V&R
VINCENT
& RYMILL

18 HEATH DRIVE, LONDON, NW3 7SL

PROPOSED REDUCTION OF FLOOR LEVEL OF EXISTING LOWER GROUND FLOOR, AND EXTENSION OF LOWER GROUND FLOOR TO REAR OF PROPERTY.

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INTRODUCTION.

The property is a large four storey, semi detached dwelling probably constructed around the 1930's.

The development proposal three parts;

1. Increase the headroom (depth) of the lower ground floors, to increase the headroom to the lower ground floor over the full footprint of the existing property.
2. Extend the lower ground floor out under the rear garden, to form a light well.
3. Form light wells to the front of the property.

Details of the proposals are shown by the relative 5d Ltd Architects drawings.

The purpose of this report / statement is to provide details of the stage 1 and 2 BIA as requested by the 'Camden Planning Guidance Basements and Light wells', together with details of the method and sequence of construction.

STAGE 1 - SCREENING FOR BIA- Reference Camden Planning Guidance Basements and Lightwells

Figure 1. Subterranean (ground water) flow screening chart.

Q1a Is the site located directly above an aquifer ?
NO. See figure 8, site above 'unproductive strata'

Q1b Will the proposed basement extend below the water table surface?
NO. Formation of new basement is at - 2. 50m below ground level.

Q2. Is the site within 100m of a watercourse, well or potential spring line?
NO. With reference to figure 12 the site is not within 100m of any of these features.

Q3. Is the site within the catchment of the pond chains on Hampstead Heath.
NO. Refer to figure 14.

Q4. Will the proposed basement development result in a change in the proportion of hard surfaced paved areas.
NO. Basement is below footprint of existing building, and below existing hard-scaped parts of the front and rear gardens.

Q5. As part of the site drainage will more surface water than at present be discharged into the ground.
NO. There is no increase in impermeable area.

Q6. Is the lowest point of the proposed excavation close to or lower than the mean level in any pond or spring line.

NO. There are no nearby ponds or spring lines.

Figure 2. Slope Stability Screening Flow Chart.

Q1. Does the existing site include slopes natural or manmade greater than 7^0
NO. Site does not include slopes greater than 7^0.

Q2. Will the proposed re-profiling of the landscaping at site change slopes at the boundary to more than 7^0
NO. There are no re-profiling works.

Q3. Does the development neighbour land have slopes greater than 7^0.
NO. Neighbouring land does not contain slopes greater than 7^0.

Q4. Is the site within a wider hillside with general slopes greater than 7^0.
NO. Site is within a wider level area.

Q5 Is the London Clay the shallowest strata on the site.
NO. British Geological Survey viewer describes highest strata as a silty sandy clay which is believed to be the Claygate Beds. These overlays the stiff London Clay. Vincent & Rymill experience of nearby sites and their Site Investigations, 14 Heath Drive, 32 and 34 Ferncroft Avenue confirm these as the ground conditions on this site.

Q6. Will any trees be felled or are any of the works within root zones of protected trees?
NO. See separate tree report.

Q7. Is there a history of seasonal shrink swell subsidence in the area? And evidence that this affects the site.
NO. Site examination of buildings did not reveal evidence of subsidence due to shrink / swelling of soils.

Q8. Is the site within 100m of a watercourse or a potential spring line?
NO. Site is not within 100m of such features

Q9. Is the site within an area of previously worked ground?
NO. The site is presently a dwelling within its own land.

Q10. Is the site within an aquifer?
NO. See figure 8, site above 'unproductive strata'

Q11. Is the site within 50m of Hampstead Heath Ponds?
NO. Site is not within 50m of these ponds.

Q12 Is the site within 5m of a highway or pedestrian Way.
No. Site has a boundary at its front with Heath Drive, but construction works are not within 5.0m of this boundary.

Q.13 Will the proposed basement significantly increase the differential depth of foundations to the relative properties.
NO. Increase in depth of foundations will be 1200mm which in terms of foundation formations is not significant.

Q. 14. Is the site over any tunnels?
NO. No tunnels are known to exist under the site.

Figure 3. Surface Flow and Flooding Screening Flowchart.

Q1. Is the site within the catchment of the pond chains on Hampstead Heath.
NO. Site is not within the catchment area of the pond chains on Hampstead Heath.

Q2. As part of the proposed site drainage will surface water flows be materially changed from the existing route?
NO. The existing surface water routes will not be changed by the development.

Q. 3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas.
NO. The development does not increase the impermeable paved areas.

Q4. Will the basement result in changes to the profiles of the inflows of surface water being received by adjacent properties or downstream watercourses.
NO. The development does not increase the impermeable paved areas.

Q5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses.
NO. The presence of the basement structure will not alter the quality of the surface water.

Q6. Is the site in an area known to be at risk of flooding?
No. Heath Drive is not listed in CPG4 as at risk to flooding.

STAGE 2 - SCOPING FOR BIA- Reference Camden Planning Guidance Basements and Lightwells

NONE

STAGE 4 - IMPACT ASSESSMENT- Reference Camden Planning Guidance Basements and Lightwells

Attribute	Change from baseline	Comment
Geological / land stability	Nil	Ground is flat lying, made ground over firm London Clay.
Hydrogeological	Nil to not significant	The underlying London Clay is effectively impermeable. Any upper made ground will be permeable however any perched water that is in this layer has a path around the proposed development.
Hydrological (surface water)	Nil	There is negligible increase in impermeable area. The rear lightwell area replaces an area of hard standing.
Structural to own	Nil	The proposed development does not undermine the

property		foundations of the existing property. No structural work is being undertaken to the existing main house.
Structural to neighbouring properties / highway	Nil / improve	The proposed development does not undermine the foundations of the neighbouring properties on Heath Drive.

The impact of the development is considered low and a full BIA is not considered necessary

STAGE 3 - SITE INVESTIGATION AND STUDY- Reference Camden Planning Guidance Basements and Lightwells

The site is assessed as low risk.

A geological desk top study and a site specific borehole have not yet been completed. Site conditions are known to be made ground over the Claygate Beds or directly over laying the London Clay. See geological map appended to rear of BIA.

STRUCTURAL DESIGN PHILOSOPHY FOR REDUCTION OF LOWER GROUND FLOOR UNDER AN EXISTING PROPERTY.

External Walls

Extended lower ground floor external walls below the property are designed as propped cantilevers in reinforced concrete, the lower ground floor slab acting as the prop at base level. The walls will be designed using the soil parameters relative to the site. The walls will be designed for a water table 3/4h above the base of the stem in accordance with the relvant Code Of Practice.

The surcharge load allowed on the external walls of the property will be 10KN/m^2 . The party wall bounding will have a surcharge load of 5.00KN/m^2 for adjoining floor and partition wall construction and will also take into account any loads from adjoining foundations. The vault structure within the front garden will be designed as necessary for a surcharge load of 10KN/m^2 or 100KN wheel load, whichever gives the most onerous design case.

Basement Slab

The slab will be formed in reinforced concrete. It will be designed for uplift due to water pressure below, or as a clear span as appropriate. The basement slab will act as a prop to the base of the basement walls.

Design Criteria.

Basement walls and bases will be designed using the parameters for the retained soils and bearing soils as indicated by the Site Investigation.. The design is in accordance with BS 8002:1994.

The design will accomodate active and passive earth pressures. Pressure coeficients in the design will adopt ' at rest pressures'.

The wall and base in designed for the following

1.Vertical loads from walls above.
2.Party wall will be designed for a surcharge loading of 5kN/m^2.
3. Other external will be designed with a surcharge load of 10.00KN/m^2.
4. The design adopts a water head behind the wall to ¾ the height of the wall below ground in accordance with BS 8102.
5. Front vault areas will be designed for a surcharge of 10KN/m^2 or a wheel load of 100KN, which ever is most onerous.

The sub soils at new lower ground floor formation level will be London Clay, an SBP of 150KN/m^2 will be used in the design to limit differential foundation movements.

Concrete will generally be grade C35 and Class 1 to BRE Digest 363. Reinforcement will be grade 500N/mm^2.

Existing brickwork assumes 7N bricks in a lime mortar, CP.111 gives basic compressive stress for this makeup of 0.45N/mm^2, and therefore allowable bearing stress will be 0.45N/mm^2. Any bearings into existing external or party wall masonry will take account of this allowable stress.

Mortar will be class (ii) or (iii) as required.

Relevant Codes of Practice and British Standards

B.S. 8004	Code of Practice For Foundations
B.S. 6031	Code of Practice For Earthworks
B.S. 8110	Structural Use of Concrete
B.S. 5750	Structural Use of Steelwork in Buildings

BRIEF METHOD STATEMENT FOR CONSTRUCTION .

The exact sequence of works will be agreed with Main Contractor and Structural Engineer, a Contruction Method Statement for the works could be as follows.

a) The walls to the perimeter of the new/existing rooms will be underpinned in reinforced concrete. The underpins will take the vertical loads from the walls and horizontal loads from the earth. During their construction the walls and bases will require laterally propping in the temporary condition; propping will be made against the central earth pudding.
b) Underpinning legs will be excavated in short sections not exceeding 1200mm in width.
c) The sequence of the underpinning will be in the 1, 3, 5, 2, 4 sequence and such that any given underpin will be completed, dry packed, and a minimum period of 48 hours lapsed before an adjacent excavation commenced to form another underpin.
d) In the event that the existing foundations to the wall are found to be unstable, sacrificial steel jacks will be installed underneath the foundation to prop the bottom few courses of bricks. These steel jacks will be left in place and will be incorporated into the concrete stem.
e) Whilst forming the wall and in the event that the vertical soil face is unstable, lateral propping will be provided as required to the excavation and to the sides of the working trench. The front and side faces of the excavation will be propped using a sacrificial inert board and acrow props as appropriate.
f) Concrete will be chuted from the point of delivery into a 'holding bath' within the working areas and placed by wheelbarrow and /or bucket, or mixed on site. The exact arrangement will be finalised when works commence on site.
g) Excavation for an underpin section will be excavated in a day, and the concrete to the base poured by the end of the same day.
h) The concrete to the wall of the underpin will be poured the following day. This will be poured up to within 50 – 75mm of the underside of the existing wall foundations.
i) On the following day, the gap between the concrete and the underside of the existing foundation will be dry packed with a mixture of sharp sand and cement (ratio 3 : 1).
j) Once the dry pack has gained sufficient strength, any protrusions of the footings into the site will be carefully trimmed back using hand tools to avoid causing any damage to the foundation. The protrusions will be trimmed back to be flush in-line with the face of the wall above.
k) A minimum of 24 hours will be allowed before adjacent sections will be excavated to form a new underpin.
l) Once all pins are complete a temporary cross propping system will be introduced between the walls to allow bulk excavation will be carried out down to formation level.
m) The below – slab drainage for foul & ground water, sumps and pumps will then be installed. The pumps will discharge the foul / ground water into the sewer system to the front of the properties. The drainage layout will be designed in due course.
n) The basement slab will then be constructed, once cured this will provided the designed propping to the walls and the temporary cross propping can be removed.
o) A cavity drainage layer will be laid to the slabs and walls.

CONSTRUCTION SEQUENCE

1. Site set up will include a hoarding to the front garden; placement for skips will either be made within the front garden or on the public highway subject to Camden approval.
2. The site is only accessible from Heath Drive, and therefore all site deliveries and operations will take place from here. This entrance will be manned throughout operational hours by a banksman to ensure construction deliveries do not pose a risk to other users of Heath Drive

3. Construct site hoarding, entrance gates to provide protection to passers-by from site operations. Site accommodation including welfare facilities will be confined to the main building throughout the site works.
4. Terminate / protect any incoming services temporarily divert any active drainage.
5. Install any tree protection measures as necessary.
6. Install enclosed skip to front on property and install conveyor to remove excavated soil to discharge soil into skip.
7. Remove walls at existing lower ground floor level and fix permanent temporary steel beams to support existing ground floors that remain.
8. Reduce existing lower ground floor and vault levels to just above existing footing formation.
9. Underpins will be carried out in the usual 1, 4, 2, 5, 3 underpinning sequence, the construction sequence for forming the pin will be agreed prior to commencement of the works. To provide temporary lateral support to the wall formed it will remain propped against the internal soil 'dumpling.'
10. On completion of all underpinning, cross propping of the pin walls will be erected to allow bulk excavation. The propping will be designed to suit the lateral loads behind the walls but generally takes the form of a series of horizontal slimlite props adequately laced and braced set approximately 1.5m from lower ground floor level.
11. Bulk excavation will be carried out down to new lower ground floor formation level. Soil will continue to be removed from site via the conveyor belt.
12. In parallel with the above actions works will commence to rear lower ground floor extension.
13. The rear lower ground floor area will be formed in two drives. Initially a reinforced councrete wall section will be formed to approximately 1.80m below ground level, once the ring of the wall is formed the ground within the ring will be reduced at the same time lateral propping of the walls will be provided, either propping from a central pudding or cross propping between wall, or a combination of both. The wall section will then be underpinned in a hit a miss arrangement to form the base and lower wall section. Once complete further reduction of the internal ground levels can be made whilst adapting the lateral propping to suit the revised form.
14. The below – slab drainage for foul & ground water, sumps and pumps will then be installed. The pumps will discharge the foul / ground water into the sewer system to the front of the properties. The drainage layout will be designed in due course.
15. The basement slab (ground – bearing slab) will then be constructed.
16. After the new basement slabs have cured, the cross propping will be removed.
17. A drained – cavity layer will be laid to the slabs and walls.

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CAMDEN GEOLOGY – Extract from FIGURE 4 Camden Geological, Hydrogeological and Hydrological Study