

BASEMENT IMPACT ASSESSMENT

PROPOSED BASEMENT

**65 GOLDHURST TERRACE
LONDON
NW6 3HB**

1.0 Introduction

In producing this Basement Impact Assessment (BIA), we have referred to and considered the following documentation:

- ❖ Camden Local Development Framework (LDF) Policy DP27 – Basements and Lightwells
- ❖ Camden Supplementary Planning Guidance – CPG4 (Basements and Lightwells)
- ❖ Camden Geological, Hydrogeological and Hydrological Study – Guidance for Subterranean Development Chapter 6
- ❖ Camden Map 22: Camden Flooding Map
- ❖ ‘The Lost Rivers of London’ Study and Map by Nicholas Barton

This document should also be read in conjunction with the following:

- ❖ Structural Engineering Design - MMP Design Ltd
- ❖ Construction Method Statement – Dig For Victory Ltd. (please also refer to the section relating to the likely temporary works regime to be employed)
- ❖ Hydro-geological and Flooding Risk report – Dig For Victory Ltd.
- ❖ Sustainability Report & Energy Statement – Dig For Victory Ltd.
- ❖ Screening and Scoping BIA – Stephen Buss
- ❖ Construction Traffic Management Plan – Dig For Victory Ltd.

2.0 Proposal

The proposal includes excavation to create a new basement storey at the above together with new lightwells to the front and rear elevations.

The proposals are consistent with numerous projects within the locality for which planning consents have already been granted, most notably that at 66A, 61A, 60, 146 and 101 Goldhurst Terrace.

3.0 Groundwater Flow

The attached Environment Agency map indicates that the application site is not located directly above an aquifer, although it is known to be in proximity to the Westbourne underground tributary.

The intrusive borehole report, carried out by Chelmer Site Investigations, demonstrates that the soil is dry to a minimum depth of 5 metres, which would indicate that the proposed 3.5m basement dig would not extend beneath the water table surface, indicating that dewatering will not be required as part of the on-site works.

The application site is outside of the flood plain, as demonstrated by the Flooding Risk report and environment agency assessment. The site is also outside of the Hampstead Heath Ponds catchment area and not within 100m of a watercourse, well or potential spring line. There will be no meaningful change in the proportion of hard surfaced/paved areas, neither will any more surface water than at present be discharged to the ground as a result of this development. Please see surface water run-off calculations for further information on this.

4.0 Land Stability

The general geology of the area is underlain by London Clay, as indicated in both the Structural Engineer's Calculations, with intrusive boreholes taken to a depth of 5 metres. The Structural Engineer's Design Philosophy, also demonstrates a safe method of constructing the basement level to ensure the structural stability of neighbouring buildings is not harmed, and the natural environment is safeguarded.

5.0 Surface Flow and Flooding

The Flood Risk Assessment, based on the criteria set out in PPS25, confirms that Goldhurst Terrace is designated on the Camden Flood Map 22 as a 1975 and 2002 flood street, however risk limitation measures are to be implemented which include that the additional space be used predominantly for recreational and ancillary use in line with Development Policy DP27; low level upstands around lightwells; surface water dual pumps to basement with high level alarm and battery back-up; and a Sustainable Urban Drainage System 'SUDS', will be implemented to hardstanding areas wherever possible.

6.0 Impacts to Neighbours

This document, and other supporting information, namely the Design & Access Statement; Contractors Method Statement; Structural Engineers Calculations and Flood Risk Assessment cover the three main issues referred to in Camden Planning Guidance (CPG4) 'Basements and Lightwells', to demonstrate that the cumulative impacts of this development to the build and natural environment and local amenity, including to the local water environment, ground conditions and biodiversity will be negligible.

7.0 Neighbour Amenity

The Contractors Method Statement clarifies the set-up process and method of construction to keep the disruption to neighbouring properties to an absolute minimum. A Construction Traffic Management Plan and Considerate Constructors Scheme standards will be adhered to and can be submitted as a condition to any Planning consent, as required.

8.0 Sustainable Construction

The Sustainability Statement describes how the use of sustainable materials will be considered and applied in the proposal together with measures to improve the energy efficiency of the development, where possible.

9.0 Planning and Design Considerations

All of the Design considerations set out in CPG 4 Planning Guidance - Section 2.52 have been considered and addressed within the supplementary information provided.

10.0 Size of Development

Externally, the alterations to the property are minimal and have been limited to the formation of 1 no new front lightwell with a railing and 1 no new rear lightwell protected with walkable/glazed grille, in order to protect and enhance the recognised architectural character of the buildings and surrounding areas. The property is a family dwelling and the additional space is predominantly for recreational and ancillary use and is

not intended to be 'habitable' such as a self-contained dwelling, as stated in Development Policy DP27 9Paragraph 27.6). As such the risk to life has been considerably reduced.

11.0 Conservation Area

The property falls within the Swiss Cottage Conservation area, and as such a Construction Traffic Management Plan and Considerate Constructors Scheme standards will be adhered to, as required. The property is not a Listed Building.

12.0 Basement walls, windows and doors

All windows to the new Basement will be subordinate in appearance to the main building, respect the original design and proportions of the building and the lightwell size indicated will retain a reasonable to generous sized garden. The new windows will line through with the existing openings above and match the same in style and proportion.

13.0 Trees and Landscape

The proposal includes excavation to enlarge the existing basement level directly beneath the existing building's footprint, and therefore complies with Policy DP27 of the Camden LDF in terms of sustaining plant and tree growth; although an Arboricultural statement is not required for this application as there are no nearby trees which will be affected by the works.

There are no requirements for additional external landscaping which means that the existing surface water run-off will remain unaffected.

14.0 Lightwells

The new front and rear lightwells are designed to be of modest size and finished flush with railings and grilles/glazing respectively to ground level, so as to be discreet and not harm the architectural character of the building or street scene, whilst addressing a safety issue to the front stairwell, where there is no present protection from falls due to the low height of the existing parapet wall.

15.0 Railings and grilles

The new front railings are required to protect members of the public from falls from height as the existing upstand walls around the existing front stairwell are in contravention of building regulations in this respect. In order to protect and enhance the recognised architectural character of the buildings and surrounding areas, we aim to install a simple traditional railing or frameless glazed balustrading, the approval of which by the Planning Department can be included as a condition to any Planning consent, as required.

16.0 Summary

This document, and attached supporting information, namely the Design & Access Statement; Contractors Method Statement; Structural Engineers Design; Sustainability Statement; Hydrology report and Flood Risk Assessment cover the three main issues referred to in Camden Planning Guidance (CPG4) 'Basements and Lightwells', to demonstrate that the cumulative impacts of this development to the built and natural environment and local amenity, including to the local water environment, ground conditions and biodiversity will be negligible.

Prepared by **Dig For Victory Limited** – 20 Mortlake High Street, London, SW14 8JN

Dated **07 October 2014**

For **Mr & Mrs Mays-Smith**

65 Goldhurst Terrace: screening and scoping basement impact assessment

Version control log

Document number	Issued by	Issued to	Comments
2014-019-002-002	SBEC	Client	Final
2014-019-002-001	SBEC	Client	First draft

DISCLAIMER

This report has been prepared by Stephen Buss Environmental Consulting Ltd (SBEC) in its professional capacity as hydrogeologist, in a manner consistent with the level of care and skill ordinarily exercised by members of the geological and engineering professions practising at this time, within the agreed scope and terms of contract, and taking account of the manpower and resources devoted to it by agreement with its client.

The advice and opinions in this report should be read and relied on only in the context of the report as a whole. As with any environmental appraisal or investigation, the conclusions and observations are based on limited data. The risk of undiscovered environmental impairment of the property cannot be ruled out. SBEC cannot therefore warrant the actual conditions at the site and advice given is limited to those conditions for which information is held by SBEC at the time. The findings are based on the information made available to SBEC at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology and practices as at that time.

This report is provided to the client addressed above. Should the client wish to release this report to any other third party for that party's reliance, SBEC accepts no responsibility to any third party to whom this report or any part thereof is made known. SBEC accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual or otherwise, against SBEC except as expressly agreed with SBEC in writing.

The findings do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

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1. Introduction

1.1 Background

This report presents the outcome of a basement impact assessment for the proposed development of 65 Goldhurst Terrace, London, NW6 3HB

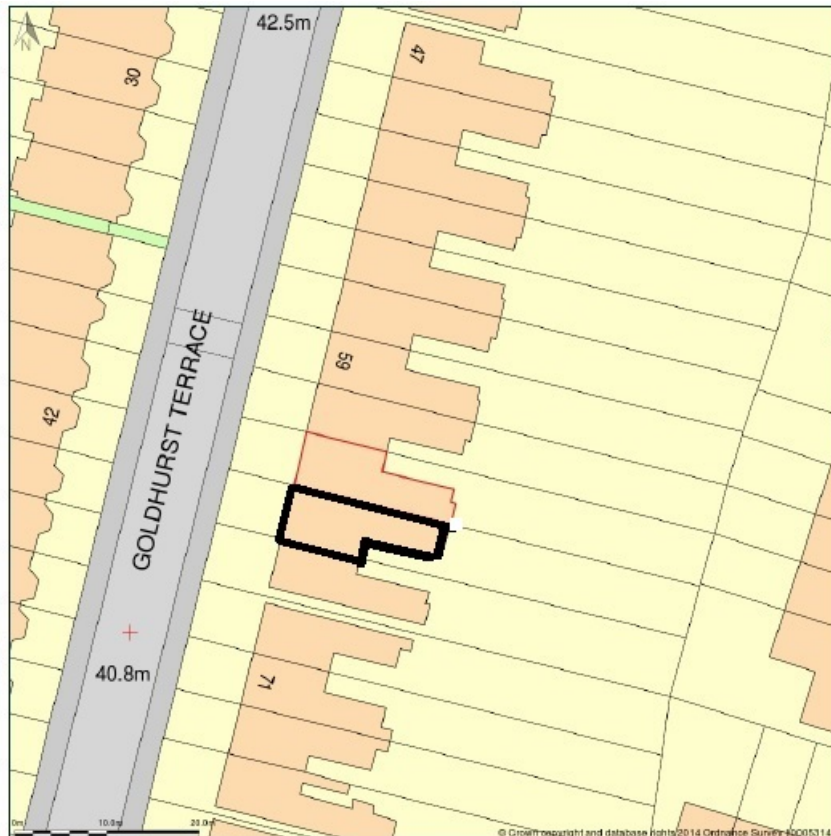


Figure 1 Location of 65 Goldhurst Terrace

1.2 Proposed basement works

The site comprises No 65 Goldhurst Terrace, which is a terraced, four-storey house, including a lower ground floor, on the east side of Goldhurst Terrace. To the north, west and south of the site are neighbouring residential properties.

The proposed development involves excavating down to a depth of 3.0m below existing ground level, to construct a basement level.

1.3 Scope of Report

This report presents a basement impact assessment that complies with CPG4 screening and scoping stages. Site investigation results are presented in Appendix B.

1.4 Authorship of Report

This report has been prepared by the following qualified persons:

- Dr Stephen Buss MA MSc CGeol. Dr Buss is a UK-based independent hydrogeologist with more than 15 years' consulting experience in solving groundwater issues for regulators, water companies and other private sector organisations. **Dr Buss is a Chartered Geologist with the Geological Society of London.**
- Rupert Evans MSc CEnv C.WEM MCIWEM AIEMA is a UK-based independent hydrologist with more than 10 years' consultancy experience in flood risk assessment, surface water drainage schemes and hydrology/hydraulic modelling. **Mr Evans is a Chartered Water and Environmental Manager (C.WEM) and a Member of the Chartered Institution of Water and Environmental Management.**
- Alan Watson BSc[Eng] CEnv CEng MICE is a UK-based geotechnical engineer with 28 years' experience of ground investigations, geotechnical interpretation and contamination assessments. **Mr Watson is a civil engineer with the "CEng" (Chartered Engineer) qualification from the Engineering Council and specialises in ground engineering.**

2. Basement Impact Assessment Screening: Surface water

Surface flow and flooding screening follows the procedure outlined in Figure 3 (surface flow and flooding screening flowchart) of the Camden Planning Guidance 4 (CPG4) entitled Basements and Lightwells dated 2013.

1) *Is the site within the catchment of the pond chains on Hampstead Heath?*

NO. Figure 14 of the Camden geological, hydrogeological and hydrological study – Guidance for subterranean development dated 2010, confirms that the site is not located within this catchment area.

2) *As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?*

NO. There will be no surface expression of the basement development, so surface water flows and drainage will be unchanged. Furthermore, the basement will not extend into an area of the plot which is currently vegetated (i.e. the above surface comprises an impermeable patio) so the surface water regime will not change as a result of the proposed basement. As there will be no net increase in man-made impermeable area, there will also be no increase or material change in runoff rate or volume as a result of the proposed basement.

3) *Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?*

NO. There will be no surface expression of the basement development. The basement will extend into an area of the plot across which the surface currently comprises an impermeable patio so there will be no net increase in man-made impermeable area.

4) *Will the proposed basement 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. There will be no surface expression of the basement development, so the surface water flow regime will be unchanged.

5) *Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?*

NO. There will be no surface expression of the basement development, so surface water flows and quality of runoff will be unchanged.

6) *Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk from flooding, for example because the proposed basement is below the static water level of nearby surface water feature?*

NO. The Camden Flood Risk Management Strategy dated 2013, North London Strategic Flood Risk Assessment dated 2008, and Environment Agency online flood maps show that the site has a low flooding risk from surface water, sewers, reservoirs (and other artificial sources), groundwater and fluvial/tidal watercourses.

3. Basement Impact Assessment Screening: Groundwater

Subterranean (groundwater) screening follows the procedure outlined in Figure 1: Subterranean (ground water) flow screening chart of the Camden Planning Guidance 4 (CPG4) entitled Basements and Lightwells dated 2013. These findings have been informed by a ground investigation undertaken at the site in April 2014 (Appendix B).

1a) *Is the site located directly above an aquifer?*

NO. The geological map, on site boreholes and the nearest off-site boreholes indicate that permeable superficial deposits are not present beneath the site. Site investigation boreholes show between 1 and 2 m of made ground lying on 0.4 – 1.4 m clayey head deposits, over London Clay. None of these can be considered an aquifer. Beneath made ground a considerable thickness of London Clay isolates the deeper aquifer units of the London Basin aquifer from the surface.

1b) *Will the proposed basement extend beneath the water table surface?*

NO. There is no aquifer directly beneath the site, and a consistent water table was not observed during the site investigation. There was a small, temporary, seepage in one borehole that is not considered to be related to a body of groundwater.

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

NO. There are no current surface water bodies within 100 m of the site. The site lies between two former tributaries of the 'lost' River Fleet. Both are quite high up in the catchment of the river. One flowed southwards about 100 m east of the site, and (if it exists) is most likely now culverted along Strathay Gardens. A second flowed southwards about 200 m west of the site.

There are no known water wells within 100 m of the site; there is one at 300 m south east of site, which is operated by the London Borough of Camden, and which exploits groundwater from the Chalk.

Geological conditions indicate no potential for development of a spring line here.

3) *Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?*

NO. There will be no additional surface expression of the basement development, so surface water flows will be unchanged.

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

NO. Discharge to the ground is not in the proposal.

5) *Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond or spring line?*

NO. The nearest water body is Hampstead Number 1 Pond, about 1750 m to the north east, while the Grand Union Canal is 2150 m to the east. These are both too far from the site to be a concern, especially given that there are no permeable superficial deposits beneath the site.

4. Basement Impact Assessment Screening: Slope stability

Slope stability screening follows the procedure outlined in Figure 2: Slope stability screening chart of the Camden Planning Guidance 4 (CPG4) entitled Basements and Lightwells dated 2013. This has been undertaken by Soil Consultants Ltd and the screening and scoping assessment is presented in Appendix A of this report. Its findings have been informed by a ground investigation undertaken at the site in April 2014 (Appendix B).

The development is considered to be at low risk of stability problems, if undertaken by reputable experienced specialists, and if the temporary and permanent works are adequately designed and implemented with due consideration to the geology and hydrogeology of the site and surrounding areas.

5. Conceptual Site Model

5.1 Drainage and topography

Ground surface around the site slopes gently southwards. Elevation of the ground is about 41 m above Ordnance Datum. There are no current surface water features near the site. Historically, two tributaries of the River Fleet passed by the site (Figure 2). These rivers are now 'lost' and mostly culverted beneath the city¹.

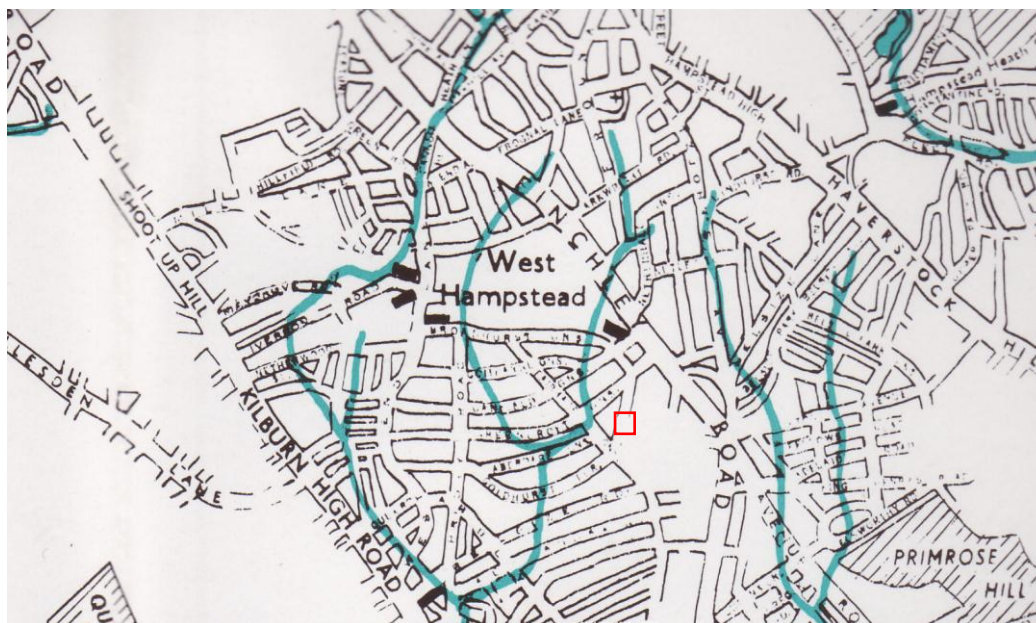


Figure 2 Location of the River Fleet tributaries relative to 65 Goldhurst Terrace

5.2 Geology and hydrogeology

Bedrock at the site comprises London Clay. This is about 83 m thick at the Swiss Cottage open space borehole² (about 300 m to the south west of the site) and isolates the main aquifer of the London Basin from the surface.

Nearby borehole records available from the British Geological Survey also show no superficial deposits, just thin Made Ground over London Clay. (Borehole TQ28SE2337³ is the closest from a site investigation centred around 3, 5 and 7 Fitzjohn's Avenue 350 m north west of the site; and the Swiss Cottage open space borehole also shows no superficial deposits.) These are considered to be representative of geological conditions around the site. A thickness of clayey head was observed in two of the site boreholes.

All of the boreholes were dry on excavation, as were the boreholes with records in BGS GeoIndex. This is typical of the London Clay.

Referring back to the screening, a detailed assessment of the near-surface geology reinforces the view that there is not an aquifer directly beneath the site, and there is no water table in the low permeability near-surface formations.

¹ Barton, N.J., 1993. The Lost Rivers of London 3rd edition.

² http://scans.bgs.ac.uk/sobi_scans/boreholes/15020820

³ http://scans.bgs.ac.uk/sobi_scans/boreholes/18393270

5.3 Slope stability

As identified in Appendix A the slopes within influential distance of the site are all shallow [$<7^\circ$] and no significant impact is anticipated on sloping ground in terms of land stability provided that the design and construction of the scheme ensure that ground movements are kept to an absolute minimum.

Presence of London Clay near the ground surface is unlikely to be a significant issue due to the depth of the proposed basement being below the root affected zone within the clay. The advantage of this stratum is that groundwater is unlikely to be a significant issue affecting construction and any impact on groundwater caused by the construction should be minimal. Soil volume change is unlikely to be a significant issue despite the presence of nearby trees as the founding depth for the proposed basement should be well below the influence of any vegetation. Some measures may be necessary to cater for potential clay swell exerting pressure on the basement retaining walls if trees are removed and desiccated clay is proven to be present.

The depth of the aquifer in relation to the basement is assessed in Section 5.2; and the London Clay does not usually contain significant groundwater within the likely construction depths. Uplift/heave pressures due to soil heave following excavation, and hydrostatic pressures will both have to be considered in the design and should not impact on land stability if properly designed and constructed.

With regard to the impact on adjacent highways / pedestrian right of way, the proposed basement construction will be within influencing distance of Goldhurst Terrace. The construction methodology must be carefully considered to ensure that adequate support is maintained at all times and significant ground movement does not occur. The differential depth of the proposed foundations in relation to neighbouring properties is such that underpinning of party wall foundations will be required.

6. Conclusions

Potential environmental impacts of the proposed basement development at Goldhurst Terrace have been considered. The following summary conclusions are made:

- There will be no change in the area of impermeable surface at the site so that surface water drainage will not be changed from present.
- Available geological information strongly indicates that there is no aquifer directly beneath the site. This indicates that there is insignificant risk of changing groundwater flow patterns beneath 65 Goldhurst Terrace. This finding is based on a recent intrusive site investigation and other local geological information.
- The development is considered to be low risk of stability problems, if undertaken by reputable experienced specialists, and if the temporary and permanent works are adequately designed and implemented with due consideration to the geology and hydrogeology of the site and surrounding areas.

These conclusions are considered to be robust and no further investigations are recommended.