

Jonathan Chattaway
Director
Atelierwest
Suite 2
26 Cadogan Square
London
SW1X 0JP

29th April 2014

Ref: K0482/PR/Rep1Rev1

Dear Jonathan,

FLOOD RISK ASSESSMENT: PRIVATE PROPERTY, 134½ ABBEY ROAD, CAMDEN, LONDON NW6 4SR.

Further to your instruction, please find attached the Flood Risk Assessment (FRA) for the proposed development at the above address. We note that surface water flooding was recorded in the *Camden flood risk management strategy*, based on the flooding of the road in 1975, and in accordance with CPG4 guidance, a flood risk assessment is required.

This FRA provides the following:

- Review of the site location and outline proposals
- Statement of existing flood risk
- Review of the effects of the proposals on flood risk
- Measures to protect the site
- Preparation of the report, suitable for submission with the planning application.

The main findings of the report are as follows:

- The proposed development comprises the excavation of a single storey basement under the southern half of the existing house, extending into the existing courtyard to form a car lift. The basement will be used as a private workshop for the restoration of classic cars.
- The proposed development site is located in Environment Agency Flood Map Zone 1, at very low risk of fluvial flooding.
- The proposed development is classified as 'Less Vulnerable' and is considered appropriate in Flood Zone 1. Neither the Sequential Test nor Exception Test is required.
- The SFRA indicates the site is at medium risk of surface water and/or combined sewer flooding. However, although the Environment Agency surface water flood map shows flooding on the roads to the north and south of the site, there is no surface water indicated on the site itself. There is a very low risk of flooding from all other sources.
- The building footprint will not change as a result of the proposed development, nor will surface flows be affected by the proposed development, including measures to protect the site, as there would be no change in impermeable surface area.
- Precautionary measures should be taken to protect the property from potential ingress of surface water in the region of the car lift platform.
- In summary, if the recommendations outlined in this report are adopted the development can proceed without increasing flood risk elsewhere.

I trust that the contents of this letter are clear, but please do not hesitate to contact me if you require any further clarification.

Yours Sincerely,

A handwritten signature in black ink that reads "P. Roberts". The signature is written in a cursive style with a large initial 'P' and a period at the end.

Paul Roberts
Modeller/Analyst
Tel. 01189 480150 (direct)

PRO-FORMA FOR UNDERTAKING A FLOOD RISK ASSESSMENT (APPENDIX C OF PRACTICE GUIDE (DCLG, 2009))

<p>1 Development description and location</p>
<p>1a. What type of development is proposed and where will it be located?</p> <ul style="list-style-type: none"> A location plan at an appropriate scale should be provided with the FRA, or cross referenced to the main application when it is submitted.
<p><i>The address of the proposed redevelopment site is 134½ Abbey Road, Camden, London NW6 4SR (NGR 525611, 184048). The location of the site is shown in Figure 1.</i></p> <p><i>The north part of the site is currently occupied by a two storey residential building and courtyard in the southern area used for parking, with a vehicle turntable immediately to the south of the house. Vehicular access is gained via double gates fronting Abbey Road. A single storey studio is present at the southern edge of the courtyard. The site is bounded to the north by Wavel Mews, the south by Abbey Road, the west by 136 Abbey Road, and the east by the rear of 53 Priory Lane. Priory Lane is located approximately 30m to the east of the site. A detailed location map of the site is shown in Figure 2.</i></p> <p><i>The proposed development comprises the excavation of a single storey basement under the southern half of the existing house, extending into the existing courtyard to form a car lift. The basement will be constructed using a combination of underpinning and piling, and will be used as a private workshop for the restoration of classic cars.</i></p>
<p>1b. What is its vulnerability classification?</p> <ul style="list-style-type: none"> Vulnerability classifications are provided in Table D.2, Annex D of PPS25
<p><i>NPPF/PPS25 includes a table to highlight whether particular types of development are appropriate in each flood zone. The proposed development is to be used for general industry/storage/assembly and is therefore classified as 'Less Vulnerable' (LV).</i></p>
<p>1c. Is the proposed development consistent with the Local Development Documents?</p>
<p><i>The development is consistent with the Camden Development Policies 2010–2025: Local Development Framework; specifically DP1 (mixed use development), DP26 (managing the impact of development on occupiers and neighbours) and DP27 (basements and lightwells).</i></p>
<p>1d. Please provide evidence that the Sequential Test or Exception Test has been applied in the selection of this site for this development type?</p> <ul style="list-style-type: none"> Evidence is required that the Sequential Test has been used in allocating the proposed land use proposed for the site and that reference has been made to the relevant Strategic Flood Risk Assessment (SFRA) in selecting development type and design (See paragraphs 16-20 and Annex D of PPS25). Your Local Planning Authority planning officer should be able to provide site-specific guidance on this issue. Where use of the Exception Test is required, evidence should be provided that all three elements of this test have been passed (see paragraphs 20 and Annex D of PPS25). Your Local Planning Authority planning officer should be able to provide site-specific guidance on this issue.
<p><i>The proposed development is classed as 'Less Vulnerable' (LV), which is "appropriate" in Flood Zone 1. The Sequential Test is not required for the proposed development.</i></p> <p><i>The Exception Test is not appropriate for the proposed development.</i></p>
<p>1e. [Particularly relevant to minor developments (alterations & extensions) & changes of use] Will your proposal increase overall the number of occupants and/or users of the building/land; or the nature or times of occupation or use, such that it may affect the degree of flood risk to these people?</p>

n/a

2. Definition of the flood hazard

2a. What sources of flooding could affect the site? (see Annex C PPS25).

- This may include hazards such as the sea, reservoirs or canals, which are remote from the site itself, but which have the potential to affect flood risk (see Chapter 3 of the Practice Guide).

The risk of flooding from all sources is identified in the table below.

Key sources of flooding	Possibility at site
<i>Fluvial (Rivers)</i>	<i>n/a</i>
<i>Tidal</i>	<i>n/a</i>
<i>Groundwater</i>	<i>None identified</i>
<i>Sewers</i>	<i>None identified</i>
<i>Surface Water</i>	<i>Indicated on EA surface water flood map</i>
<i>Infrastructure Failure</i>	<i>n/a</i>

The Environment Agency flood map indicates the site is located entirely in Flood Zone 1, corresponding to risk of flooding from rivers less than 1 in 1000 years.

See section 3b.

2b. For each identified source, describe how flooding would occur, with reference to any historic records wherever these are available.

- An appraisal of each identified source, the mechanisms that could lead to a flood occurring and the pathways that flood water would take to, and across, the site.
- Inundation plans, and textural commentary, for historic flood events showing any information available on the mechanisms responsible for flooding, the depth to which the site was inundated, the velocity of the flood water, the routes taken by the flood water and the rate at which flooding occurred.

See Section 3b.

2c. What are the existing surface water drainage arrangements for the site?

- Details of any existing surface water management measures already in place, such as sewers and drains and their capacity.

Connected to existing surface water drains.

3. Probability

3a Which flood zone is the site within?

- The flood zones are defined in Table D.1 of Annex D PPS25.

The Environment Agency flood map indicates the site is located entirely in Flood Zone 1, corresponding to risk of flooding from rivers less than 1 in 1000 years.

3b If there is a Strategic Flood Risk Assessment covering this site, what does it show?

- The planning authority can advise on the existence and status of the SFRA.

The North London Strategic Flood Risk Assessment (SFRA) (Mouchel, 2008), which covers the Camden area, indicates that the risk of surface water and/or combined sewer flooding is medium throughout the borough. Map 22 from Appendix A of the SFRA shows the Camden surface water flooding map, and a small section of this map at the location of the site, with inset, is shown in Figure 3. The map confirms that Abbey Road was subject to surface water

flooding caused by the August 1975 storm, which was the most severe storm ever recorded in London (Haycock Associates, 2011), with 150 mm of rain falling in 2½ hours .

The storm of August 2002 was less severe, with 60 mm of rain falling in under one hour, but was nevertheless estimated to correspond to the to the 1 in 100 year storm. The SFRA confirms that the resulting surface water flooding was caused by excessive rainfall exceeding the capacity of the main sewer. Although the storm caused flooding in many of the surrounding streets, did not lead to flooding in Abbey Road itself.

The Environment Agency surface water flood map shown in Figure 4 indicates low to medium risk of flooding on Abbey Road to the south of the site, and Wavel Mews to the north of the site. However, surface water is not shown in the site itself, indicating very low risk.

The SFRA indicates that the risk of groundwater flooding in Camden is very small.

The SFRA indicates that the risk of flooding from infrastructure failure is very large in the Camden in general. However, the Environment Agency infrastructure failure flood map indicates very low risk at the site.

3c What is the probability of the site flooding taking account of the contents of the SFRA and of any further site-specific assessment?

This may need to include

- a description of how any existing flood risk management measures affect the probability of a flood occurring at the site FRA Pro-forma
- supporting evidence and calculations for the derivation of flood levels for events with a range of annual probability
- inundation plans of, and cross sections through, the existing site showing flood extents and levels associated with events with a range of annual probability
- a plan and description of any structures which may influence the probability of a flood occurring at the site. This may include bridges, pipes/ducts crossing a watercourse, culverts, screens, embankments or walls, overgrown or collapsing channels and their likelihood to choke with debris.
- details of any modelling studies completed to define the exiting degree of flood risk (Ref Chapter 3 of the PG)

There is low to medium risk of surface water and/or flooding on the roads immediately to the north and south of the site. The site itself is at very low risk of surface water flooding.

Flooding from all other sources is considered low risk at the site.

3d What are the existing rates and volumes of runoff generated by the site?

- This should generally be accompanied by calculations of runoff rates and volumes from the existing site for a range of annual probability events (see Chapter 4 of the Practice Guide).

The proposed development would not lead to any change to the building footprint and therefore no change to runoff rates and volumes. For this reason the existing rates and volumes of runoff have not been determined.

4. Climate change

4a How is flood risk at the site likely to be affected by climate change?

- Annex B of PPS25 and Chapters 3 and 5 of the Practice Guide provide guidance on how to assess the impacts of climate change.

Based on NPPF guidance, the flood risk to the site due to climate change will be from increased rainfall intensity.

5. Detailed development proposals

Where appropriate, are you able to demonstrate how land uses most sensitive to flood damage have been placed in areas within the site that are at least risk of flooding, including

providing details of the development layout?

- Reference should be made to Table D.2 of PPS25.
- Chapter 4 of the Practice Guide provides guidance on how the sequential approach can be used to inform the lay-out of new development sites.

The proposed development comprises the excavation of a single storey basement under the southern half of the existing house, extending into the existing courtyard to form a car lift. The basement will be constructed using a combination of underpinning and piling, and will be used as a private workshop for the restoration of classic cars. Detailed plans of the existing and proposed development are shown in Figure 5, Figure 6 and Figure 7.

The site is small and no special consideration of land sensitive to flooding, or at different levels of flood risk is required.

6. Flood risk management measures

How will the site be protected from flooding, including the potential impacts of climate change, over the development's lifetime?

- This should show that the flood risk management hierarchy has been followed and that flood defences are a necessary solution. This should include details of any proposed flood defences, access/egress arrangements, site drainage systems (including what consideration has been given to the use of sustainable drainage systems) and how these will be accessed, inspected, operated and maintained over the lifetime of the development. This may need to include details of any modelling work undertaken in order to derive design flood levels for the development, taking into account the presence of any new infrastructure proposed.

As previously stated, there is low to medium risk of surface water flooding on the roads immediately to the north and south of the site. However, the site itself is at very low risk of surface water flooding, and no surface water has been previously observed on the site. As a precautionary measure the property should be protected from potential ingress of surface water in the region of the car lift platform.

The basement should be adequately protected from flooding as part of the proposed design and no special measures are required.

7. Off site impacts

7a How will you ensure that your proposed development and the measures to protect your site from flooding will not increase flood risk elsewhere?

This should be over the lifetime of the development taking climate change into account. The assessment may need to include:

- Details of the design basis for any mitigation measures (for example trash screens, compensatory flood storage works and measures to improve flood conveyance). A description of how the design quality of these measures will be assured and of how the access, operation, inspection and maintenance issues will be managed over the lifetime of the development.
- Evidence that the mitigation measures will work, generally in the form of a hydrological and hydraulic modelling report.
- An assessment of the potential impact of the development on the river, estuary or sea environment and fluvial/coastal geomorphology. A description of how any impacts will be mitigated and of the likely longer-term sustainability of the proposals.

The building footprint will not change as a result of the proposed development. Surface flows will not be affected by the proposed development, including measures to protect the site, as there would be no change in impermeable surface area. The development will not impact the existing drainage scheme.

7b How will you prevent runoff from the completed development causing an impact elsewhere?

- Evidence should be provided that drainage of the site will not result in an increase in the peak rate or in the volumes of runoff generated by the site prior to the development proceeding.

No measures need. See section 7a.

8. Residual risks

8a What flood-related risks will remain after you have implemented the measures to protect the site from flooding?

- Designing for event exceedence on site drainage systems is covered in Chapter 5 of the Practice Guide. Guidance on other residual risks is provided in Chapter 7.

None.

8b How, and by whom, will these risks be managed over the lifetime of the development?

- Reference should be made to flood warning and evacuation procedures, where appropriate, and to likely above ground flow routes should sewers or other conveyance systems become blocked or overloaded. This may need to include a description of the potential economic, social and environmental consequences of a flood event occurring which exceeds the design standard of the flood risk management infrastructure proposed and of how the design has sought to minimize these – including an appraisal of health and safety issues.

n/a

REFERENCES

Author	Date	Title/Description
Communities and Local Government (CLG)	Mar 2012a	National Planning Policy Framework
Communities and Local Government (CLG)	Mar 2012b	Technical Guidance to the National Planning Policy Framework.
Communities and Local Government (CLG)	Dec 2009	Planning Policy Statement 25: Development and Flood Risk Practice Guide (Updated).
Communities and Local Government (CLG)	Mar 2010	Planning Policy Statement 25: Development and Flood Risk.
Environment Agency (EA)	Apr 2014	Flood map for Planning (Rivers and Sea) http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=nw6+4sr&lang=e&ep=map&topic=floodmap&layerGroups=default&scale=9&textonly=off&submit.x=0&submit.y=0 (accessed 22/04/2014)
Environment Agency (EA)	Apr 2014	Risk of Flooding from Surface Water http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=nw6+4sr&lang=e&ep=map&topic=floodmap&layerGroups=default&scale=9&textonly=off&submit.x=0&submit.y=0 (accessed 22/04/2014)
Haycock Associates	Jul 2011	HiDEP WD 20 – Review of the August 1975 Storm relative to the 1:10,000 year rainfall event. http://www.cityoflondon.gov.uk/things-to-do/green-spaces/hampstead-heath/ponds-project/Documents/OS_HH_DP_1975stormcomparison.pdf (accessed 25/04/2014)
Mouchel	Aug 2008	North London Strategic Flood Risk Assessment
Mouchel	Aug 2008	North London Strategic Flood Risk Assessment Appendix A: Flood Maps

Figure 1 Location of the proposed development site

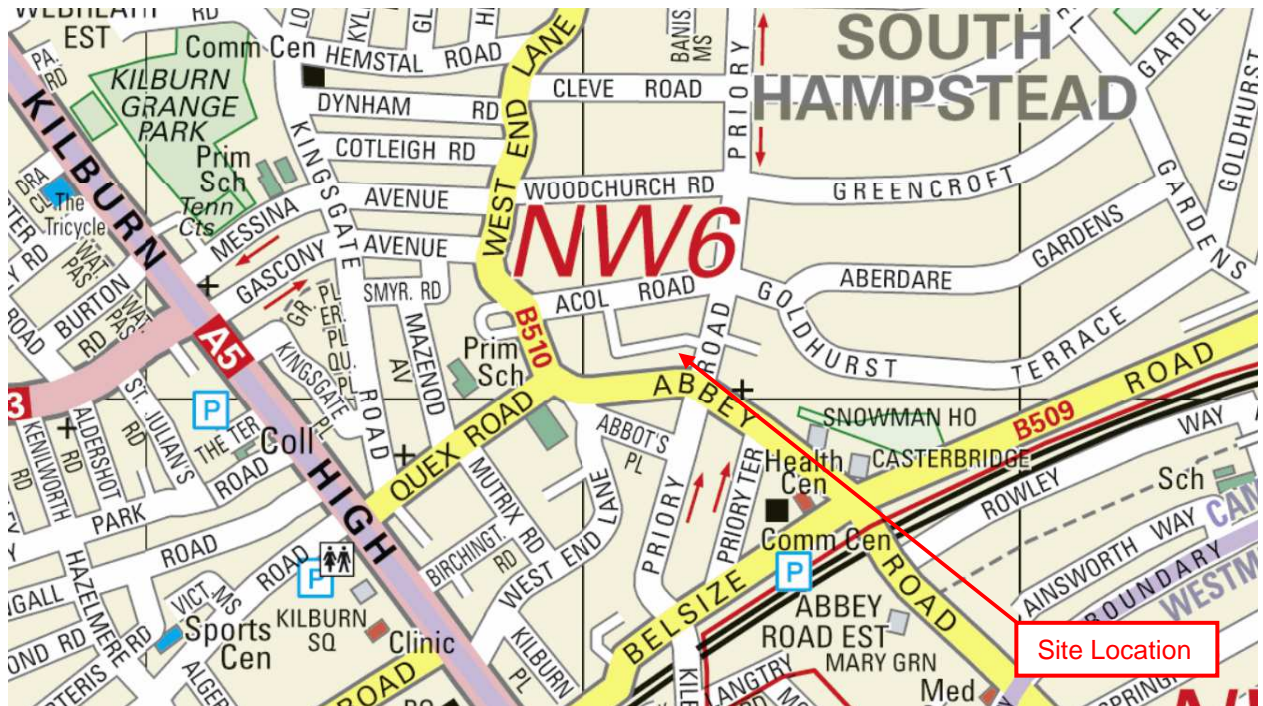


Figure 2 Detailed location of the proposed development site

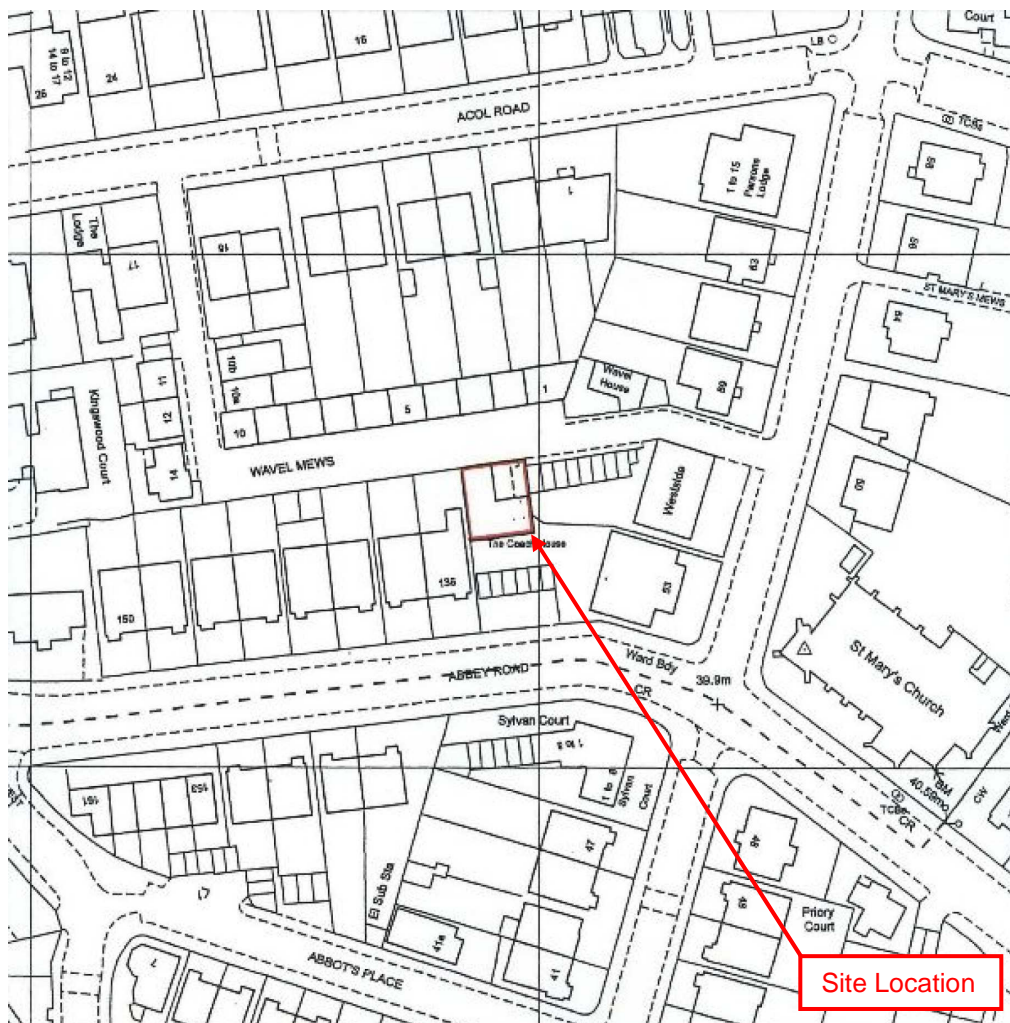


Figure 3 Camden surface water flooding (taken from SFRA Appendix A Map 22)



Figure 4 Environment Agency Risk of Flooding from Surface Water

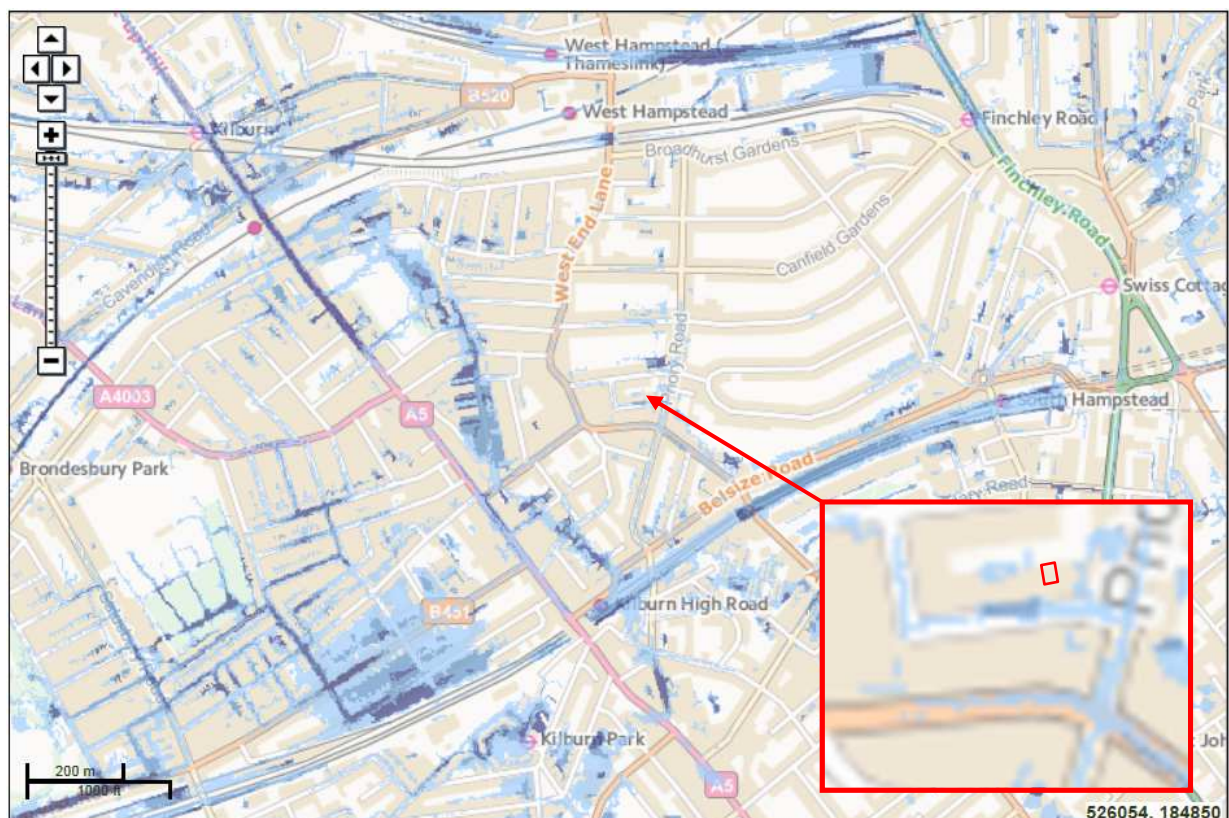
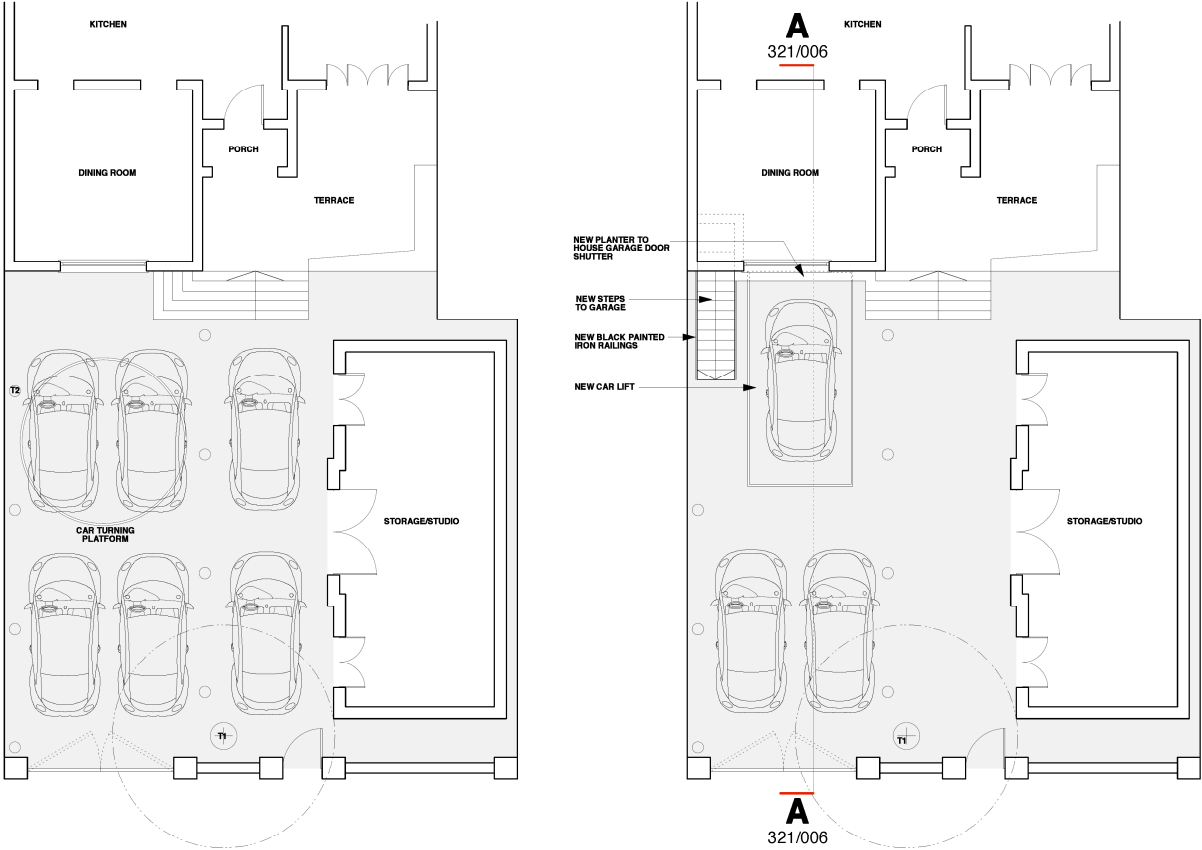
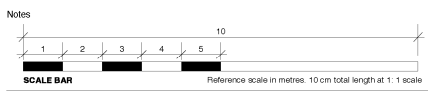


Figure 5 Ground floor plan - existing and proposed



GROUND FLOOR PLAN - EXISTING

GROUND FLOOR PLAN - PROPOSED



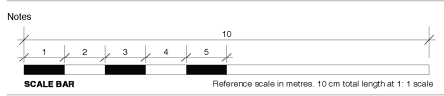
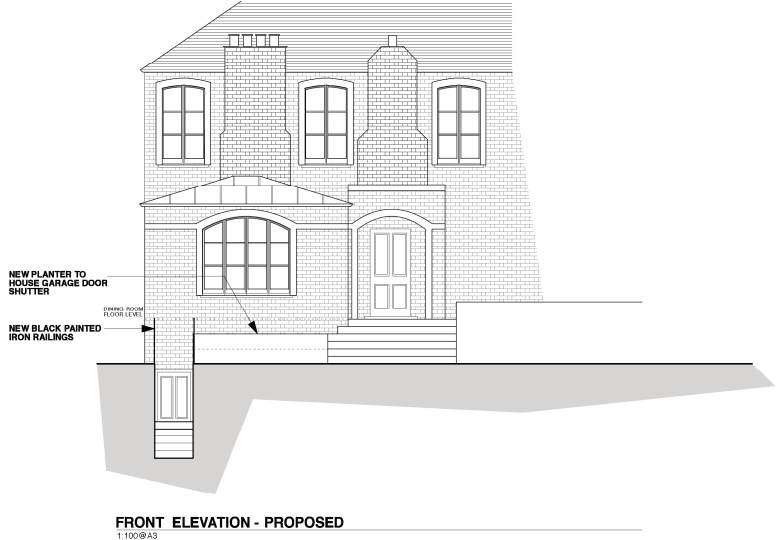
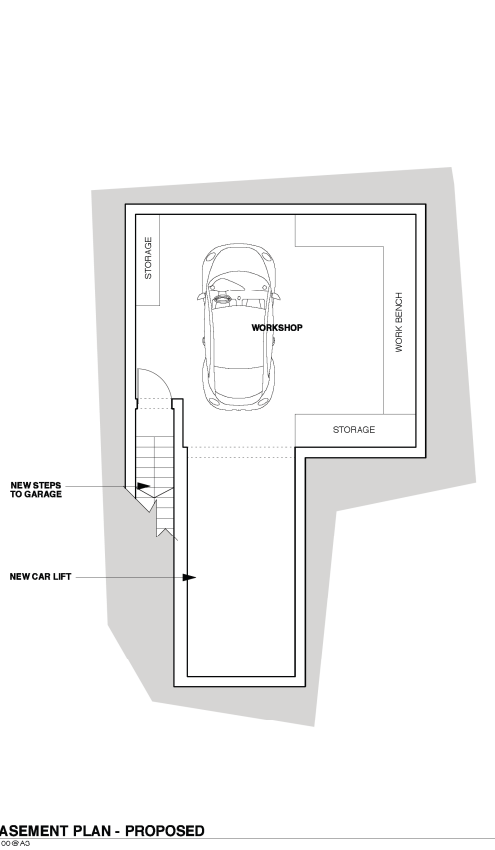
Rev.	Comments	Date

Project	ABBAY ROAD - LONDON - NW6
Drawing Title	GROUND FLOOR PLAN - EXISTING & PROPOSED
Dwg No.	321/P/004
Scale	1:100 @ A3
Date	MARCH 2014
Drawn by	JC

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Figure 6 Basement plan – proposed



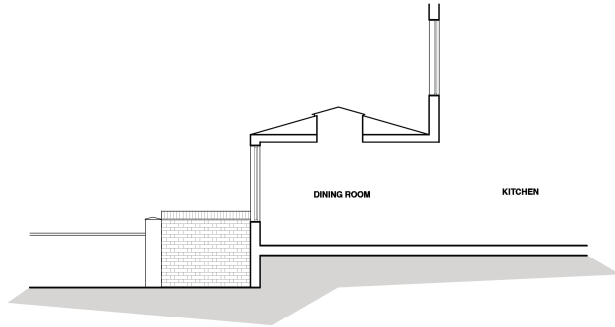
Rev.	Comments	Date

Project	ABBEY ROAD · LONDON · NW6
Drawing Title	BASEMENT PLAN - PROPOSED & FRONT ELEVATION - EXISTING & PROPOSED
Uwg no.	321/P/005
Scale	1:100 @ A3
Date	MARCH 2014
Drawn by	JC

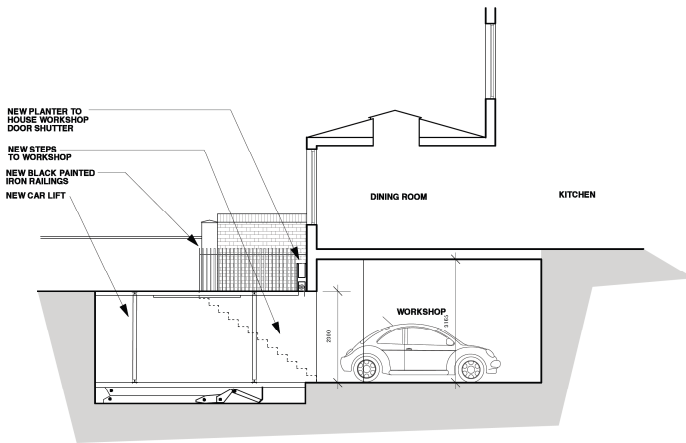
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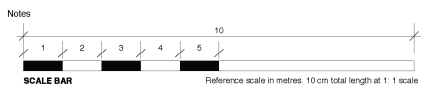
Figure 7 Ground floor and basement section – existing and proposed



SECTION AA - EXISTING
1:100 @ A3



SECTION AA - PROPOSED
1:100 @ A3



Rev. Comments

Date

Project **ABBEY ROAD · LONDON · NW6**
 Drawing Title **SECTION AA - EXISTING & PROPOSED**
 Dwg No. **321/P/006** Revision
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