Intended for
Stadium Capital Holdings

Project no.
30030

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12 November 2012

BASEMENT IMPACT ASSESSMENT

MIDLAND CRESENT

Revision History

Revision	Date	Purpose / Status	Document Ref.	Comments
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1. INTRODUCTION

1.1. Brief

Ramboll was commissioned by Stadium Capital Holdings to prepare a Screening study to determine whether a Basement Impact Assessment for the proposed development at Finchley Road NW3 is required.

1.2. Proposed Development

The proposed development is located on a wedge of currently unused land located between rail lines adjacent to Finchley Road, Hampstead, in the Borough of Camden. The development proposes a seven story building (two basement levels) comprising approximately 140 student accommodation units and studio spaces.

This Report uses drawings of the development provided by CZWG Architects (1666-00-DR-0108_D03; 1666-00-DR-0109_D02; 1666-00-DR-01010_D04; 1666-00-DR-0111_D02; 1666-00-DR-0112_D02; 1666-00-DR-0113_D02; 1666-00-DR-0114_D02; 1666-00-DR-0116_D01; 1666-00-DR-0601_D02; 1666-00-DR-0602_D02; 1666-00-DR-0603_D02; 1666-00-DR-0604_D01; 1666-00-DR-0605_D01).

1.3. Objectives

The purpose of this report is to undertake a basement assessment in accordance with guidance in London Borough of Camden's (LBC) '*Guidance for subterranean development document'* (LBC, 2010). This report follows the screening process set out in Section 6.2 of the Guidance documents.

1.4. Constraints and Limitations

This report has been prepared for the exclusive use of Stadium Capital Holdings for the purpose of assisting them to determine whether a basement impact assessment is required at the planning stage. This report should not be used in whole or in part by any third parties without the express permission of Ramboll in writing.

Ramoll has endeavoured to assess all information provided to them during this report. The report summarises information from a number of external sources and cannot offer any guarantees or warranties for the completeness or accuracy of information relied upon. The recommendations summarised in this report relate to details of the proposed development at the time of writing the report. Any substantial changes to the proposed design may require a reassessment of the strategy identified.

2. SITE SETTING

2.1. Site Location

The site is in the London Borough of Camden. The site is approximately 0.16Ha, located adjacent to Finchley Rd, NW3 6LT (approximate National Grid Reference is 526130, 184880). A site location plan (Figure 1) and approximate site boundary plan (Figure 2) are provided.

2.2. Site Boundary and Surroundings

The site is located in a mixed-use area of Hampstead.

- To the east of the site is Finchley Road, which is fronted predominantly by commercial spaces (mainly shops) at ground level and residential apartments above. There is also a Holiday Inn.
- The northern, southern and western boundaries are immediately adjacent to National Rail lines.
- Further to the north is Rosemont Road, which is predominantly residential with a small number of commercial spaces.
- Further to the south is Blackburn Road, the O2 shopping centre and associated outdoor car park. Within the centre is a cinema, gym, restaurants and shops including a supermarket.

2.3. Site Description

Site walkovers were undertaken by Ramboll in March-May 2012.

The site is a largely vacant wedge of land located between National Rail lines, overgrown with shrub-like vegetation and grasses. The site slopes by approximately 7m from the elevated street level at Finchley Road at the eastern boundary down to the western end of the site where it is approximately level with the National Rail lines.

There are brick retaining walls along areas of the northern and southern boundaries. Another brick wall with a metal fence runs north/south across the width of the site approximately 10m westward of the eastern boundary at Finchley Road, and a Network Rail cable duct runs along this wall. A ~5m length of fencing is located approximately 15m westward of Finchley Road. The Finchley Road eastern boundary is fenced with wooden hoardings, and there is an advertising billboard in this area.

There are several sets of steps on the site, some providing access down to the rail tracks.

There are two small National Rail huts on the site. Approximately 5m westward from Finchley Rd is a brick hut, and approximately 10m westward from the road is a metal communications hut surrounded by a metal fence.

There was some demolition/brick rubble observed on the site.

3. BASEMENT IMPACT ASSESSMENT – SCREENING

The following assessment is based on our current understanding of the proposed scheme and the screening methodology set out in the LBC's 'Guidance for Subterranean Development.

3.1. Surface flow and flooding screening assessment

Question	Response	Justification	Mitigation
1: Is the site within the catchment of the pond chains on Hampstead Heath?	No	The site is located 600m downgradient from the pond chains on Hampstead Heath and outside of their catchment.	None required
2: As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	Yes	The site was historically drained when in use as a station, but the site has become derelict and overgrown. It is assumed that there is an existing connection to the public sewer crossing the railway to the west of the site. It is proposed to connect the site to the public sewer network following development. Initial drainage proposals are shown in Appendix A.	Seek approval for drainage strategy from LBC, Thames Water and Network Rail (due to proximity of infrastructure).
3: Will the proposed basement development result in a change in the proportion of hard surfaced /paved external areas?	Yes	The site was historically drained when in use as a station, but the site has become derelict and overgrown. The drainage strategy has been developed on the assumption that the site will be 100% hardstanding.	Seek approval for drainage strategy from LBC, Thames Water and Network Rail (due to proximity of infrastructure).
4: Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses?	Yes	A flow control device is proposed to restrict flow to the public sewer.	Seek approval for drainage strategy from LBC, Thames Water and Network Rail (due to proximity of infrastructure).
5: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	There should not be any concern of any changes to the quality of surface water being received by adjacent properties as all foul and surface water will drain to the public. sewer.	Seek approval for drainage strategy from LBC, Thames Water and Network Rail (due to proximity of infrastructure).
6: Is the site in an area known to be at risk from surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?	Yes	The site is located next to Finchley Road which flooded in 2002 (figure 3). This was due to a high intensity rainfall event where Camden suffered widespread surface water flooding (North London Strategic Flood Risk Assessment, 2008). There is no risk from flooding due to rivers, ponds, or canals there are none in close proximity (figure 1 & 2). All of Camden is assumed to be within the Greater London Indicative Flood Risk Area (London Borough of Camden Preliminary Flood Risk Assessment, 2011).	SUDS are included in the drainage strategy to minimise the impact of the development and assist with reducing the risk of sewer flooding downstream. Sewer flooding is a residual risk managed by the design of site drainage, appropriate setting of FFL/building thresholds and maintenance of private and public sewer network. Flood resistant and resilient design may be required and should be considered as part of the detailed design. The flood risk associated with adjacent sewers may also increase over time in the area due to climate change, which should be considered as part of the detailed design.

3.2. Subterranean (groundwater) flow screening assessment

r	Response	Justification	Mitigation
1a: Is the site located directly above an aquifer?	No	According to ground investigation at the site (Capita Symonds, 2012), the site is understood to be located on Made Ground over London Clay. See Figure 4.	None required.
1b: Will the proposed basement extend beneath the water table surface?	No	The proposed basement level will be close to the level of the existing railway line which it is assumed has its own drainage network. Therefore, the basement itself is unlikely to alter the groundwater flow regime. Furthermore, given the anticipated ground conditions, the foundations are unlikely to affect the groundwater regime.	Undertake ground investigation to better understand the hydrogeology of the site and undertake appropriate groundwater impact assessment as part of the detailed design of the foundations/substructure.
2: Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	Based on a review of historical maps (accessed via www.old-maps.co.uk, EA website (Groundwater SPZs in 'what's in my backyard', Find Maps, BGS Geoindex map (accessed online), no wells (used/discussed) or springs were identified. The closest identified well was identified approximately 1km south east of the site. A small ditch is noted along the western boundary of the site in the line of the public sewer.	Consultation with EA and LBC Environmental Health to confirm no other water features are present within this area. Establish function of the small ditch feature through further desktop and site investigation.
3: Is the site within the catchment of the pond chains on Hampstead Heath?	No	The site is located 600m downgradient from the pond chains on Hampstead Heath and outside of their catchment.	None required
4: Will the proposed basement development result in a change in the proportion of hard surfaced /paved areas?	Yes	The site was historically drained when in use as a station, but the site has become derelict and overgrown. The drainage strategy has been developed on the assumption that the site will be 100% hardstanding.	Seek approval for drainage strategy from LBC, Thames Water and Network Rail (due to proximity of infrastructure).
5: As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No	All surface runoff will be discharged into the public sewer network, and therefore the total recharge within the site to subterranean water is likely to be reduced compared to existing brownfield condition. However, as the site is relatively small it should not have a significant impact on the overall groundwater regime of the wider area.	Seek approval for drainage strategy from LBC, Thames Water and Network Rail (due to proximity of infrastructure).
6: Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line.	No	The site is located 600m downgradient from the pond chains on Hampstead Heath and outside of their catchment.	None required

3.3. Slope stability screening assessment

Question	**Response**	**Justification**	**Mitigation**
1: Does the existing site include slopes, natural or manmade, greater than 7º? (approximately 1 in 8)	yes	N/A	The existing site levels will be reduced to that of the railway and hence removing this issue.
2: Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7º? (approximately 1 in 8)	No	N/A	N/A

Question	Response	Justification	Mitigation
3: Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7º? (approximately 1 in 8)	No	The site is within a railway cutting but will not influence the slopes due to its proximity from them	N/A
4: Is the site within a wider hillside setting in which the general slope is greater than 7º? (approximately 1 in 8)	No	N/A	N/A
5: Is the London Clay the shallowest strata at the site?	Yes	The Capita Symonds Phase II Ground Contamination Report for Midland Crescent (Feb, 2012) comprised 4no. Window Sample Boreholes. All locations that progressed beyond the Made Ground encountered London Clay.	Long term ground movements from loading or unloading the clay will be designed for.
6: Will any tree/s be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained? (Note that consent is required from LB Camden to undertake work to any tree/s protected by a Tree Protection Order or to tree/s in a Conservation Area if the tree is over certain dimensions).	No	Situated within multiple areas of the Site are stands of scattered broadleaved sapling trees, species include: sycamore (Acer Pseudoplatanus), ash (Franxinus excelsior) and hawthorn (Crataegus monogyna). Due to their young age and a stem diameter at breast height (DBH) of less than 75mm, the trees are not applicable for a BS5837 tree survey.	None anticipated - Review prior to site clearance.
7: Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	No	N/A	N/A
8: Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	Based on a review of historical maps (accessed via www.old-maps.co.uk, EA website (Groundwater SPZs in 'what's in my backyard', Find Maps, BGS Geoindex map (accessed online), no wells (used/discussed) or springs were identified. The closest identified well was identified approximately 1km south east of the site. A small ditch is noted along the western boundary of the site in the line of the public sewer.	Consultation with EA and LBC Environmental Health to confirm no other water features are present within this area. Establish function of the small ditch feature through further desktop and site investigation.
9: Is the site within an area of previously worked ground?	Yes	Site is brownfield, having previously been used as residential housing and as railway platforms/ticket office.	A site investigation will quantify the risk of encountering obstructions within the Made Ground. There will be removed and the final raft foundation with be constructed on the London Clay
10: Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?	No	The proposed raft foundation will be founded on the London Clay. There are no River Terrace Deposits across the site that may contain a shallow aquifer.	None required
11: Is the site within 50m of the Hampstead Heath ponds?	No	The site is located 600m downgradient from the pond chains on Hampstead Heath and outside of their catchment.	None required
12: Is the site within 5m of a highway or pedestrian right of way?	Yes	Finchley Road is located to the east of the site.	A strategy for maintaining pedestrian access along Finchley Road in the vicinity of the site, will be prepared following consultation with LBC as is likely that footpath diversions will be required.
13: Will the proposed basement significantly increase	No	The proposed foundation level will be approximately at railway	None – undermining will not occur.

Question	Response	Justification	Mitigation
the differential depth of foundations relative to neighbouring properties?		level. The adjacent road bridge is founded at or below this level. As is the adjacent property to the north which sits on a raft that spans two retaining walls that are both founded at or below the railway level.	
14: Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No	The development is specifically designed so that it does not protrude into any exclusion zones. i.e. • within 4.5m of a working rail track • within 3.5m of an overhead gantry • within 3m of an overhead powerline • within 1m of the communication equipment boxes • over the communications cabin • to have opening windows onto the railway land	Review any changes to the proposed scheme.

4. CONCLUSIONS AND RECOMMENDATIONS

This study concludes that the proposed scheme will not have a significant impact on surface water flow and flooding, groundwater and slope stability that cannot be readily mitigated as part of the detailed design.

The previous section has assessed any potential impacts on surface water flow, flooding, groundwater and slope stability in line with the screening guidance. Mitigation measures have been identified where potential impacts have been identified.

The mitigation measures are summarised as follows:

- Develop and agree foul and surface water drainage strategy with LBC, Thames Water and Network Rail (due to proximity of infrastructure);
- Include SUDS in the drainage design and accommodate for climate change;
- Residual flood risks associated with sewer flooding and flood resistant and resilient design should be considered as part of the detailed design;
- Consultation with EA and LBC Environmental Health to confirm no other water features are present within this area;
- Establish function of the ditch along the line of the public sewer through site investigation;
- Undertake a detailed intrusive site investigation and prepare both a factual report and interpretive report in or to inform the detailed design of the substructure and services and to mitigate any adverse impacts on neighbouring property;
- Ensure any revisions to the scheme do not intrude into any network rail exclusion zones.

5. REFERENCES

Capita Symonds (2008) Phase I Geoenvironmental Report Midland Crescent – Network Rail Land, London, Version 1.0, November 2008.

Capita Symonds (2007) Phase I Geoenvironmental Report Midland Crescent, London, Version 1.0, November 2007.

Arup (2010) London Borough of Camden, Camden geological, hydrogeological and hydrological study: Guidance for subterranean development, London, Issue 01, November 2010.

Environment Agency (2011) Preliminary Flood Risk Assessment: London Borough of Camden, London, Vol. 2, December 2011.

Mouchel (2008) North London Strategic Flood Risk Assessment, London, Final, August 2008.

FIGURES

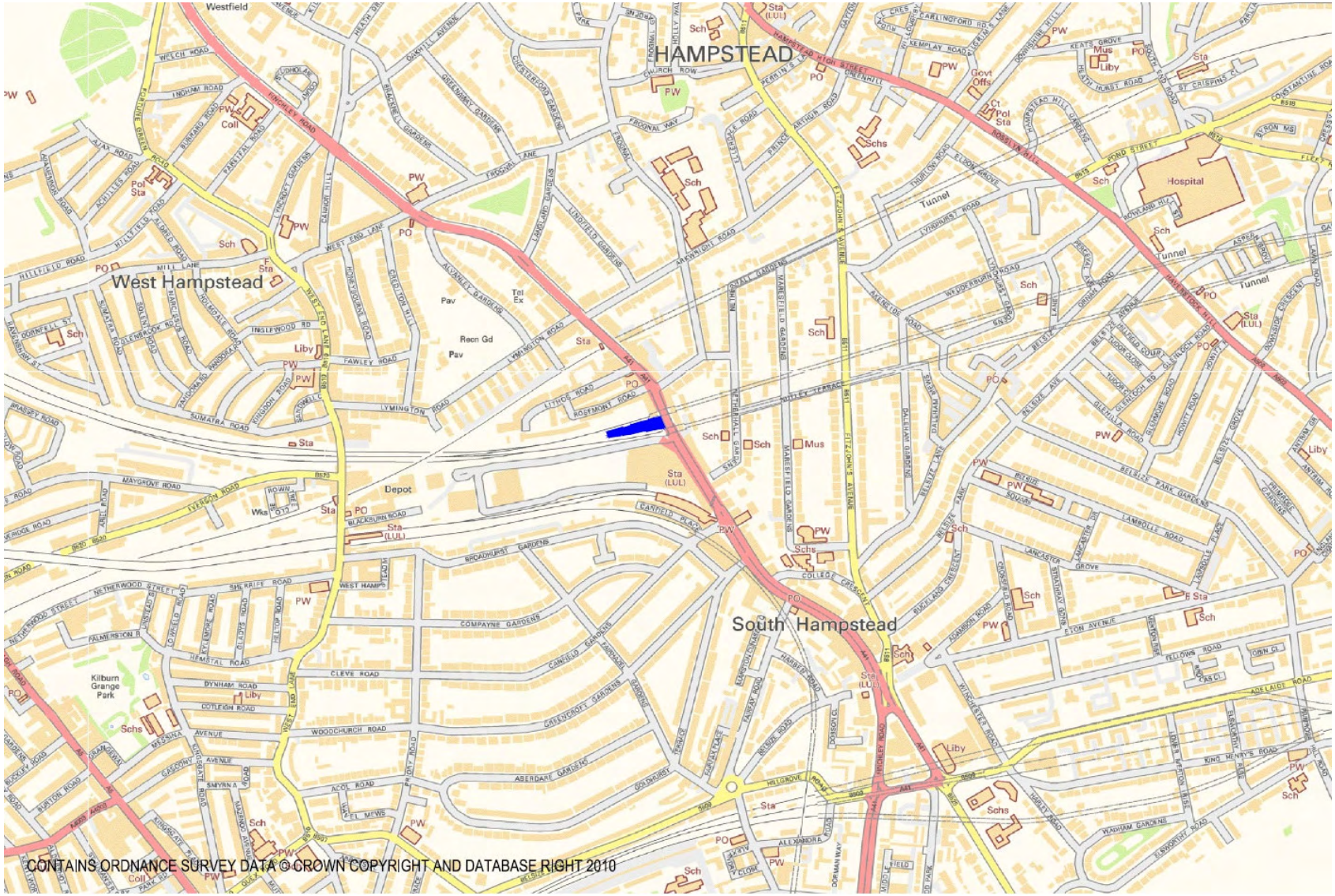
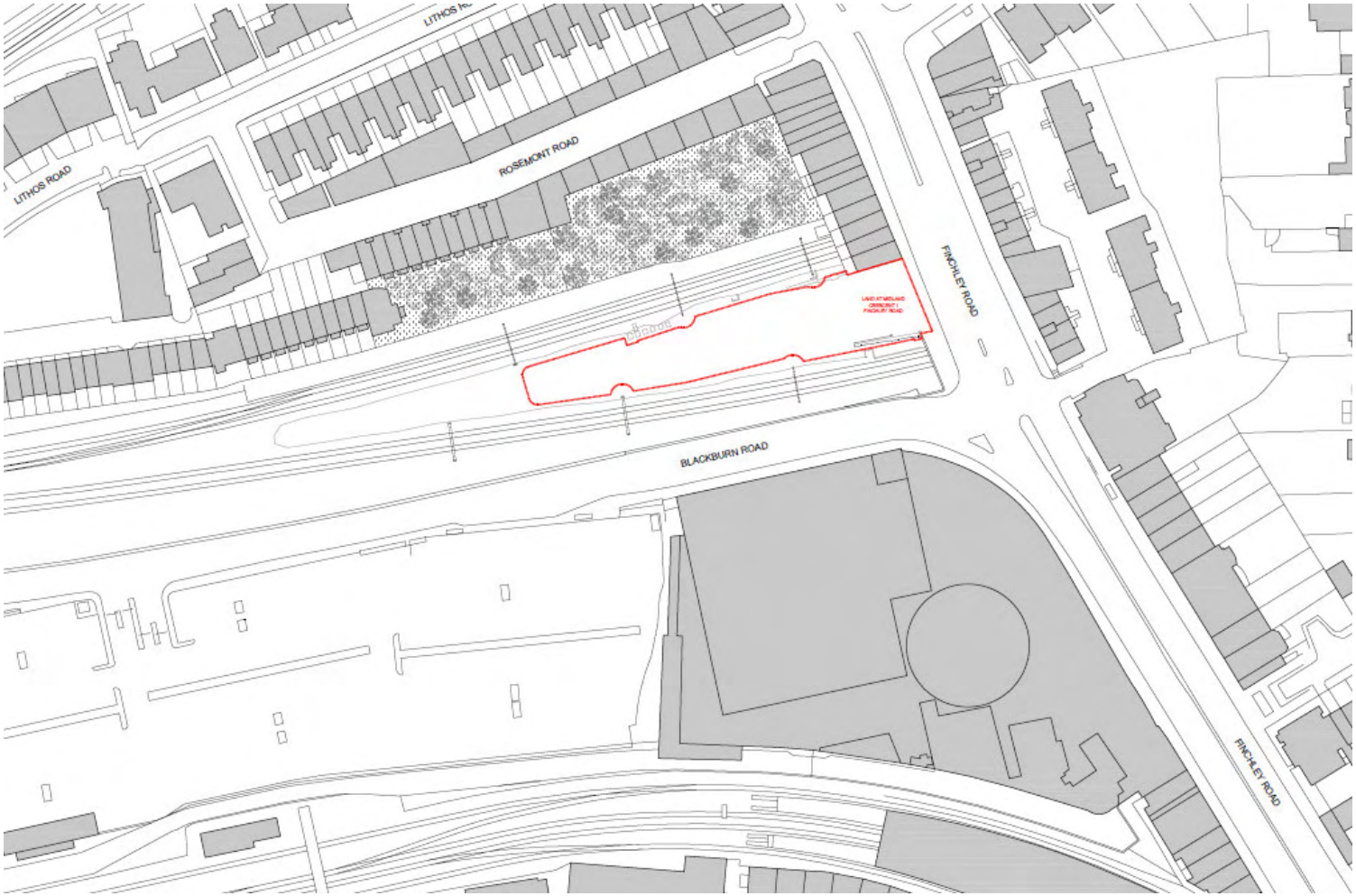
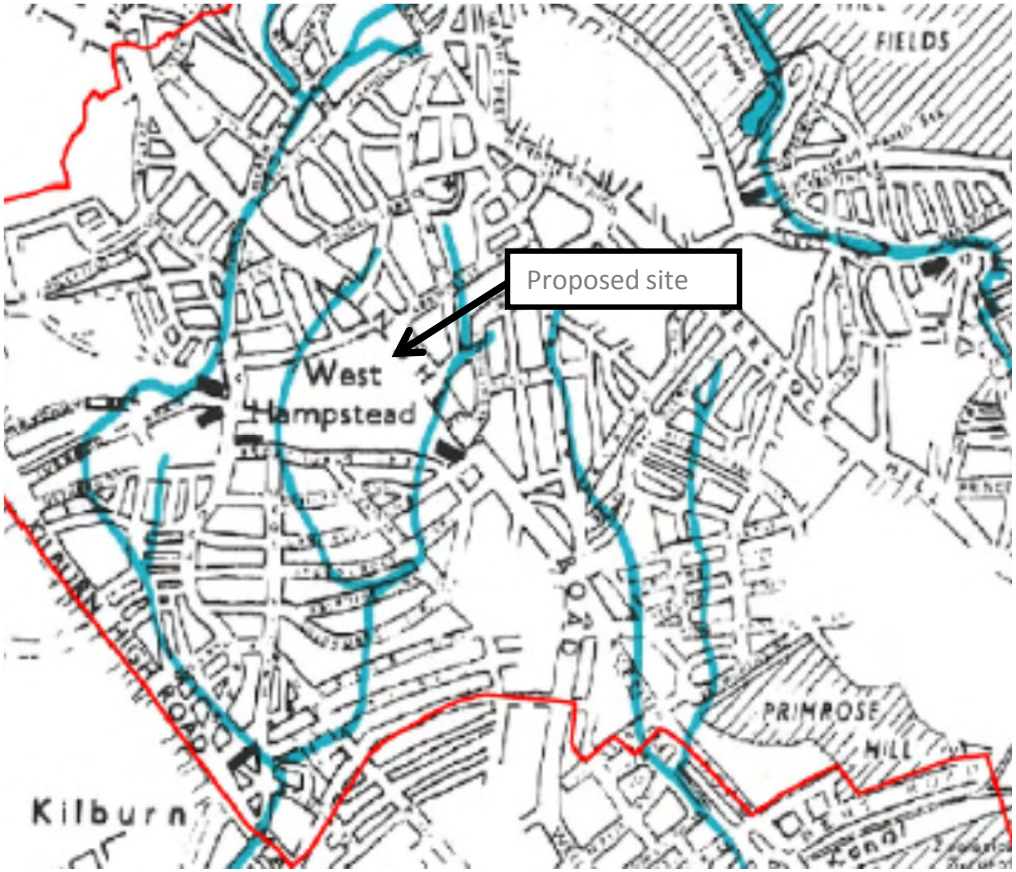


Figure 1: Site Location



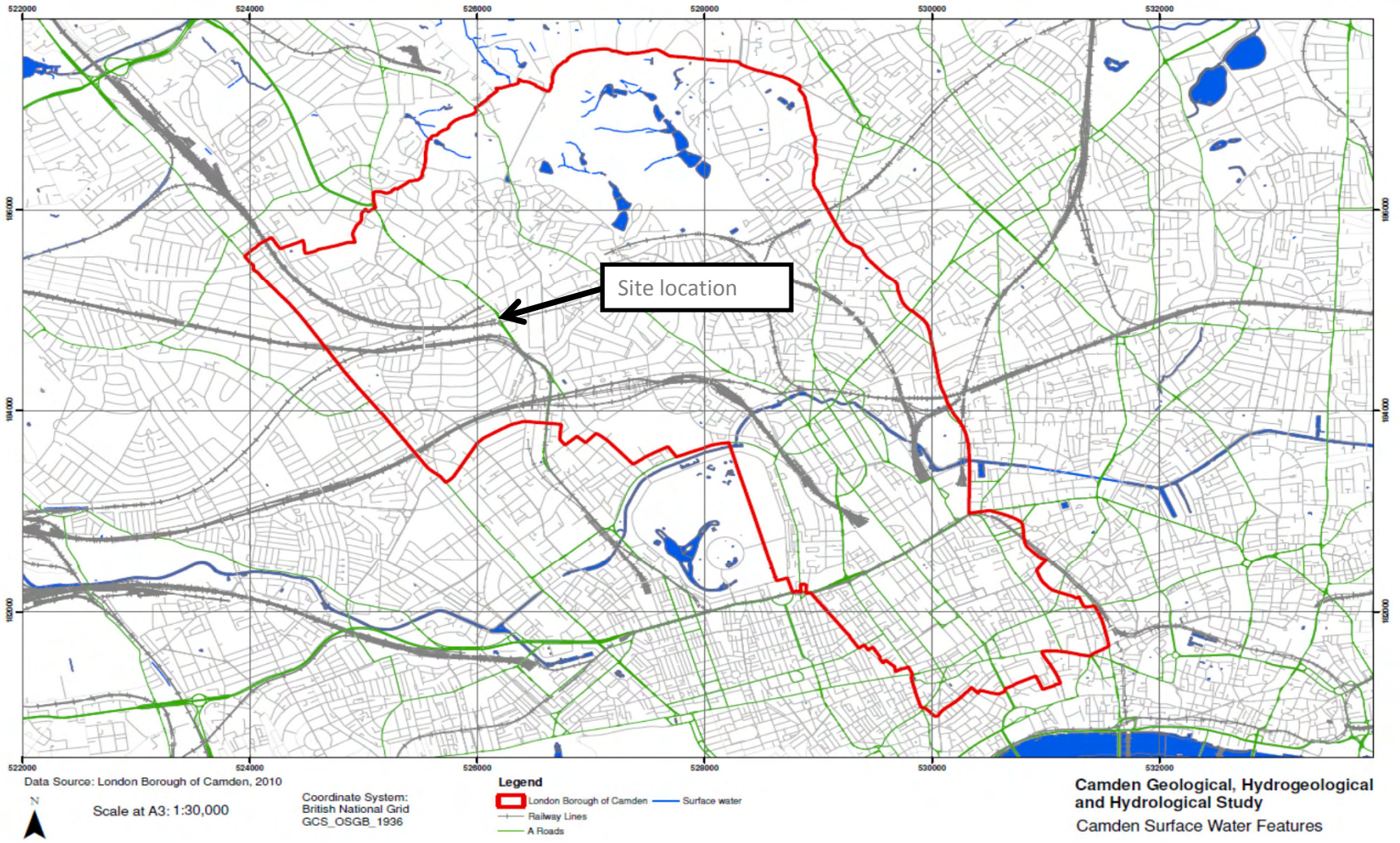
Source: CZWG Drawing "1666-00- DR0101 Site Plan Red Line.pdf" provided 24/10/12

Figure 2: Site Plan



Source: London Borough of Camden; Camden geological, hydrogeological study: Guidance for subterranean development (November 2010)

Figure 3: Watercourses



Source: London Borough of Camden; Camden geological, hydrogeological study: Guidance for subterranean development (November 2010)

Figure 4: Camden Surface Water Features

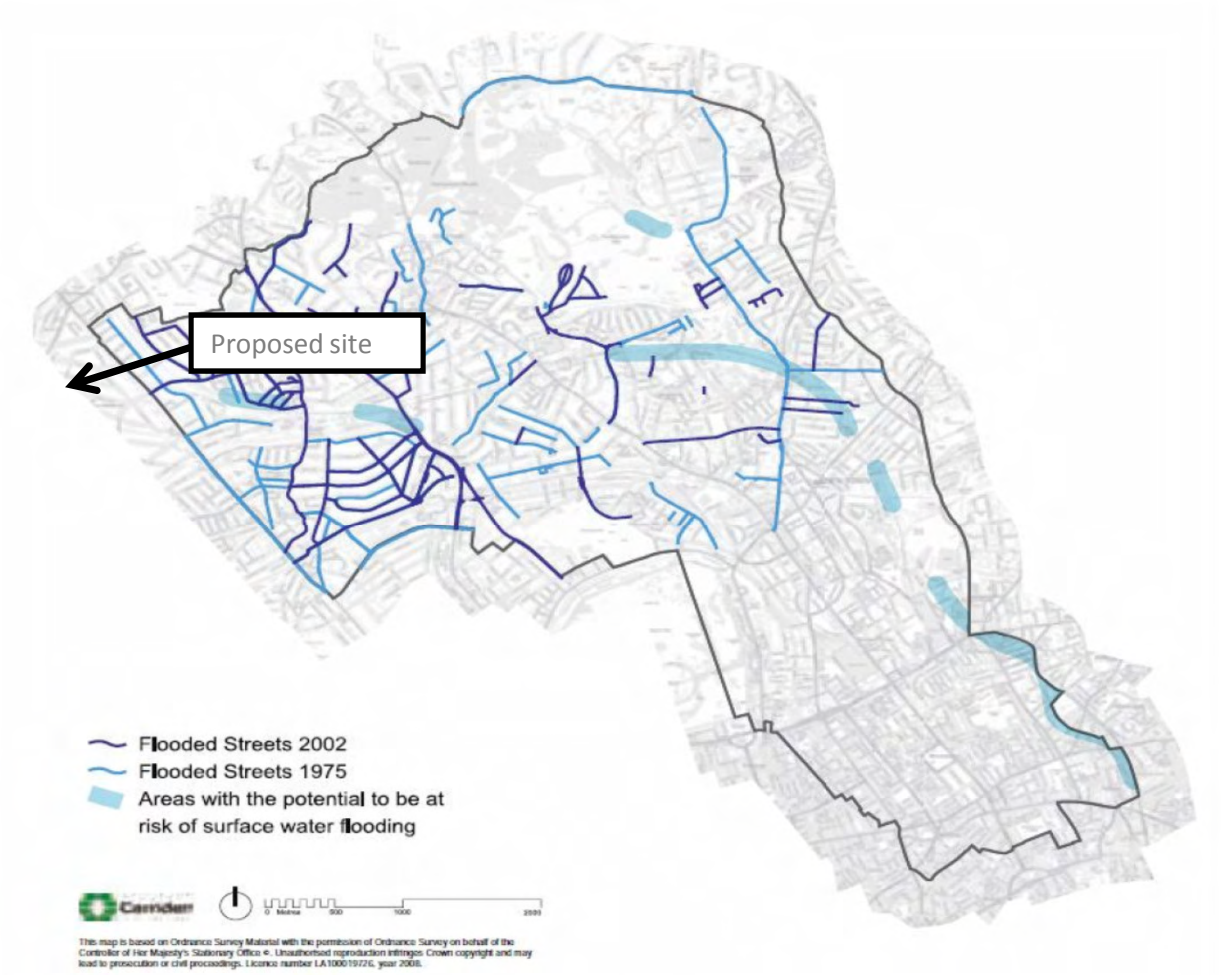
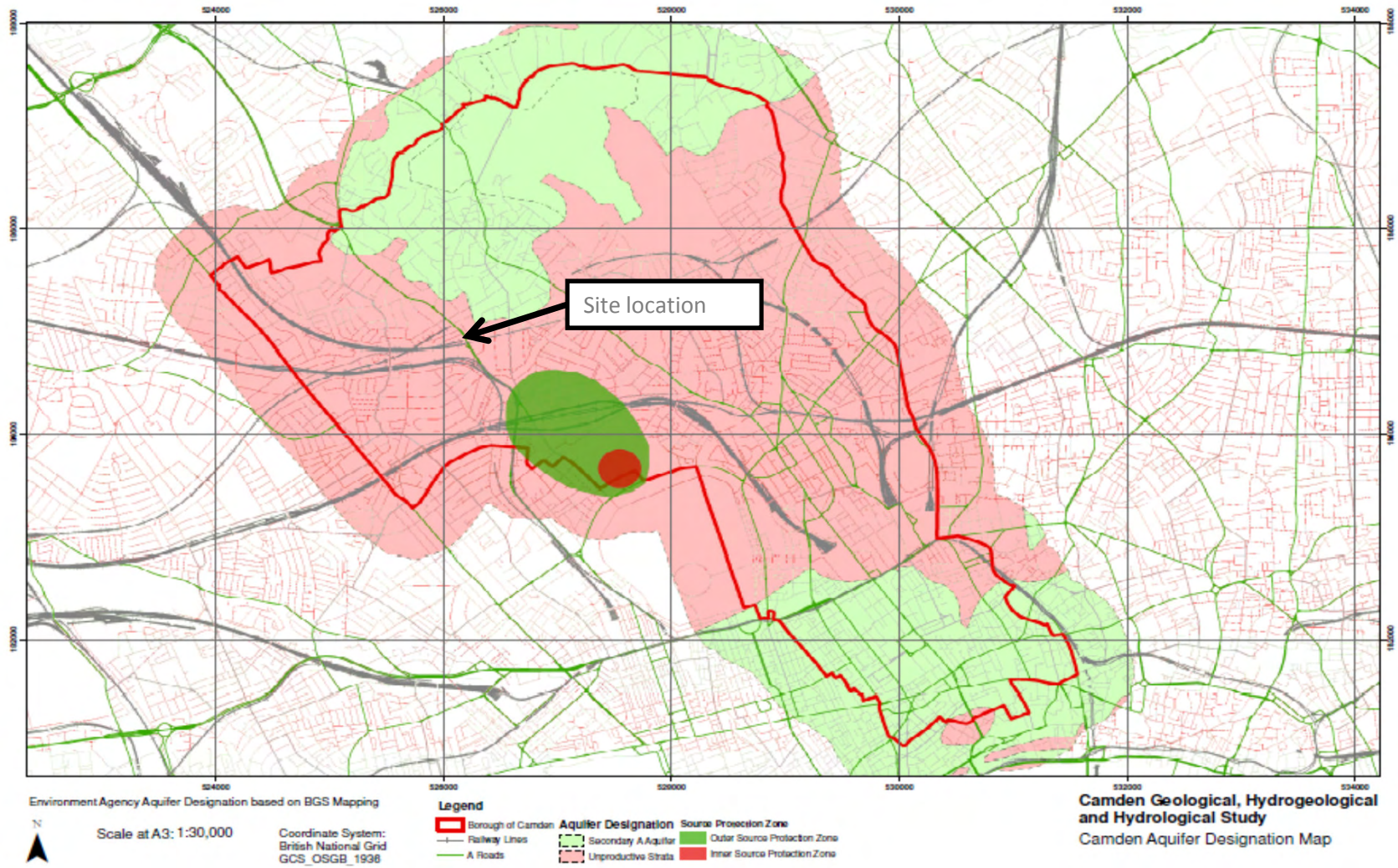


Figure 5 from Core Strategy, London Borough of Camden

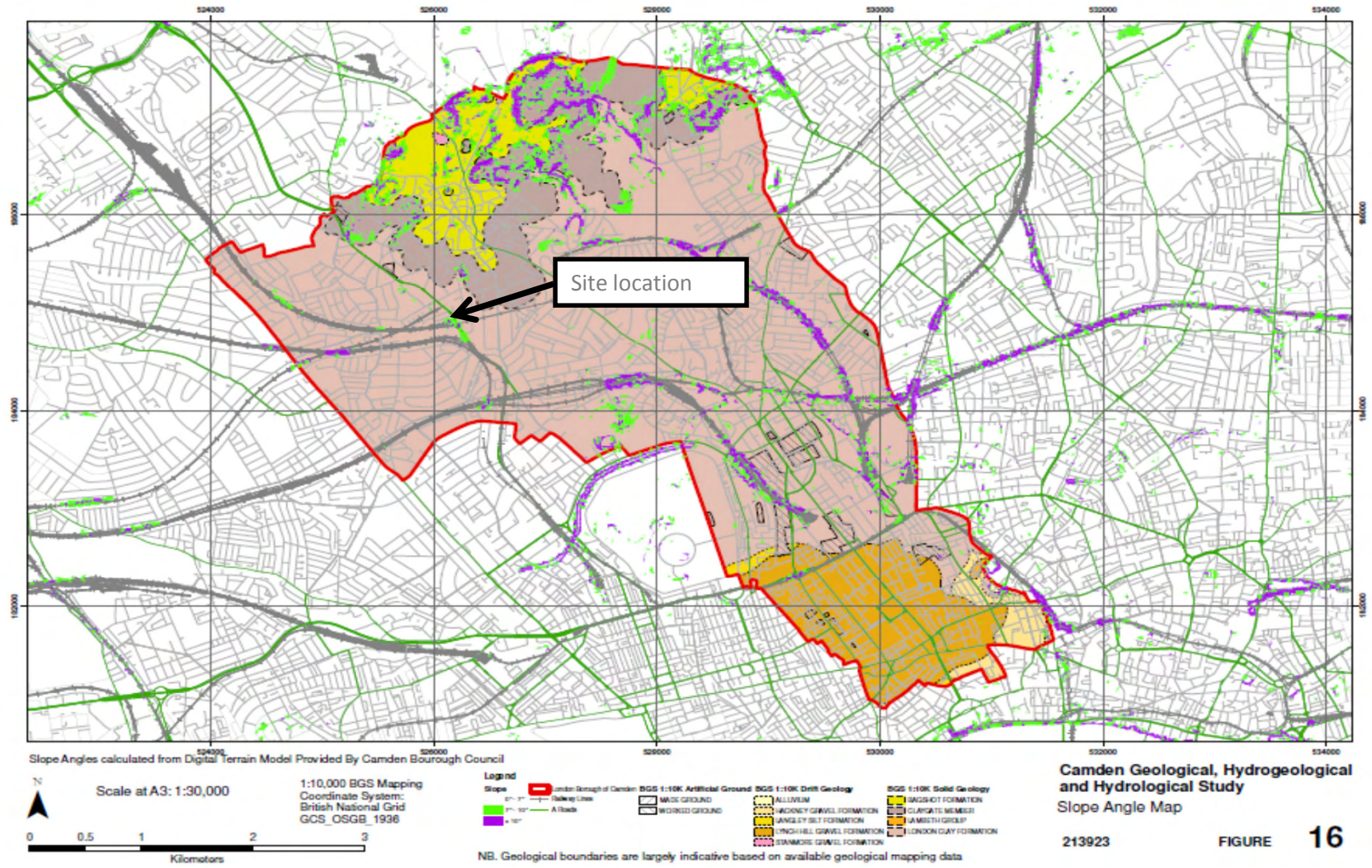
Source: London Borough of Camden; Camden geological, hydrogeological study: Guidance for subterranean development (November 2010)

Figure 5: Flood Map



Source: London Borough of Camden; Camden geological, hydrogeological study: Guidance for subterranean development (November 2010)

Figure 6: Camden Aquifer Designation Map

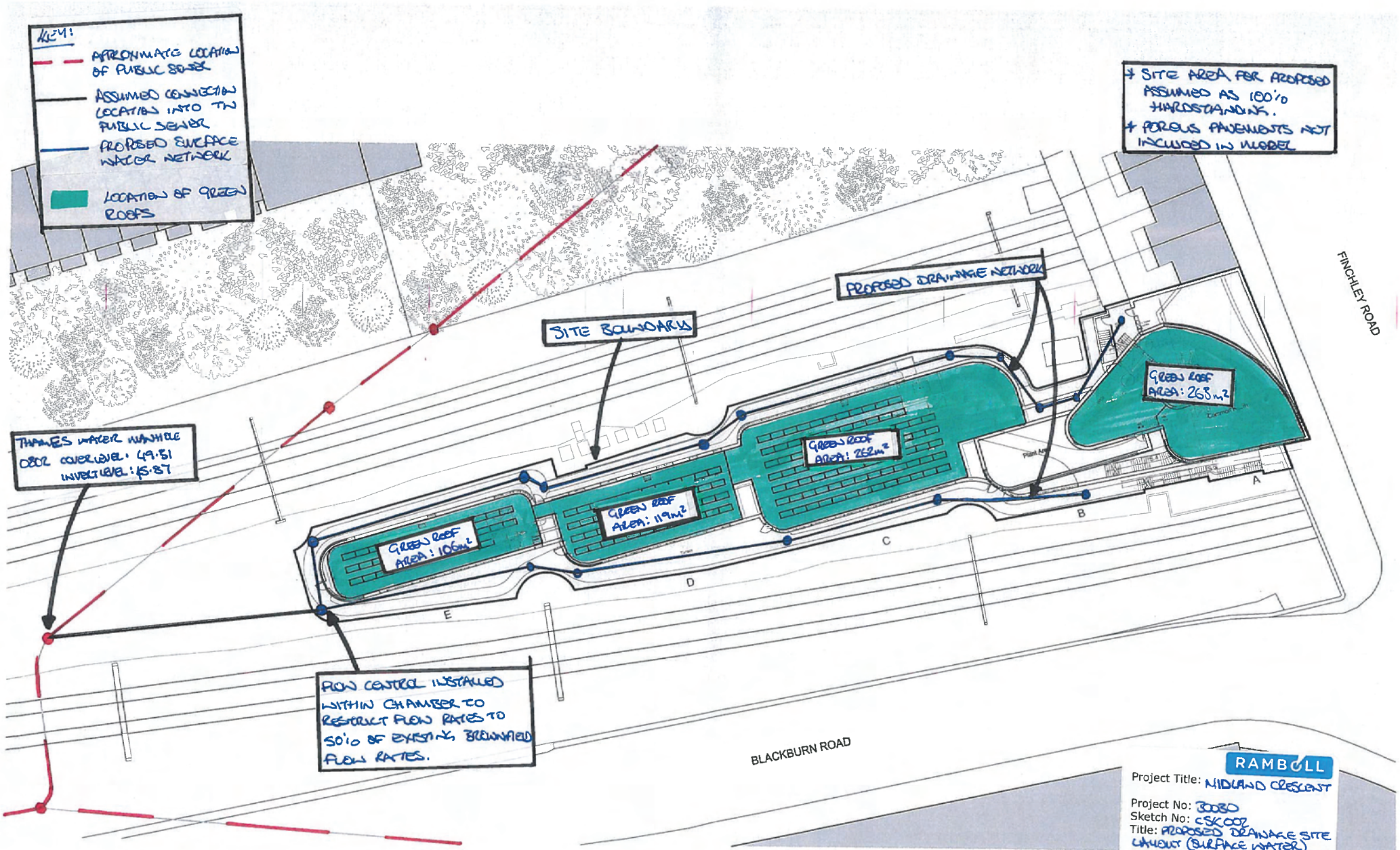


Source: London Borough of Camden; Camden geological, hydrogeological study: Guidance for subterranean development (November 2010)

Figure 7: Slope Angle Map

APPENDIX A

Drainage strategy proposed layout



RAMBOLL

Project Title: MIDLAND CRESCENT

Project No: 30080
Sketch No: CSK007
Title: PROPOSED DRAINAGE SITE LAYOUT (SURFACE WATER)
Rev I02
By: GHZ
Checked: EP
Scale: –
Date: 09/11/2012