Project No. 1587	Revision [B]: July 2017

27 Gladys Road

Basement Impact Assessment & Structural Method Statement

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1. INTRODUCTION

Constructure Ltd were appointed in February 2017 for structural advice on the proposed refurbishment and extension of 27 Gladys Road. This Basement Impact Assessment report has been produced to accompany the Planning Application submission by Shake The Sky, describing the scope and nature of the structural works. It details the outline approach that will be taken to safeguard the integrity of adjacent buildings, highways and services, in particular with the construction of the proposed lower ground floor structures.

Local ground conditions have been assessed with targeted site investigations, scoped to ensure site conditions are known. This assists to reliably inform the structural design and construction sequence. This has been conducted to support the assessment of the lower ground floor extension works.

Please refer to the appendix for a list of structural engineering drawings which support this report and show the shell and core works in detail.

1.1 THE EXISTING PROPERTY

Situated within the residential area of West Hampstead, the property is of 19th century origin, a mid terrace house used as a single dwelling unit. The lower ground floor is level with the rear garden but is below the road level, and the space beneath the front ground floor room is currently a generous cellar. There exists a walled, predominantly paved, forecourt between the house and public highway.

Constructure conducted a site walk-over, and inspected foundation trial pits investigations, on the afternoon of 7th March 2017, in fair and clear conditions. The findings of the trial pits are presented on SK201 and 202, and the details of their findings also noted in Section 4.

The building was obscured to be in an empty unoccupied condition, and exhibited no signs of ill-founding or dilapidation. It was possible to judge therefore that the property has been well maintained during its lifetime, and that no progressive of recent structural damage was evident.

The neighbouring buildings to the north and south are of the same type and were constructed at the same time. As the terrace tends downhill towards the south, the terrace steps at alternate party walls, with pairs of terraces having the same floor levels. 27 Gladys Road is paired at the same level as 29 Gladys Road to the north, whilst 25 Gladys Road, adjoining to the south, is measured as being some 525mm lower. Neither adjoining neighbours have basement extensions. 29 Gladys Road, to the north side, has a front light well built between 10 and 20 years ago, apparently in solid masonry. 25 Gladys Road to the south has no front lightwell.

Currently the forecourt to 27 Gladys Road is as originally built, generally on the same level as the highway footpath. The highway footpath is some 2m wide, and is clearly not underlain by vaults.

1.2 THE PROPOSED WORKS

It is proposed to construct a new single storey front lightwell/terrace leading off from the current cellar. The cellar floor is to be lowered to afford suitable headroom to enable the room to be used as habitable accommodation.

The existing habitable lower ground floor aft of the cellar is also to be excavated to improve the headroom and comfort for the occupiers. This will result in a general reduction in lower ground floor level of some 800mm.

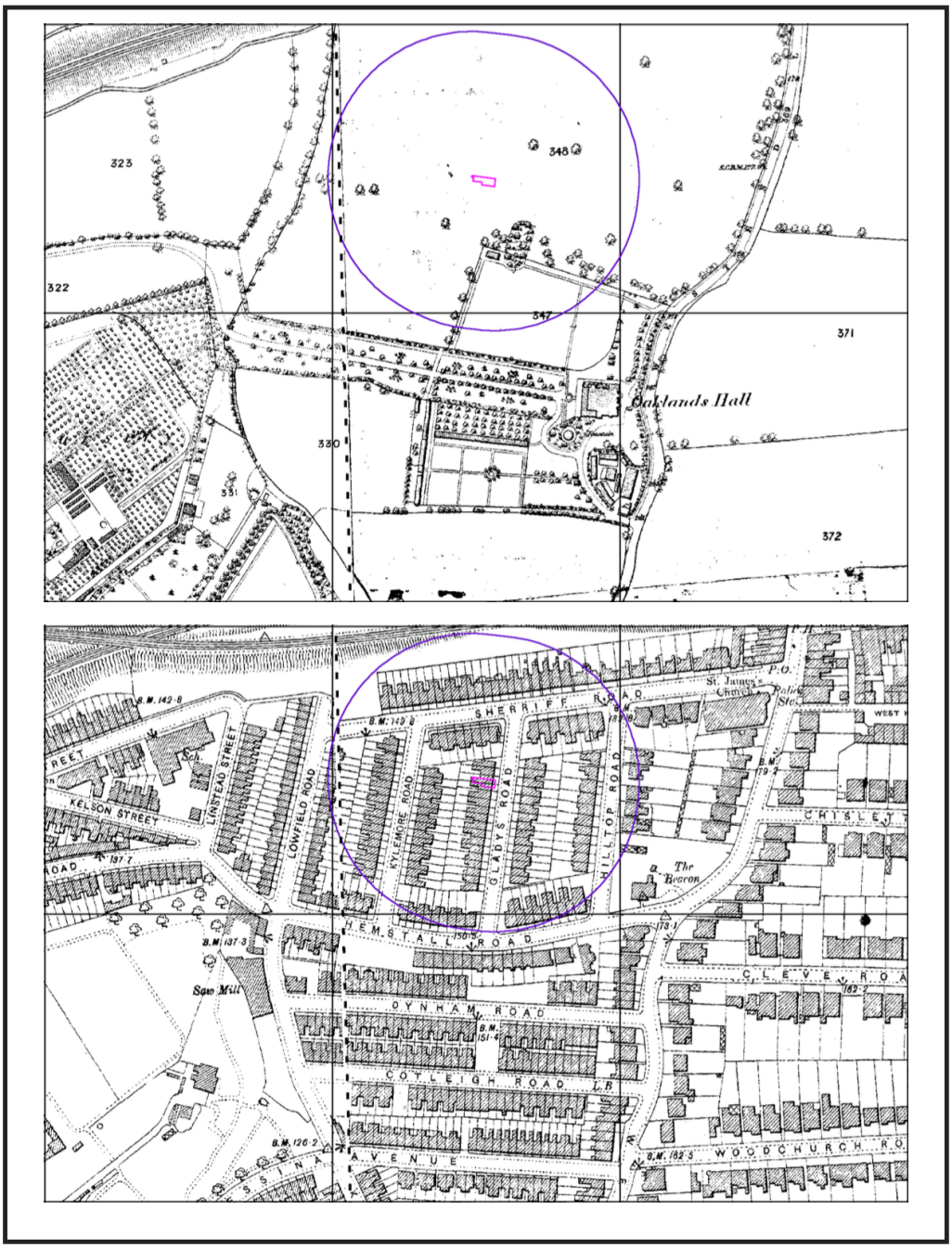
To the rear, the existing closet wing is to be demolished and a larger extension constructed, to occupy the footprint of the existing, plus the surrounding drained hard-paved rear external courtyard.

2. DESK STUDY

2.1 SITE HISTORY

Along with conducting a site walk-over to inspect the general site conditions and setting, a historic site usage search has been conducted.

Between 1871 and 1879, maps show that the site and surrounding pre-developed area between the Euston rail line 75 metres to the north, and Oaklands Hall (built 1829) some 75 metres to the south, was open country, probably arable land [upper map, Figure 1]



[FIGURE 1] HISTORIC MAP SHOWING POSITION OF SITE UPON UNDEVELOPED LAND IN 1871, AND DEVELOPED REGION IN 1896

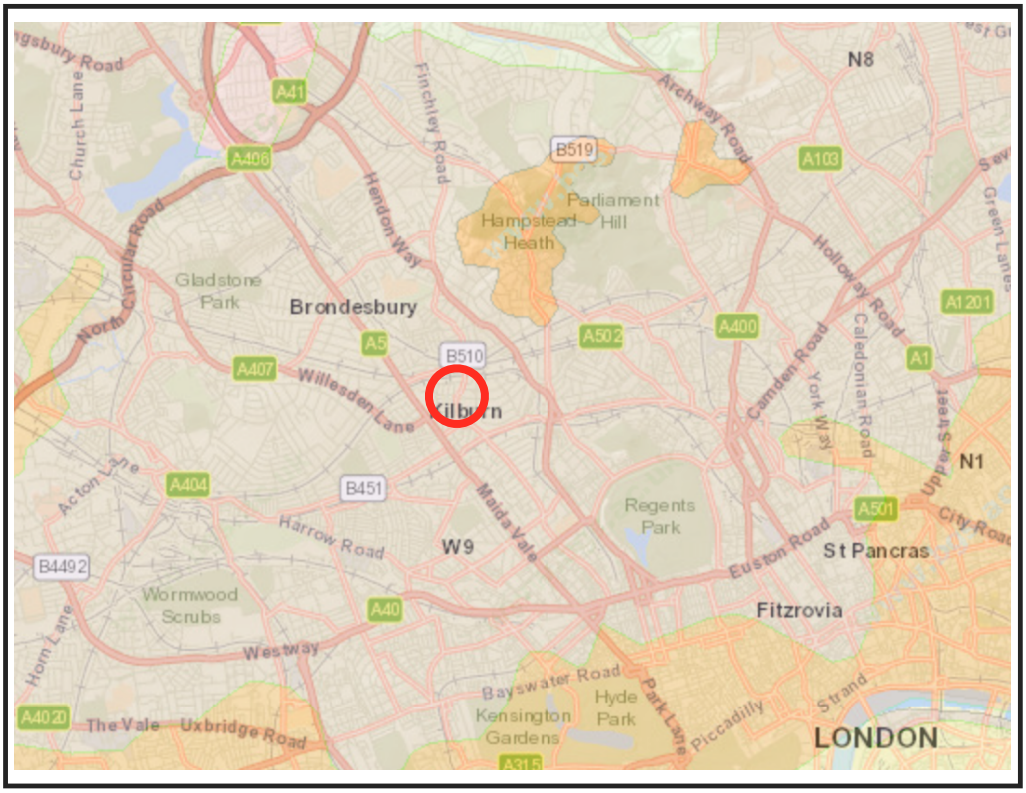
The lower map of Figure 1, published in 1896, shows this open land to have been fully developed as a grid of streets and rows of terraced houses. Research showed this development to have been carried out very soon after Oaklands Hall was sold in 1878, the first houses built upon this property in 1883.

It is therefore apparent that the land upon which 27 Gladys Road was constructed in circa 1890 was undeveloped until that time, and considered therefore that the historic land use presents no concerns of contamination risk.

The map additionally appears to indicate that the natural course of the Westbourne river tributary stream is just over 50m away to the west, suggesting that the conduit is likely to be two streets to the west, under Lowfield Road.

2.2 LOCAL GEOLOGY AND HYDROLOGY

From geological maps for the area [Figure 2], the ground conditions (which have been confirmed through targeted site investigations in the form of trial pits, and a site investigation borehole) are known to comprise Made Ground onto Clayey Sands, onto London Clay, known from BGS records to extend some 30-45m below ground level.

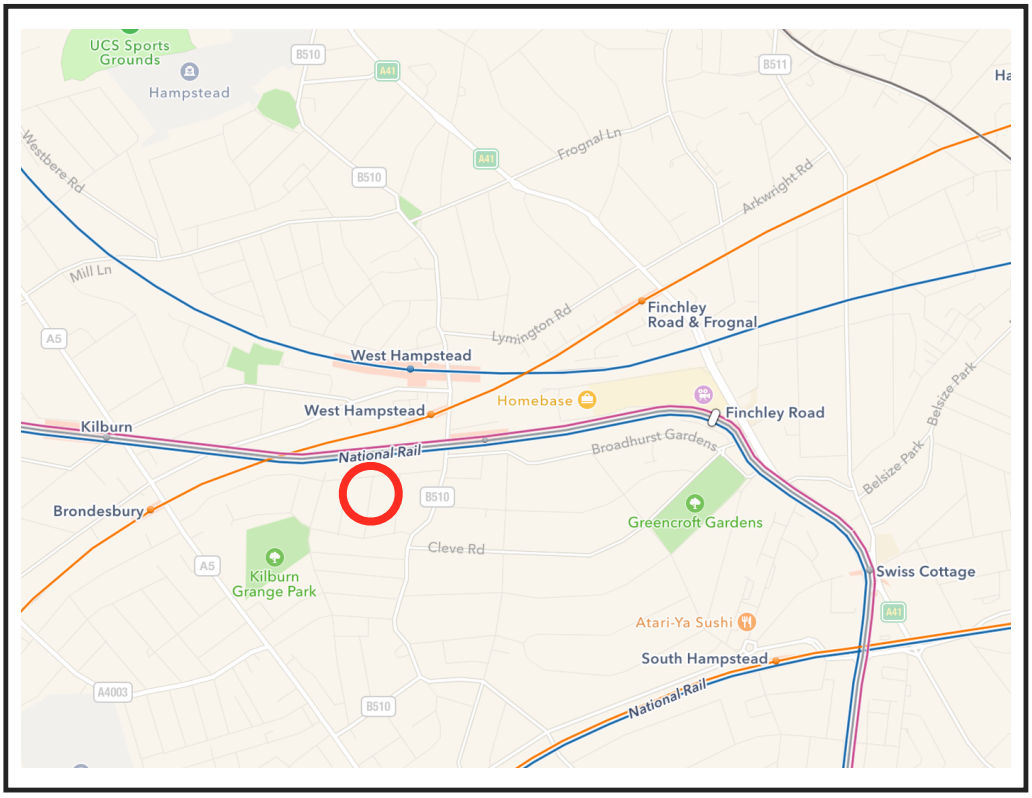


[FIGURE 2] LOCAL GEOLOGICAL MAP

2.3 LONDON UNDERGROUND AND RAILWAY LINES

From the map with underground lines overlaid [Figure 3] it can be seen that the site is sufficiently far from London Underground infrastructure, with the closest line being

approximately 150m away from the site boundary to the north. Therefore no consultation with the London Underground or TfL Asset Protection team is considered to be necessary.



[FIGURE 3] LOCAL TRANSPORT TUNNELS

2.4 FLOOD RISK

With reference to the Environment Agency's Flood Risk map, and the Camden Flood Risk Management Strategy, it can be seen that the site lies outside any flood risk zones. The site is on higher ground than the areas that historically experienced flooding most recently in 1975. As such, a Flood Risk Assessment is not deemed required. Refer to section 5.1.

2.5 EXISTING UTILITIES AND UNDERGROUND SERVICES

Existing services including sewers and drainage runs will be identified prior to commencing the works. The proposed new drainage is anticipated to be connectable to the existing outfalls to the public system.

2.6 NEIGHBOURING PROPERTIES

27 Gladys Road is a mid-terrace property. Several properties along the terrace have conducted front light well excavations, and a similar such recent alteration was conducted to 29 Gladys Road. It is understood that no other recent substructures have been formed to either of the adjoining no.25 or 29 Gladys Road. This is ratified by the trial pits to the party walls which showed no existing underpinning.

3. STAGES 1 & 2: SCREENING AND SCOPING ASSESSMENTS

Camden Planning Guidance CPG4 sets out the assessment requirements, the initial stages being a screening and scoping assessment, the checklists for which are addressed below. These inform the further desk study in subsequent sections.

3.1 STAGE 1: SCREENING

SCREENING CHECKLIST: SUBTERRANEAN GROUNDWATER FLOW			
CONSIDERATION		RESPONSE	JUSTIFICATION
1A	Is the site located directly above an aquifer?	NO	BGS records indicate non water bearing London Clays to significant depths at least 30m below the ground level
1B	Will the proposed basement extend beneath the water table surface?	NO	London Clay is not water-bearing. Trial pit and borehole investigations to depth beneath proposed excavation indicates no encountered ground water
2	Is the site within 100m of a watercourse, well (disused/ used), or potential spring line?	YES	A tributary to the Westbourne River has been historically culverted to the west side of the property, some 50m west
3	Is the site within the catchment of the pond chains on Hampstead Heath?	NO	The property is located topographically down-stream of the pond chain
4	Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	NO	The works outside of the building footprint (the front light well and the rear extension) do not add further drained hard areas. The light well will feature drained planters to the equivalent area of the existing front planted beds
5	As part of the site drainage, will more surface water (eg rainwater and run-off) than at present be discharged to the ground (eg via soakaways and/or SUDS)?	NO	As per the above, no material additional hard paved areas are proposed. The site underlain with London Clay means that the drainage required to continue to be connected to the public sewer system

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 man water level in any local pond (not just the pond chains on Hampstead Heath) or spring line?	NO	The excavations proposed are less than a metre lower than the existing lower ground floor level, and will be similar therefore to original floor levels to the adjacent property but one to the south. No groundwater encountered in the trial pits or borehole

SCREENING CHECKLIST: SLOPE STABILITY			
CONSIDERATION		RESPONSE	JUSTIFICATION
1	Does the existing site include slopes, natural or man-made, greater than 7°, or 1 in 8?	NO	Longitudinal fall (front to rear) is 2m over 20m (1/10) Transversely this is seen to be 0.5m over 5.5m (1/11)
2	Will the proposed re-profiling of the landscaping at site change slopes at the boundary to more than 7°, or 1 in 8?	NO	Change in floor level will be at the north and south boundaries and be retained by party wall/ boundary wall retaining underpins
3	Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°, or 1 in 8?	NO	The neighbouring land across the boundary follows the natural topography of between 0° and 7° (where Q2 does not apply)
4	Is the site within a wider hillside setting in which the slope is greater than 7°, or 1 in 8?	NO	Natural slope is seen to be between 0 and 7° in accordance with slope angle map. Local man-mad slope exceeding 10°, due to railway cutting, is more than 150m to the north
5	Is the london clay the shallowest stratum at the site?	YES	Verified by trial pit and borehole
6	Will any trees be felled as part of the proposed development, and/or any works proposed within tree protection zones where trees are to be retained?	NO	
7	Is there a history of seasonal shrink/swell subsidence in the local area, and/or evidence of such effects at the site?	NO	Not apparent to existing and neighbouring properties. The upper stratum of soil is a sandy clay meaning typically less susceptible

8	Is the site within 100m of a watercourse?	YES	Culverted tributary to the Westbourne to the west (down slope) of the property
9	Is the site within an area of previously worked ground?	NO	A small amount of overlying fill indicating rationalising and terracing of the land longitudinally and transversely across the property
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 the construction?	NO	BGS records indicate non water bearing London Clays to significant depths at least 30m below the ground level
11	Is the site within 50m of the Hampstead Heath ponds?	NO	Ponds are some 2000+m away
12	Is the site within 5m of a highway or pedestrian right of way?	YES	The lightwell to extend to the eastern boundary with the pedestrian footpath to the highway
13	Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	NO	The excavations proposed are all less than a metre beneath the existing floor level
14	Is the site over (or within exclusion zone of) any tunnels e.g. railway lines?	NO	Railways are overground and 150m to the north, including the Jubilee Line, set into a cutting

SCREENING CHECKLIST: SURFACE FLOW AND FLOODING IMPACT IDENTIFICATION			
CONSIDERATION		RESPONSE	JUSTIFICATION
1	Is the site in the catchment of the pond chains in Hampstead Heath	NO	The property is located topographically down-stream of the pond chain
2	As part of the proposed site drainage, will surface water flows (eg volume of rainfall and peak run-off) be materially changed from the existing route?	NO	The existing drainage routes and rainwater catchment will be unchanged

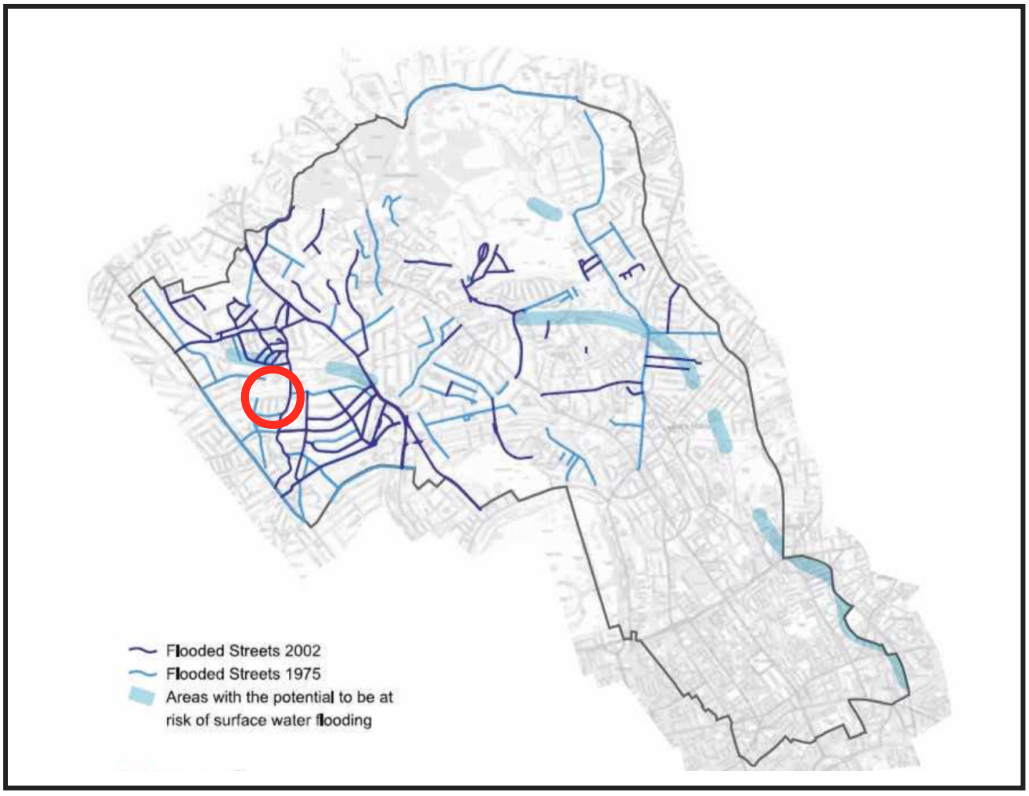
3	Will the proposed basement development result in a change in the proportion of hard surfaced/paved external areas?	NO	The works outside of the building footprint (the front light well and the rear extension) do not add further drained hard areas. The light well will feature drained planters to the equivalent area of the existing front planted beds
4	Will the proposed basement result in changes to the profile of the inflows (instantaneous and long term) of the surface water being received by adjacent properties or downstream watercourses?	NO	The rear extension and front light well will neither increase or decrease the natural surface water flows
5	Will the proposed basement development result in changes to the quality of of surface water being received by adjacent properties or downstream watercourses?	NO	All hard paved areas will discharge run-off to existing sewers as currently

3.2 STAGE 2: SCOPING

The screening assessment identifies the following matters, which are required to be studied and justified or discussed further.

- The site is within 100m of a watercourse (the culverted tributary to the buried Westbourne river to the west): how do the proposed works affect this?
- Stiff sandy clay is the shallowest stratum on the site (the excavations would occur within this clay stratum): What are the geotechnical implications?
- The site and proposed works occur within 5m of the public highway (the front light well to occupy the front garden): What are the constructional implications?

These aspects are considered further in Stage 4 (see section 5.) and elaborated upon in section 6. (detailed design considerations)



[FIGURE 4] CAMDEN FLOODING MAP

4. STAGE 3: SITE INVESTIGATION

A trial pit investigation was carried out in January 2017, and a borehole subsequently conducted in May 2017. The findings of the trial pits are shown on drawings SK-201 and 202. Under the floor slab, a thin layer of made ground was penetrated to find brick corbel foundations upon a thin layer of well bound trench rubble, upon the bearing substratum of sandy clay.

The borehole was conducted in the front garden, which was found to be of a mix of made ground and re-worked firm clays.

4.1 CONTAMINATION TESTING

The desk study was able to demonstrate that the historic land use should not have led to concerns about contamination to the soils. Nevertheless, contamination testing is to be carried out by the contractor during the excavation works to allow WAC classification for disposal.

4.2 GROUNDWATER

The trial pits and borehole were found to be dry upon completion. The trial pits were left open during 8 weeks over the winter months, and reinspected such to find no groundwater inundation. This confirms that groundwater is not considered to affect the proposed works.

5. STAGE 4: IMPACT ASSESSMENT

5.1 SURFACE FLOW AND FLOODING IMPACT

With reference to the Environment Agency's Flood Risk map, it can be seen that the site lies outside any flood risk zones. The site is on higher ground than the areas that historically experienced flooding most recently in 1975, as is indicated on the map below, [Figure 4]. As such, no detailed Flood Risk Assessment is deemed required.

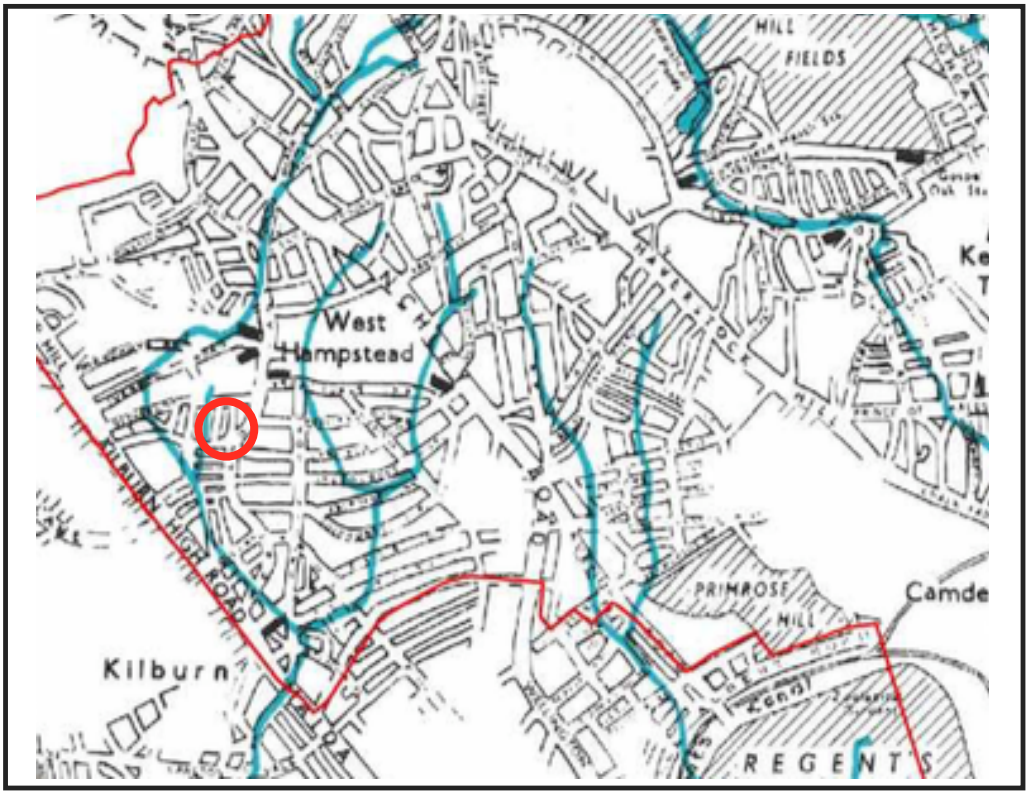
The hard-standing and roof areas combined do not materially increase in the proposed scheme, and so the outflows into the public sewer system from the site due to surface waters will be comparable to the existing site.

5.2 SUBTERRANEAN GROUNDWATER FLOW IMPACT

The existing subsoils are of London Clay. The trial pit investigation showed a nominal build-up of made ground underlain by a sandy clay, upon which the original foundations are situated. No ground water was encountered.

The local natural watercourse has been historically culverted (as identified in the historic mapping study (ref section 2.1 and figure 1, along with figure 5, below), and is a suitable distance away to not be impacted by the proposed excavations, which are not deeper than the original rear wall to the house, itself being located between the site of the culvert and the proposed light well extension and nominal floor reduction.

Because the property has structural foundations already extending to the depth of the proposed excavations, including a cellar and lower ground floor, the penetration of the building structures will not be increased in depth by the proposed development. The proposed extensions also have a negligible volumetric impact upon the subsoils. The clay subsoils are relatively impermeable, and so any lateral ground water flows would be minimal. As such, the proposed extension is deemed to have no significant effect on the local hydrogeology.



[FIGURE 5] LOCAL WATERCOURSES

5.3 PUBLIC HIGHWAY BOUNDARY PROXIMITY IMPACT

The implications of this matter are related to the design and construction of suitable retaining structures. This is therefore discussed and addressed in section 6, which details the considerations of how the structures will be built against the existing boundaries, and section 7, which addresses the works sequence.

5.4 STABILITY OF EXCAVATIONS

Excavations in made ground are more likely to be unstable and so may require temporary support.

Excavations within the firm sandy clay are expected to be stable in the short term.

The excavation of the front light well will exceed 1.2m, therefore temporary restraint to the excavations will be necessary for safety compliance. Although there appears to be an element of reworked sandy silty clay material, likely representing original natural superficial deposits, these were found to be firm and well bound, and so considered locally stable in and temporary condition. However it would appear likely the pockets of made ground may be less stable, and so temporary restraint to the deeper excavations to the light well will also be required for this reason.

For the underpin excavations under the body of the existing house, the predominant excavation will be into the firm clayey soils which have inherent local temporary stability. The trial pits showed the thin layer of made ground and the foundation trench rubble to be stable. No foundation excavation trenches are significantly in excess of 1.2m

and so underpin excavations are expected to be stable and self-supporting in the temporary condition.

5.5 STABILITY OF NEIGHBOURING PROPERTY

5.5.1 UNDERPINNING

Neighbouring building stability is to be assured by proper sequencing of the shallow underpins to the main house, which is within the sandy clay soil.

The proposed underpinning is shallow, being of some 900mm below the current north party wall and front and rear walls, and 400mm below the deeper footing on the south party wall. It is reasonably judged that only a very minor increase in load due to the concrete in place of the soil will be experienced, and with the slightly increased bearing area, the difference in ground bearing pressure is zero to negligible. The subsoils were seen to be sandy clays which are considered to have a very low potential for shrinkage, and of a bearing greater capacity than seen to be applied. The soils at the proposed bearing level have been subjected to the existing building loadings for an extended period of over a century. In consideration of these factors, the risk of settlement of the underpins themselves, as a result of vertically applied ground bearing load, is considered to be negligible, and therefore of no considerable consequence particularly in view of the greater influence presented by the lower ground floor excavation itself.

5.5.2 GROUND MOVEMENT ANALYSIS

The proposed excavation of the lower ground floor will remove a depth of some 1.1m of soil. The front light well excavation proposed will remove a depth of some 3.3m.

A Ground Movement Analysis has been conducted, in line with CIRIA C580 to determine the movement response of the clay subsoils as a result of the proposed excavations. This has been calculated to determine an expected movement of the ground supporting neighbouring foundations, and correlated to a value on the Burland Scale.

Please refer to Appendix D for the calculations and output presented upon a plan of the site.

The following can be demonstrated:

- The light well excavation has an influence on the movement of the ground it is retaining, which amounts to the public footpath and the front garden to the south. It is notable that this excavation goes deeper than the foundations to the north and the south properties by only the same amount as the lower ground floor excavation. Therefore, to the outer sides of the light well the movements experienced would not influence the foundations of the adjoining properties.
- The lower ground floor excavation has a reach of influence no more than 4.5m away, and across the adjoining building structures a Burland Scale of Category 1 (‘very slight’) can be demonstrated by calculation.

It is notable that these calculations are conservative, as the properties assumed are of a clay without sandy content as found at this site. The anticipated movements therefore are expected to be less still.

The site investigation report states that laboratory testing identified that there is a negligible risk of clay heave, and so precautions against ground movement as a result of the excavation are considered to not be necessary.

Constructure has direct experience of underpinning and lower ground floor and light well excavation of the same scale to 21 Gladys Road in 2015, and can confirm that negligible movement was measurable and no damage to 19 nor 23 Gladys Road incurred.

6. DETAILED PROPOSALS AND DESIGN CONSIDERATIONS

6.1 CONVERSION OF CELLAR TO ACCOMMODATION

The protection of the neighbouring properties and boundary structures has been carefully considered, such to ensure that during the works, the boundary and neighbouring structures are protected from ground movement. The techniques proposed therefore are designed to conform with this.

6.1.1 UNDERPINNING

Under the house, the side walls on the boundary lines will be underpinned in 1.0m bays to approximately 1m of depth. Underpinning will be sequenced as shown on the plans, to avoid excavating immediately adjacent freshly curing concrete. The underpinning will be pinned-up with compacted dry pack mortar.

6.1.2 FLOOR SLAB

It is proposed to create a suspended reinforced concrete slab, in order to avoid a need to form a hardcore sub base, thus reducing excavation depths. This would be achieved by installing a ClayBoard void-former, which would be designed to degrade after concrete curing, such to create a sub-floor void.

6.1.3 HEAVE PROTECTION

The nature of the sandy clay soil is such that heave under the shallow excavation will not be of significance. As such, no allowance is considered necessary to be made for a heave mat. However, the formation of a suspended slab with nominal sub-floor void is considered to be ample precaution against minor effects of changes in ground loading condition.

6.1.4 WATER PRESSURE AND CONTROL

No groundwater was evident that would impose load to the new floor slab. Investigations suggest that in the temporary as well as the permanent condition, no groundwater is likely to be encountered. As such dewatering is not likely to be needed.

6.2 FRONT LIGHTWELL EXTENSION

6.2.1 RETAINING WALLS

The forecourt will be excavated to meet the level of the new lower ground floor level, and the boundary to the south, north, and to the east, will be retained using a new reinforced concrete cantilever retaining wall.

6.2.2 HIGHWAYS

The front of the property is adjacent to the public highway. The surcharge used in the design is based on the Highways Agency Design Manual for Roads and Bridges Volume 1, Section 3, Part 14. Values of HB loading of 12.0kN/m2 or HA loading of 10.0kN/m2 are to be considered. The proposed front retaining wall will therefore be designed to resist these forces. A calculation for this wall is appended to this report.

6.3 PARTY WALLS

The proposed development falls within the scope of the Party Wall Act 1996. Procedures under the Act will be dealt with in full by the Employer's Party Wall Surveyor. The Party Wall Surveyor will prepare and serve necessary notices under the provisions of the Act and agree Party Wall Awards in the event of disputes. The Contractor will be required to provide the Party Wall Surveyor with appropriate drawings, Method Statements and other relevant information covering the works that are notifiable under the Act. The resolution of matter under the Act and provision of the Party Wall Awards will protect the interests of all owners.

The scheme for 27 Gladys Road will be developed so as not to preclude or inhibit similar, or indeed any, works on the adjoining properties in the street. The Surveyors will verify this as part of the process under the Act.

6.4 DESIGN CODES

The following design codes will be followed during the detailed design stage:

The Building Regulations 2010 - Approved Document A

- BS 648 - Weights of building materials
- BS 5950:1 - Structural use of steelwork in building
- BS 5268 - Structural use of timber
- BS 5628-1:2005 - Code of practise for the use of masonry
- BS 6399:1 - Loadings for buildings (Dead and imposed loads)
- BS 6399:2 - Loadings for buildings (Wind loads)
- BS 8000:Section 2.2:1990 - Workmanship on building sites
- BS 8002 - Earth retaining structures
- BS 8004 - Foundations
- BS 8102 - Protection of structures against water from the ground
- BS 8110:1 - Structural use of Concrete

7. CONSTRUCTION METHODOLOGY

7.1 SEQUENCE OF WORKS

The outline construction sequence and temporary works assumed in the design and described in this report will be superseded by the Contractor's construction proposals. The Contractor will be required to provide full proposals, method statements and calculations

to the engineer prior to the commencement of any works on site and these will be considered in conjunction with the permanent structures and verified as suitable before the works are implemented.

The appointed contractor will be required to provide a detailed works sequence with their tender submission. An outline sequence of the substructures works is likely to be as follows:

- Secure site, erect hoardings, establish welfare facilities, and divert on-site services.
- Enabling works, demolition and stripping out works. Detailed sequence by specialist contractor. Remove debris and excavation arisings from site via the highway, in accordance with agreed management plan.
- Break out and remove existing lower ground floor
- Excavate underpins for perimeter wall adjoining the neighbouring properties and front wall in sequenced bays 1.0m wide. Cast mass concrete against soil to the rear and formwork to the front face with a “letterbox” at the top. Terminate concrete 75mm below the underside of the existing footing.
- 24 hours after casting concrete, ram dry-pack mortar onto the gap between pre-existing footing and new underpin.
- Continue until walls have been underpinned following standard timings for underpinning, ensuring no excavation is carried out until at least 48 hours after casting an adjacent underpin.
- Reduce level of soil internally
- Lay sand blinding
- Arrange reinforcement for slab then cast concrete slab
- Excavate forecourt providing shoring to preserve integrity of north, south and east boundaries
- Construct slab and retaining wall base
- Construct retaining walls, progressively, removing shoring as this progresses
- Once cured, remove temporary upper level props

7.2 MOVEMENT CONTROL

The techniques proposed are proven to produce minimal or negligible movement effects to the party walls, and the deflection of the retaining walls can be practically limited so as to avoid disturbance to the retained ground.

It has been demonstrated that the excavations made and the works being conducted using normal techniques it is practical to achieve a level of 1 [very slight damage] on the Burland Scale, such to limit any damage to ‘slight’.

A heave response, due to the relatively minor overburden relief, is not considered to represent a practical risk.

7.3 MONITORING OF ADJACENT STRUCTURES

It is proposed that the integrity of the adjacent properties is safeguarded by a system of movement monitoring. The Contractor shall appoint a specialist survey company to establish monitoring positions (targets) to key elements of the neighbouring buildings as deemed required.

The external facades and Party Walls will be monitored at these positions and the targets shall be firmly attached to allow 3D location measurement for the duration of the work, to a continuous and uninterrupted accuracy of +/- 1mm. Suitable remote reference bases unaffected by the works will be adopted.

Two series of baseline readings shall be taken before the work begins then readings shall be taken shortly after the start of excavation then at weekly intervals during the basement construction until the RC shell is complete and propped after which point the frequency will be reduced to then a final reading 6 months after completion.

All measurements will be plotted graphically, clearly indicating any movements over time. Results shall be submitted and circulated to all relevant parties including the appointed Party Wall Surveyors within 24 hours of being measured.

Trigger levels are to be as set out below. In the event of a 'red' value being reached the Contractor must immediately stop, make safe the works, notify the Party Wall Surveyors and only recommence when agreed by the appointed Surveyors.

Trigger Levels for movement:

Vertical movement of Party Walls (including garden walls):

Amber +/- 5mm	All parties notified
Red +/- 8mm	Work stopped and reviewed

Lateral movement of Party Walls (including garden walls):

Amber +/- 5mm	All parties notified
Red +/- 8mm	Work stopped and reviewed

Lateral or vertical movement of facades:

Amber +/- 5mm	All parties notified
Red +/- 8mm	Work stopped and reviewed

7.4 NOISE, DUST AND VIBRATION

All demolition and construction works will be carried out by a competent and qualified contractor, who will be required to accord with the Considerate Constructors Scheme, and take all necessary measures to minimise the short term disturbances in terms of noise, vibration and dust which might impact on the local environment and the neighbouring residents and businesses.

The following measures and actions will be implemented:

Noise – Neighbours will be notified in advance of noisy activity, in particular where these are on or near boundary structures. Where there is particular sensitivity, activity will be restricted to 09:00-17:00 Monday to Friday.

In all cases where possible, electrically operation tools will be used in preference to engine driven machinery.

The use of site radios will be considered carefully in terms of their locations and volume levels, and if any neighbour complaints are received, a firm prohibition of their use will be enforced.

Vibration – While the use or percussive, powered machinery upon hard construction materials in many situations will likely give rise to inevitable vibration, wherever possible and in accordance with CCS Code, unnecessary vibration will be avoided and mitigated. This will take the form of the careful planning and consideration of the hardness of the material being demolished, and the works planned and notified accordingly, and where considered particularly unavoidable, the 09:00-17:00 working hours principle be observed.

Dust – Most of the works will be internal and so can be relatively easily isolated from becoming airborne and dispersing to neighbours and the local environment. External activity shall be contained as best as possible using suitable hoardings and sheeting.

Materials stored externally would be covered or contained to avoid wind and weather disturbance to granular and particulate materials. Structural concrete will be typically mixed off-site and delivered, but where small quantities or mortar are to be site mixed, this can be done in an enclosed area to limit cement dust from becoming airborne.

Deliveries of materials shall be covered where potential for dust is prevalent. Waste skips and excavated soils are to be covered whenever practicable.

For activities that generate dust, surface wetting-down, and water misting will be used to suppress dusting. Rotary cutters will use water as a dust suppressant.

Housekeeping – Shared driveways, external pavements on the site and in front of, will be regular swept, and should vehicles or windows become soiled, the contractor shall arrange cleaning as the neighbour so desires.

8. TEMPORARY WORKS

Temporary works design and coordination is to be carried out by a suitably qualified and experienced specialist and full design details (drawings and calculations) will be submitted to the engineer for comment. This specialist will be appointed by the Contractor who will be responsible for the design, erection and maintenance of all temporary works to ensure the stability of the existing structure, excavations and adjacent structures at all times.

An indicative temporary works to forming the front light well would be typically as follows. The elements are shown indicatively on sketches SK01[A] and SK101[A]

1. Underpin the main house boundaries and the front facade first

2. Excavate the front forecourt in approx 1.2m drops. Conduct the first drop, installing trench sheeting against excavated soil face, driving trench sheets into floor of excavation by hand, to some 400mm embedment.

3. Install waling beam to head of trench sheets, and secure to facade, and connect securely at corners, to permit beams to span laterally.

4. Install waling beam at floor of excavation and secure similarly.

5. Progress to second excavation drop for further 1.2m, and repeat steps 2, 3, and 4. Ensure trench sheets are lapped at each waling restraint.

6. Repeat for third drop to formation level.

7. Install base slab, with starter bars.

8. Form RC retaining walls in approx 1.2m lifts, removing waling beams after each lift has cured sufficiently.

9. SUMMARY

Adjacent properties have undergone similar successful developments: to number 23 Gladys Road, a similar extension has been constructed in 2012, and to 21 Gladys Road in late 2014. The same construction techniques were applied, and to number 21 Gladys Road the structure was designed to successful effect by Constructure Ltd and the author of this report.

During construction, lateral and vertical stability of the building will be maintained by directly underpinning and temporarily propping, such that no significant adverse movement is expected.

Environmental impacts have been assessed, and the response to geotechnical and hydrological aspects have been considered. The proposals are deemed to not have any adverse impact in this respect.

Once complete, the new structure will provide a robust and secure support for both new and existing structure without detriment to the overall stability of the building or adjoining property.

None of the proposed superstructure alterations will fundamentally affect the integrity and stability of the original structures upon and adjacent the site. The front (eastern boundary) of the property is adjacent to the public highway of Gladys Road. The surcharge to be used in the detail design phase is based on the Highways Agency Design Manual for Roads and Bridges Volume 1, Section 3, Part 14. Values of HB loading of 12.0kN/m2 or HA loading of 10.0kN/m2 would be adopted accordingly. The proposed retaining structures in the vicinity of this highway will therefore be designed to accommodate these loads in addition to the loadings imposed by the ground.

Paul Longdin BEng CEng MIStructE
Director
for Constructure Ltd

APPENDICES.

APPENDIX A: DRAWINGS

1587_SK-01[A]: Lower Ground Floor Plan

1587_SK-02: Ground Floor Plan

1587_SK-101[A]: Longitudinal Section

1587_SK-102[A]: Boundary Underpinning Detail

1587_SK-201: Trial Pit Investigation Plan

1587_SK-202[A]: Trial Pit Logs

APPENDIX B: SITE INVESTIGATION REPORT

REF. K. F. GEOTECHNICAL REPORT G/051750/001

APPENDIX C: RETAINING WALL CALCULATION

APPENDIX D: GROUND MOVEMENT ANALYSIS CALCULATIONS AND OUTPUT