Chord Environmental Ltd

Yakov Levy
42 Olinda Road
London
N16 6TL

Your Ref: 24 Gladesmore Road
Our Ref: 1136/LJE270416

For the attention of: Yakov Levy

27th April 2016

24 Gladesmore Road, London – Hydrogeological Assessment

Dear Yakov,

Further to our discussions and your instruction to proceed I have prepared a hydrogeological assessment for the proposed basement development at 24 Gladesmore Road, London. I have reviewed the design of the proposed basement development, together with published information on the site setting, against the requirements of the London Borough of Camden BIA guidance set out within DP27 and CPG4 (in lieu of the availability of current guidance from the London Borough of Haringey).

Chord Environmental specialise in the provision of hydrogeological services with extensive experience in the UK supporting both private and public sector clients. I am a geologist and hydrogeologist and have a BSc. in geology from the University of Bristol, a MSc. in hydrogeology from the University of East Anglia and am also a Chartered Geologist and fellow of the Geological Society. I am Managing Director at Chord Environmental and was previously a Technical Director with Paulex Environmental Consulting and managed Hyder Consulting (UK) Ltd's groundwater team.

I have been a hydrogeologist for 19 years. During that time I have advised on over 100 basement developments. Much of my career has been spent assessing the impact of development on the quality and quantity of groundwater resources. I have worked for both promoters and regulators of schemes and have acted as an expert witness for the Highways Agency and on BIA schemes.

Basement Assessment Guidance

The site is located within the London Borough of Haringey which has recently withdrawn its Basement Development Guidance Note (dated 2012). This guidance set out a framework for assessing the impacts of proposed basements in accordance with the Development Management Policy (DMP) 8 - Basements and Lightwells.

However, the council still requires the planning application for basement development projects to be accompanied by a hydrogeological Basement Impact Assessment to assess any potential impacts in view of the geological setting. The assessment also needs to determine, if any, the likely increase in risk of localised flooding. Therefore in the absence of current guidance, the Camden BIA policy has largely been adopted as it is now widely known and is considered to provide a robust approach to the issues of potential concern.

Development proposal

I understand the proposed development comprises a single storey basement which would extend beneath the entire footprint of the existing building. The basement development would not extend beyond the footprint of the existing building however lightwells are proposed which would extend the excavation by approximately 1m to the front and rear of the basement.

Excavations to basement floor formation level below the existing house would extend to a depth of approximately 2.3m.

Site Description

The site is located in South Tottenham, north London, approximately 500 m to the southeast of South Tottenham London Overground station and 500 m northeast of Stamford Hill London Overground station (National Grid Reference TQ 33709 88341).

The site covers a rectangular area and is approximately 22 m north-south by 5 m east-west and is occupied by No 24 Gladesmore Road, a traditional three-storey semi-detached house. It fronts onto Gladesmore Road to the north and is bordered to the south by the rear gardens of properties fronting onto Wargrave Avenue, to the west by the adjoining No 22 Gladesmore Road, which forms the other half of the semi-detached building, and to the west by No 26 Gladesmore Road. The house occupies the majority of the site, although a small paved front garden is present along the northern boundary with a courtyard garden to the rear. The site is roughly level and at a similar elevation to the surrounding area.

Environmental Site Setting

The site lies at an elevation of approximately 13 m ordnance datum (OD) which falls away gently to c. 6m OD at the River Lea, 750m to the east of the site. The site is underlain by the Eocene London Clay as shown on the British Geological Survey 1:50,000 scale map (Sheet 256 – North London) to a depth of approximately 20m. The London Clay is classified as Unproductive Strata (formerly Non-Aquifer) by the Environment Agency, deposits with low permeability and which have negligible significance for groundwater supply or river base flow.

The London comprises firm to stiff, brown to blue grey silty clay. The very low permeability of the London Clay results in very low rates of rainfall infiltration and correspondingly, very high rates of rainfall runoff. The London Clay is not capable of supporting a continuous groundwater table, although isolated pockets of perched groundwater may occur within fissures and silt and sand partings. Published data for the permeability of the London Clay indicates the horizontal permeability to generally range between 1 x 10^{-10} m/s and 1 x 10^{-8} m/s, with an even lower vertical permeability.

The site does lie within the Outer Zone of a designated public (Thames Water) groundwater Source Protection Zone as delineated by the Environment Agency. However the Source Protection Zone relates to a groundwater abstraction from the Chalk aquifer which underlies the lowly permeable London Clay more than 40m beneath the site.

Surface Flow and Flooding

The nearest surface water feature is the River Lea, which flows in a southerly direction, approximately 750 m to the east of the site, beyond which is a series of reservoirs. The site is not located in an area at risk of flooding from rivers or sea, as defined by the EA. Surface water flooding maps published by the Environment Agency also indicate that the site is not located in an area at risk from surface water flooding up to a 1 in 1000 year storm event. The site is predominantly covered in hard-standing, such that infiltration of rain water into the ground beneath the site is limited. The majority of surface runoff is therefore likely to currently drain into combined sewers.

The basement construction would be within the existing ground floor footprint with the exception of small light wells to the front and rear. The proposed basement development would therefore not materially change surface water drainage from the existing condition.

Subterranean (Groundwater) Flow Screening Assessment

The BIA screening, scoping and risk assessments have followed the relevant CPG4 Camden guidance screening questions. I have commented on the answer to each question below.

- **Is the site located directly above an aquifer?**

  The Site is mapped as being underlain by the London Clay, designated as Unproductive Strata by the Environment Agency and is therefore not underlain by an aquifer.

- **Will the proposed basement extend beneath the water table surface?**

  No. The basement excavation will extend to a depth of c.2.3m within the London Clay. Due to its cohesive and impermeable nature, the London Clay cannot support a water table or groundwater flow beneath the site.

- **Is the site within 100m of a watercourse, well (used/disused) or potential spring line?**

  No surface water features are present within 750m of the site.

- **Will the proposed development result in a change in the proportion of hard surfaced / paved area?**

The proposed basement development won't result in a net increase in hard surfaced / paved area.

- **As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to ground (e.g. via soakaways and/or SUDS)?**

  As the site is underlain by the London Clay, rainfall infiltration is very low and runoff is very high, therefore discharging drainage to the ground is not practically possible. Drainage from the site will continue to be principally to surface water sewer.

- **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?**

  There are no local groundwater dependent ponds or spring lines present within 750m of the site and the proposed basement excavation will be not encounter a water table within the London Clay.

Conclusions

This assessment has appropriately characterised 24 Gladesmore Road with respect to its geological and groundwater site setting. The site is underlain by effectively impermeable London Clay, which cannot support groundwater flow or a water table. Therefore the proposed basement would could not have an effect on groundwater locally. The site does not lie within an area identified to be at risk from surface water flooding and the basement development would not materially change surface water drainage from the existing condition.

On the basis of all of the above, it is considered that the proposed basement will not have an impact on either the surrounding hydrogeological or hydrological setting. No potential adverse impacts have been established by this assessment.

Yours sincerely,



John Evans BSc MSc CGeol.

Director

THE GEOLOGICAL SOCIETY
CGeol
CHARTERED GEOLOGIST
Fellow No. 1012979