

39a ROSSLYN HILL, NW3

Basement Impact Assessment – Screening and Scoping Report.

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Ref: 140321/HH

Date: 09 December 2014

Rev No: Planning Rev E

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1.0 INTRODUCTION

- 1.1 It is proposed to construct a new single storey rear extension to the lower ground floor of this Victorian four storey property, at level into the garden area which is presently steps and then slopes up to the back of Eldon Grove.
- 1.2 This report is in response to The Camden Development Policy DP27, with reference to para. 27.3., the proposed extension is a single storey at level with neighbouring properties and owing to the sloped nature of the ground, does not remove a full storey's worth of soil over it's whole area.
- 1.3 Following the format guidance in The Camden Policy Guidance PG4, the stages for a Basement Impact Assessment are:
 - Stage 1 - Screening; •
 - Stage 2 - Scoping; •
 - Stage 3 - Site investigation and study; •
 - Stage 4 - Impact assessment; and •
 - Stage 5 - Review and decision making.

This report follows the Flow Charts and uses the Figurative information given in the Camden Geological, Hydro-geological and Hydrological Study to submit data with relevance to the small scale of this project to address stages 1 and 2.

- 1.4 The Flowcharts of the Appendix E to the Camden Geological, Hydro-geological and Hydrological Study are completed in table format in section 3 of this report and form the screening element of this report, including:
 - Surface Flow and Flooding Impact Identification
 - Subterranean (groundwater) Flow Impact Identification
 - Slope Stability screening flowchart
- 1.5 39 Rosslyn Hill is located with an arrow on the relevant Figures of the Camden Geological, Hydro-geological and Hydrological Study, appended to this report, Appendix A.
- 1.6 Again reflecting the size of the scheme, a brief scoping report is provided in section 4, to be commented upon by Camden. It is hoped this will satisfy the requirement of DP27 in terms of consideration to the Geological, Hydro-geological and Hydrological effects of the development.

2.0 SITE INFORMATION

- 2.1 39 Rosslyn Hill is an early Victorian 'villa' style property, four storey semi-detached build circa 1850s. 39a is the basement /garden flat of this four storey building. The construction is typical for buildings of this era with load bearing masonry walls and timber floors. The proposed development is structurally isolated from the main property.
- 2.2 Rosslyn Hill lies within the generally sloped setting of Hampstead, although the area to either side of no 39 is relatively flat, with the land that forms the garden sloping up from the rear towards Eldon Grove.
- 2.3 Neighbouring the property on either side are Nos 37 and 41 Rosslyn Hill, with 39 being semi-detached with no 37 and 41 being a detached property. Both these properties are four storeys including their basements, level with No. 39. Both have similar 'terraced' and then sloped gardens to the rear, up to Eldon Grove / Thurlow Road.
- 2.4 No 27 Rosslyn which lies down hill from No 39 Rosslyn Hill, was granted permission to construction a full basement below the existing 'basement /lower ground' in January 2013.
- 2.5 Eldon Grove lies uphill to the rear of Rosslyn Hill, with gardens between being terraced and / or sloped, No 10d Eldon Grove's garden backs on to No 39's garden, as well as part of No 30 Thurlow Road, which runs between Rosslyn Hill and Eldon Grove. Both Eldon Grove and 30 Thurlow Road lie over 7.5m from the proposed development no 30a Thurlow road is 4.5m away. 45 degree lines taken from the base of the excavation will not cross the properties' foundations.
- 2.6 Geological maps of the area show the site to be on the boundary of the claygate member, overlying deeper London Clay. This is borne out by the boreholes, taken on 4th November 2014, attached in Appendix C. No water ingress was noted in the exploratory holes and trial pits remained dry. Standpipes were left in place for subsequent monitoring.
- 2.7 A level survey will need to be prepared to ensure the relative levels of the garden of no 39 and neighbouring gardens / properties is established prior to detailed design however it is reasonably assumed that they follow a similar profile to No 39.
- 2.8 Reference to the Environment Agency maps, as well as the maps appended, locate the site away from the ground source protection zones , however just within a secondary aquifer as seen on the Environment Agency Map, below and Figure 8, appended. See Figs 1 & 2 overleaf. It is noted the secondary aquifer relates to the solid bedrock geology (the claygate member).

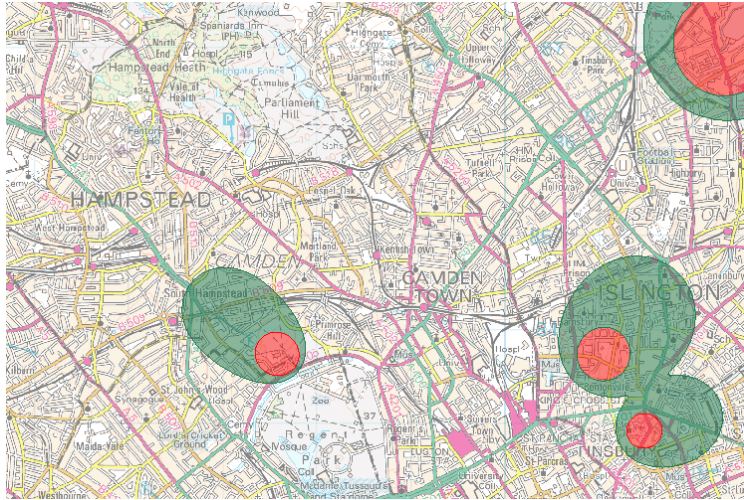


FIG 1. GROUND SOURCE PROTECTION ZONES

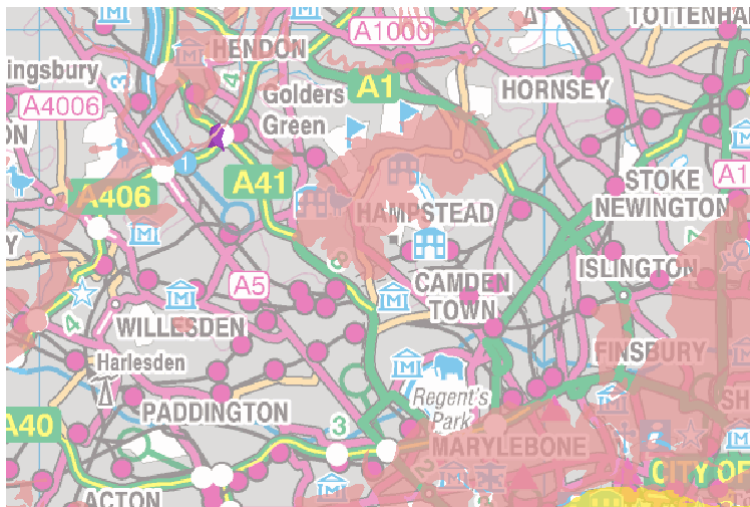


FIG 2. AQUIFER MAP BEDROCK DESIGNATION – PINK IS SECONDARY 'A'

2.9 A Structural Scheme for the basement is appended to this report, Appendix B.

3.0 RESPONSE TO BIA SCREENING FLOWCHARTS

Appendix E : Camden geological, hydrological and hydrology study: Guidance for subterranean development.

3.1 <u>Surface Flow and Flooding Impact Identification</u>		
3.1.1	Is the site within the catchment of the pond chains on Hampstead Heath?	No, refer to Figures 14 & 15 appended.
3.1.2	As part of the site drainage, will surface water flows (e.g. rainfall and run-off) be materially changed from the existing one?	Not significantly, it is assumed the 600mm thick soil and landscaped 'roof' of the extension will attenuate surface water flows as typical ground/soil. The slab will run off into the surrounding claygate member. The lower terrace/patio area will be of similar area to the terrace presently.
3.1.3	Will the proposed basement development result in a change in the proportion of hard surface / paved external areas?	Yes, there will be a greater area of decked terrace, however this maybe permeable to allow for similar drainage regime to present.
3.1.4	Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses?	No, the extension is not adjacent to the neighbouring property and there is clear ground about the extension with natural and designed attenuation.
3.1.5	Will the proposed basement development result in a change to the quality of surface water being received by adjacent properties or downstream watercourses?	No change in water quality is expected.

3.2 <u>Subterranean (groundwater) Flow Impact Identification</u>		
3.2.1	Is the site located directly above an aquifer?	Yes. The site is just within the Secondary A Aquifer, however this relates to the solid bedrock geology and not superficial deposits. Refer to Figure 8, Appended.
	○ Will the proposed basement extend beneath the water table surface?	No. No water was encountered in the exploratory boreholes and trial pits remained dry. Standpipes are to be monitored. However a contractor may need to allow for de-watering in the event of perched water or high rainfall.
3.2.2	Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No, refer to Figure 11, appended
3.2.3	Is the site within the catchment of the pond chains on Hampstead Heath?	No, refer to Figures 14 appended
3.2.4	Will the proposed basement development result in a change in the proportion of hard surface / paved areas?	Yes, there will be a greater area of decked terrace, however this covers the same area as existing timber decking and artificial grass, and will have the same drainage regime as existing.
3.2.5	As part of the site drainage, will more surface water ((e.g. rainfall and run-off) than present be discharged to the ground? (e.g. via soak-aways and/or SUDS)	No, a similar amount of surface water will be discharged into the ground.
3.2.6	Is the lowest point of the proposed excavation (allowing for any drainage and foundation source under the basement floor) close to, or lower than, the mean water level in any local pond or spring line? (not just the Hampstead ponds).	No. From examining OS maps, the nearest pond is 500m from the site, to the bottom of Downshire Hill, which lies downhill of the site. From the ESG desk study report, the nearest recorded surface water features are a culvert 366m to the East and the Hampstead ponds 485m to the North East.

3.3 <u>Slope Stability screening flowchart</u>		
3.3.1	Does the existing site include slopes, natural or manmade, greater than 7 degrees (approx. 1 in 8)?	Yes, the existing terrace steps up in a greater slope than 1 in 8.
3.3.2	Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7 degrees (approx. 1 in 8)?	No, the slopes at the site boundaries are to remain the same.
3.3.3	Does the development neighbour land, including railway cutting and the like, with a slope greater than 7 degrees (approx. 1 in 8)?	Yes, the neighbours gardens to nos 37 & 41 Rosslyn Hill will have similar slopes and general profile to no 39.
3.3.4	Is the site within a wider hill setting in which the general slope is greater than 7 degrees (approx. 1 in 8)?	The general Belsize Hill area is sloped, however this is a more gentle slope of 1 in 15-25, when 1:25 000 maps are examined.
3.3.5	Is the London Clay the shallowest strata at the site?	No – according to the geological long section, viewed in relation to topographical information from an OS Map, a thin band of Claygate member overlies the approx 100m deep band of London Clay., the site lies just over this Claygate member as it peters out to London Clay. Refer to Fig 7 (note too small a scale to indicate an approximate location of the site).
3.3.6	Will any tree/s be felled as part of the proposed development and/or any works proposed within any tree protection zones where trees are to be retained?	No. Refer to arboriculturalist report for response with regard to trees. Root protection as required will be given during works on site, however most of the site works, and expected storage (close to the property) is away from trees, which largely are to the rear of the site.

3.3.7	Is there a history of seasonal shrink-swell subsidence in the local area., and/or evidence of such effects on site?	The clay layers within the claygate member and the under lying London clay both have high shrinkage potential and as such properties near to high water demand trees maybe susceptible to movement, depending on the depth of their foundations. No evidence of movement has been seen no No 39 Rosslyn Hill. The proposed foundations (retaining walls and base slab) are below the influence of trees.
3.3.8	Is the site within 100m of a watercourse or potential spring line?	No, refer to Figure 11.
3.3.9	Is the site within an area of previously worked ground.	No.
3.3.10	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?	The site is over the Secondary A Aquifer. Refer to Figure 8, Appended. The borehole to 6m did not strike a water table, however if perched water is present, or rainfall during construction, dewatering may be required.
3.3.11	Is the site within 50m of Hampstead Heath?	No, refer to Figure 11 and other maps appended.
3.3.12	Is the site within 5m of a Highway or pedestrian right of way?	No.
3.3.13	Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties.	No –not in relation to Nos 37 & 41 Rosslyn Hill , the development is at level with both these properties. The foundations will be lower that the rear neighbour, in Eldon Grove, although this is some distance away and therefore will not be undermined by the development. The basement will also be below a property in a site adjacent to the garden – 30a Thurlow Road. A 45 deg line from the base of the base of the

		excavation line to soil surface is marked on drawings S101, in appendix B.
3.3.14	Is the site over (or within the exclusion zone of) any tunnels, e.g. railways lines?	No. The North London Line running between Hampstead & Finchley Road runs some 20m below nos 27/29 Rosslyn Hill , however this is over 50m from the site.

4.0 PROPOSED SCHEME - STRUCTURE

- 4.1 It is proposed to form a reinforced concrete box within the existing sloped rear garden.
- 4.2 To No 37 Rosslyn Hill, the garden wall maybe underpinned and supported during construction, when a reinforcement retaining wall will be formed, tied into the rear retaining wall and propped by the concrete roof, which forms the deck to support 600mm of top soil for a lawn / planted areas.
- 4.3 A similar r.c. planter is to be formed to no 41 Rosslyn Hill side in a staged form in sections of no more than 1m wide sections to avoid undermining the garden.
- 4.4 The retaining walls and basement slab will be designed to take into account ground water, assuming a worst case scenario of a water to the upper level (although this would be unlikely given the already steeped and sloped nature of the ground), and to accommodate/withstand heave from the removal of a depth of soil.
- 4.5 A Structural Scheme for the basement is appended to this report, Appendix B.

5.0 SUGGESTED METHOD STATEMENTS

- 5.1 Within the design, there are forms of construction which require either a staged form of construction, such as underpinning or building in front of an existing garden wall, or / and temporary works to enable a continuous reinforced retaining wall to be formed.
- 5.2 What follows is a brief sequence which would appropriate for the variety of situations-boundary conditions – and how a contractor could approach the works. A final method statement will need to be provided by a contractor as it will be their responsibility to ensure the construction is formed as per the design without any detriment to surrounding structures or features. Refer also to the sections in the proposed structural scheme, Appendix B.

5.3 *Boundary to 37. Rosslyn Hill. Underpinning and forming a reinforced concrete retaining wall to the inside face.*

- 5.3.1 Dig out section of soil below the garden wall, no longer than 1m wide, ensure flush face with rear of wall and suitable width of footing at base.
- 5.3.2 Pour concrete (with some reinforcement to the inside, 39 side, if necessary), set, dry pack up to base of garden wall.
- 5.3.3 Prop 1m section of retaining wall back to shear blocks formed in dug out base. (to be left insitu).
- 5.3.4 Continue 5.3.1 to 5.3.3 in sequence to ensure no adjacent pins are undertaken after one another, and a minimum of two metres remains between any pins/gaps being worked on. Shear keys to be provided between pins.
- 5.3.5 Once fully propped & underpinned wall, set up reinforcement cage for base of retaining wall, cast with appropriate starter bars / kicker for remained for wall.
- 5.3.6 From upright of retaining wall, with waterbar in any joints. Remove props (left in situ or wall cast only in 1m sections) and make good any holes.

5.4 *Rear and in-boundary side of new room; temporary retaining wall:*

- 5.4.1 King post or sheet piled wall driven in situ – final design by special contractor.
- 5.4.2 If king post, soil dug out in sections to enable precast concrete sections to be fitted in place.
- 5.4.3 Soil then dug out to front of temporary retaining wall – propped if necessary.
- 5.4.4 Base, wall and top formed as 5.4.6 to 5.4.8.
- 5.4.5 Temporary wall may then either be left in situ, or removed by jacking against top of retaining wall (this would entail some design input into the permanent design), and gaps filled with granular graded fill and compacted.
- 5.4.6 Top of new room covered as 5.4.10.

5.5 *Planters to boundary with 30 Thurlow Road / 41 Rosslyn Hill. There is an existing concrete block retaining wall to No.39's side, the line of which is to mover slightly nearer to the boundary wall.*

- 5.5.1 The existing retaining wall to be propped either side of 1m sections.
- 5.5.2 1m max section of existing wall to be removed, area prepared to form new r.c. base and retaining wall.

- 5.5.3 Concrete cast and set for min 48 hours prop to any adjacent section.
- 5.5.4 Fill any void to rear of new void with graded lightly compacted granular fill prior to undertaking adjacent sections.
- 5.5.5 The whole wall to be worked in this process.
- 5.5.6 The face of the boundary wall may need to be made good, re-pointing to be in mortar to match existing and any weep holes cleared out. Should the level of the new wall be lower or stepped, then the boundary wall may need to be underpinned and a new retaining wall formed immediately to the face of the boundary wall – this will depend on the level of the soil to the rear of the wall, as per junction at 37/39 Rosslyn Hill.

6.0 SCOPING

- 6.1 The screening undertaken as observations in reply to the flowcharts in Section 3 highlights the following items that may impact on the design:
- 6.1.1 *Proportion of hard surfaces.* The existing artificial grass area is being lowered and decked over, with a similar drainage regime as existing. The scheme provides a greater area of 'flat' garden over the new room with a suitable depth of soil (600mm) for water attenuation and plants / grass as well as deeper planters, replacing an area of sloped ground, of relatively thin band of Claygate member over London Clay, therefore on balance it is unlikely these will result in any significant ground and subsurface water flows.
- 6.1.2 *Secondary A Aquifer.* The site only just lies within this zone, understood to relate to the solid bedrock geology (claygate beds), this is typically of low permeability and not highly productive. Therefore it is not considered the proposed development would result in a significant change to the ground water flow regime in the vicinity of this site, especially when considering the properties in front to the development are all at a similar level.
- 6.1.3 *Sloped ground.* The garden and grounds to the rear and adjacent to the development are sloped (adjacent follow a similar topography). With the exception of a garden wall to No 37 Rosslyn Hill, the excavated depth does not impinge on nearby properties if a 45 degree line is drawn up from the base of the dig (refer to S101, Appendix). The soil is cohesive in nature however it is recommended by geotechnical specialist that battered back slopes are not suitable for this site and a temporary retaining wall such as king-post system is used. Both the temporary works and retaining wall design will need to be designed for a sloping clay site. The method and sequence of construction will need to be finally designed by the contractor; suggested method statements are given in section 5.0 and marked up on the sectional drawings in Appendix B.
- 6.2 In conclusion, it is considered that there are no negative impacts anticipated in this basement proposal on the hydro-geological and hydrological conditions of the local environment that cannot be suitably addressed in the detailed design of this proposal, and that a competent contractor with experience in this type of construction cannot suitably address in their final temporary works and construction methods statements.



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