confined. The change in flood risk is likely to be low.

7.6 Flooding from sewers

Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its conveyance capacity, the system becomes blocked or it cannot discharge due to a high water level in the receiving watercourse. When exceeded, the surcharged pipe work will lead to flooding from backed up manholes and gully connections. This will lead to immediate flooding within highways surrounding the site.

Most adopted surface water drainage networks are designed to the criteria set out in Sewers for Adoption [(Ref. 17)]. One of the design parameters is that sewer systems be designed such that no flooding of any part of the site occurs in a 1 in 30 year rainfall event. By definition a 1 in 100 year event would exceed the capacity of the surrounding sewer network as well as any proposed drainage.

An illustrative summary of Thames Water's DG5 Register within the SWMP shows that (as of 2010) there were 1 – 5 records of sewer flooding incidents in the TW11 0 postcode area, amongst the lowest in the borough.

7.6.1 Climate change

The impact of climate change is likely to be negative regarding flooding from sewers. Increased rainfall and more frequent flooding put existing sewer and drainage systems under additional pressure resulting in the potential for more frequent surcharging and potential flooding. This would increase the frequency of local sewer flooding but not significantly in terms of the proposed change of use development.

7.7 Flooding from reservoirs, canals and other artificial structures

Flood events can occur from a sudden release of large volumes of water from reservoirs, canals and artificial structures due to structural failure, a breach or overtopping. There is a possibility that flooding may result from culverts and/or sewers being blocked by debris or structural failure. This can cause water to backup and result in localised flooding, as well as placing areas with lower ground levels at risk.

7.7.1 Reservoirs

The EA have produced maps that show the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map for the site (**Figure 6**) indicates that the site is not at risk of flooding from reservoirs.

7.7.2 Canals

The artificial canals in Bushy Park do not present a flood risk to the site. The canals are relatively small and the topography falls to the south and east towards the River Thames.

7.7.3 Blockages of artificial drainage systems

Given the distance from site and the fall in topography, any blockages of the water features in Bushy Park should not present a flood risk to the site.

7.8 Flood risk as a result of the proposed development

The proposed development layout indicates a net increase in permeable area of approximately 130m^2. Therefore, the proposed development will not generate additional surface water runoff and will reduce the flood risk to other areas.

8 PLANNING CONTEXT

8.1 Application of planning policy

Section 10 of the NPPF includes measures specifically dealing with development planning and flood risk using a sequential characterisation of risk based on planning zones and the flood zones. The main study requirement is to identify flood zones and the vulnerability classification of the land use, based on an assessment of the pre and post-site conditions.

8.2 Land use vulnerability

The PPG includes a list of appropriate land uses in each flood zone dependent on the vulnerability classification of the land use. With reference to Table 2 of the PPG, the proposed educational development is classed as 'more vulnerable'. In applying the Sequential Test, reference is made to Table 3 of the PPG (reproduced as Table 8.1 below).

Table 8.1: Flood risk vulnerability and flood zone 'compatibility'

Flood Risk Vulnerability Classification (Table D2)		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone (Table D1)	Zone 1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
	Zone 2	Appropriate	Appropriate	Exception Test Required	Appropriate	Appropriate
	Zone 3a	Exception Test Required	Appropriate	Should not be permitted	Exception Test Required	Appropriate
	Zone 3b functional floodplain	Exception Test Required	Appropriate	Should not be permitted	Should not be permitted	Should not be permitted

This classification of development is appropriate for areas within Flood Zone 1.

9 SURFACE WATER DRAINAGE ASSESSMENT

It is presumed that the proposed change of use development will utilise the existing drainage arrangement on the site.

As outlined in Section 4, there will be no significant change to the proportion of external permeable and impermeable surfaces on the site. If anything, the increase in the amount of soft landscaping will reduce overall runoff rates from the site, providing a betterment to the surrounding sewer network.

With respect to the development proposals, and considering that the site is located in Flood Zone 1 and less than 1ha, a surface water drainage strategy is not considered necessary.

10 FLOOD MITIGATION MEASURES

10.1 Overland flood flow

Minor proposed alterations to external areas will not obstruct the potential overland flow route to Hampton Road via the site entrance in the southeast.

11 CONCLUSIONS AND RECOMMENDATIONS

This FRA complies with the NPPF and local policy and demonstrates that flood risk to the site from all sources has been considered. The assessment also considers the flood risk to the site and surrounding areas as a result of the proposed development.

This assessment concludes the following key points:

- The development proposal for the site is a prior approval planning application under permitted development rights for the change use of the existing building from offices (B1a) to 28 no. residential dwellings (C3), with minor alterations to external areas.
- There are no known water features on the site. The closest surface (artificial) watercourse to the site is the Longford River, approximately 800m to the southeast of the site in Bushy Park. The River Thames is located approximately 1.35km to the northeast of the site at its closest point.
- The site is underlain by permeable superficial deposits comprising the Kempton Park Gravel Formation and Taplow Gravel Formation. The deposits are designated a principal aquifer.
- The site is located upstream of the tidal limit of the Thames at Teddington Lock therefore is not at risk of tidal flooding. The site falls within Flood Zone 1 and is at low risk of flooding from all fluvial sources.
- There are no significant topographic gradients on the site or overland flow routes in the wider area. The surface water flood risk is considered low.
- The site is located in an area at potential risk of groundwater flooding due to the presence of permeable superficial deposits and known groundwater flood incidents in the area. The lower ground floor of the site building could be particularly susceptible to flooding. However, it is unlikely that the groundwater level in the shallow aquifer will break the surface and cause the site and building to flood. No significant structural changes are proposed as part of the change of use development which could otherwise increase the potential for groundwater to break the surface.
- The site is considered at low risk of flooding from sewers and is not considered to be at risk of flooding from reservoirs, canals or other artificial structures.
- It is presumed that the proposed change of use development will utilise the existing drainage arrangement on the site. There will be a slight increase in the percentage of soft landscaping that will reduce overall runoff rates from the site, providing a betterment to the surrounding sewer network.
- Minor proposed alterations to external areas will not obstruct the potential overland flow route to Hampton Road via the site entrance in the southeast.

Overall, taking into account the above points, the proposed development of the site should not be precluded on flood risk grounds.

12 REFERENCES

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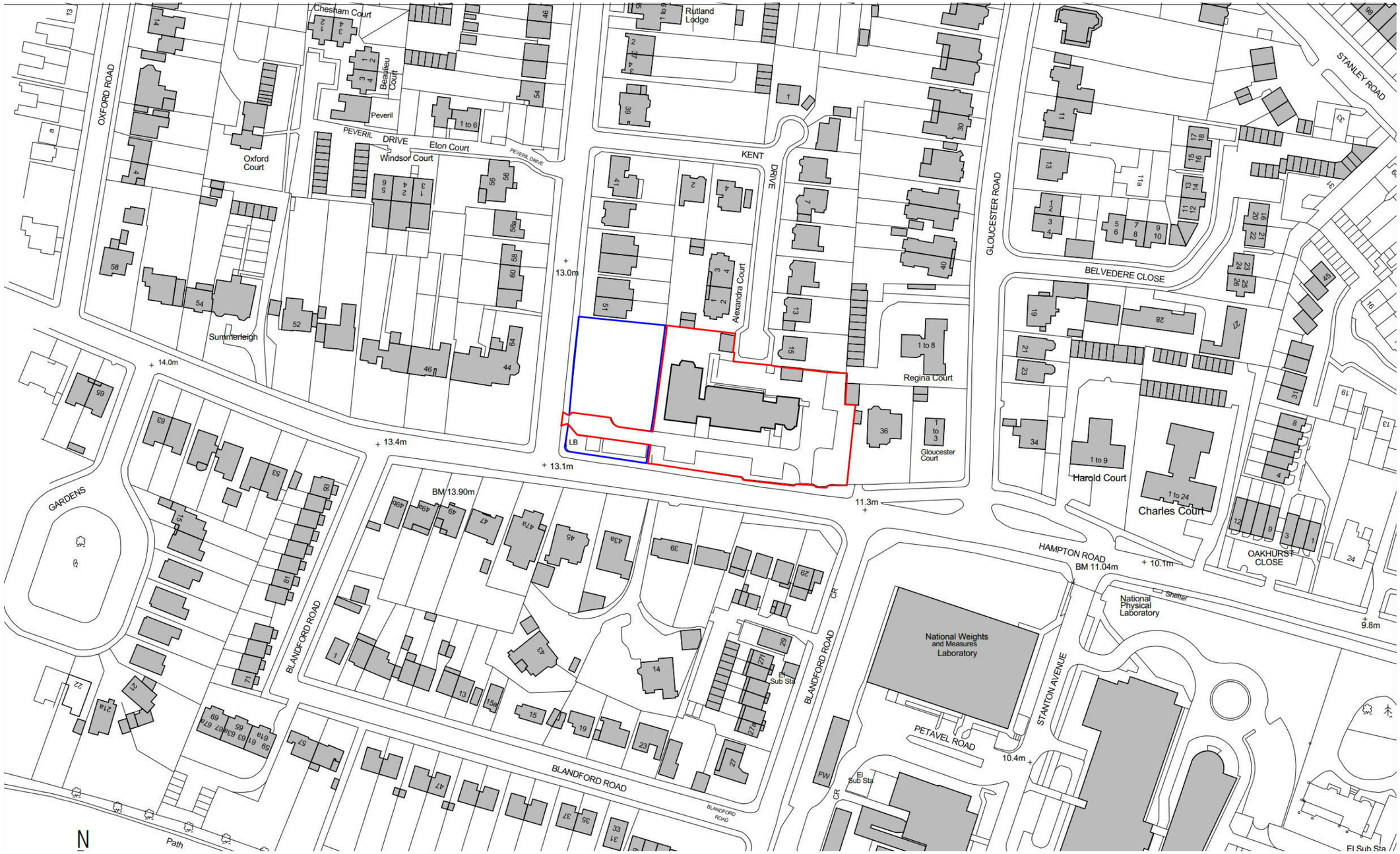
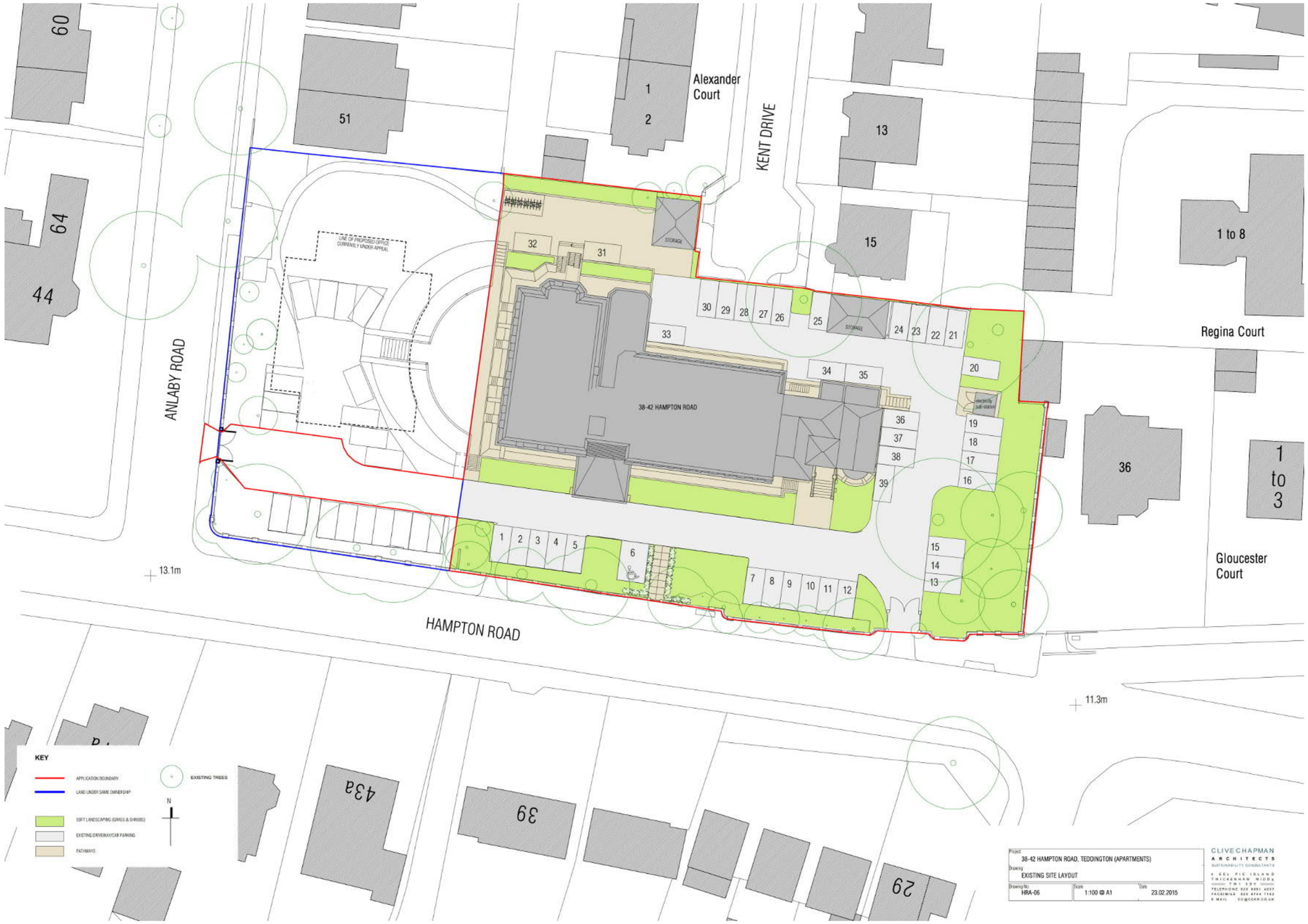
15. URS/Scott Wilson (August 201, 'London Borough of Richmond upon Thames Surface Water Management Plan'.
16. Environment Agency (December 2009), 'Thames Catchment Flood Management Plan, Summary Report'.
17. WRC (2006), 'Sewers for Adoption' 6th Edition.



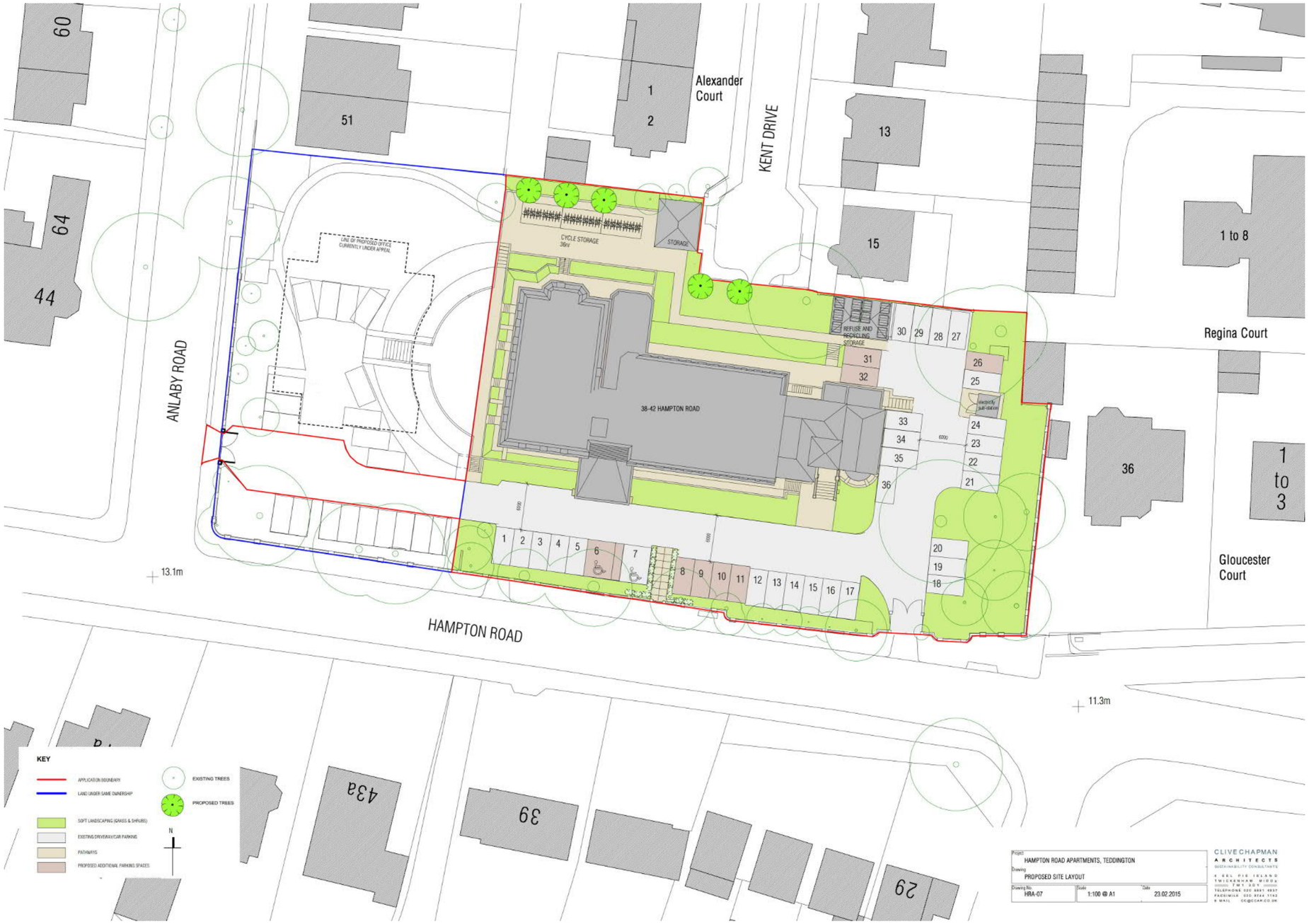
*For the purpose of this assessment the site is bound by the red line

RSK	**SITE LOCATION PLAN**	**Client:** Byrne Group	**Figure:** 1
		Site: 38 – 42 Hampton Road, Teddington, London	**Job No:** 132519
		Scale: NTS	**Source:** Clive Chapman Architects



*For the purpose of this assessment the site is bound by the red line

RSK	**EXISTING SITE PLAN**	**Client:**	Byrne Group	**Figure:**	2
		Site:	38 – 42 Hampton Road, Teddington, London	**Job No:**	132519
		Scale:	NTS	**Source:**	Clive Chapman Architects



*For the purpose of this assessment the site is bound by the red line

RSK	**PROPOSED SITE LAYOUT**	**Client:**	Byrne Group	**Figure:**	3
		Site:	38 – 42 Hampton Road, Teddington, London	**Job No:**	132519
		Scale:	NTS	**Source:**	Clive Chapman Architects

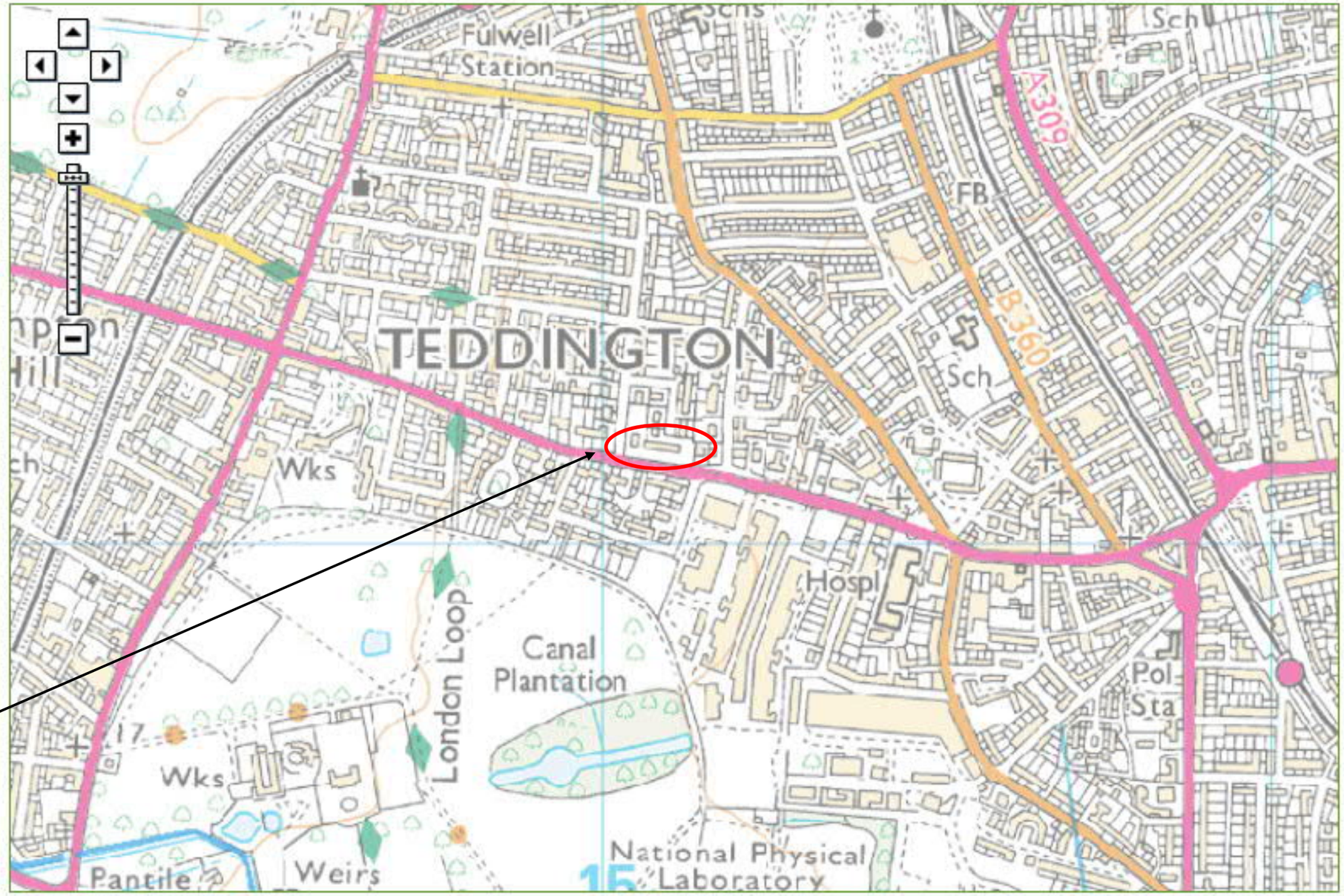
Map legend

Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

- ☑ Flood Map for Planning (Rivers and Sea)
  - Flood Zone 3
  - Flood Zone 2
  - Flood defences (Not all may be shown*)
  - Areas benefiting from flood defences (Not all may be shown*)
- ☑ River and Sea levels
  - Main rivers

TW11 0JE at scale 1:10,000

Other maps · Data search · Text only version



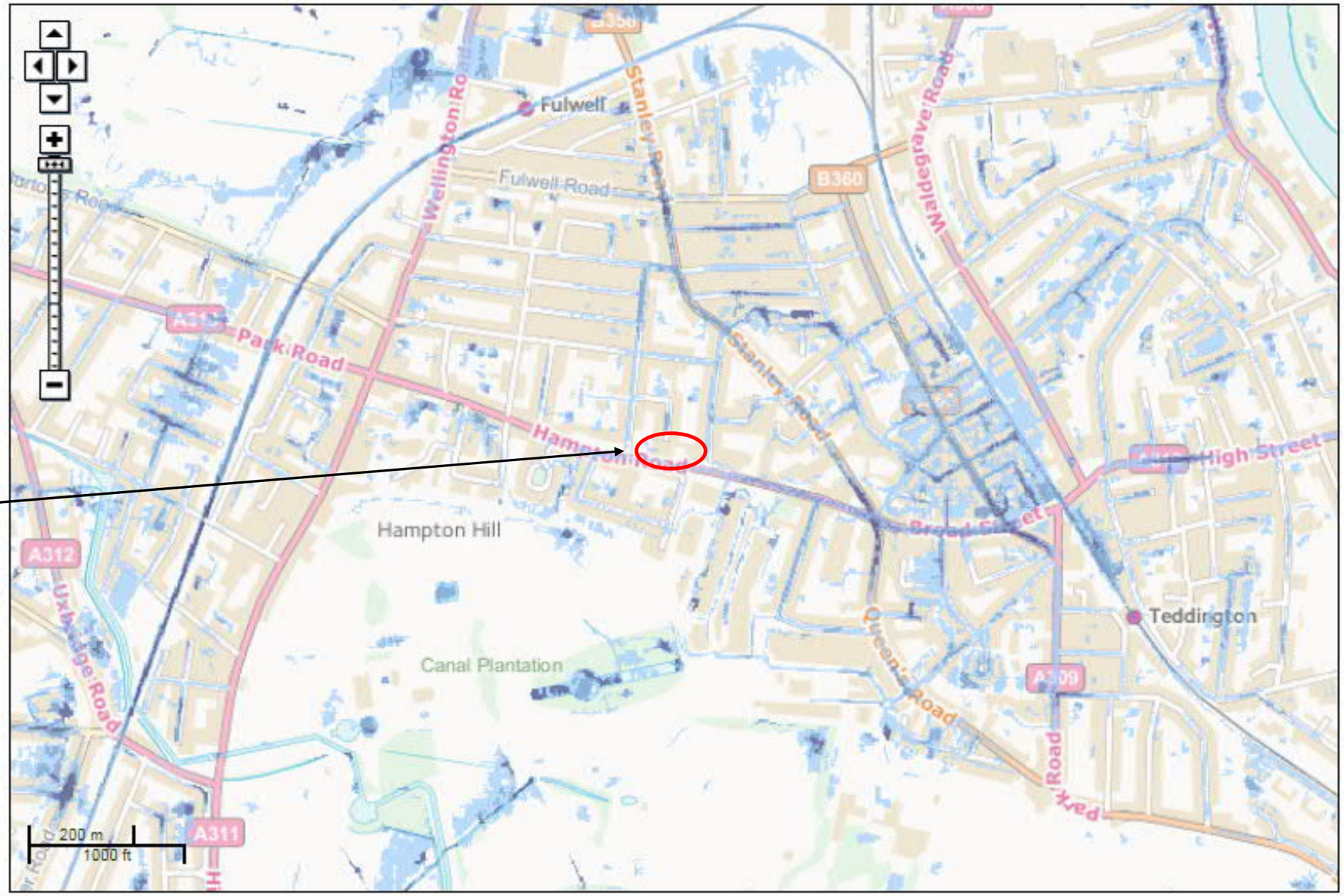
RSK	**ENVIRONMENT AGENCY FLOOD MAP**	**Client:** Byrne Group	**Figure:** 4
		Site: 38 – 42 Hampton Road, Teddington, London	**Job No:** 132519
		Scale: NTS	**Source:** Environment Agency

Map legend

- [x] Risk of Flooding from Surface Water
- High
- Medium
- Low
- Very Low

Map of X: 515,111; Y: 171,143 at scale 1:10,000

Data search



Site

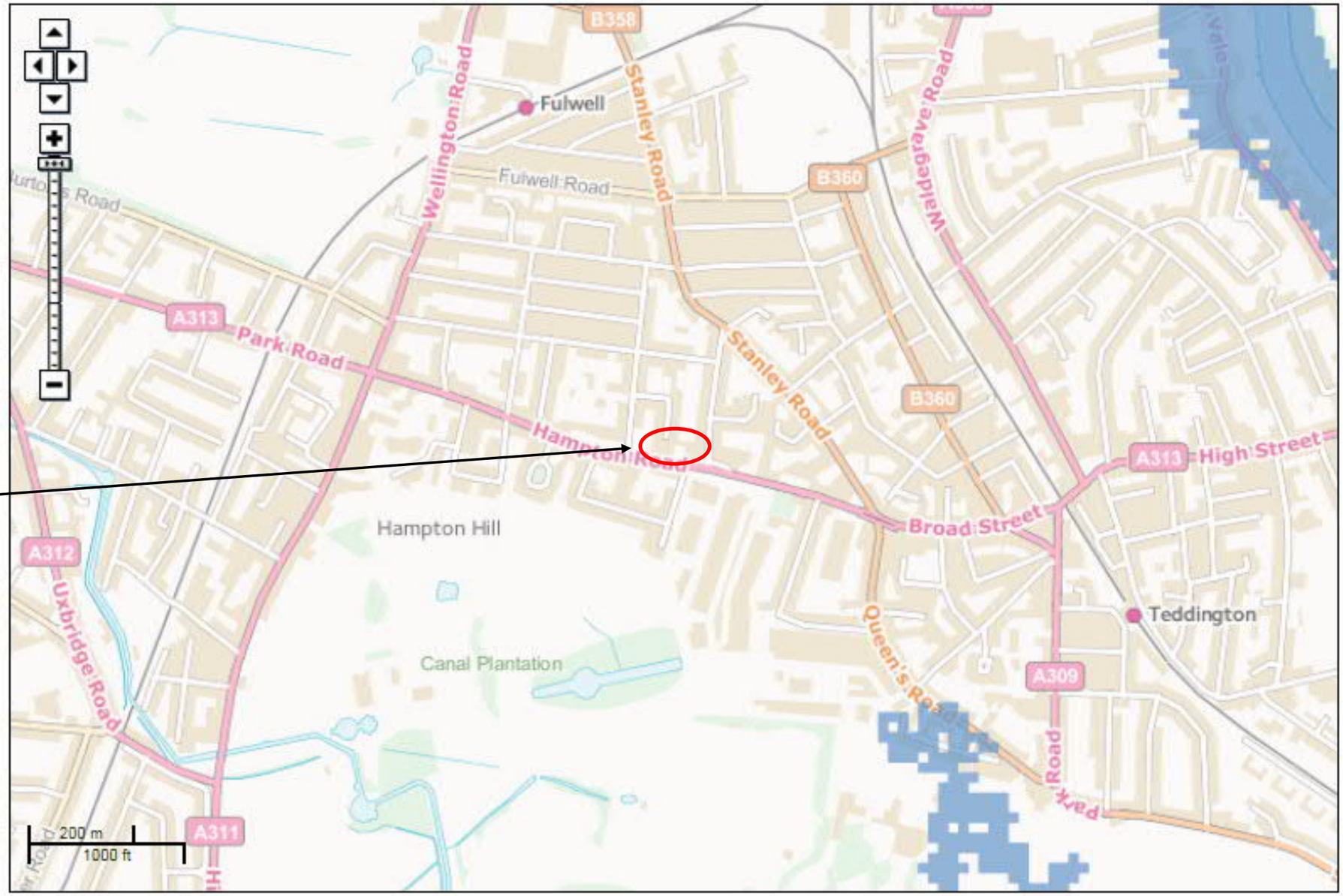
RSK	**ENVIRONMENT AGENCY RISK OF FLOODING FROM SURFACE WATER**	**Client:**	Byrne Group	**Figure:**	5
		Site:	38 – 42 Hampton Road, Teddington, London	**Job No:**	132519
		Scale:	NTS	**Source:**	Environment Agency

Map legend

- [x] Risk of Flooding from Reservoirs
- Maximum extent of flooding

Map of X: 515,111; Y: 171,143 at scale 1:10,000

Data search



RSK	**ENVIRONMENT AGENCY RISK OF FLOODING FROM RESERVOIRS**	**Client:**	Byrne Group	**Figure:**	6
		Site:	38 – 42 Hampton Road, Teddington, London	**Job No:**	132519
		Scale:	NTS	**Source:**	Environment Agency

APPENDIX A
SERVICE CONSTRAINTS

RSK Group service constraints

1. This report and its content (the "Services") were completed by RSK LDE Ltd (RSK) for the Byrne Group (the "client") in accordance with the terms of a contract between RSK and the "client" dated February 2015. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable Civil Engineer at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.

2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

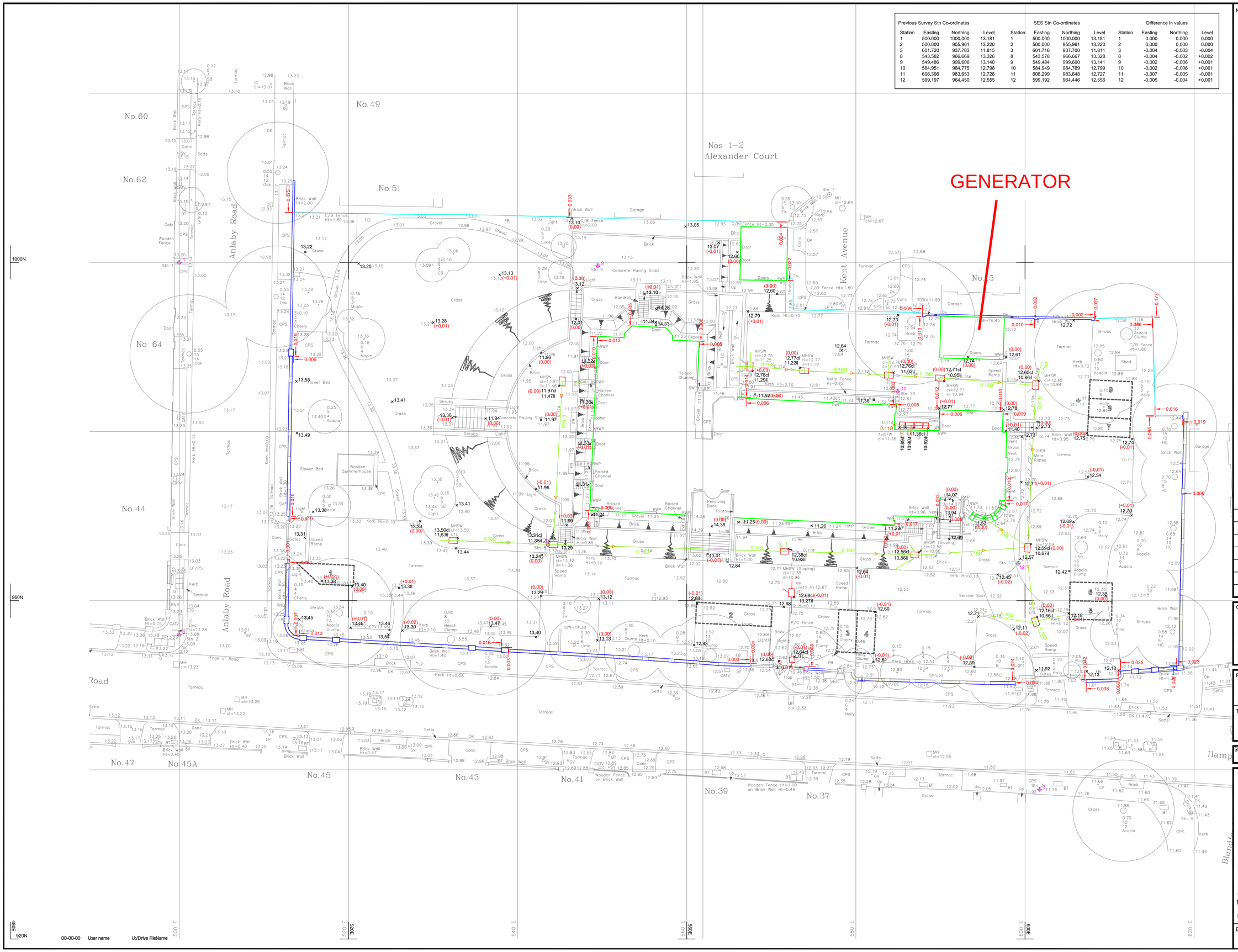
6. The observations and conclusions described in this report are based solely upon the Services, which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to

this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials. 7. The Services are based upon RSK's observations of existing physical conditions at the site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.

APPENDIX B
TOPOGRAPHIC SURVEY



Previous Survey Stn Co-ordinates				SES Stn Co-ordinates				Difference in values			
Station	Easting	Northing	Level	Station	Easting	Northing	Level	Station	Easting	Northing	Level
1	500.000	1000.000	13.181	1	500.000	1000.000	13.181	1	0.000	0.000	0.000
2	500.000	955.961	13.220	2	500.000	955.961	13.220	2	0.000	0.000	0.000
3	601.720	937.703	11.815	3	601.716	937.700	11.811	3	-0.004	-0.003	-0.004
8	543.582	966.669	13.326	8	543.578	966.667	13.328	8	-0.004	-0.002	+0.002
9	549.486	999.606	13.140	9	549.484	999.600	13.141	9	-0.002	-0.006	+0.001
10	584.951	984.775	12.798	10	584.949	984.769	12.799	10	-0.002	-0.006	+0.001
11	606.306	983.653	12.728	11	606.299	983.648	12.727	11	-0.007	-0.005	-0.001
12	599.197	964.450	12.555	12	599.192	964.446	12.556	12	-0.005	-0.004	+0.001

NOTES

SES survey information is shown in colour, previous survey information shown in grey

Previous survey information taken from drawing (01)001A had to be scaled as it was not an original CAD file. This was probably scanned Infrom an original, The result of this has caused minor errors in the grid dimensions, varying from -6mm to +12mm.

Dimensions shown on plan are the discrepancies between SES survey and the CAD file provided in metres

(-0.01) .....shows discrepancy between SES level survey and previous level survey in metres

	Issued for Information	24/08/06	JF
	REVISIONS	DATE	BY

CLIENT

Ellmer Construction

PROJECT TITLE

42 Hampton Rd - Teddington

TITLE

Verification Survey

SURVEYED	DRAWN	CHECKED	DATE	SCALE @A1
JF/SC	JF	RH	August 06	1:200

CONSTRUCTION SURVEYORS

Site Engineering Surveys Ltd
16 Tiller Court
Tiller Road
London E14 8PX
Tel: 020 7538 0870
Fax: 020 7537 4355
Email: office@sesltd.uk.com

DRAWING No

SES/6336/001

REV

00-00-00 User name U:/Drive FileName

APPENDIX C
ARCHITECTURAL PLANS

60
64
44
51
1
2
Alexander Court
KENT DRIVE
13
15
1 to 8
Regina Court
ANLABY ROAD
LINE OF PROPOSED OFFICE CURRENTLY UNDER APPEAL
CYCLE STORAGE 36nr
STORAGE
REFUSE AND RECYCLING STORAGE
38-42 HAMPTON ROAD
electricity sub-station
6000
6000
6000
30 29 28 27
31
32
33
34
35
36
26
25
24
23
22
21
20
19
18
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
36
1 to 3
Gloucester Court
13.1m
HAMPTON ROAD
11.3m
43a
39
29

KEY

- APPLICATION BOUNDARY
- LAND UNDER SAME OWNERSHIP
- SOFT LANDSCAPING (GRASS & SHRUBS)
- EXISTING DRIVEWAY/CAR PARKING
- PATHWAYS
- PROPOSED ADDITIONAL PARKING SPACES
- EXISTING TREES
- PROPOSED TREES

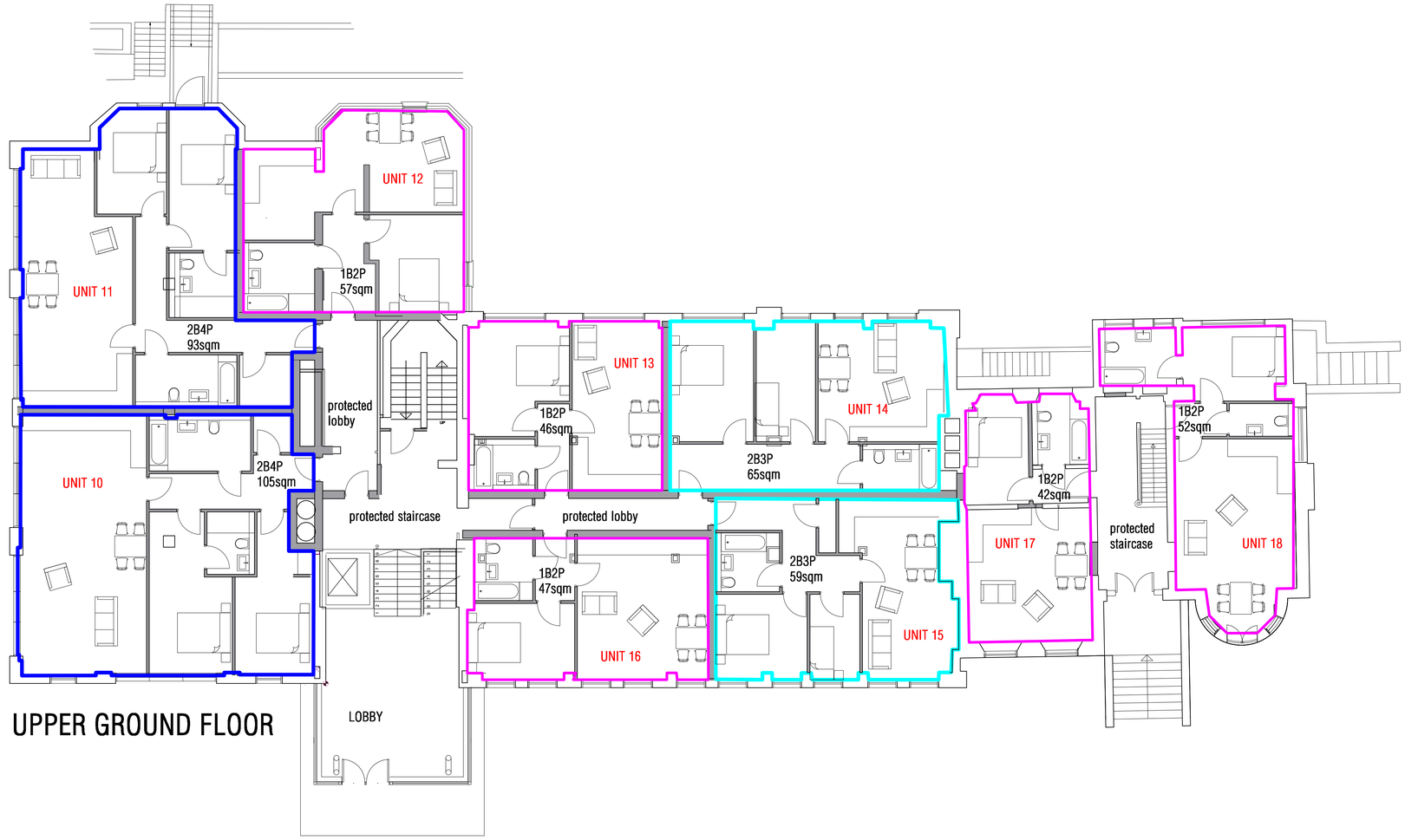
N

Project
HAMPTON ROAD APARTMENTS, TEDDINGTON

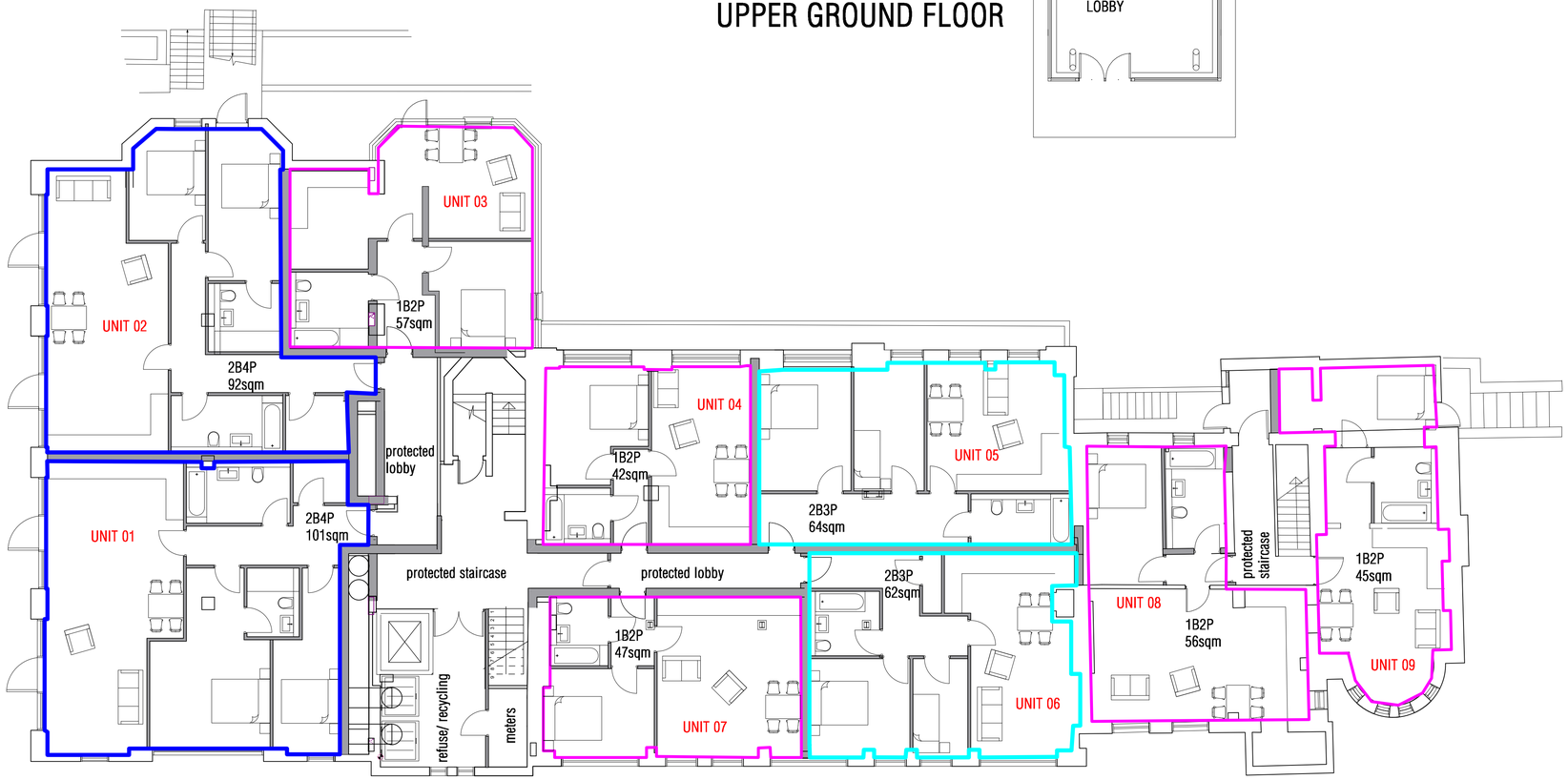
Drawing
PROPOSED SITE LAYOUT

Drawing No. HRA-07 | Scale 1:100 @ A1 | Date 23.02.2015

CLIVE CHAPMAN
ARCHITECTS
SUSTAINABILITY CONSULTANTS
4 EEL PIE ISLAND
TWICKENHAM MIDDx
TW1 3DY
TELEPHONE 020 8891 4837
FACSIMILE 020 8744 1152
E MAIL CC@CCAR.CO.UK



UPPER GROUND FLOOR



LOWER GROUND FLOOR

PROPOSED SCHEDULE OF ACCOMMODATION

	HR	TOTAL HR	GROSS INT
17 No 1B2P FLATS	2	48	-
10 No 2B3P FLATS	3	39	-
8 No 2B4P FLATS	3	39	-

TOTAL NSA OF UNITS = 2251m2

TOTAL GIA (including circulation space) = 2833m2

TOTAL GEA = 3034m2

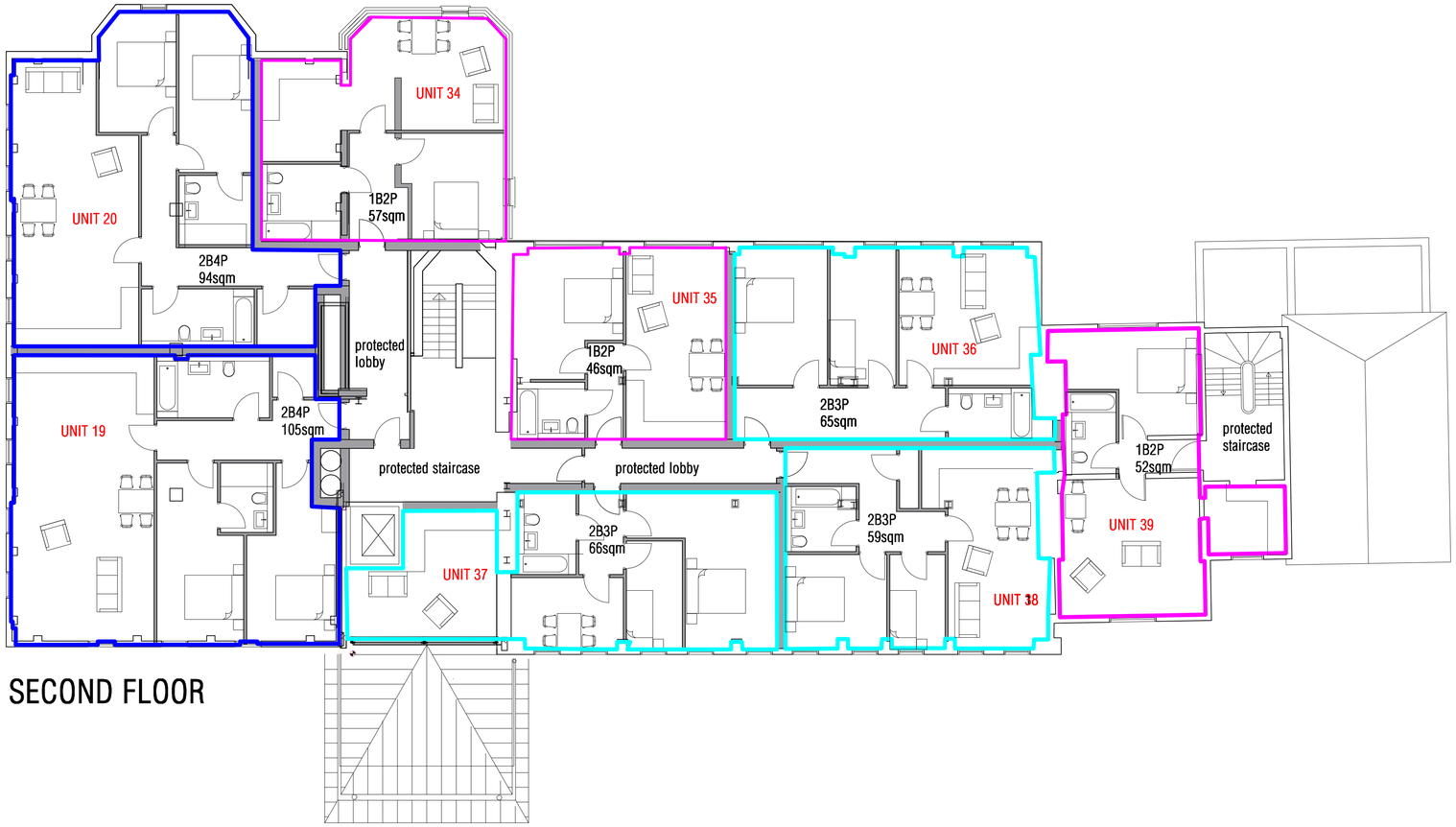
35No. UNITS = 36 No. CAR PARKING SPACES

NO. CYCLE SPACES FOR NEW FLATS - 36

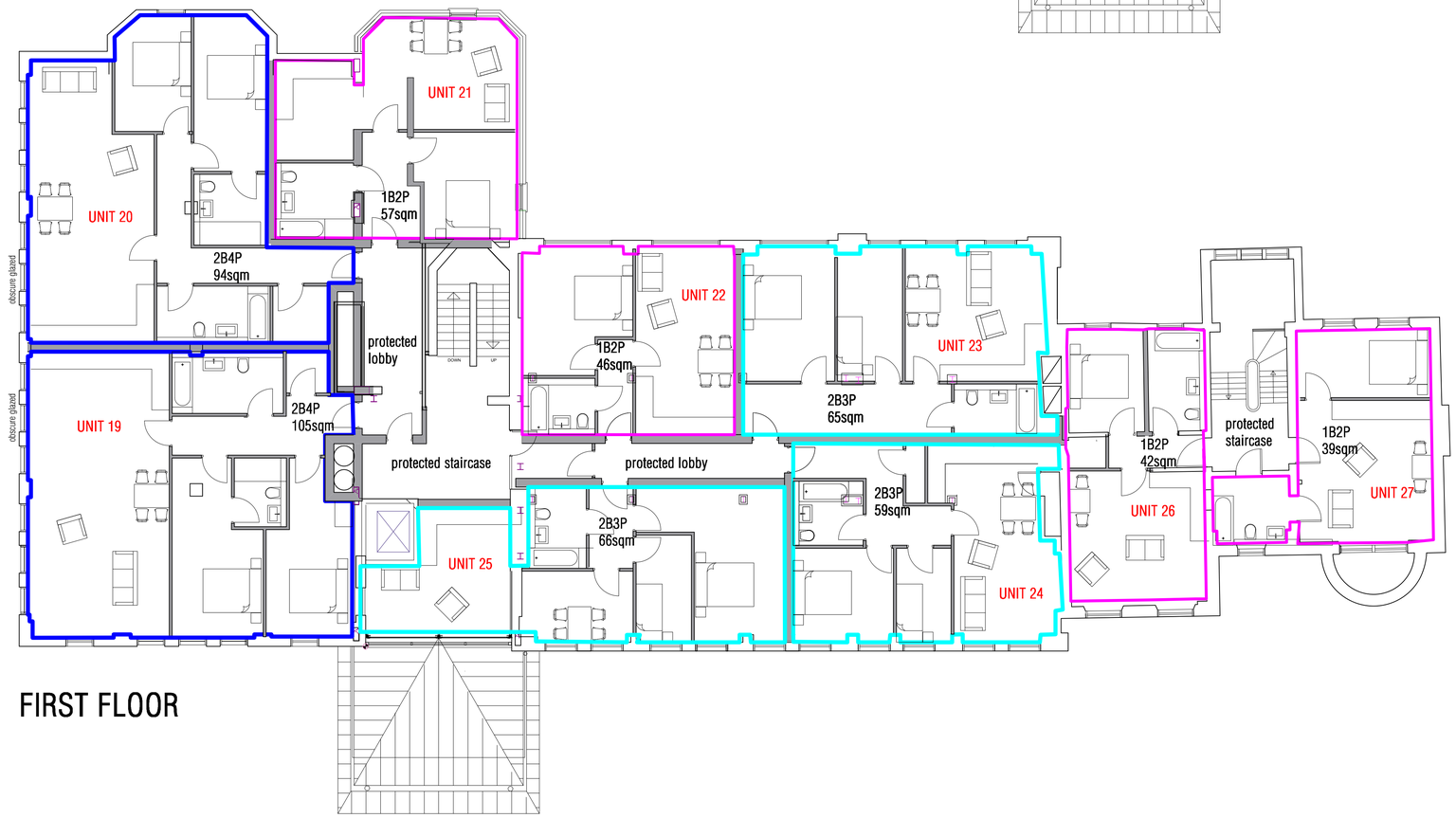
96 Bed spaces x 70litres = 6720litres = 6 x 1100litres
26 to 45 units = 4 x 1100litres total recycling

Project
38-42 HAMPTON ROAD, TEDDINGTON (APARTMENTS)
Drawing
PROPOSED LOWER GROUND AND UPPER GROUND FLOOR PLANS
Drawing No.
HRA-04
Scale
1:100 @ A1
Date
27.02.2015

CLIVE CHAPMAN
ARCHITECTS
SUSTAINABILITY CONSULTANTS
4 EEL PIE ISLAND
TWICKENHAM MIDDX
TW1 3DY
TELEPHONE 020 8891 4837
FACSIMILE 020 8744 1152
E MAIL CC@CCAR.CO.UK



SECOND FLOOR



FIRST FLOOR

Project
38-42 HAMPTON ROAD, TEDDINGTON (APARTMENTS)
Drawing
PROPOSED FIRST AND SECOND FLOOR PLANS

Drawing No.	Scale	Date
HRA-05	1:100 @ A1	27.02.2015

CLIVE CHAPMAN
ARCHITECTS
SUSTAINABILITY CONSULTANTS
4 EEL PIE ISLAND
TWICKENHAM MIDDX
TW1 3DY
TELEPHONE 020 8891 4837
FACSIMILE 020 8744 1152
E MAIL CC@CCAR.CO.UK

APPENDIX D
THAMES WATER ASSET LOCATION PLAN

Asset Location Search

RSK Land And Development Engineering Ltd
18

HEMEL HEMPSTEAD
HP3 9RT

Search address supplied

Byrne Group Plc
38-42
Hampton Road
Teddington
TW11 0JE

Your reference 132519

Our reference ALS/ALS Standard/2015_2997210

Search date 18 March 2015

You are now able to order your Asset Location Search requests online by visiting
www.thameswater-propertysearches.co.uk

searchcode

Asset Location Search

Search address supplied: Byrne Group Plc, 38-42, Hampton Road, Teddington, TW11 0JE

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Asset Location Search

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer

Asset Location Search

Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Asset Location Search

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

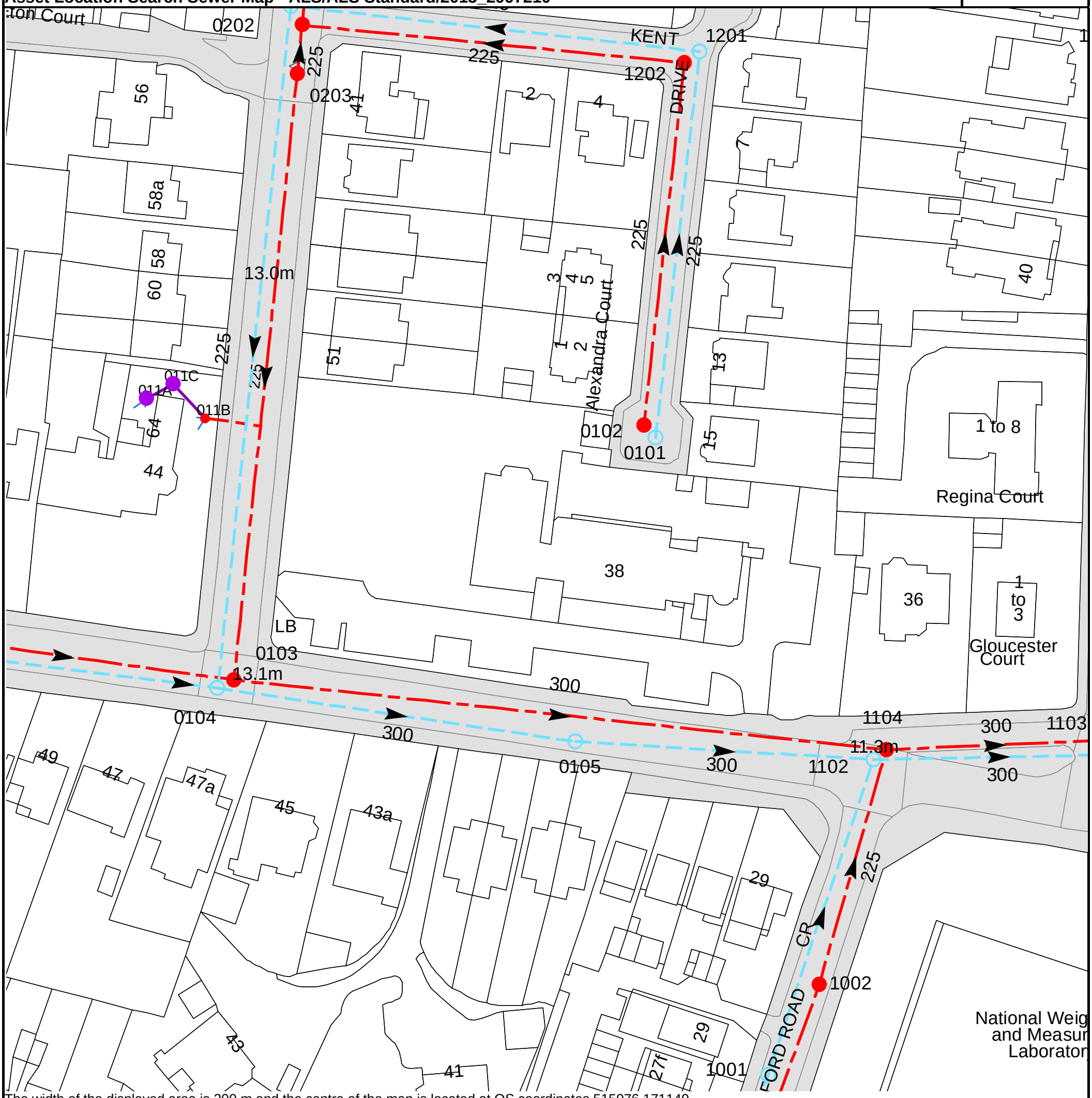
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2015_2997210



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 515076,171149

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0202	n/a	n/a
1202	n/a	n/a
1201	n/a	n/a
011A	10.25	9.55
011C	10.22	9.42
011B	10.48	8.86
0104	n/a	n/a
0103	n/a	n/a
0203	n/a	n/a
0105	n/a	n/a
0102	n/a	n/a
0101	n/a	n/a
1001	n/a	n/a
1002	n/a	n/a
1102	n/a	n/a
1104	n/a	n/a

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

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

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

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

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

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

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

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

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

Control Valve

Drop Pipe

Ancillary

Weir

End Items

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

Outfall

Undefined End

Inlet

Other Symbols

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

Public/Private Pumping Station

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

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

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

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

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

2) All measurements on the plans are metric.

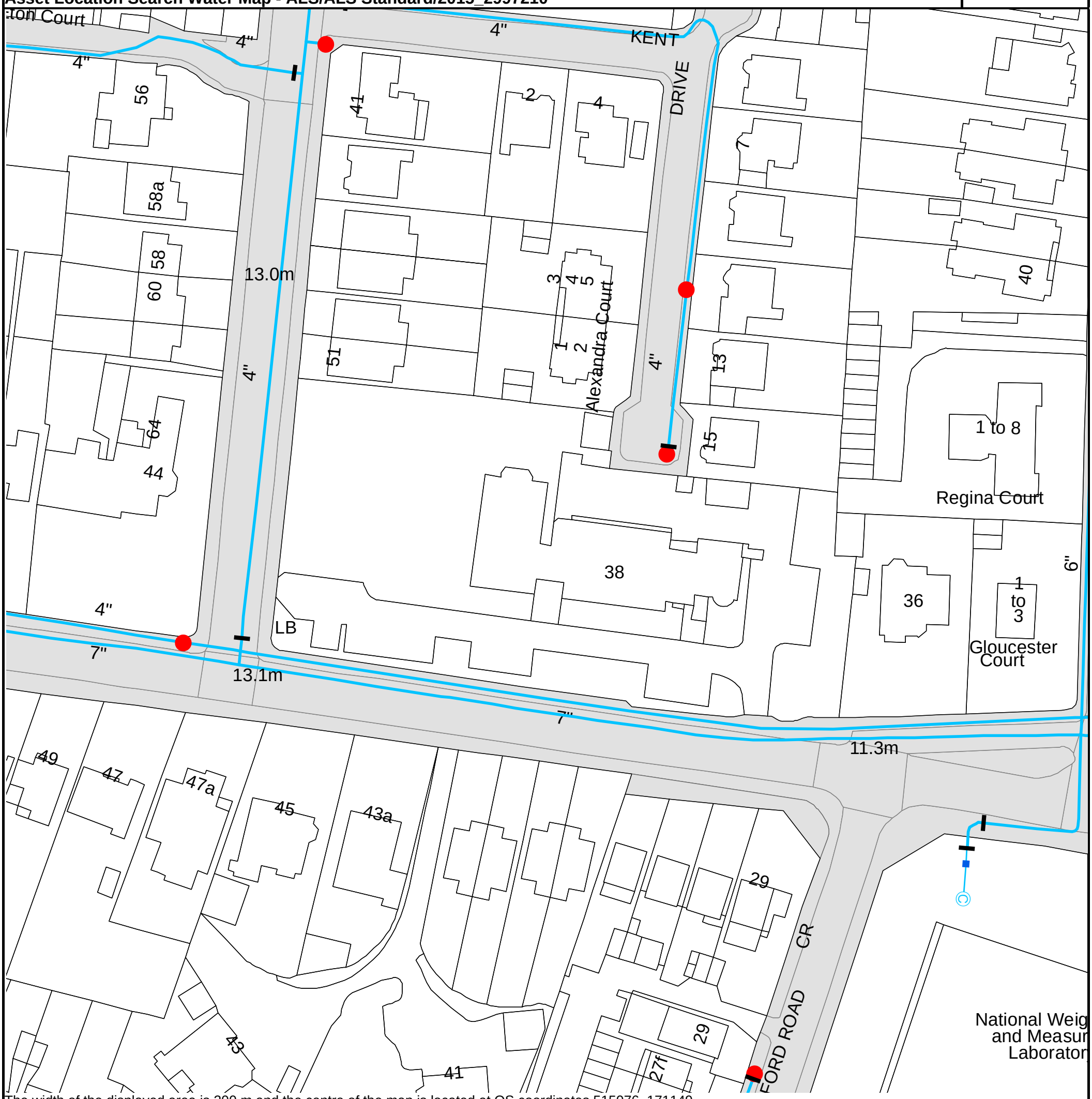
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.

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

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

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Asset Location Search Water Map - ALS/ALS Standard/2015_2997210



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 515076, 171149.

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

ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

4"

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

16"

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

3" SUPPLY

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

3" FIRE

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

3" METERED

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

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

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

Valves

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

Hydrants

- Single Hydrant

Meters

- Meter

End Items

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

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

Operational Sites

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

Other Symbols

- Data Logger

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

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

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

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

Search Code

IMPORTANT CONSUMER PROTECTION INFORMATION

This search has been produced by Thames Water Property Searches, Clearwater Court, Vastern Road, Reading RG1 8DB, 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 practise 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.

By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

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Firms which subscribe to the Search Code will:

- display the Search 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 products and services comply with industry registration rules and standards and relevant laws
- 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 TPOs or to the PCCB.

TPOs Contact Details

The Property Ombudsman scheme
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Fax: 01722 332296
Email: admin@tpos.co.uk

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