Basement Impact Assessment: 20-21 Kings Mews, London WC1N 2JB

(Groundwater)

Basement Impact Assessment: 20-21 Kings Mews, London WC1N 2JB

Prepared for

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Groundwater

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REPORT SUMMARY

The assessment findings are summarised as follows:

1. Impacts to surface water flows and related flooding	High	
	Med	
	Low	
2. Impacts to ground water flows and related flooding	High	
	Med	
	Low	
3. Overall risk posed by the Site	High	
	Med	
	Low	

Key:

High		*There is a high potential risk*
Med		*There is medium potential risk*
Low		*There is a low potential risk*

RECOMMENDATIONS and SUMMARIES

Screening Stage

The site is located above an aquifer and some of the available nearby borehole logs record the presence of groundwater

Scoping Stage

It is not certain that groundwater is present at the Site, or that the proposed excavation will extend below any water table.

Recommendations

It is recommended that the presence of groundwater is confirmed by a site investigation before construction is started. Should groundwater be encountered and monitoring determines a rest water level within 1 metre of the proposed base of the development then the potential impacts may need further assessment.

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1 INTRODUCTION

1.1 Background

ESI Ltd (ESI) was commissioned by JMS Consulting Engineers Ltd to undertake a Basement Impact Assessment (BIA), for groundwater only, for a proposed development at 20-21 Kings Mews, London WC1N 2JB (the Site) in the Holborn and Covent Garden Ward of the London Borough of Camden. The Site has a total area of 185 m^2, and the proposal is to demolish the existing commercial building and create a residential building including a new basement level within the footprint of the existing building (Appendix A).

The Site is located at the approximate National Grid Reference of 530929, 182028 (Figure 1.1).

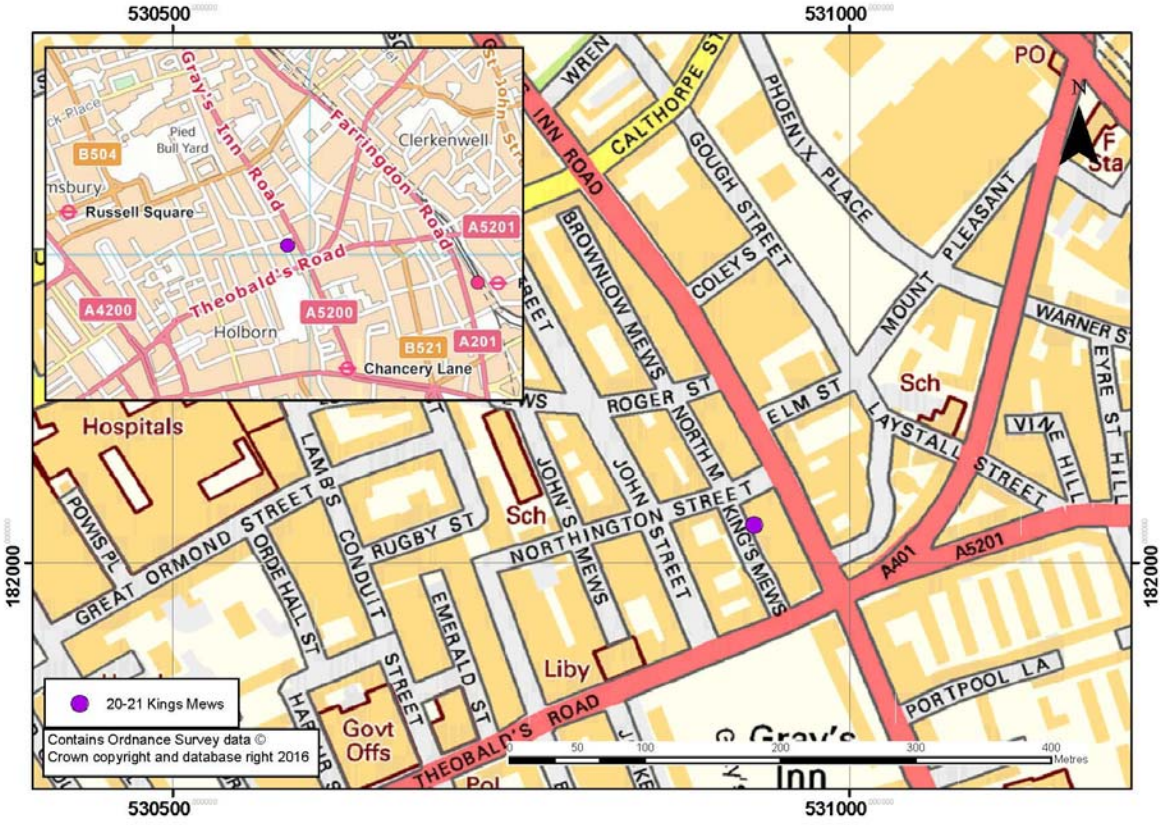

Figure 1.1 Site Location

1.2 Scope of Works

This Basement Impact Assessment (BIA) follows the Camden Council guidance, CPG4 (Camden Council, draft 2015) supported by the Camden geological, hydrogeological and hydrological study (ARUP, 2010) and considers the groundwater conditions; the land stability and surface water conditions are assessed in a separate report. This report will be used for submission to the Planning Authority in support of the planning application for the proposed development. The work undertaken follows the procedure outlined below:

1) **Screening** – this process aims to identify any matters of concern and determine whether or not a full BIA is required.
2) **Scoping** – this process identifies the potential impacts of the proposed scheme.
3) **Site investigation and study** – this is undertaken to develop an understanding of the site and its immediate surroundings; the level of detail will depend on the matters of concern identified during the screening and scoping stages.

4) **Impact assessment** – this involves evaluating the direct and indirect impacts of the scheme by comparing the current situation (the baseline) with the situation as it would be with the basement in place.

Recommendations – recommendations are made based on the outcome of the assessment.

1.3 Description of proposed development

The proposed development is to demolish the existing commercial building and create a residential building including excavating a new basement level that will comprise the lower level of two duplex flats with terraces. The completed excavation, according to the proposed development plan in Appendix A, will have an approximate depth of 3.5 mbgl and a total area of 185 m^2, the same area as the existing building.

2 SCREENING

The screening stage for Impact Assessment has been considered as set out in CPG4 (Camden Council, 2013) as follows.

2.1 GROUND WATER (Subterranean (groundwater) flow screening chart (Figure 1, CPG4 (Camden Council, 2013)))			
Impact question	**Answer**	**Justification**	**Reference**
1a) Is the Site located directly above an aquifer?	**Yes**	The Site is located on the Lynch Hill Gravels, according to the BGS GeoIndex (last accessed 2016). The Lynch Hill Gravels are classified as a secondary aquifer; "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" according to the Environment Agency.	Arup (2010) BGS GeoIndex (2016) Environment Agency website (2016)
1b) Will the proposed basement extend beneath the water table surface?	**Uncertain**	The proposed basement will extend to 3.5 mbgl. Not all nearby borehole logs accessed via BGS Geoindex record the presence of groundwater and only one of these was higher than the base of the proposed development.	Site plans BGS GeoIndex (2016)
2) Is the Site within 100 m of a watercourse, well (used/disused) or potential spring line?	**No**	There is a tributary of the "Lost" River Fleet that once flowed approximately 110m to the north of the site at its closest point, before moving further east. It is associated with the Hackney Gravels deposits	BGS (2015) ARUP (2010) URS (2014)
3) Is the site within the catchment of the pond chains on Hampstead Heath?	**No**	The site is not within the catchment of the pond chains on Hampstead Heath	ARUP (2010)
4) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**No**	The site is currently 100% impermeable surface and this will not change.	Site plans
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**	No change to Site drainage is expected, pending confirmation from a detailed site drainage plan.	Site plans
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 or spring line.	**No**	There are no nearby ponds and the site is located outside the catchment of Hampstead Heath pond chains.	ARUP (2010)

3 SCOPING

3.1 GROUNDWATER (Subterranean (groundwater) flow flowchart (Figure 1, CPG4 (Camden Council, 2013)))			
Impact question	**Answer**	**Justification**	**Reference**
1a) Is the Site located directly above an aquifer?	**Yes**	The Site is located on the Lynch Hill Gravels, according to the BGS GeoIndex (last accessed 2016). The Lynch Hill Gravels are classified as a secondary aquifer; "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" according to the Environment Agency. Publicly available borehole logs (Appendix B) 80m to the northwest (TQ38SW143) indicate the superficial deposits to a depth of 7 mbgl, and 6.5 mbgl 130m to the southeast (TQ38SW3947, TQ38SW3948, TQ38SW3950, TQ38SW156). TQ38SW3949 (140m to the southeast) suggests the Lynch Hill Gravels finish at 4 mbgl and two boreholes to the north (TQ38SW2550 & TQ38SW2551) indicate depths of 3 mbgl and 5.1 mbgl. The land around the Site is flat, varying only by 1 or 2 m in elevation within 200 m. This confirms that the Lynch Hill Gravels extend beneath the Site, with probable thickness between 3 and 7 m. The Gravels lie above the London Clay formation (BGS GeoIndex). The relative proximity of a tributary of the "Lost" River Fleet (see response to question 2 above) increases the likelihood of the presence of a shallow water table at the Site.	Arup (2010) BGS GeoIndex (2016) Environment Agency website (2016)
1b) Will the proposed basement extend beneath the water table surface?	**Un-certain**	The proposed basement will extend to 3.5 mbgl. Of the nearby borehole records listed above, the following indicate the presence of groundwater; TQ38SW2551, 130m to the north, and TQ38SW156, 130m to the southeast both recorded groundwater at 6 mbgl. TQ38SW3949 recorded groundwater at 3.3 mbgl and TQ38SW3947 recorded it at 10 mbgl, however TQ38SW3948 & TQ38SW3950, excavated at the same time, were dry on completion. Should groundwater be present at the Site it is probable, pending confirmation from a site investigation, that the water table would be below the proposed development. Should groundwater be encountered within 1 metre of the proposed base of the development then further assessment may be required to determine the potential impacts to and from groundwater and the cumulative effects with any other basements in the vicinity.	Site plans BGS GeoIndex (2016)

4 CONCLUSIONS

Potential impacts of the proposed basement development at 20-21 Kings Mews have been considered. The following summary conclusions are drawn.

4.1 Screening Stage - Groundwater

The site is located above an aquifer and some (not all) nearby borehole logs record the presence of groundwater.

4.2 Scoping Stage - Groundwater

It is not certain that groundwater is present at the Site, or that the proposed excavation will extend below any water table. The proximity of a tributary of the "Lost" River Fleet increases the likelihood of the presence of a shallow water table at the Site. Should there be a water table it is possible that the proposed development would leave some aquifer thickness below it, in which case any impacts to groundwater flows and or levels would be minimal.

4.3 Recommendations

It is recommended that the presence of groundwater is confirmed by a site investigation before construction is started. Should groundwater be encountered and monitoring determines a rest water level within 1 metre of the proposed base of the development then the potential impacts may need further assessment.

REFERENCES

Arup, 2010. Camden Geological, Hydrogeological and Hydrological Study.

Barton, N., 1992. The Lost Rivers of London, revised edition. Historical Publications Ltd. London.

British Geological Survey, 2015 Received December 2015 from http://mapapps.bgs.ac.uk/geologyofbritain/home.html.

Camden Council, 2015. Camden Planning Guidance: Basements and lightwells. London Borough of Camden, CPG4.

Environment Agency, 2016. What's in your backyard website. Received from http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e, March 2016.

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URS, 2014. London Borough of Camden Strategic Flood Risk assessment. Ref 47070547

APPENDICES

APPENDIX A

Proposed Development Plans

APPENDIX B

BGS Borehole logs