

# 21 KIDDERPORE GARDENS LONDON, NW3

# PROPOSED BASEMENT UNDER FOOTPRINT OF BUILDING, INCLUDING LIGHTWELLS.

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### **INTRODUCTION.**

The property is a large two storey, semidetached dwelling probably constructed around the 1920's.

The development proposal is to form a new basement storey below the footprint of the existing building, including light wells to the front and the sides. The proposal also includes a light well to the rear.

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 - 3. 50m below ground level, site investigation has shown minor water seepage at -8.20m 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. The site is within the Golders Hill chain.

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, new lightwells are formed replacing 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. The nearest pond is the Leg Of Mutton in Golders Hill Park, 825m away in a direct line. The site ordnance datum is above this pond.

#### Figure 2. Slope Stability Screening Flow Chart.



Q1. Does the existing site include slopes natural or manmade greater than  $7^{\circ}$  **NO**. Site does not include slopes greater than  $7^{\circ}$ .

Q2. Will the proposed re-profiling of the landscaping at site change slopes at the boundary to more than  $7^{\circ}$ 

NO. There are no re-profiling works.

*Q3. Does the development neighbour land have slopes greater than*  $7^{\circ}$ . **NO.** Neighbouring land does not contain slopes greater than  $7^{\circ}$ .

*Q4.* Is the site within a wider hillside with general slopes greater than  $7^{\circ}$ . **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.** No trees will be felled and works do not conflict with root zones.

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.

**Yes**. Site has a boundary at its front with Kidderpore Gardens, construction of the front light well at the front bay will be within 2.0m of the public highway. As described in the design philosophy the structural elements at subterranean level will be designed to accommodate the loading from the public highway.

Q.13 Will the proposed basement significantly increase the differential depth of foundations to the relative properties.

**YES**. To the attached property at their party wall juncture.

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?* **YES.** Camden Planning Guidance on page 29 lists Kidderpore Gardens being flooded in 1975.

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

#### Figure 2.

Q12 Is the site within 5m of a highway or pedestrian Way.

**YES**. Kidderpore Gardens footpath is within 2.0m of the proposed front light well. As described in the Design Philosophy the structural elements at subterranean level will be designed to accommodate the loading from the Public Highway.

'The structural element design and stability of the walls and base to the front light well will be made to accommodate a surcharge load of 10KN/m<sup>2</sup> or wheel load of 40KN which ever gives the most onerous loading.

Design of final structure and temporary elements within the method of construction will be made to minimise ground movement laterally, refer to method statement for construction.

Q.13 Will the proposed basement significantly increase the differential depth of foundations to the relative properties.

YES

'The construction of the basement below no 21 will require underpinning of the party wall shared between no 21 and no 19, these foundations will be some 2 to 2.5m below the existing foundations.

The borehole investigation has shown the site to be overlain with 1.7m depth of made ground then the firm silty clay of the Claygate beds, the investigation lists the Claygate beds as medium shrinkage potential. It is probable that the existing foundations are formed into the Clay, i.e. at least 1.70m below ground level which is below the effective depth where seasonal variation can occur within the ground. It is unlikely therefore those seasonal variations within the soils will differentially affect the varying level of foundations. Prior to works commencing the existing fabric of 21 and the adjoining buildings will be made to identify and record any existing cracks or movement. Monitoring points will be fixed at third points along the party wall, these levelled horizontally and vertically, these would be checked weekly to monitor movement of the party wall.



Differential movements between the underpinned foundations and those on the adjoining property will be minimised and controlled through careful structural design and controlled construction. The new and existing foundations will be founded upon similar material, i.e. the Claygate beds. Structural design will be made adopting lower than normally acceptable bearing pressures at formation level these to control settlement movements, or pressures that imitate the existing bearing pressures below the existing foundations. The method statement and construction sequence is added below for information.'

Figure 3. Surface Flow and Flooding Scoping Flowchart.

*Q6. Is the site in an area known to be at risk of flooding?* **YES**. Camden Planning Guidance on page 29 lists Kidderpore Gardens as being flooded in *1975.* 

'This occurred 37 years ago due to surcharge of existing drains during a storm and it is assumed that drainage improvements have been made to improve the situation. No 21 in the highest part of Kidderpore Gardens, the ground floor F.F.L. is some 650mm above road channel level and as such any surcharge flooding to the road will travel away down the road and not have detrimental effect on the basement. The basement will be protected from water / moisture by an internal cavity drainage layer, ( DELTA SYTEM), gravity drainage will not effectively be linked to the basement therefore the external drainage system will not be able to surcharge the new basement.

It should be noted that this is not a self contained apartment.'

### 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 been completed. Site conditions are known to be made ground over the Claygate Beds over laying the London Clay. Water seepage was noted at 8.20m below ground level.

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

<u>Attribute</u>	<u>Change from</u> <u>baseline</u>	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 lightwell area replace existing areas of hard standing.
Structural to own property	Nil	The existing foundations will be reformed down onto the stiffer clays. No structural work is being undertaken to the existing main house.
Structural to neighbouring properties / highway	Nil / improve	'The construction of the basement below no 21 will require underpinning of the party wall shared between no 21 and no 19, these foundations will be some 2 to 2.5m below the existing foundations. The borehole investigation has shown the site to be overlain with 1.7m depth of made ground then the firm silty clay of the Claygate beds, the investigation lists the Claygate beds as medium shrinkage potential. It is probable that the existing foundations are formed into the Clay, i.e. at least 1.70m below ground level which is below the effective depth where seasonal variation can occur within the ground. It is unlikely therefore those seasonal variations within the soils will differentially affect the varying level of foundations.

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

## STRUCTURAL DESIGN PHILOSOPHY

### 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<sup>2</sup>. The party wall bounding will have a surcharge load of 5.00KN/m<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup>.
- 3. Other external will be designed with a surcharge load of 10.00 KN/m<sup>2</sup>.
- 4. The design adopts a water head behind the wall to <sup>3</sup>/<sub>4</sub> the height of the wall below ground in accordance with BS 8102.

5. Front vault areas will be designed for a surcharge of 10 KN/m<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup>.

Existing brickwork assumes 7N bricks in a lime mortar, CP.111 gives basic compressive stress for this makeup of 0.45N/mm<sup>2</sup>, and therefore allowable bearing stress will be 0.45N/mm<sup>2</sup>. 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. 8002 Code of Practise for Retaining Walls



- 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.
- I) 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 Kidderpore Gardens, 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 Kidderpore Gardens
- 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. The light well to the front of the property will be constructed first to give access to the remainder of the works. The light well will be constructed by initially forming the upper part of the wall. Excavation will be made to form this part of the wall in the ground approximately 1.0 to 1.5 m deep. Once cured this wall will then be underpinned in the usual sequence to form the remainder of the wall and its base. Once formed the light well will be backfilled but leaving enough space to allow access subsequent works under the property.
- 8. Construction under the property will commence by forming a heading tunnel, approx 1.50m deep, below the lower ground floor, propping the existing concrete floor as the tunnel extends. Side tunnels will be formed to access the underpinning points. Priority will be given to pins or bases that will eventually support the structural steel supporting the existing lower ground floor slab. This steel work will be placed as the area below the floor is opened by the works.
- 9. Underpins will be carried out in the usual 1, 4, 2, 5, 3 underpinning sequence, the construction sequence for forming the pin is shown on the attached sketch drawing. Backfilling of the excavation will be made after each pin has been formed.
- 10. On completion of all underpinning and fixing of the structural steelwork supporting the lower ground floor, cross propping of the pin walls will be erected to allow release of the local pins that may be propped against the central dumpling so the basement slab can be constructed. The propping will be designed to suit the lateral loads behind the walls but generally takes the form of a series of horizontal slimshor props adequately laced and braced set approximately 1.5m from lower ground floor level.
- 11. Bulk excavation will be carried out down to basement slab formation level. Muck will continue to be removed from site via the conveyor belt.
- 12. 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.
- 13. The basement slab (ground bearing slab) will then be constructed.
- 14. After the new basement slabs have cured, the cross propping will be removed.
- 15. A drained cavity layer will be laid to the slabs and walls.
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- 16. The basement slab (ground bearing slab) will then be constructed.
- 17. After the new basement slabs have cured, the cross propping will be removed.
- 18. 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

