11 PARK VILLAGE WEST

Basement Impact Assessment

QED Ref: Job No. 19-167 Rev - 01

Property Address:

11 Park Village West,

Regent Park,

London,

NW1 4AE

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Project Name	Park Village West

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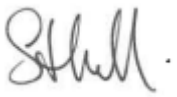
Scott Hull, *BEng (Hons)* Director		18/10/2019

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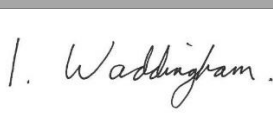
Ian Waddingham, *BEng, MICE, CEng* Managing Director		18/10/2019

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Contents

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1.0 NON-TECHINCAL SUMMARY

1.1.1 The site Location is No.11 Park Village West, London, NW1 4AE. Please see the Location Plan in (Appendix 10.1).

1.1.2 The property is in the London Borough of Camden within a residential area to the east of Regents Park. The site comprised a three-storey dwelling of brick masonry construction including a lower ground floor. A driveway was present to the front of the property and garden to the rear. See (Appendix 10.3) the existing floor plan drawings.

Figure 1- View of the property from Park Village West

Figure 2- View of the property from the rear garden

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1.1.3 The proposed development comprises the construction of a new basement located beneath the partial footprint of the existing property and marginally extending into the rear garden.

1.1.4 The following assessments are presented:

- Desk Study
- Screening
- Scoping
- Additional evidence
    - Site investigation
    - Arboricultural report
    - Ground movement assessment
    - Flood risk assessment
    - Surface water drainage strategy and SUDS assessment
    - Proposed foul water drainage system
    - Construction Traffic Management Plan (CTMP)
    - Heritage Statement
- Impact Assessment

1.1.5 The authors of the assessment are;

- Tom Whiffin, B.Sc. (Hons), FGS, Geo-environmental Engineer in Solitechnics.
- Darryl Neylon, B.Sc. (Hons), FGS, AMIEnvSc Geo-environmental Engineer in Solitechnics.
- Joe Taylor, MArborA, FdSc (Arboriculture), Lantra Approved Professional Tree Inspector, Arboricultural Consultant in Crown Tree Consultancy.
- Mateo Blanco, MEng, GMICE, Design Engineer in Infrastruct CS Ltd.
- Adam Griffiths, BEng (Hons), MCIHT, Design Engineer in Infrastruct CS Ltd.

1.1.6 The ground and groundwater conditions beneath the site are as following based on information from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)";

- Ground conditions in the vicinity of the proposed basement comprised between 0.4m and 1.5m of Made Ground overlying London Clay, which was described as stiff high to very high strength brown becoming grey clay.
- Although no groundwater was recorded in the borehole BH01 during the fieldwork, groundwater has subsequently been recorded at 7.27m and 7.31m BGL during return monitoring visits completed on the 5th August 2019 and 28th August 2019. This corresponds to a depth of 1.85m below the underside of the finished floor slab.

1.1.7 The proposed construction will adopt an underpinning technique to construct reinforced concrete retaining walls under the existing load bearing spine walls. Where the new basement extends into the rear garden, a contiguous piled wall construction will be adopted. The wall will be formed of 350mm diameter

piles with 150mm spacing and designed for the temporary case structurally. A 300mm thick RC retaining wall adjacent to temporary pilled wall will be constructed and will act as the permanent structure. In addition, the wall to the front of the property is designed to span horizontally between the return walls with additional support taken from the lift reinforced concrete (RC) walls.

1.1.8 A Structural monitoring strategy to control the works and impacts of neighbouring structures will comprise of target monitoring in order to monitor the neighbouring party wall with an accuracy of +/-2mm. The results of the monitoring are to be recorded and issued by email to the project engineer, CA and engineers for the adjoining properties, on the day that the results are taken. The results are to be presented both in the table and graphical form with the graphs for each point plotting the readings taken against time.

1.1.9 The BIA has assessed land stability and the impacts of the proposed development on neighbouring structures and indicated that damage will not exceed Burland Category 1.

1.1.10 The BIA has identified the proposed basement will be formed beneath the existing property at the crest of the slope and will effectively cut into the slope. Accordingly, the proposed works will not impact upon the current stability of the slope.

1.1.11 The BIA has identified the development site lies within land classified as Flood Zone 1, which is considered at a low risk of flooding, and therefore appropriate for a development of this nature. Having assessed the other forms of flood risk to and from the development site, this report finds that the site is not considered at high risk from any other sources of flooding.

2.0 INTRODUCTION

This Basement Impact Assessment (BIA) is to support the planning application for the proposed development at 11 Park Village West. This BIA should be used for no other purposes. This report considers the effect of the proposed basement on the local hydrology, geology, hydrogeology and potential impacts to neighbours and the wider environment.

This BIA aims to address the requirements of the London Borough of Camden. This BIA should be read in conjunction with QED drawing series 19-167-01-BIA1 to 19-167-06-BIA1.

This report has been compiled using the various individual consultants reports and site investigations that are required to complete the BIA assessment.

2.1 Authors

2.1.1 The report has been provided by a Structure Engineer with 4 years relevant experience in structural engineering. A copy of the reviewer's CV is presented in (Appendix 10-11).

2.1.2 The report has been reviewed by a Chartered Structure Engineer with more than 20 years relevant experience in structure and civil engineering. A copy of the reviewer's CV is presented in (Appendix 10.11).

2.2 Sources of Information

2.2.1 The following baseline data have been referenced to complete the BIA in relation to the proposed development:

- Site walkover and discussion with residents in numerous occasions;
- Current/historical mapping are Extract of Soiltechnics Report No. R-STR4808-G01, September 2019, and presented in Appendix 10.1;
- LB Camden geological, hydrogeological and hydrological study – Guidance of subterranean development (Arup, 2010);
- LB Camden, Strategic Flood Risk Assessment (produced by URS, 2014);
- LB Camden, Floods in Camden, Report of the Floods Scrutiny Panel (2013);
- LB Camden, Planning Guidance (CPG) – Basements (March 2018);
- LB Camden, Local Plan Policy A5 Basements (2017);
- LB Camden's Audit Process Terms of Reference;

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2.3 Existing and Proposed Development

2.3.1 The property is located in the London Borough of Camden within a residential area to the east of Regents Park. The nearest surface water feature is a pond within Regents Park located some 450m west of the site. The nearest watercourse is the Regents Canal located some 460m north-west of the site. Local topography generally falls in an easterly direction.

2.3.2 The ground level at the front of the property is approximately 2m higher than the ground level at the rear of the property. The rear garden is terraced with two drops in level of 0.8m and 0.75m, totalling a 1.5m drop from the ground level at the rear of the property.

2.3.3 The site comprises of a three-storey dwelling of brick masonry construction including a lower ground floor. A driveway was present to the front of the property and a garden to the rear. Generally, the site boundaries were defined by a mixture of post and rail fencing, wire mesh fencing and timber panel fencing. A brick masonry retaining wall along the eastern site boundary retains a height of approximately 1.2m from the garden of the property to the adjacent garden.

2.3.4 The site is bordered to the north and south by residential dwellings and to the east by a garden area of an adjacent property. The site is bordered to the west by Park Village West beyond which lie residential dwellings.

2.3.5 11 Park Village West is one of a group of Grade II* listed villas that forms part of John Nash's Picturesque vision for Regent's Park. Park Village West and Park Village East helped pioneer the leafy urban suburb. Each detached villa is different from its neighbour.

2.3.6 Semi-mature and mature trees up to 7m were present on the site in along the east and western garden area boundaries and a mature tree up to 15m was observed in the front garden area.

2.3.7 The West Coast Mainline, orientated northwest-southeast passes within 90m of the site.

2.3.8 Existing and Proposed development drawings are presented in (Appendix 10.3).

2.3.9 The proposed development will utilise the underpinning technique to construct reinforced concrete retaining walls either side where we have existing walls above, and where new basement extending into the rear garden, 350mm diameter piles with 150mm spacing as part of contiguous piled wall will be adopted and designed for the temporary case structurally, with 300mm thick RC retaining wall adjacent to temporary pilled wall to act as a permanent structure. In addition, where the new basement starts approximately 2.5m from front wall towards the rear, 300mm RC retaining wall will be adopted with 150mm RC shear walls around the staircase to act as an intermediate support along the retaining wall.

2.3.10 The outline construction programme for the proposed development is presented in (Appendix 10.5).

3.0 DESK STUDY

"The following statements are from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)"

3.1 Site History

3.1.1 A review of Ordnance Survey (OS) maps dating back to 1874 has been undertaken.

3.1.2 Residential properties, occupying the existing site and immediate vicinity, were first recorded on mapping dated 1874. The footprint of the building has altered on the 1953 map, which suggests that the building was extended at around this time.

3.1.3 Regents Canal, orientated north-west to south-east, is recorded adjacent to the eastern boundary on the 1874 map. The canal is not present on aerial photography dated 1946 indicating that it has been infilled. This area is now occupied by the rear gardens associated with the properties along Park Village East.

3.2 Geology

3.2.1 Reference has been made to the 1:50 000 scale geological map published by the British Geological Survey (BGS) – Sheet 256 North London (2006). Reference has also been made to historical exploratory hole logs available from the BGS GeoIndex and information provided in the Envirocheck report.

3.2.2 The site is underlain by London Clay at crop. A historical borehole log within the vicinity of the site obtained from the BGS GeoIndex has proved the base of the London Clay at approximately 30-50m below ground level.

3.2.3 No superficial deposits have been mapped at the site.

3.3 Hydrogeology

3.3.1 London Clay is designated as an unproductive stratum. The site is not located within a Source Protection Zone.

3.4 Hydrology, Drainage and Flood Risk

3.4.1 The site is not located within close proximity (250m) of any existing surface water features. Reference has been made to Figure 11 from the Camden Geological, Hydrogeological and Hydrological Study (Arup, 2010). The site is located over 500m away from historical river courses. An extract of Figure 11 is provided below in Figure 3.

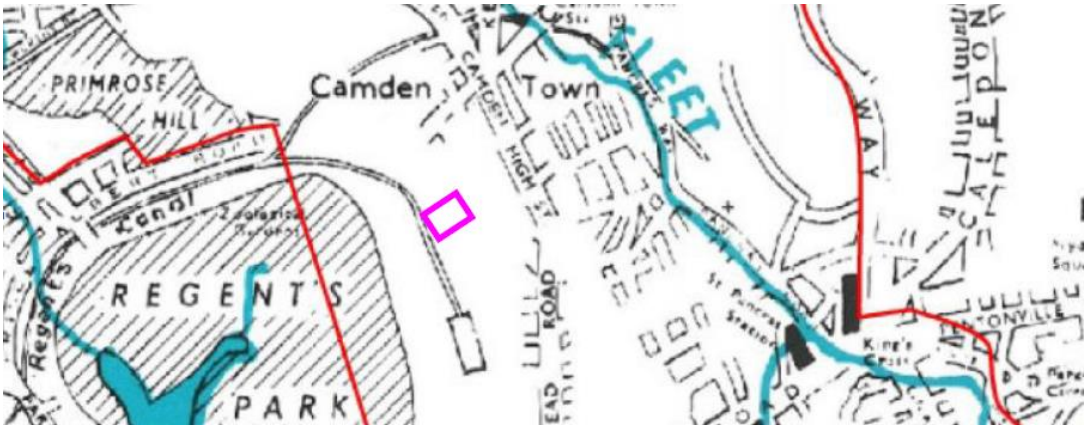

Figure 3 – Extract of Figure 11 from the Camden Geological, Hydrogeological and Hydrological Study (Arup, 2010)

3.4.2 Reference has been made to Figure 14 from the Camden Geological, Hydrogeological and Hydrological Study (Arup, 2010) which shows that the site lies outside of any recorded catchment area for Hampstead Heath surface water.

3.4.3 The site is currently occupied by the existing property and associated front and rear garden. The rear garden is predominantly covered with, brick and stone paving and flowerbeds. The front garden comprises a raised garden surrounded by paving and an asphaltic concrete surfaced driveway.

3.4.4 Reference has been made to the GOV.UK website and the Envirocheck report to assess the risk of flooding due to a variety of sources. The site is not considered to be at risk of flooding although the land coincident with the former Regent's Canal is indicated to be at risk of surface water flooding. This is shown in the Figure 4 below which is an extract of the surface flooding risk map.

Figure 4 – Extract from Envirocheck report indicating the risk from surface water.

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3.4.5 Figure 15 from the Camden Geological, Hydrogeological and Hydrological Study (Arup, 2010) also shows the property to be remote from areas of historical flooding and not at risk of surface water flooding.

3.4.6 Reference has been made to the London Borough of Camden, Strategic Flood Risk Assessment (URS, 2014). Figure 6 of that document indicates that the site is within Critical Drainage Area 3_003. A Critical Drainage Area (CDA) is defined as "a discrete geographic area (usually a hydrological catchment) where multiple and interlinked sources of flood risk (surface water, groundwater, sewer, main river and/or tidal) cause flooding in one or more Local Flood Risk Zones during severe weather thereby affecting people, property or local infrastructure".

3.5 Quarrying and Mining

3.5.1 The site is not within an area affected by mining.

3.5.2 Inspection of historical Ordnance Survey maps dating back to 1882 does not reveal any quarrying activities within 250m of the property.

3.6 Unexploded Ordnance (UXO)

3.6.1 Reference has been made to The London County Council Bomb Damage Maps, 1939 –1945 (Ward, 2015). Those maps recorded that the site suffered minor blast damage. However, a property approximately 25m to the west was completely destroyed, which is further evidenced in the historical maps. Additionally, properties along Park Village East, to the east of the property, were also severely damaged by bombs.

3.6.2 A preliminary risk review was commissioned by Soiltechnics and undertaken by MACC International Ltd who are a UXO specialist. They concluded that the UXO risk is medium within the site boundary.

3.7 Below ground service and Infrastructure

3.7.1 We have contacted the following Statutory Undertakers to obtain copies of their records for the purposes of our ground investigation activities. Copies of statutory undertaker's responses are presented as (Appendix 10.1).

- BT Openreach Ltd;
- Cadent Gas Ltd;
- Thames Water; and
- UK Power Networks.

3.7.2 No services are recorded traversing the site.

3.7.3 Additionally, a detailed survey of the site drainage was undertaken by JSD Solutions Ltd on behalf of the Client; a copy of their report is presented as (Appendix 10.2). The existing drainage does not traverse the proposed basement location.

4.0 SCREENING

"The following statements are from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)"

4.1 Subterranean (groundwater) flow

4.1.1 A screening process has been undertaken and the findings are described below.

Question	Response	Details
1a. Is the site located directly above an aquifer?	No	The property is underlain by London Clay.
1b. Will the proposed basement extend beneath the water table surface?	No	The London Clay Formation comprises reasonably homogenous relatively impermeable clays which are not able to transmit groundwater under normal hydraulic gradients.
2. Is the site within 100m of a watercourse, well (used / disused) or potential spring line?	No	The site is remote (in excess of 100m) of any known watercourse. The geology of the area is not conducive to spring lines or wells for extraction of water.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No	The site is located over 2km away from the ponds.
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No	The basement will be beneath the existing property and marginally extending into the rear garden, which is paved in this area. Accordingly, there will be negligible change to the impermeable area.
5. As part of 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)?	No	There will be negligible change to the area of garden that is impermeable and therefore, negligible change to the volume that will be discharged to the ground.
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 mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line?	No	There are no ponds or spring lines within 100m of the site.

Table 1 – Extract of Table 4.2 by Soiltechnics Report No. R-STR4808-G01, September 2019

4.2 Slope Stability

Question	Response	Details
1. Does the existing site include slopes, natural or man-made greater than 7 degrees (approximately 1 in 8)?	Yes	The site is terraced with ground levels falling circa 4.25m over approximately 34m indicating an equivalent slope angle of 7.3°.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7 degrees (approximately 1 in 8)?	No	Any slopes required to provide access from the proposed basement to the rear garden will not be steeper than 7°.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)?	Yes	Ground continues to fall to the east at a gradient of up to 10°.
4. Is the site within a wider hillside setting in which the general slope is greater than 7 degrees (approximately1 in 8)?	No	The site is positioned at the crest of a slope, which falls to the east at a gradient of up to 10°.
5. Is the London Clay the shallowest strata at the site?	Yes	A thickness of Made Ground associated with the existing building and potentially terracing activities is anticipated.
6. Will any trees be felled as part of the development and/or are any works proposed within any tree protection zones where trees are to be retained?	No	It is not anticipated that any trees will be felled as part of the development.
7. Is there a history of seasonal shrink-swell subsidence in the local area and/or evidence of such effects at the site? `	Yes	London Clay is susceptible to shrink swell subsidence. However, the proposed basement foundations will be below the depth of susceptibility.
8. Is the site within 100m of a watercourse or a potential spring line?	No	The site is remote from any current watercourses. The geology of the area is not conducive to spring lines or wells for extraction of water.
9. Is the site within an area of previously worked ground?	No	There is no evidence to suggest quarrying has taken place at the site. However, worked ground is recorded to the east of the site associated with the former Regents Canal and existing railway line.
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 construction?	No	The property is underlain by London Clay, which is relatively impermeable.
11. Is the site within 50m of the Hampstead Heath Ponds?	No	The site is over 2km from the Hampstead Heath Ponds.

12. Is the site within 5m of a highway or pedestrian right of way?	No	N/A
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Yes	The presence of a basement will naturally increase the differential depth of foundations between neighbouring properties.
14. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No	The nearest tunnel, the Northern line, is over 300m east of the site.

Table 2 – Extract of Table 4.3 by Soiltechnics Report No. R-STR4808-G01, September 2019

4.3 Surface Water and Flooding

Question	Response	Details
1. Is the site within the catchment of the ponds chains on Hampstead Heath?	No	The site is located over 2km away from the ponds.
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 negligible change to the area of garden that is impermeable and therefore negligible change to the site drainage and surface water flows.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No	There will be negligible change to the area of garden that is impermeable.
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 negligible change to the drainage pattern on site.
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 negligible change to the drainage pattern on site.
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 site is not considered to be at risk of surface water flooding.

Table 3 – Extract of Table 4.4 by Soiltechnics Report No. R-STR4808-G01, September 2019

4.4 Non-Technical Summary of Screening Process

4.4.1 The screening process identifies the following issues to be carried forward to scoping for further assessment:

- The existing site is situated at the crest of a slope;
- Potential damage to neighbouring property at 10 Park Village West.

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5.0 SCOPING

"The following statements are from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)"

5.1 Introduction

5.1.1 A scoping assessment has been undertaken to satisfy Stage 2 of Camden Planning Guidance – Basements; this section of the report provides an assessment and discussion of each of the issues that have arisen from the screening process.

5.2 Site is Situated at the Crest of Slope

5.2.1 The existing site is situated at the crest of a slope that falls to the east, and therefore away from the property. The rear garden has been terraced with two distinct changes in level. The slope falls at an overall gradient of circa 7.5° and locally steeper, which is evidenced in Figure 16 from the Camden Geological, Hydrogeological and Hydrological Study, an extract of which is presented below in Figure 5.

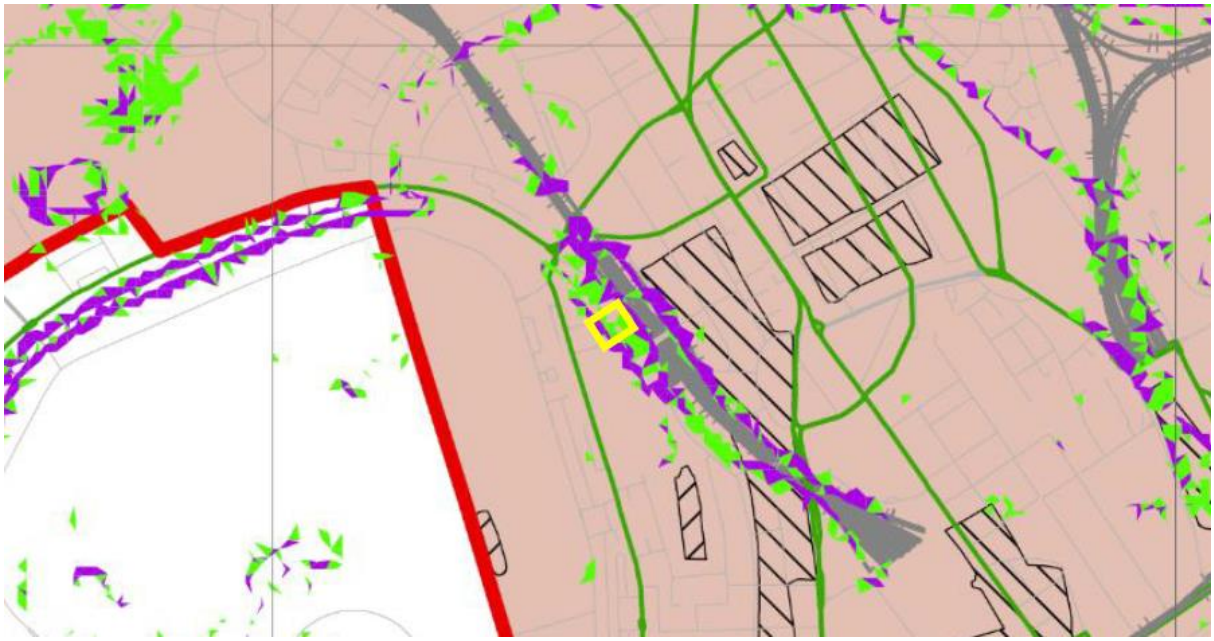

Figure 5 - Extract of Figure 16 from the Camden Geological, Hydrogeological and Hydrological Study (Arup, 2014) showing the slope angle map. Green highlighting indicates a slope of 7-10°. Purple highlighting indicates a slope of >10°. The site is highlighted in yellow.

5.2.2 The proposed basement will be formed beneath the existing property at the crest of the slope and will effectively cut into the slope. Accordingly, the proposed works will not impact upon the current stability of the slope.

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5.3 Potential Damage to Neighbouring Property at 10 Park Village West

5.3.1 Construction of the proposed basement will cause ground movements that have the potential to cause damage to existing neighbouring structures.

5.3.2 It is considered that the scheme can be suitably designed and constructed to maintain stability therefore minimise damage. A detailed ground movement analysis is presented in Section 7.3.

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6.0 SITE INVESTIGATIONS/ADDITIONAL ASSESSMENTS

6.1 Ground Investigation

"The following statements are from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)"

6.1.1 The ground investigation comprised the following;

- 1 no. borehole undertaken using cable percussive techniques to a depth of 20m BGL (below ground level) to confirm underlying ground conditions;
- 4 no. borehole undertaken using handheld driven tube (window sampling) equipment to a maximum depth of 3.4m BGL to confirm shallow underlying ground conditions;
- 1 no. hand excavated trial pit to a depth of 0.95m BGL to expose existing foundations.

6.1.2 Ground conditions in the vicinity of the proposed basement comprised between 0.4m and 1.5m of Made Ground overlying London Clay, which was described as stiff high to very high strength brown becoming grey clay.

6.1.3 Although no groundwater was recorded in the borehole BH01 during the fieldwork, groundwater has subsequently been recorded at 7.27m and 7.31m BGL during return monitoring visits completed on the 5th August 2019 and 28th August 2019. This corresponds to a depth of 1.85m below the underside of the finished floor slab.

6.1.4 The following table summarises the ground model proposed for the site:

Stratum	Depth to top (m BGL)	Depth to base (m BGL)
Made Ground	0	0.4 – 1.5
London Clay	0.4 – 1.5	>20

Table 4 – Extract of Table 6.3 by Soiltechnics Report No. R-STR4808-G01, September 2019

6.1.5 Groundwater is assumed to be at 1.5m below formation level for the basement.

6.1.6 The property at No. 10 Park Village West also has a lower ground floor, which is assumed to be a similar level to that in No. 11 Park Village West.

6.1.7 The foundations for the existing building (No. 11 Park Village West) were proven to a depth of 0.85m BGL in exploratory hole FTP01. The foundations at No. 10 Park Village West are assumed to be at a similar depth.

6.2 Arboricultural Report

"The following statements are from (Crown Tree Consultancy Report No. 10347, October 2019, BS 5837 Arboricultral Report & Impact Assessment, 11 Park Village West, London)"

6.2.1 Number 11 Park Village West is a detached, residential property located 105m east of Regent's Park. The front garden measures approximately 23m by 6m and is predominantly given over to hard surfacing. A planting bed exists to the centre of the front garden, in which a Retention Category A London plane grows (T1). The remaining trees within the front garden grow within planting beds along its boundaries. They include one Retention Category B tree (T3) and several Retention Category C trees.

6.2.2 The larger rear garden measures approximately 22m by 13m and is predominantly given over to pedestrian surfacing and planting beds along its boundaries. One Retention Category B tree (T4) and numerous Retention Category C trees grow within the planting beds.

6.2.3 Adjacent to the rear garden and overhanging the boundary are numerous Retention Category B and Retention Category C trees. The roots of these trees are likely to extend into the site.

6.2.4 The foundations for the new basement and lower ground floor will extend into to the theoretical Root Protection Areas of T1 and T13. However, only a small portion of each Root Protection Area shall be affected (see the Impact Assessment Plan in Appendix 6) so the potential impact is considered to be relatively negligible. In addition, where excavation is proposed within the Root Protection Area of T1, little rooting activity is anticipated. This is due to the decreased availability of oxygen and water beneath the existing garage, resulting in inhospitable rooting conditions.

6.2.5 In order to ensure that the basement does not impact on more than of the RPAs of T1 and T13 than is absolutely necessary, is it proposed to install the basement in a manner that does not disturb any of the soils beyond the footprint of the basement. This may be done via contiguous piling, sheet piling, pinning or any similar method which restricts excavation to the basement footprint.

6.2.6 The tree protection measures specified within the accompanying Arboricultural Method Statement should be installed prior to the commencement of all demolition activities (including soil stripping) to prevent any detrimental impact on tree health. Where this is not practicable, demolition of structures within Construction Exclusion Zones shall be undertaken very early on in the demolition phase and the protective barriers installed immediately thereafter.

6.2.7 In order to facilitate the development, it is proposed to remove one Retention Category C tree and one Retention Category U tree which are located internally to the site. These are all small trees and/or are hidden from public vantage points. Consequently, the impact of tree removal on local amenity shall be minimal.

6.2.8 No pruning works are required to facilitate the proposal.

6.2.9 No hard surfacing is proposed in RPAs.

6.2.10 Foundations for the lower ground floors are proposed within the Root Protection Area of T1 and T13. However, the small extent of RPA affected coupled with the sympathetic foundation design shall ensure no detrimental impact on trees.

6.2.11 A suitable load spreading surface shall need to be maintained throughout the Restricted Activity Zones A.

6.2.12 Tree protection measures are specified throughout the accompanying Arboricultural Method Statement that will ensure no negative impact on retained trees due to construction activity.

6.3 Flood Risk Assessment

"The following statements are from (Infrastruct CS Ltd Report No. 3557-PARK-ICS-XX-RP-C-001, August 2019, BS 5837 Flood Risk Assessment and Drainage Statement, Park Village West, London)"

6.3.1 The proposed development site lies entirely within Flood Zone 1 which is classified as land assessed as having a less than 1 in 1000 annual probability of river or sea flooding and is appropriate to all uses of land. It is, therefore, the consideration of this FRA that the site has a low risk of flooding from fluvial sources.

6.3.2 The risk of flooding due to overland flood flows is considered very low by the Environment Agency. The surface water flood data, shown below, indicates that there is low to medium flood risk in the rear gardens nearby, to the northeast of the site, but very low risk within the site itself. The basement, however, will depend on positive drainage of the patio and therefore there is a risk of flooding due to poor maintenance or the lack of power supply to the pumping station. Therefore, an alternative power supply system is recommended such as an oil generator. It is, therefore, the consideration of this FRA that the site has a medium risk of flooding from overland flow.

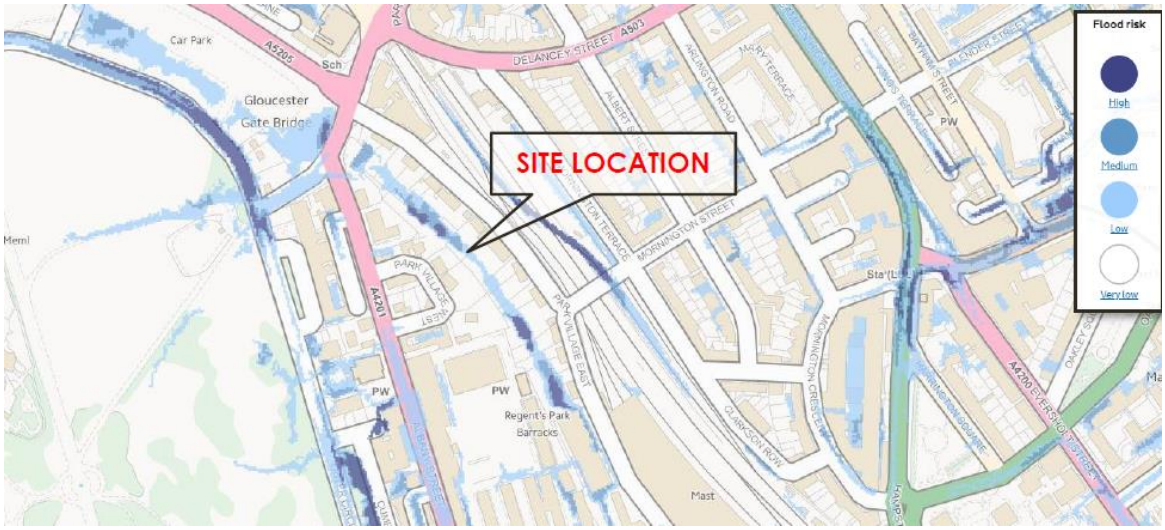

Figure 6 – Environment Agency Flood Risk from Surface Water map.

6.3.3 Groundwater flooding occurs because of the underground water table rising, which can result in water emerging through the ground and causing flooding in extreme circumstances. This source of flooding tends

to occur after extensive periods of heavy rainfall. Groundwater flooding can occur in areas where the underlying soil and bedrock can become saturated with water. Therefore, ground composition and aquifer vulnerability are significant influences on the potential rate of groundwater flooding. A majority of the sub-region is underlain by Thames Group (also referred to as London Clay) bedrock, a composition of silty clay/mudstone, sandy silts and sandy clayey silts of marine origin. This geological unit generally has a low hydraulic conductivity which means water does not easily move through it. The proposals include a basement which is 6.21m below the ground level and therefore the potential for the water table to raise above the basement level is higher. Since the water table levels are unknown, they must be confirmed via groundwater monitoring over a period of time, ideally in winter. The site is shown outside the "Increased Susceptibility to Elevated Groundwater" area but nearby a location where a groundwater flood incident occurred in the past, identified by the Environment Agency. See map in Appendix G. It is, therefore, the consideration of this FRA that the site has a medium risk of flooding from rising groundwater levels.

6.3.4 Sewer flooding can occur due to sewer infrastructure failure or due to an increased flow and volume of water entering a sewer system which exceeds its hydraulic capacity, causing the system to surcharge. If sewer outfall points are either blocked or submerged due to high water levels, water can back up in a sewer system and cause flooding. These issues can result in water overflowing from gullies and manholes, causing flooding in the local area. Blockages caused by sediment or debris can further exacerbate the probability of sewer flooding. Drainage in the sub-region is serviced by Thames Water Utilities who provide surface water, foul and combined sewer systems. Modern sewer systems are designed to be separate surface water and foul water systems, typically accommodating up to 1 in 30-year rainfall events. However, sewer system segments across London vary in capacity due to age. Older segments have a smaller capacity and may not be designed to accommodate rainfall events as significant as 1 in 30-year events. The Thames Water historical sewer flooding dataset provides details on the number of reported sewer flood incidents within a four-digit postcode area. Information on historical sewer flooding is shown in the SFRA indicates no flooding from sewers in the vicinity of the site. It is, therefore, the consideration of this FRA that the site has a low risk of flooding by surcharging of the local sewer network.

6.3.5 Reservoirs in the UK have an extremely good safety record. The EA is the enforcement authority for the Reservoirs Act 1975 in England and Wales. All large reservoirs must be inspected and supervised by reservoir panel engineers. It is assumed that these reservoirs are regularly inspected and essential safety work is carried out. These reservoirs therefore present a minimal risk. Flooding may result from the failure of engineering installations including flood defence, land drainage pumps, sluice gates and floodgates. Hard defences may fail through the slow deterioration of structural components such as the rusting of sheet piling, erosion of concrete reinforcement and toe protection or the failure of ground anchors. The Regent's Canal is not considered to pose a significant flood risk as all the flows and levels are managed and under control. It is, therefore, the consideration of this FRA that the site has a low risk of flooding by reservoirs, canals or other artificial sources.

6.3.6 The property -including the garden- occupies and area of 650m2, although the house itself is150m2 only. The construction of the proposed basement will not change the total impermeable area but will increase the positively drained value up to 190m2. The current runoff rates, estimated below, will be increased by the 2l/s pumped from the basement.

Return Period	Greenfield Runoff Rate L/S	Brownfield Runoff Rate L/s
1 in 1 Year	0.2	9.6
Qbar	0.2	12.4
1 in 30 year	0.5	23.1
1 in 100 year	0.8	30.0

Table 5 – Extract of Table 7.4 by Infrastruct CS Ltd Report No. 3557-PARK-ICS-XX-RP-C-001, August 2019

Greenfield runoff rates were calculated using the ICS SUDS Method within MicroDrainage Software. Calculations can be found in (Appendix 10.7).

6.4 Surface Water Drainage Strategy and SuDS Assessment

"The following statements are from (Infrastruct CS Ltd Report No. 3557-PARK-ICS-XX-RP-C-001, August 2019, BS 5837 Flood Risk Assessment and Drainage Statement, Park Village West, London)"

6.4.1 A hierarchical approach has been undertaken in consideration of the application of SuDS in relation to the development. This is in order to meet the design philosophy of ensuring that surface water run-off is managed as close to its source as possible and the existing situation is replicated as closely as possible.

6.4.2 The following drainage hierarchy has been undertaken with reference to the procedures set out in the SuDS Manual (CIRIA C753, 2015) to assess the viability of the application of SuDS techniques to this scheme:

- Store rainwater for later use: Storing rainwater for later use in water butts is recommended but it is not enough to accommodate the runoff volume from the whole development.
- Use infiltration techniques, such as porous surfaces in permeable strata areas: Soakaways cannot be used due to the reduced soakage of the clay.
- Attenuate rainwater in ponds or open water features for gradual release to a watercourse. There are no watercourses in the vicinity of this site.
- Attenuate rainwater by storing in tanks or sealed water features for gradual release to a watercourse. Not feasible because there are no watercourses in the close vicinity.
- Attenuate rainwater by storing in tanks or sealed water features for gradual release to a surface water sewer. There are no surface water sewers in the vicinity.
- Discharge rainwater to the combined sewer. As a last resort, foul and surface water from the basement will be discharged into the main combined sewer, replicating the arrangement of the rest of the house, which will be retained. Surface water flows will be attenuated in the

pumping station tank and pumped into one of the private chambers to the west of the main building.

6.4.3 The sustainable drainage hierarchy shown above is intended to ensure that all practical and reasonable measures are taken to manage surface water higher up the hierarchy (1 being the highest) and that the amount of surface water managed at the bottom of the hierarchy is minimised.

6.4.4 The patio runoff will be collected using a linear channel and a yard gully that lead into a package pumping station, from where the flows will be pumped into an existing chamber which is already connected into the main sewers along Park Village West. The system has been sized to accommodate a 1 in 100y storm event, including a 40% allowance for climate change. Potential sediments will be trapped using a catchpit. Therefore, the site runoff will be controlled by the pumping station and limited to 2l/s. This arrangement increases the runoff into the main sewers but reduces the risk of surface water flooding elsewhere as more area is being positively drained. Calculations can be found in (Appendix 10.7).

6.4.5 Flood risk can be managed but never completely removed. Residual risks are those which remain after following the sequential approach and taking action to control risk. Alternative means of power (i.e. oil generator) are encouraged for the surface water pumping station since during a big storm event it is more likely for a power cut to occur. The proposed surface water drainage measures will however be designed to contain the peak storm event that can be expected for a 1 in 100 years situation. A 40% allowance has already been applied to the site to account for future climate change. Flood resistance and resilient measures should be considered due to the nature of the site.

6.4.6 For basement development it is necessary to provide safe access and egress during a flood. A safe access or exit route must be appropriate for use by occupiers to escape flooding without the intervention of the emergency services. Based on the Environment Agency flood maps, the main entrance to the building is in Flood Zone 1. Therefore, a safe access/egress will be available through the internal stairs.

6.5 Proposed Foul Water Drainage System

"The following statements are from (Infrastruct CS Ltd Report No. 3557-PARK-ICS-XX-RP-C-001, August 2019, BS 5837 Flood Risk Assessment and Drainage Statement, Park Village West, London)"

6.5.1 The development proposals will seek to connect the foul water from the new basement into the existing chamber serving the current building. This will be subject to a Section 106 connection consent from Thames Water. Flows from this chamber and into the main sewer will be via a gravity fed connection.

6.5.2 Since the development site will increase the flow rates and volumes of foul sewerage into the Thames Water network, a capacity enquiry has been made to the undertaker. At the time of writing this report, no answer has been received.

6.6 Construction Traffic Management Plan (CTMP)

"The following statements are from (ORA Open Road Associates Report, August 2019, Construction Traffic Management Plan, 11 Park Village West, London)"

6.6.1 The site is surrounded by a road network suitable to accommodate all types of vehicles that will be involved in the project. All vehicles associated with the project will be told to access the site only via the existing strategic network and to avoid the lower classification of roads.

6.6.2 The nearby public highway condition should be surveyed prior to commencement of the development and will be carried out in the following sequence:

- Notify the London Borough of Camden (as local highway authority) when the proposed start date for the project has been confirmed and arrange a suitable date for the survey.
- Carry out joint survey with The London Borough of Camden.
- Carry out photo survey of Park Village West and any other areas to be agreed with The London Borough of Camden using suitable cameras to record the condition of the road, footway and verges; the extent of the survey to be agreed with the Council.
- Identify during the survey specific areas where pre-existing damage has occurred.
- Inspect each area of specific damage and record the details such as;
    - Location of damage
    - Type of damage
    - Extent of damage
    - Potential for increased damage (vulnerability)
    - Photograph the damaged areas.
    - Compile a report to include the recorded details and submit the report to The London Borough of Camden for consultation and consent.
    - The Council to approve details recorded in the report.
- A working brief will be in place in the interim period between the survey date and the commencement of site operations. Any additional defects will be documented and notified to The London Borough of Camden.

6.6.3 A banksman will be overseeing all traffic, along with the site manager on all deliveries. This will not affect pedestrian safety. There will be no overhead works where pedestrians are required to walk under any overhead gantries. A scaffolding will be erected around the frontage of the area impacted by the

conversion works for the duration of the project. However, no part of the structure will encroach onto the public highway therefore no prior approvals are required from the local highway authority.

6.6.4 The site has limited space available within the existing boundary. Where possible, the site will request smaller delivery vehicles where available for plant and materials. Tracking has been provided in Appendix A of this document to demonstrate a small tipping wagon can safely access the site. Where a larger vehicle is unavoidable, there will be a requirement for temporary unloading from the public highway.

6.6.5 As per the Safety at Street and Road Works: A Code of Practice, when a delivery vehicle is directly outside the site, there will not be sufficient width for the footway on the sites side to remain open. The contractor will provide appropriate Chapter 8 (Traffic Signs Manual) temporary traffic management to close the existing footway for pedestrian safety.

Figure 7 – Swept path analysis for maximum length articulated vehicle which can be used to access the site, by ORA Open Road Associate.

6.7 Heritage Statement

"The following statements are from (Authentic Futures Report No. 11 PVW HS, August 2019, Heritage Statement, 11 Park Village West, London)"

6.7.1 As a statutorily listed building, No. 11 is a nationally important building and is of high significance. This significance is reinforced by it being Grade II* and by being part of a group of similarly important buildings in the Park Villages and as an element of Nash's wider Regent's Park development. However, this designation reflects only the statutory importance of the building; it does not set out what features are important, or to what degree; nor does it describe what elements play a neutral role or detract from significance. Understanding these aspects is essential in enabling informed decisions to be taken when proposing alterations to the site, so that its special interest can be conserved wherever possible. The purpose of this section is to provide an assessment of significance, so that the effects of any proposed changes upon the listed building can be fully evaluated.

6.7.2 Three quarters of the new basement (containing a living room, kitchen, bathroom and internal staircase) is beneath the existing extension and will be invisible from any external location or from within the main house. There will be no impact on significance from this aspect of the works.

6.7.3 Where it emerges into the rear slope of the garden, the basement addition takes on the shape of an Italianate bow-fronted form, but one made contemporary by its Picturesque asymmetry. This playful exploration of historical forms in a modern manner continues externally with the small patio, steps and enclosing terraced planting which together, to paraphrase Paul Klee, takes an Italianate line for a walk. This aspect of the proposal adds to the original rather than subtracting from it; the basement bow becomes part of the ensemble of curves, bays and projections that are part of the character of Park Villa West.

6.7.4 This is especially true of the character of the Site when considered from the rear in the context of the rear treatments of Nos 10 and 12 adjacent. These flanking houses (No 12 especially) relate to their rear garden setting with a series of turrets, bays and other semi-circular, hexagonal and part-hexagonal projections, they establish a creative interplay with their sloping setting in a way which is a component of their romantic, character. To date, however, these aspects of the Picturesque have been more limited at No 11 – and to its detriment. The 1970s extension may have introduced some welcome asymmetry in addition to that previously provided by the porch wing alone, but it was a somewhat rigid and rectilinear asymmetry which compounded the lack of playfulness. The bow-fronted stucco façade, by contrast, increases the Picturesque interplay between the sloping grounds and built form at No 11 in a manner that enhances its established character and echoes that already achieved at No 10 and No 12.

6.7.5 An earlier iteration of the basement proposals posited a concave bay beneath a cantilevering terrace for the basement facade, but this could have read as too emphatic a scooping out. Instead, the swelling bay projection that has since emerged from design development uses the language of the additive, accretive forms characteristic of Park Village West's villas with their bays and bows.

6.7.6 It is noted that No 12 has recently won consent for an extensive basement floor but one that is entirely beneath landscaping. This is probably the right solution for that site because further additive forms in that location would have been excessive if expressed externally – it already has many volumes and projections

including a coach house, conservatory and linking wing – some of which fully interact with the sloping ground to Picturesque effect.

6.7.7 The additive external bay of the proposed basement at No 11 is far more discreet than those extant on the flanking properties and which form part of their character. The basement bow to No 11 is also being added to an existing structure whose Picturesque qualities at rear are, relatively speaking, limited. The basement projection consequently offers scope for enhancement to the rear of No 11 in ways that playfully interlocks the house and its landscape setting, more successfully responding to the Italianate rus in urbe artifice of the Park Villages than the present excessively rectilinear relationship between house and garden.

6.7.8 The proposed basement bay front has contemporary details such as large areas of glazing that flow from its sinuous, asymmetrical form. This fenestration is of very limited visibility beyond the new patio. It is also considered that in this location (which is an extension to an extension rather than being in direct juxtaposition with the main house) a contemporary language of details rather than pastiche becomes a matter of personal taste rather than objective pre-requisite (as is the case when considering the first floor side extension). There is, in any case, a better internal logic to contemporary detailing on a contemporary bay rather than seeking to apply pastiche fenestration to an asymmetrical curve.

6.7.9 The contemporary language continues on the terrace above the bay where bronzed terraced railings provide an elegant transition between contemporary and traditional elements.

6.7.10 The very small scale of the projection of the new basement means that the area of the garden it takes up is, likewise, a very small fraction of the whole. The slight change in balance between built form and landscaping is marginal and even more marginal when considered in relationship to the entirety of the Park Villages. The Site for the bow front of the extension and terrace above is already occupied by hard landscaping (semi-circular steps) and will not reduce the space available for soft landscaping from that which exists today. The area taken up by the bow front and patio has been substantially reduced during design development to take into account of aboricultural advice.

6.7.11 This is also a change that will not be visible from anywhere beyond the immediate garden of the Site (with the possible exception of limited glimpses from the upper rear bay of No 10 from an oblique angle). The villas of Park Village East are a substantial distance away and view the Site at angles that mean that the basement addition will be very difficult to observe at all. There is reinforced by extensive intervening planting within gardens and along the course of the canal even outside the growing season.

6.7.12 The basement proposals thus constitute a minor to moderate enhancement of No 11 as a heritage asset by emphasising its Picturesque qualities and better integrating the 1970s extension into the whole ensemble. The change is in the spirit of the Picturesque's asymmetry and irregularity, drawing upon the architectural style's desire to arouse curiosity and pleasure.

6.7.13 In conclusion, beyond the very minor adverse impact resulting from removing material in the south flank to create door openings, the proposals otherwise offer between minor and moderately positive impacts Picturesque qualities are emphasised and enhanced in locations where they were previously lacking.

6.7.14 Taken overall, the proposals preserve the more than special interest of the house and the group of statutorily listed assets of which it forms a part as well as the special interest of the conservation area which is preserved in some aspects and enhanced in others. No harm is caused to assets, their significance or their setting.

6.7.15 In reaching this conclusion, great weight has been given to the conservation of the designated assets.

6.7.16 Consequently, the proposals comply with national, regional and local heritage planning policy and guidance and the council is urged to grant listed building consent and planning permission for the changes subject to suitable conditions.

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7.0 CONSTRUCTION METHOD STATEMENT (CMS)

7.1 Outline Geotechnical Design Parameters

7.1.1 Relevant geotechnical parameters for London Clay have been derived from laboratory testing, technical standards, industry publications and wider literature. The following table summarises those parameters:

Parameter / Property	Value	Derivation
Characteristic unit weight, γ (kN/m3)	19	BS8004
Characteristic constant volume angle of shearing resistance, φ (°)	21	Correlation with plasticity index
Characteristic undrained shear strength, Cu (kN/m2)	80	Laboratory and in situ testing

Table 6 – Extract of Table 7.1 by Soiltechnics Report No. R-STR4808-G01, September 2019

7.2 Outline Temporary and Permanent Works Proposals

7.2.1 The proposed development comprises of the construction of a new basement for habitable use beneath the partial footprint of the existing building and marginally extending into the rear garden.

7.2.2 The proposed construction will adopt an underpinning technique to construct reinforced concrete retaining walls either side where we have existing walls above. The underpinning wall as a minimum, match the existing width of the existing foundations. The underpinning retaining walls can be placed within the London Clay Formation materials designed to a net allowable bearing pressure of 320kN/m2.

7.2.3 Differential settlements to acceptable levels.

7.2.4 Underpinning is to be done in short sections generally not exceeding 1.0m in length, in such manner that adequate support is at all times maintained to the underside of the wall for at least three quarters of its length and that sections of work in progress at any one time are separated by a distance of at least 3m.

7.2.5 Where the new basement extends into the rear garden, 350mm diameter piles with 150mm spacing as part of contiguous piled wall will be adopted and designed for the temporary case structurally. The piles will be founded at depth within the London Clay.

7.2.6 Installation of 300mm thick RC retaining wall adjacent to temporary pilled wall to act as a permanent structure.

7.2.7 Based on the ground conditions encountered, the presence of adjacent structures and the nature of the proposed development it is considered that bored piles will be most appropriate.

7.2.8 The piled wall can be extended up to 650mm from the face of existing building.

7.2.9 Pile depths will be subject to final design loadings, the method of installation and pile diameter.

7.2.10 Where the new basement starts approximately 2.5m from front wall towards the rear, a 300mm RC retaining wall will be adopted with 150mm RC shear walls around the staircase to act as an intermediate support along the length of the retaining wall.

7.2.11 Additional two number steel box frame will be adopted where we have internal walls, with columns running along the wall at either side and ground beam encased with concrete at ground level.

7.2.12 Excavating the existing soil to construct the basement will result in an unloading of the soil beneath the proposed basement. Heave (upward ground movement) will occur in the short term and is estimated to be less than 10mm. Long term heave of the order of 15mm has also been estimated. Ground bearing slab has been designed to accommodate the heave.

7.2.13 The wall will be propped by the ground floor slab in the permanent case.

7.2.14 Waterproofing will be done by the use of a lining wall and any other additional measure required by the Architect.

7.3 Ground Movement and Damage Impact Assessment

"The following statements are from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)"

7.3.1 Camden Planning Guidance – Basements, require that basement construction does not cause structural damage to neighbouring buildings. The risk of structural damage should be assessed using the Burland Scale and the classification must be no higher than Category 1 – very slight.

7.3.2 Ground movement analyses have been undertaken in accordance with the guidance provided in CIRIA Report C760 'Guidance on embedded retaining wall design'.

7.3.3 Based on the available GI information the soils are assumed to comprise 'stiff clay' with respect to CIRIA Report C760. The maximum depth of excavation is understood to be circa 3.5m below existing ground level.

7.3.4 The analyses have been undertaken with the aid of computer software package XDisp Version 20.1 developed by OASYS. The software estimates the ground movements induced by basement excavation using the movement profile curves presented within CIRIA Report C760. The building damage is then assessed within the software against the damage criteria presented by Burland.

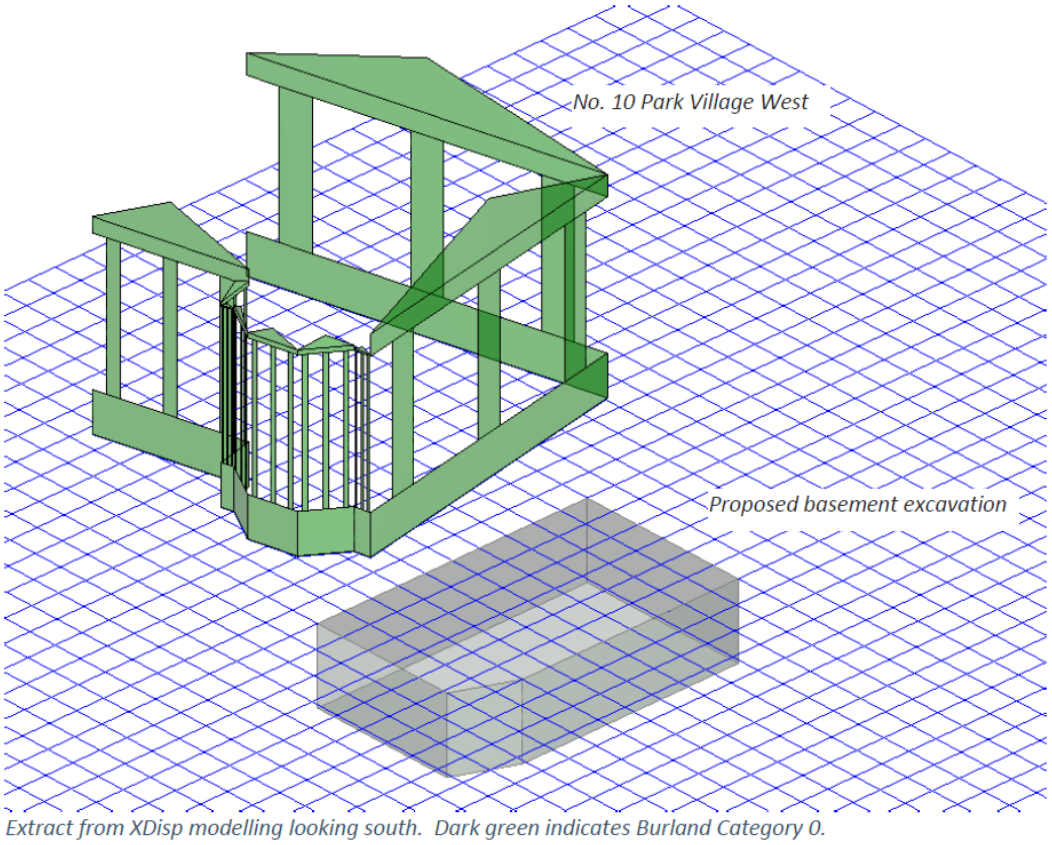
7.3.5 The basement will be constructed utilising underpinning techniques. The existing ground floor will remain during construction and will effectively act as a prop, restricting inward yielding. Accordingly, the walls will comprise a 'high stiffness' wall with respect to CIRIA C760.

7.3.6 Benefits due to corner stiffening effects have been ignored in the analyses; accordingly, full plane strain conditions have been assumed at the corners as well.

7.3.7 The foundations of No. 10 Park Village West are assumed to be at the same level as those at No. 11 Park Village West. On this basis the 'effective' depth of the excavation that has the potential to induce ground movement is 2.65m.

7.3.8 The masonry panels associated with No. 10 Park Village West have been assessed in the analyses.

7.3.9 The results, illustrated below and presented in detail in (Appendix 10.4), indicate that damage will not exceed Burland Category 1.



Extract from XDisp modelling looking south. Dark green indicates Burland Category 0.

Figure 8 – Ground Movement Analysis, by Soiltechnics Environmental.

7.4 Control of Construction Works

7.4.1 At this stage it is assumed that a formation level of approximately 5.7m-5.8m below the highest existing ground level is to be adopted for the new basement construction.

7.4.2 The contractor will monitor the adjacent structures and party walls for movements throughout the principal demonstration & construction works and, in the event of any movements exceeding the agreed target levels the method of works will be reviewed and altered as necessary.

- The proposed monitoring points will be agreed with the contractor
- The Green/Amber trigger level will be 6mm

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▪ The Amber/Red trigger level will be 10mm

The monitoring regime and frequency proposed is:

Activity	Frequency of monitoring
Site set up	Bi-Weekly
Demolition & Excavation	Weekly
Underpinning & Ground Works	Weekly
Principal Construction Works	Bi-Weekly

Table 7 – Monitoring Regime and Frequency

7.4.3 Target monitoring will monitor the neighbouring party wall with an accuracy of +/-2mm.The results of the monitoring are to be recorded and issued by email to the project engineer, CA and engineers for the adjoining properties, on the day that the results are taken. The results are to be presented both in the table and graphical form with the graphs for each point plotting the readings taken against time. The following actions will be taken if the trigger levels are exceeded:

Trigger Level	Action
Green/Amber	Immediately notify the engineers. Increase frequency of monitoring to a daily basis.
Amber/Red	Contractor to stop all works an immediately notify the engineers. Contractor and project engineer to put forward proposals, such as additional propping, to put forward proposals. Such as additional propping, to limit further movement to an acceptable level.

Table 8 – Trigger level and action required

7.4.4 In addition, the Contactor shall undertake the works in such a way as to minimise noise, dust and vibration when working close to adjoining buildings in order to protect the amenities of the neighbours. The Contractor shall only complete noisy works during the as noted below. The breaking out of existing structure shall be carried out by saw cutting where possible to minimise vibration to the adjacent properties and associated construction noise. All demolition and excavation work will be undertaken in a carefully controlled sequence taking into account the requirement to minimise noise vibration and dust.

7.4.5 The Contractor is to use suitable method of minimising the emission of dust and dirt during the construction works. This will include the use of protective plastic dust sheeting, enclosing conveyors and water spraying where suitable.

7.4.6 Bored piling techniques are to be adopted to reduce piling induced vibration. It has been recommended by the pilling contractor that Klemm KR702-2R or K708-2 can be used for the installation. Table below shows the following piling plant sound levels from different distances.

Plant	Sound Level dB(A)		
	2.0m	4.0m	10.0m
Klemm KR702	Idle: 74 Max Rev: 82	Idle: 68 Max Rev: 78	Idle: 67 Max Rev: 73
Klemm KR708	Idle: 78 Max Rev: 88	Idle: 74 Max Rev: 86	Idle: 69 Max Rev: 80

Table 9 – Sound level, By (Geostructural Solutions Ltd Construction Specialists)

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8.0 BASEMENT IMPACT ASSESSMENT

8.1 Ground Stability

"The following statements are from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)"

8.1.1 The basement will be founded on London Clay.

8.1.2 Ground movement analyses have been undertaken in accordance with CIRIA Report C760 with the aid of computer software package XDisp. Damage to surrounding structures has been assessed using the Burland scale and concluded that, with appropriate controls, the damage can be limited to no worse than Burland Category 1.

8.1.3 Ground levels fall to the east and therefore away from the proposed basement. Therefore, through inspection the proposed works will not impact upon the current stability of the slope.

8.1.4 The existing building founded at 800mm below ground level in loose to medium dense slightly clayey gravely sand.

8.1.5 The proposed development will be at approximately 5.7m below ground level in London Clay Formation.

8.1.6 The distance of the highway from the proposed basement is an average of 10m.

8.2 Land Stability/Slope Stability

8.2.1 The BIA screening, scoping and risk assessments have followed the Camden Planning Guidance - Basements criteria and screening questions. The potential ground movement issues raised by the screening and scoping exercises have been appropriately addressed by Angus Wilson (CEng) of Soiltechnics Ltd within the BIA report and no areas of concern relating to the proposed development were identified.

8.3 Hydrogeology and Groundwater Flooding

"The following statements are from (Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London)"

8.3.1 The proposed development will have negligible impact to the wider hydrogeological environment.

8.3.2 Groundwater monitoring indicates that groundwater is below the base of the proposed basement. Groundwater flows encountered during construction, if any, will be collected via a sump and suitably discharged.

8.4 Hydrology, Surface water flooding and sewer flooding

"The following statements are from (Infrastruct CS Ltd Report No. 3557-PARK-ICS-XX-RP-C-001, August 2019, BS 5837 Flood Risk Assessment and Drainage Statement, Park Village West, London)"

8.4.1 The development proposals together with the site layout have been assessed in relation to the provision of SuDS drainage associated with the works. The report has assessed the feasibility of implementing the SuDS hierarchal approach and has confirmed that this development is likely to be able to install suitable drainage measures into the design proposals. Therefore, in line with the recommendations of the National Planning Policy Framework, the development site lies within land classified as Flood Zone 1, which is considered at a low risk of flooding, and therefore appropriate for a development of this nature. Having assessed the other forms of flood risk to and from the development site, this report finds that the site is not considered at high risk from any other sources of flooding.

8.4.2 As part of the works associated with the new development it is the recommendation of the report that consideration should be given to flood resistant measures. These are mechanisms which can be implemented by the occupier to provide additional defences against flood water ingress. More information can be gained from the CIRIA document 'Improving the flood performance of new building'.

8.4.3 It is also the recommendation of the report that flood resilient measures are used within the design to minimize the impact an extreme flood event would have on the property. As these works are associated with the construction of the residential dwelling it would mainly involve the sighting of sockets and fuse boxes away from floor level. More information can be gained from the CIRIA document 'Improving the flood performance of new building'.

8.4.4 The proposed development will have negligible impact to the wider hydrological environment.

8.4.5 The proposed development will not increase the likelihood of surface water or sewer flooding.

9.0 REFRENCES

9.1 Soiltechnics Report No. R-STR4808-G01, September 2019, Ground Investigation Report Park Village West, London

9.2 Crown Tree Consultancy Report No. 10347, October 2019, BS 5837 Arboricultral Report & Impact Assessment, 11 Park Village West, London

9.3 Infrastruct CS Ltd Report No. 3557-PARK-ICS-XX-RP-C-001, August 2019, BS 5837 Flood Risk Assessment and Drainage Statement, Park Village West, London

9.4 ORA Open Road Associates Report, August 2019, Construction Traffic Management Plan, 11 Park Village West, London

9.5 Authentic Futures Report No. 11 PVW HS, August 2019, Heritage Statement, 11 Park Village West, London

9.6 Code of Practice BS6187: 2011 'Demolition'

9.7 Building Regulations 2000 Approved Document A – Structure

9.8 Building Regulations 2000 Approved Document C – Site preparation and resistance to contaminants and moisture.

10.0 APPENDICES

10.1 DESK STUDY REFERENCES

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10.10 GROUND INVESTIGATION REPORT

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