



BASEMENT IMPACT ASSESSMENT

REPORT

**35 BUCKLAND CRESCENT
LONDON NW3 5DJ**

For William Carter Ltd

February 2014
Ref: JB15296.1

Basement Impact Assessment

**35 Buckland Crescent,
London NW3 5DJ**

Date: February 2014
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Architect: William Carter Limited
Engineers: Rose Associates

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Front Elevation: 35 Buckland Crescent, London NW3 5DJ



Site Plan: 35 Buckland Crescent, London NW3 5DJ

Section 1: Introduction

1. Background

- 1.1 John Baxter Associates have been instructed to undertake a Basement Impact Assessment (BIA) for 35 Buckland Crescent, London NW3 5DJ. The purpose of this report is to assess the potential impact on surrounding structures and hydrological features. This report has been produced in conjunction with the project architects, William Carter Limited, who are preparing a full planning application for a new basement extension at the property. This report should be read in conjunction with the plans and documents produced by William Carter Limited as part of their planning submission.
- 1.2 This report is prepared in accordance with Camden Planning Guidance 2013 (CPG 4 Basement and lightwells).
- 1.3 Due diligence and care have been used in the preparation of this report. Whilst every effort has been made to ensure the accuracy of data supplied and any analysis derived from it, there may be conditions at the site that have not been disclosed by the available records and could not therefore be taken into account. In particular, it should be noted that ground water conditions vary due to seasonal and other effects and may at times be significantly different from those measured by intrusive investigations. No liability can be accepted for any such variations in these conditions.

2. Methodology

- 1.4 Camden Guidance CPG4 requires Basement Impact Assessments to be undertaken for new basements in the borough and sets out 5 stages:
 1. Screening
 2. Scoping
 3. Site investigation
 4. Impact assessment
 5. Review and decision making
- 1.5 This report sets out to address the screening, scoping and impact assessment processes set out in CPG4 and the Camden geological, hydrogeological, and hydrological study. As part of the Stage 1 screening process, key issues in respect of land stability, hydrogeology and hydrology have been identified. The information

derived from the screening process has been assessed in conjunction with recent and historic site investigation data as part of the stage 2 scoping process.

3. Site Description

- 3.1 The site is located at 35 Buckland Crescent, London NW3 5DJ at approximate grid reference TQ 26739 84482. The plot is rectangular in shape with an approximately 10m wide frontage onto Buckland Crescent. The site runs approximately 40m NW to SE parallel with neighbouring properties.
- 3.2 The existing building dates from the latter half of the 19th Century. Originally planned as a semi detached four storey villa, later infill additions have been created that join the property to it's neighbour. The property is of conventional construction. External walls are of solid masonry with upper floors and internal partitions of timber. Generally, the building appears to be in sound condition with no obvious distortion or evident cracking as a result of movement.
- 3.3 The building is connected to a (handed) identical property on one side and to a similar pair of conjoined villas on the other as a result of the later infill additions. The property is located on a road of similar buildings.
- 3.4 It is understood that the properties situated either side of the application site do not contain basements.
- 3.5 The property is loaded at approximately 60m AOD on a negligible slope of approximately 1:100.
- 3.6 The back garden is lower than the front garden by approximately 0.9m and thus the existing lower ground floor level is a partial storey below road level to the front and at ground floor level to the rear.
- 3.7 The building falls within the Belsize Park Conservation Area.
- 3.8 The property is not listed
- 3.9 Copies of the Architects existing site layout plans and sections are provided at Appendix A.

4. Proposed Development

- 4.1 The proposed scheme relates to the following works:

Conversion of existing raised and lower ground floor maisonette and excavation of a new basement to create a two bedroom (3-person) flat at raised ground floor level and a three-bedroom (6-person) maisonette at ground floor and basement levels.

Works to include the demolition of the existing rear ground floor extension and the creation of a new rear extension at ground floor level together with a rear light well.

- 4.2 The lower ground FFL level is 59.38m AOD and the proposed basement floor level is 56.58m AOD. Taking a standard 500mm construction thickness for the basement floor slab, the formation for the basement will be positioned at 56.08m AOD, i.e. approximately 3.30m below existing lower ground floor level.
- 4.3 Copies of the Architects proposed layout plans and sections for the development are provided at Appendix B.

5. Proposed Structure

- 5.1 The new basement will extend beneath the existing footprint of the building and beneath a proposed lower ground floor extension to the rear.
- 5.2 The new basement slab will form a reinforced concrete raft foundation. Due to the removal of soil there is a nett reduction in loading on the London Clay at formation level, thus no piles are required to transfer loads. From the slab will be constructed RC retaining walls in a "hit and miss" sequence.
- 5.3 The new retaining walls will be formed by underpinning the existing main walls (where under the existing building) or by casting insitu vertical cantilevers (utilising the soil as a back shutter) where beyond the current footprint.

6. Site History

- 6.1 Historic maps dating back to 1873 have been assessed as part of this Basement Impact Assessment (see Appendix G). The maps show that between 1873-1882, the site backed onto the open land of Belsize Park, with Buckland Crescent and Belsize Park (shown as College Road) in their current positions. By 1896 the open land of Belsize Park had been developed, with the formation of Adamson Road to the South and Lancaster Road to the East. Although the pattern of roads for the most part reflect the modern arrangement, there remain areas of open land to the North East and East of the site. By 1920 the system of roads within the wider area broadly reflects the current arrangement.
- 6.2 Envirocheck data does not list any historic or current landfills or other waste management facilities within 500m of the site.
- 6.3 There are no contaminated land register entries or notices and no substantiated pollution incident register entries listed within 1km of the site and no pollution incidents to controlled waters have been recorded within 1km of the site.
- 6.4 There are no discharge consents listed within 1km of the site.

- 6.5 The site is not located within an environmentally sensitive area, such as a SSSI. The site falls within an area that has the lowest classification given by the Health Protection Agency in respect of radon emissions. As such, no further action is required in this regard.
- 6.6 A single fuel station entry is shown between 250m - 500m from the site. It is not considered likely to impact upon the proposed development.

7. Geology and Flood Risk

7.1 Reference to BGS data shows that the site sits within an area underlain by approximately 80m of the London Clay Formation. This in turn is underlain by the Lambeth Group, Thanet Sand and Chalk. The London Clay Formation is an over consolidated firm to very stiff, becoming hard at depth, fissured, blue to grey silty clay of low to very high plasticity. The upper and lower parts may contain silty or fine grained sand partings. It also contains within it laminated structured nodular claystone and rare sand partings.

7.2 A number of historic BGS records exist containing data for boreholes within the immediate vicinity of the site. Of particular relevance are those detailed below (see also Appendix E).

7.3 Borehole Reference: Tq28se1769 Distance: 171m

Description: Borehole carried out by Drilcorp Ltd on behalf of Camden Council. The borehole data shows Made Ground, comprising bricks and rubble to a depth of 0.3m, dark brown sandy soil from 0.3m-0.6m, pale brown clay from 0.6m-1.2m, pale brown mottled clay from 1.2m-5.2m, brown clay from 5.2m-17.5m (laminated from 5.2m-9m), grey clay from 17.5m-84.5m. There is no recording of significant levels of groundwater, the borehole is described within the report as "Not quite dry but close".

7.4 Borehole Reference: Tq28se2337 Distance: 221m

Description: Borehole carried out by Soiltechnics on behalf of undisclosed. The borehole data shows Made Ground, comprising dense reinforced concrete to a depth of 0.15m, hard dark brown slightly gravelly clay from 0.15m-0.5m, very stiff brown slightly gravelly clay from 0.5m-1m, very stiff brown occasionally mottled light grey clay from 1m-2.5m, stiff brown occasionally mottled light grey clay from 2.5m-4m, very stiff brown occasionally mottled light grey clay from 4m-5m. There is no recording of water within the borehole and it is described within the report as "dry".

7.5 The data derived from these boreholes is particularly relevant given their close proximity to the site, to the North West (Tq28se2337) and to the South East (Tq28se1769) and the fact that both boreholes are located upon the line of the historic offshoot of the River Tyburn, as shown in Fig 11 of the Camden geological, hydrogeological, and hydrological study (See Appendix F).

- 7.6 An intrusive site investigation has been undertaken by Chelmer Site Investigations Laboratories Ltd. A copy of the findings is contained within this report at Appendix D.
- 7.7 The underlying ground conditions at the site were found to comprise paving at 0m-0.06m, sand at 0.06m-0.1m, concrete at 0.1m-0.2m, Made Ground comprising medium compact organic dark brown silty clay with brick and concrete fragments at 0.2m-1.5m, Stiff orange-brown grey veined silty clay with partings of orange and brown silt and fine sand at 1.5m to close of borehole at 5m. No groundwater was encountered and the borehole is described in the report as being "dry and open on completion".
- 7.8 The site is situated on London Clay which is classified by The Environment Agency as Unproductive Strata (formerly Non Aquifer) with low permeability.
- 7.9 Reference to Fig 11 of the Camden geological, hydrogeological, and hydrological study shows that the site may be positioned to the SW of an offshoot of the river Tyburn (See Appendix F). The historic river ran in a north-south direction from Hampstead Heath to the end of Belsize Lane at which point it runs in a south-easterly direction towards Regents Park. At this point the Tyburn was a small stream, which is thought to have arisen from Shepherd's Well by Fitzjohn's Avenue in Hampstead. It is understood that this water course is now culverted. The recent site investigation carried out by Chelmer Site Investigations Laboratories Ltd and historic BGS data in respect of the boreholes to the North and South of the site (BGS Refs: Tq28se1769 & Tq28se2337 detailed above), record low levels of groundwater and support this view.
- 7.10 The property is not within a Flood Plain according to Environment Agency published information. Figure 15 of the Camden Geological, Hydrogeological and Hydrological Study Flood Map (See Appendix F) does not show the site to be within an area with the potential to be at risk of surface water flooding. There are no known subterranean water courses (the River Tyburn being within a culvert).

Section 2: Basement Impact Assessment

The London Borough of Camden stipulate that all new developments within the borough are to be subject to the assessment process as set out in Camden Planning Guidance 2013 (CPG 4 Basement and lightwells). This policy has been adopted to ensure that new basement excavations do not:

- Cause harm to the built and natural environment and local amenity;
- Result in flooding; or
- Lead to ground instability

The proposed development relates to the creation of a new basement extension to the existing property at 35 Buckland Crescent, London NW3 5DJ. The proposed basement will extend beneath the footprint of the existing property and beneath a small extension to the rear. A rear lightwell is also proposed. There is no existing basement at the property.

8. Screening

Council guidance requires any proposed application to make an assessment on the impact of the development on (a) groundwater and surface water flows, and (b) land stability.

The screening process is described in Appendix E of CPG4 and includes 3 flowcharts as follows:

- Surface flow and flooding
- Subterranean (groundwater) flow
- Slope stability

Potential impacts linked to the screening flowcharts are provided in CPG4 Appendix F.

Each of the above flow charts and responses to the questions asked are presented on the following pages of this report.

Table 1: Surface Water and Flooding Screening Flowchart

	Question:	
1	<i>Is the site within the catchment of the pond chains on Hampstead Heath?</i>	N
2	<i>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?</i>	N
3	<i>Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?</i>	N
4	<i>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 down stream watercourses?</i>	N
5	<i>Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?</i>	N
6	<i>Is the site in an area known to be at risk from surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and Kings Cross, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?</i>	N
Notes:	<p>Q1 - Ascertained by inspection of Figure 14 of CGH&H.</p> <p>Q2 - Existing surface water pipes are not shown on the existing plans, however, we view it as extremely unlikely that the proposed development will materially change existing routes.</p> <p>Q3 - A rear extension and lightwell are proposed, however, these are relatively small in size and fall within an area of existing hard paving. A sedum roof is proposed upon the rear extension.</p> <p>Q6 - Ascertained by inspection of Figure 15 of CGH&H. The site does not fall within an area at risk of flooding.</p>	

Summary:

The proposed development is not likely to impact upon surface water flow. The site does not fall within a flood risk zone.

Table 2: Subterranean (Groundwater) Flow Screening Flowchart

	Question:	
1a	<i>Is the site located directly above an aquifer?</i>	N
1b	<i>Will the proposed basement extend beneath the water table surface?</i>	N
2	<i>Is the site within 100m of a watercourse, well (used / disused) or potential spring line?</i>	Unknown
3	<i>Is the site within the catchment of the pond chains on Hampstead Heath?</i>	N
4	<i>Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?</i>	N
5	<i>As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and or /SUDS)?</i>	N
6	<i>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 (not just the pond chains on Hampstead Heath) or Spring Line?</i>	N
Notes:	<p>Q1a - The site is situated on London Clay which is classified by The Environment Agency as Unproductive Strata (formerly Non Aquifer)</p> <p>Q1b - The proposed depth of the new basement excavation is above the level of the water table as evidenced by the recent site investigation carried out by Chelmer Site Investigations Laboratories Ltd, detailed in Appendix D of this report. The excavations can be expected to be dry with soft pumping to deal with localised perched water.</p> <p>Q2 - The only potential watercourse within 100m of the site is an offshoot of the River Tyburn, now culverted and underground. As detailed above, site investigations within the vicinity of the site and along the line of the historic waterway show the ground to be dry. There are no known wells or spring lines within 100m of the site.</p> <p>Q3 - Inspection of Figure 14 of CGH&H shows that the site is approximately 1.5km South West from the Hampstead Heath Extension Chain Catchment</p>	

	<p>Q4 - The development will reduce the area of impermeable / permeable ratio as the proposed extension and lightwell fall within an area of existing hard paving and a sedum roof is proposed upon the new extension.</p> <p>Q5 - There will be no change to the drainage arrangements for the site</p> <p>Q6 - The lowest point of the proposed excavations is not below the mean water level of any local pond within the zone of influence of the proposed basement</p>	
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Summary:

The site is situated on London Clay which is classified by The Environment Agency as Unproductive Strata (formerly Non Aquifer). The soil investigation survey carried out at the site by Chelmer Site Investigations Laboratories Ltd, together with BGS data relating to boreholes drilled within the vicinity of the site indicate that the proposed basement excavation will not extend below the water table. It is considered likely that perched water will be encountered during the excavation of the basement.

Figure 11 of the Camden geological, hydrogeological, and hydrological study (See Appendix F) indicates that the site may be potentially positioned within 100m of a historic offshoot of the River Tyburn. It is understood that this offshoot is now culverted and underground. Data recorded by Chelmer Site Investigations Laboratories Ltd, following an intrusive investigation on site (See Appendix D), and shown in the BGS borehole records detailed above, shows the ground to be dry and evidences that the historic waterway is no longer in existence.

The proposed basement development will not result in an increase in the proportion of hard surfaced / paved areas or a change to the drainage arrangements for the site.

Table 3: Slope Stability Screening Flowchart

	Question:	
1	Does the existing site include slopes, natural or manmade, greater than 7 degrees (approximately 1 in 8)?	N
2	Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7 degrees?	N
3	Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees	N

4	<i>Is the site within hillside setting in which the general slope is greater than 7 degrees?</i>	N
5	<i>Is the London Clay the shallowest strata at the site?</i>	N
6	<i>Will and tress be felled as part of the proposed development and / or any works proposed within any tree protection zones where trees are to be retained?</i>	Y
7	<i>Is there a history of seasonal shrink - swell subsidence in the local area, and / or evidence of such effects at the site?</i>	Unkn-own
8	<i>Is the site within 100m of a watercourse or a potential spring line?</i>	N
9	<i>Is the site within an area of previously worked ground?</i>	N
10	<i>Is the site within an aquifer? If so will the proposed basement extend beneath the water table such that dewatering may be required during construction?</i>	N
11	<i>Is the site within 50m of the Hampstead Heath Ponds?</i>	N
12	<i>Is the site within 5 m of a highway or pedestrian right of way?</i>	N
13	<i>Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?</i>	Y
14	<i>Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines)?</i>	N
Notes:	<p>Q1 - See existing site plans provided with this report. The topography surrounding the site is gently sloping towards Buckland Crescent. The rear garden is lower than the front garden by approximately 0.9m over a distance of approximately 25m (approximately 3.5%).</p> <p>Q2 - No change to the surrounding topography is proposed.</p> <p>Q5 - Based on available site data and reference to the 1:50,000 Geological Map, the geological profile consists of variable depths of man made and/or Head, over London Clay. The formation level for the proposed basement is expected to penetrate the London Clay by a minimum 1.8m.</p>	

Q6 - It is understood that a small Box Tree and Magnolia will be felled. We understand that there will be no further impact upon the trees surrounding the development. Please refer to the Arboricultural Report enclosed with the planning submission.

Q7 - There is no evidence of historic movement or distortion at the property. However, the site is underlain by clay which is prone to shrink and swell.

Q8 - There are no Environment Agency flood plains, river network entries or surface water features in the vicinity of the site.

Q9 - The site is not within any known previously worked ground

Q10 - Inspection of figure 8 of CGH&H study shows that the site is sitting on unproductive strata.

Q12 - Although the site fronts onto Buckland Crescent, the proposed basement will not extend beyond the front elevation of the building and so will remain more than 5m away from the public footpath and highway. Appropriate temporary works will need to be designed and adopted to ensure the safety of the public highway and footpath.

Q13 - By approximately 1 storey height.

Q14 - No tunnels have been identified passing beneath or close to the site.

Summary:

The topography surrounding the site is relatively flat and no changes are proposed to the surrounding topography as a result of the scheme. Although the existing building upon the site appears sound, with no signs of historic movement or distortion, the site is located over the London Clay Formation and it is therefore possible that heave movements/settlement may occur during construction and in the longer term. Further, The proposed basement increases the differential depth of foundations relative to the neighbouring properties. It is essential that the potential for movement is addressed in the permanent and temporary works design for the new basement. These issues are dealt with in further detail below.

The site fronts onto Buckland Crescent, however, the proposed basement excavation remains more than 5m from the public footpath and highway. Appropriate temporary works will need to be designed and adopted to ensure the safety of the public highway and footpath

9. Results of Screening Process

- 9.1 The basement has been assessed in accordance with the three flow charts detailed in Appendix E of the CPG4 Basements and Lightwells. The purpose of scoping is to assess in more detail the identified factors to be investigated within the impact assessment.
- 9.2 Table 4 below summarises the potential factors identified within the screening process to be addressed by this basement impact assessment.

Table 4: Summary of Assessment Requirements and Potential Impacts

	Assessment Requirement:	Potential Impact:
	Subterranean (Groundwater) Flow	
1	Investigation is required to establish ground conditions on site.	Potential impact upon groundwater flow
	Slope Stability	
2	Detailed assessment of ground conditions and suitable permanent / temporary works design.	Potential for underpin settlements and deflection, ground heave and ground movement.
3	Assessment of the potential impact of the proposed works upon neighbouring properties.	Potential for structural damage to neighbouring properties as a result of inappropriate permanent / temporary work designs.
4	Assessment of the potential impact of the proposed works upon the public highway.	Potential impact upon the safety of those using the public footpath and highway.

Section 3: Scoping

This section of the report covers the scoping (Stage 2) process as set out in Camden Planning Guidance CPG4. The purpose of scoping is to access in more detail the potential impacts of the proposed scheme.

10. Site Investigation

- 10.1 A site investigation was carried out by Chelmer Site Investigations Laboratories Ltd on 31st January 2014 consisting of 1 No. hand augered borehole to a depth of 5m. The borehole was located within the driveway to the front of the property. A copy of the investigation report is enclosed at Appendix D.
- 10.2 The site investigation found paving at 0m-0.06m, sand at 0.06m-0.1m, concrete at 0.1m-0.2m, Made Ground comprising medium compact organic dark brown silty clay with brick and concrete fragments at 0.2m-1.5m, Stiff orange-brown grey veined silty clay with partings of orange and brown silt and fine sand at 1.5m to close of borehole at 5m.
- 10.3 The site investigation down to a depth of 5m did not encounter groundwater and the borehole is described as "dry and open on completion". A standpipe was not installed or further ground water monitoring undertaken.
- 10.4 The findings of the site investigation confirm the expected geology of Made Ground over Clay. The borehole was dry to a depth of 5m which reflects the BGS data detailed above and in Appendix E.
- 10.5 The scope of the site investigation did not include laboratory testing for geotechnical and chemical properties.

11. Subterranean (Groundwater) Flow

- 11.1 Groundwater was not encountered during the intrusive site investigation detailed above. BGS data in relation to boreholes within the vicinity of the site record a low level of groundwater.
- 11.2 The site is situated on London Clay which is classified by The Environment Agency as Unproductive Strata (formerly Non Aquifer) with low permeability.
- 11.3 The Stage 1 screening process revealed the potential proximity of the site to a historic offshoot of the River Tyburn. The intrusive site investigation carried out by

Chelmer Site Investigations Laboratories Ltd and BGS borehole data evidence that the River Tyburn is no longer in existence and as such, the basement will have no impact on it. Vice versa, the River Tyburn, or flooding of it, will not have an impact on the basement and would not be capable of developing water pressures/leakages on the basement walls that would exceed modest design code requirements.

- 11.4 It is considered likely that localised "perched" water may be encountered during the works to excavate the new basement.

12. Slope Stability

- 12.1 The site is located over the London Clay Formation which is prone to shrink-swell (subsidence and heave) – seasonal shrink-swell can result in foundation movements and in particular if a new basement is dug to below the depth likely to be affected by tree roots this could lead to damaging differential movement between the subject site and adjoining properties. It is considered possible that heave movements/long term settlement may occur during construction and over the long term.
- 12.2 Following excavation works, we anticipate that the floor slab for the proposed basement will need to be suspended over a void to accommodate the potential heave and any potential uplift forces from groundwater pressures unless the slab can be reinforced sufficiently to cope with these movements.
- 12.3 The proposed basement will increase the differential depth of foundations relative to the adjoining properties. An appropriate temporary and permanent works design will need to be formulated and adopted to ensure the stability of the neighbouring buildings during construction and over the longer term.
- 12.4 Although the site fronts onto Buckland Crescent, the proposed basement will not extend beyond the front elevation of the building and as such, will remain more than 5m from the public footpath and highway. We do not consider that the proposed basement will impact upon the structural integrity of the public highway or footpath and so do not believe further action is required in this regard.
- 12.5 Large amounts of spoil will be removed from the site during the proposed excavation works. The works will also result in potentially dangerous activities close to the public footpath and highway. A full assessment will need to be undertaken by the Contractor and works methodology formulated and approved to ensure the safety of site personnel and the public.

Section 4: Conclusion

13. Basement Excavation

- 13.1 The site is underlain with London Clay which is classified by The Environment Agency as Unproductive Strata. A soil investigation survey carried out at the site, together with BGS data relating to boreholes drilled within the vicinity of the site indicate that the proposed basement will not extend below the water table surface.
- 13.2 Groundwater was not encountered during the intrusive site investigation carried out by Chelmer Site Investigations Laboratories Ltd (See Appendix D). BGS data in relation to boreholes drilled within the vicinity of the site also record a low level of groundwater.
- 13.3 We consider it likely that localised "perched" water may be encountered during the works to excavate the new basement. These trapped "lenses" may flow into excavations but can be dealt with by soft pumping. We believe that subject to the engagement of a reputable and experienced specialist ground works contractor and dewatering specialist, if required, no further action is necessary at this stage and that the presence of groundwater can be dealt with by following good industry standard practice for the construction of basements.
- 13.4 We recommend that during initial excavation stages any seepage into excavations is monitored as this will further inform the selection of an appropriate waterproofing system and decisions in relation to construction techniques.
- 13.5 On the basis of the data we have inspected as part of producing this report, we do not consider that the proposed basement will affect ground water flows in the longer term.
- 13.6 The site is located on a street with predominantly hard surfaced front gardens and lawned rear gardens, with a generally flat topography. Aside from the creation of a small rear extension, the proposed new basement will sit within the footprint of the existing building. The new extension is sited within an area of existing hard paving and will therefore not increase the proportion of hard surfaced / paved external areas. In addition, the proposed extension will be installed with a sedum roof.
- 13.7 We do not consider that the proposed scheme is likely to impact upon surface water flow. The site does not fall within a flood risk zone.
- 13.8 The excavations necessary to produce the proposed basement structure will require appropriate temporary support to prevent excessive ground movement and resulting damage to neighbouring properties.
- 13.9 The project engineers, Rose Associates, have submitted details in relation to the scope of works they will be undertaking in relation to the temporary and permanent

works design, enclosed at Appendix C. We consider the proposed scope of works to be adequate and necessary to ensure the temporary and long term stability of the host property and buildings neighbouring the site.

- 13.10 We strongly recommend the use of a specialist contractor to undertake the excavation works. Any amendments to the proposed temporary works or construction methodology should be approved by the project engineers prior to the commencement of any works on site. The Contractor must undertake a thorough site specific risk assessment for the proposed works and produce a detailed construction method statement, approved by the project engineers, in accordance with the requirements of CDM Regulations. The risk assessment and resulting construction methodology should include measures to ensure the safety of those using the public footpath and highway adjoining the site.
- 13.11 We strongly recommend that regular minuted site meetings and inspections are undertaken by the project team to ensure that the works are progressing satisfactorily and that the temporary works design and construction methodology are being followed at all times.
- 13.12 A CCTV survey of all public and private sewers passing within the immediate vicinity of the site should be carried out prior to the commencement of works.
- 13.13 Party wall awards for the proposed works will need to be sought in accordance with the Party Wall Act 1996.
- 13.14 Subject to the above measures being implemented, we consider that the proposed works to create a new basement extension at the property can be undertaken safely. From the information we have reviewed as part of this basement risk assessment, we do not believe that this project presents any issues that do not fall within the realms of standard works management and safe working practice for this type of development.

John Baxter Associates