CampbellReith
consulting engineers

114 Prince of Wales Road, Camden, London NW5 3NE

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-01
Revision: F1

December 2017

Campbell Reith Hill LLP
Friars Bridge Court
41-45 Blackfriars Road
London
SE1 8NZ

T:+44 (0)20 7340 1700
F:+44 (0)20 7340 1777
E:london@campbellreith.com
W:www.campbellreith.com

Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	September 2016	Comment	IMjw-12466-01-280916-114 Prince of Wales Road-D1.doc	I MacDonald	E Brown	E Brown
D2	October 2017	Comment	JBrm-12466-01-0401017 - 114 Prince of Wales Road - D2.doc	J Brown	R Morley	R Morley
F1	December 2017	Planning	JBrm-12466-01-131217 - 114 Prince of Wales Road - F1.doc	J Brown	G Kite	G Kite

Document Details

Last saved	13/12/2017 09:36
Path	JBrm-12466-01-131217 - 114 Prince of Wales Road - F1.doc
Author	J Brown, BSc MSc FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12466-01
Project Name	114 Prince of Wales Road
Planning Reference	2015/7293/P

Contents

Appendix

1.0 NON-TECHNICAL SUMMARY

1.1. CampbellReith was instructed by London Borough of Camden, (LBC) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for 114 Prince of Wales Road, Camden, London, NW5 3NE (planning reference 2015/7293/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

1.2. The Audit reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.

1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed it against an agreed audit check list.

1.4. The BIA and Structural Method Statement (SMS) have been prepared by Ashton Bennet with structural engineering input from LIM Engineering Ltd and Price and Myers LLP, well-known firms of engineering consultants using individuals who possess suitable qualifications.

1.5. The proposal includes the extension of an existing basement into the rear garden to enable the construction of a light well. The extension is to be constructed using underpinning techniques for a retaining wall founded upon the London Clay.

1.6. Appropriate structural calculations have been provided.

1.7. It is not likely that the ground water table will be encountered during basement foundation excavation.

1.8. The SMS discusses underpinning with suitable temporary propping arrangements.

1.9. It is recommended that further investigation of the neighbouring foundations is carried out.

1.10. It is accepted that the surrounding slopes to the development site are stable.

1.11. It is accepted that the risk of flooding is low.

1.12. The revised submissions confirm there will be no hydrological impacts.

1.13. Considering the revised submissions, the BIA meets LBC's policy requirements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 05/09/2017 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 114 Prince of Wales Road, London (Camden Planning reference 2015/7293/P.

2.2. The Audit was carried out in accordance with the Terms of Reference set by LBC. It reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development.

2.3. A BIA is required for all planning applications with basements in Camden in general accordance with policies and technical procedures contained within

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Local Plan Adopted version. June 2017
- Camden Planning Guidance (CPG) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.

2.4. The BIA should demonstrate that schemes:

a) maintain the structural stability of the building and neighbouring properties;

b) avoid adversely affecting drainage and run off or causing other damage to the water environment;

c) avoid cumulative impacts upon structural stability or the water environment in the local area, and;

evaluate the impacts of the proposed basement considering the issues of hydrology, hydrogeology and land stability via the process described by the GSD and to make recommendations for the detailed design.

2.5. LBC's Audit Instruction described the planning proposal as *"Erection of a replacement single storey rear extension and enlargement of existing basement with rear lightwell."*

The Audit Instruction also confirmed 114 Prince of Wales Road is not listed, nor is it a neighbour to a listed building.

2.6. CampbellReith accessed LBC's Planning Portal on 21/09/2017 and gained access to the following relevant documents for audit purposes:

- Initial BIA Impact Assessment Audit, CambellRieth Hill LLP, 2016 Rev D1
- BIA LCAL 3303 114 Prince of Wales BIA Report, Ashton Bennet, August 2017

  This includes:

  Appendix A: Drawings of Site Proposals

  Appendix B: Archival Maps

  Appendix C: Borehole Logs and DCP

  Appendix D Geotechnical and Environmental Test results

  Appendix E: Structural Method Statement & Construction Method (SMS)

  Appendix F: Ground Movement Methodology
- Planning and Heritage Statement 114 POWR, December 2015
- Existing Drawings

  PRWLS-E001 Dec 2015
- Existing Plans

  PRWLS-L001 Dec 2015

  PRWLS_P001-P004 Dec 2015

  PRWLS_S001-S002 Dec 2015
- Proposed Drawings

  PRWLS-L101 Mar 2017

  PRWLS-P100-P104 Mar 2017
- Proposed Plans

  PRWLS-E101 Mar 2017

  PRWLS-S101-S104 Mar 2017

2.7. CampbellReith received the following information in November 2017:

- John Helyer CV
- Drainage Plan
- Photos of Rear Garden
- Letter to CampbellReith 071117

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
Is data required by Cl.233 of the GSD presented?	Yes	Updated in November 2017.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	
Are suitable plan/maps included?	Yes	
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	Updated in November 2017.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Updated information in November 2017 clarifies impermeable site area. Q6 Surface water flooding. Figure 15 is referred to but BIA incorrectly identifies a low risk from surface water. Should be medium risk.
Is a conceptual model presented?	Yes	

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated information in November 2017 clarifies impermeable site area. Q6 Surface water flooding. Figure 15 is referred to but BIA incorrectly identifies a low risk from surface water. Should be medium risk.
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	A reasonable assumption has been made as to the presence of neighbouring basements matching that of the site property.
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	No	
Are reports on other investigations required by screening and scoping presented?	Yes	Update information confirms flood risk mitigation measures will be adopted.

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	A reasonable assumption has been made as to the presence of neighbouring basements matching that of the site property.
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	Yes	Updated information confirms drainage arrangements.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	An appropriate GMA, structural calculations, and method statement have been provided.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Updated information confirms drainage arrangements.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	Category 1.

Item	Yes/No/NA	Comment
Are non-technical summaries provided?	Yes	Should be provided at the front of the BIA.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by a well-known firm of engineering consultants, Ashton Bennet (AB) and the individuals concerned in its production have suitable qualifications.

4.2. Similarly a Conceptual Model, Monitoring Strategy and Ground Movement Methodology including ground movement calculations have been included in Appendix F of the BIA, authored by AB and the individuals concerned in its production have suitable qualifications.

4.3. A Structural Method Statement (SMS) and a Construction Method has been carried out by a well-known firm of engineering consultants, Price and Myers LLP. The author and reviewer are both chartered structural engineers. In the November 2017 submissions, the Structural Engineer's CV has been provided to demonstrate experience.

4.4. The LBC Instruction to proceed with the audit did not identify that the basement proposal either involved a listed building or was adjacent to listed buildings.

4.5. The proposal consists of extending the existing lower ground level to the rear of the property by approximately 5m, and partially lowering the existing rear portion of the basement by approximate 600mm.

4.6. The BIA has identified that the 80mm concrete ground slab is underlain by Made Ground to a maximum depth of 0.80 metres below which lies the London Clay Formation.

4.7. The BIA refers to basement depths of construction of 3.0 with a retained soil height of 2.5m which agrees with an Architect's proposed section A-A drawing, no. PRWLS-S101 dated March 2017.

4.8. The new basement structure is proposed as being formed by L shaped retaining walls which are to cantilever from the new basement slab. The form of construction of the ground slab is not discussed, it is therefore assumed that the retaining walls are to act as unpropped cantilevers. Shallower RC underpins are proposed to the original rear wall of the property in order to create a step between the existing lower ground level beneath the main property and the extended basement level to the rear of the property.

4.9. Structural calculations have been provided that design the wall L shaped retaining wall in the worst case, which has been considered as the lightwell retaining wall. Calculations have also been provided for the basement slab to resist buoyancy and ground heave using a conservative assumption that water will be found at ground level which is unlikely.

4.10. An assessment of vertical and horizontal ground movements has been produced, with a predicted Burland Damage category to adjoining properties of 1 (Very slight).

4.11. The revised submissions of November 2017 provides supporting information that confirms the proposed development will not increase impermeable site area. It is accepted that there will be no impact to the wider hydrological environment.

4.12. The BIA concludes that although the development is close to a now culverted tributary of the "lost" River Fleet, it will not impact on the wider hydrogeology of the area, any other watercourses, springs or the Hampstead Heath Pond chain catchment area. This conclusion is accepted.

4.13. It is accepted that there are no slope stability concerns regarding the proposed development

4.14. The BIA screening has identified that the road has previously flooded, and that a FRA may be required. The revised submissions of November 2017 confirm that there is a medium surface water flood risk that will be mitigated by use of appropriate flood risk defences, such as non-return valves to drainage. It is recommended that threshold levels to lightwells and entrances are elevated in relation to surrounding ground level, such increase in threshold levels to be assessed as part of the detailed design works.

5.0 CONCLUSIONS

5.1. The BIA and SMS have been carried out by well-known firms of engineering consultants using individuals who possess suitable qualifications.

5.2. The BIA has confirmed that the proposed basement will be founded within the London Clay.

5.3. It is likely that the ground water table will not be encountered during basement foundation excavation.

5.4. The SMS discusses underpinning retaining walls both with suitable temporary propping arrangements.

5.5. An appropriate site investigation consisting of trial pits and two window samples was undertaken.

5.6. Appropriate structural calculations have been provided for the basement retaining walls and basement slab.

5.7. Analysis has been undertaken of horizontal and vertical ground movements and mitigation measure proposed.

5.8. Proposals are provided for a movement monitoring strategy during excavation and construction.

5.9. The revised submissions of November 2017 confirm there will be no hydrological impacts.

5.10. It is accepted that the surrounding slopes to the development site are stable.

5.11. It is accepted that the development will not impact on the wider hydrogeology of the area.

5.12. The development should implement appropriate flood risk mitigation measures.

5.13. Considering the revised submissions, the BIAS meets LBC's policy requirements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

CampbellReith
consulting engineers

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	As per requirements of CPG4, please provide evidence of the authors having the appropriate qualifications and experience.	Closed	05/10/17
2	BIA	All screening questions within the Arup GSD to be included within screening process. Any questions with identified potential concerns to be carried through to scoping.	Closed	05/10/17
3	BIA	Please provide additional information relating to construction methodology to include temporary works, mitigation measures and works programme. All assumptions concerning soil and groundwater properties, neighbouring foundations, dewatering and temporary and permanent propping to be stated.	Closed	05/10/17
4	Stability	Please update BIA to include conceptual ground model along with assumed groundwater conditions and retaining wall design parameters as required by CPG4	Closed	05/10/17
5	Stability	BIA to be updated to include bearing capacity and heave assessments and outline retaining wall calculations.	Closed	05/10/17
6	Hydrology	Outline/indicative details for proposed drainage to be submitted.	Closed	05/10/17
7	Hydrology	Drainage of the hardstanding in the garden at the rear of the property should be confirmed. With a comparison of surface areas that drain to the sewer as existing and proposed provided to demonstrate that SUDs are not required.	Closed	November 2017

Appendix 3: Supplementary Supporting Documents

John Helyer CV

Drainage Plan

Photos of Rear Garden

Letter to CampbellReith 071117

John Helyer
BSc CEng MIStructE FICE

Partner

Education
The City University

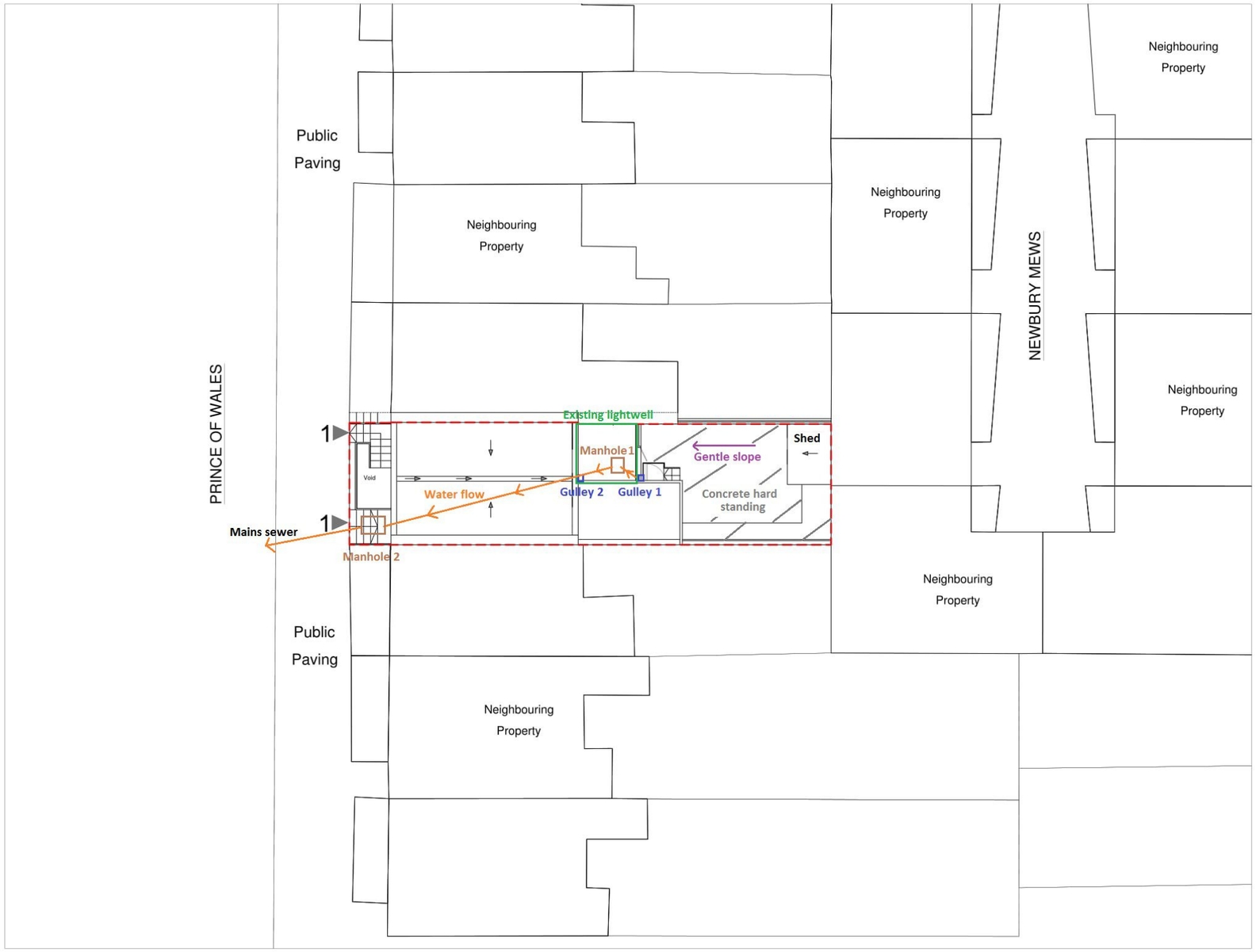
John worked for Scott-White and Hookins whilst studying and after graduating worked on a variety of projects including an extension to Homerton Hospital and a two year period on site at Waterloo International Station. The projects that follow show his extensive experience working on projects with difficult geology, where he has had to work closely with the Engineering Geologist and Geotechnical Engineer to develop the design.

He joined Price & Myers in 1994 and has worked on numerous refurbishment and new build projects including The Tricycle Cinema, a two-storey extension with the cinema sunk 4.5m into the ground, with Foster Wilson Architects (£2m, RIBA Award 1999, British Construction Industry Commendation 1999, Fine Arts Trust/BskyB Entertainment Building of the Year 1999); the refurbishment of The Place dance theatre with Allies and Morrison (£5m, 2001); a new headquarters building for Capital One with Orms Architects (£35m, 2002); 60 Fenchurch Street, London EC2, a new 13-storey office building and basement, with John McAslan & Partners (£15.5m, 2004); the Kaleidoscope Children and Young Peoples Centre in Lewisham with van Heyningen and Haward (£8m, 2006); the Stephen Lawrence Centre with Adjaye Associates (£2.5m, 2007); a basement extension to a house on Denning Road, London NW3 (2009); Phase B2 of the Ulster Hospital with Todd Architects (£40m, 2010); a 9-storey mixed-use development with basement in Howick Place with Rolfe Judd Architects (£45m, 2012, UK Property Awards, Best Office Development 2013); Oriental Club in London, new accommodation within the Grade I listed building with Consarc (£1.5m, 2013); and renovation and improvements to St James's Church at Goldsmiths College with John McAslan & Partners (£2m, 2015).

More recent projects include St Benedict's School in Ealing: a new art, design and technology block and a new CLT Passivhaus junior school building, with van Heyningen and Haward Architects (£8m and £5m, 2016); a new residential building with basement on Harrow Road, with Collado Collins Architects (£4.4m, 2016); four residential towers with a shared basement on Upper Richmond Road with Studio Partington (£30m, 2016); and the refurbishment and conversion of a building in Great Titchfield Street with HÛT (£2m, 2017).

He is currently working on Central Somers Town community hub, including a nursery, residential accommodation, residential hall and a community garden in North London, with Adam Khan Architects (£8m, in design); Sir Thomas Fremantle School in Winslow with van Heyningen and Haward Architects (£8m, on site); a new Link building at Dulwich College with Mittelman Associates (£1m, in design); and Magna Carta Park student accommodation in Runnymede with Studio Partington (£30m, on site).

He became a Partner in 2005.



Gulley 1 collects rain water from the flat roof over the existing outrigger. An exposed soil pipe connects this to the manhole

Surface water runs down the concrete hard standing into the existing lightwell and into gulley 2

The rainwater from gulley 2 goes directly under the building towards the front of the property and into the mains sewer

KEY

1 Entrance

Property Boundary

N

0 1m 5m 10m 20m

PROJECT TITLE
114 Prince of Wales

DRAWING TITLE
Existing Site Plan

CLIENT
Lorenzo Calzavara

DRAWING No
PRWLS-L001

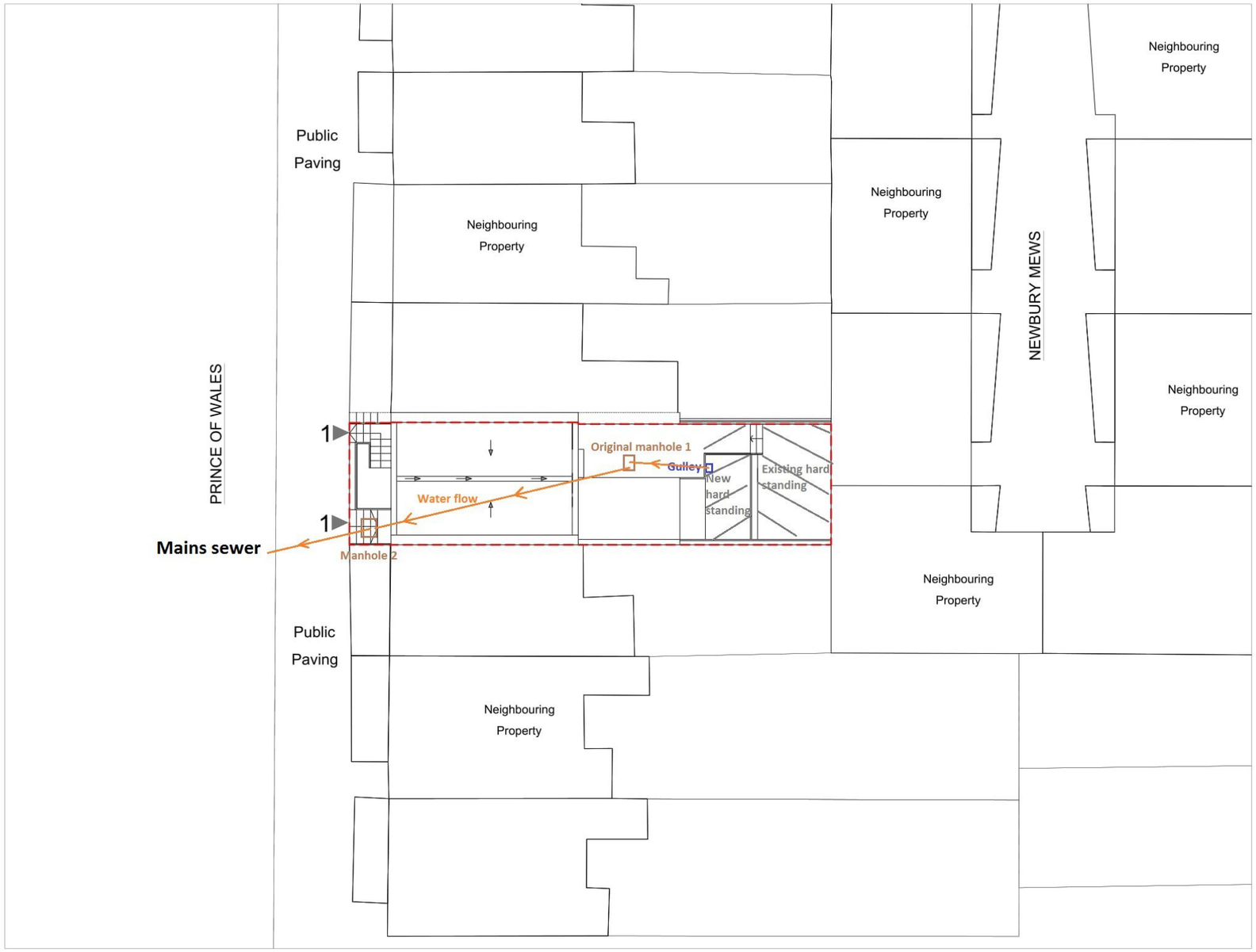
REVISIONS

REV:	DESCRIPTION:	BY:	DATE:
	Existing Drainage Plan		

SCALE AT A3
1:200

DATE.
Dec 2015

REV



Surface water from both levels of hard standing will run into the new gulley

The original manhole 1 will be double sealed but remain unchanged

Water from both flat roof levels will run across gutters and down downpipes into the new gulley

KEY
1 Entrance
2 Light well

N

Property Boundary

0 1m 5m 10m 20m

PROJECT TITLE
114 Prince of Wales

DRAWING TITLE
Proposed Site Plan

CLIENT
Lorenzo Calzavara

DRAWING No
PRWLS-L101

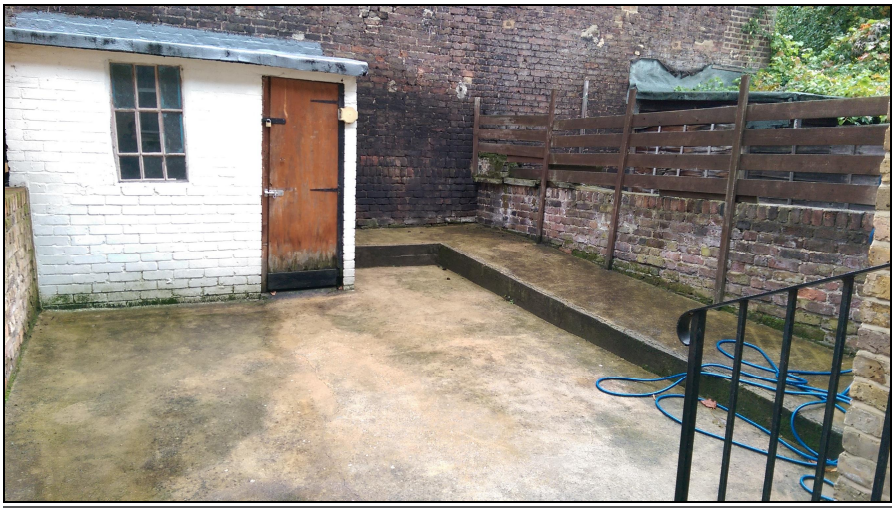
REVISIONS

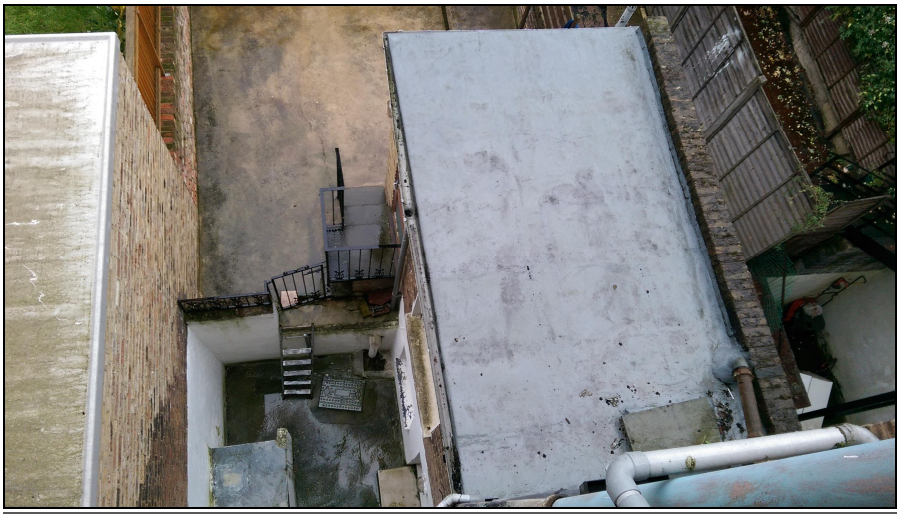
REV:	DESCRIPTION:	BY:	DATE:
	Proposed Drainage Plan		

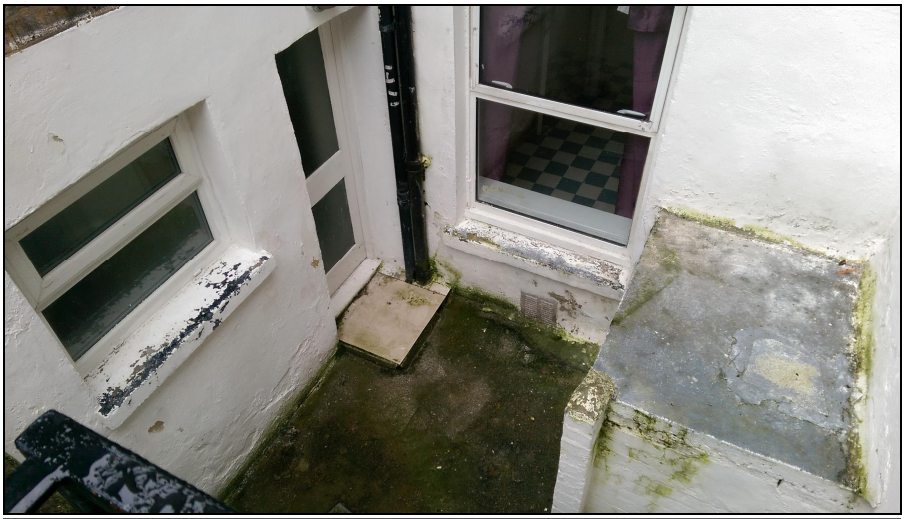
SCALE AT A3
1:200

DATE.
Mar 2017

REV







Ashton Bennett

Campbell Reith Hill LLP,
Friars Bridge Court,
41-45 Blackfriars Road,
London,
SE1 8NZ

For the attention of E Brown and R Morley

Dear Sirs,

Re: 114 Prince of Wales Road, NW5 3NE. Your Ref 1246-01

We write in reply to your Audit of the above BIA dated October 2017.

Section 3

We consider that the site does not require a Flood Risk Assessment. The construction is for a lightwell only as the basement already exists. Provided the mitigating measures of tanking and waterproofing, non return valves on drains and an emergency pump are incorporated, this should alleviate any concerns regarding flooding.

Flood resistant measures were included in the LCAL 3303 Report Section 13, and CR have accepted that the risk of flooding is low. CR Audit D2 page 10.

The attached photographs illustrate the existing concrete hard cover over the entire site confirming, as stated in our Report Section 2.1, that there will be no increase in hard cover following the construction.

The attached plan illustrates the way in which the surface water drains and this will remain the same although a new gulley will be created and the original manhole will remain the same but be double sealed. Level of surface water will remain unchanged. Report LCAL 3303 Appendix E Section 4 details that the drainage will be designed to restrict outflow to sewer to existing levels and that SUDS will be considered. Large planters will be placed in the hard covered garden to mitigate a small level of rainfall.

Figure 15 we agree the surface water risk is medium, however it is at the front of the house where the road was flooded in 2002 and provided the mitigating measures detailed are implemented the risk of flooding the lightwell is removed.

The retaining wall design is presented in Appendix E by Price and Myers.

Mr L Calzavara confirms that both adjacent properties have basements at the same level as 114 basement and as the houses were constructed with basements it can be concluded that all foundations are at the same depth.

There are no residual impacts following mitigating measures.

Blomfield Road, London W9 1AH
Bridge Mills, Huddersfield Road, Holmfirth, HD9 3TW
Director: F A Bennett BSc, CGeol, FGS, FIMMM, C.WEM, MCIWEM, CEnv, AIEMA, MIEnvSci
tel: 01484 689531/0330 088 2003
geoenviro@ashton-bennett.co.uk
www.ashton-bennett.com

4.11 Page 9 of CR audit. We find it extraordinary that you have not accepted that the rear garden is entirely hard covered in concrete. We do not misinform in our Reports. Please find photos attached to confirm that the rear garden is completely hard covered in concrete and the surface water drainage will not therefore increase. Drainage plans are attached detailing all water currently drains to town sewer.

We trust that this letter and attachments will conclude the requirements of CR for this small project.

Please do not hesitate to call if you have any queries so that we can close this BIA as soon as possible.

Thank You,

Yours faithfully,

Frances A Bennett

For and on behalf of Ashton Bennett Limited

Blomfield Road, London W9 1AH
Bridge Mills, Huddersfield Road, Holmfirth, HD9 3TW
Director: F A Bennett BSc, CGeol, FGS, FIMMM, C.WEM, MCIWEM, CEnv, AIEMA, MIEnvSci
tel: 01484 689531/0330 088 2003
geoenviro@ashton-bennett.co.uk
www.ashton-bennett.com

London

Friars Bridge Court
41- 45 Blackfriars Road
London, SE1 8NZ

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com

Bristol

Wessex House
Pixash Lane, Keynsham
Bristol BS31 1TP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com

UAE

Office 705, Warsan Building
Hessa Street (East)
PO Box 28064, Dubai, UAE

T: +971 4 453 4735
E: uae@campbellreith.com