Tully De'Ath consultants

Feasibility Research

EIA, Flood Risk & Transport Assessments

Urban Planning and Design

Integrated Transport Solutions
Infrastructure Development

Structural Design

Eco and MMC Focused

Flood Risk Assessment and Drainage Strategy Report

Issue 3

2-4 Shoot-Up Hill, London

14065

For Notting Hill Genesis

Engineering at its Best

Report For

Notting Hill Genesis

Scheme No: 14065

2-4 Shoot-Up Hill, London

Flood Risk Assessment and Drainage Strategy Report Issue 3

Main Contributors

Martin Deus

June 2021

Issued By

Martin Deus

Approved By

Andrew Picton

Tully De'Ath Consultants, Sheridan House, Forest Row, East Sussex, RH18 5EA
Tel: 01342 828000 Fax: 01342 828001 Email: info@tullydeath.com Web: **www.tullydeath.com**

Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by Tully De'Ath (© Tully De'Ath Limited 2009) save to the extent that copyright has been legally assigned by us to another party or is used by Tully De'Ath under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of Tully De'Ath. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

Third-Party Disclaimer

Any disclosure of this report to a third-party is subject to this disclaimer. The report was prepared by Tully De'Ath at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third-party who is able to access it by any means. Tully De'Ath excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

Contents

1.0 Introduction

Tully De'Ath have been commissioned by Notting Hill Genesis to provide a Flood Risk Assessment and Drainage Strategy Report to accompany a planning application for the proposed residential development at 2-4 Shoot-Up Hill, London NW2 3QN.

The purpose of the report is to demonstrate to the Planners and the Lead Local Flood Authority representatives within the London Borough of Camden, that the proposed development is subject to an acceptable risk of flooding and can be drained both safely and sustainably for the lifetime of the development.

The present report has been produced in accordance with the technical guidance set out within the following documents:

- London Borough of Camden Local Plan Policy CC3
- London Plan Policy 5.13 and Draft New London Plan Policy SI.13
- National Planning Policy Framework (NPPF) (updated version February 2019)
- Ciria SuDS Manual (2015)
- London Borough of Camden Surface Water Management Plan
- London Borough of Camden Strategic Flood Risk Assessment (SFRA)

London Borough of Camden Water and Flooding Planning Guidance (March 2019)

2.0 Site Location and Setting

The site is located to the eastern end of No's 2-4 Shoot-Up Hill, London, within the administrative boundary of the London Borough of Camden.

The site is bounded by Maygrove Road to the south, and residential properties to the north, east and west. The approximate central postcode is NW2 3QN. The National Grid Reference is TQ246846.

Refer to Appendix A for a Site Location plan.

3.0 Existing Conditions

3.1 Land Use

The site covers an approximate area of 290m², and is currently occupied by a number of outbuildings, which include a timber shed and a small brick-built single-storey building, as well as part of the rear garden of No. 4 Shoot up Hill. These structures are surrounded by a mixture of rough ground and concrete hard standing.

3.2 Local Topography

The topographical survey undertaken in August 2018 (Appendix B) indicates that the majority of the site is relatively flat, with an average ground level of approximately 45.8m AOD.

In terms of the surrounding adopted highway network, Maygrove Road appears to fall gradually south-westwards towards Shoot-Up Hill, with levels ranging from 45.62m AOD to 45.52mAOD along the road section adjacent to the site.

3.3 Drainage

With reference to the Thames Water sewer records (included in Appendix C), the local adopted sewer network appears to comprise a single 1016 x 686mm combined asset, which runs in an east-west direction along Maygrove Road towards Shoot-Up Hill.

Based upon this record information, it is understood that the invert level of this asset at its closest point to the site is 41.15m, approximately 4.5m below road level.

A drainage survey has not been undertaken on the site however, it is noted that a rainwater pipe and a yard gully is noted on the survey, and due to the age of the buildings it is considered likely that these drains connect to the adjacent combined sewerage system.

3.4 Geology

The British Geological Survey records contain a borehole scan on property No.4/6 Shoot-Up Hill, immediately adjacent to the north of the site, which indicates Made Ground, over Alluvium, over London Clay Formation.

No ground water was encountered in the borehole, which was dug to a depth of 19.2m.

An intrusive onsite ground investigation established that below a layer of made ground (up to 1.2m thick) the natural geology is silty clay, over London Clay.

Based upon the presence of the impermeable clay layers described above, infiltration techniques are not considered to be suitable as a means of surface water disposal.

3.5 Local Water Courses and Water Features

The site is approximately 3km to the north of the Regents Canal and 7km north of the River Thames. No other water courses are present within the vicinity of the site.

4.0 Development Proposals

4.1 The proposed development will provide 6 residential flats within a four-storey block, which includes external hard and soft landscaping to the front and rear of the block.

A set of architectural drawings can be found in Appendix F.

5.0 Fluvial and Tidal Flood Risk Assessment

5.1 With reference to the flood maps obtained from the Gov.uk website (Appendix E), the site lies entirely within a Flood Zone 1, which means that the probability of flooding from tidal and fluvial sources is less than 1 in 1000 (0.1%) in any one year.

It is therefore considered that the proposed development will be subject to a very low risk of flooding from Fluvial and Tidal sources.

In terms of flood risk, the development is classed as More Vulnerable within the NPPF, which is considered appropriate development for a Flood Zone 1 area.

6.0 Other Sources of Flooding

6.1 Ground Water Flooding

With reference to map 4 in Appendix D of Camden's Flood Risk Management Strategy, the site is not classed as being at risk from groundwater flooding.

In addition to this, and as mentioned in Section 3.4 above, it is worth noting that the record information for the 19.2m deep borehole dug in the vicinity of the site does not highlight the presence of groundwater.

The risk from this type of flooding is therefore considered to be low.

6.2 Surface Water Flooding

With reference to the Gov.uk (Appendix E) and Camden SFRA's (Appendix D), the site is not located within an area which is subject to surface water flooding, although it is noted that the adjacent property to the west does have a high surface water flood risk, which appears to relate to a local low spot.

It is also noted that opposite the site, Maygrove Road is highlighted as having a Low to Medium risk of surface water flooding.

To mitigate any potential risk associated to this source of flooding, it is proposed that the existing vehicular crossover (which currently acts as the site entrance) is removed and replaced with a full-height section of footway, laid with a gradient away from the development and towards the adjacent Maygrove Road carriageway.

In addition, the ground floor units will be set at a minimum level of 45.840m AOD, which is slightly higher than the existing average ground level on site (45.800m AOD), and approximately 240mm higher than the highest point within the adjacent adopted carriageway in Maygrove Road.

6.3 Sewer Flooding

Based upon Figure 5a 'DG5 Internal Sewer Flooding' of Camden's Strategic Flood Risk Assessment (Appendix E), no internal sewer flooding events have been recorded in the postcode area where the site is located. With regard to exterior sewer flooding, the records show that only two properties have been affected by this type of flooding over the past 10 years, although the exact location of such properties is not specified.

With reference to Figure 6 of Camden's Strategic Flood Risk Assessment (Appendix D), the site is located on the boundary of a critical drainage strategy (group 3_010), but not within a Local Flood Risk Zone.

With reference to Chapter 8, a new surface water system is to be provided which will restrict flows to the minimum practical value and attenuation provided to accommodate 1 in 1 in 100 return period including a 40% allowance for climate change.

See Appendix G for the indicative Drainage Strategy plan

Based on the above, it is considered that the proposed development will be subject to an acceptable risk of flooding from sewer sources.

6.4 Reservoirs

With reference to the Gov.uk maps (Appendix E), the site is not considered to be at risk of flooding from reservoir sources.

7.0 Surface Water Drainage Proposals

7.1 SuDS General

Appropriately designed, constructed and maintained, SuDS are more sustainable than conventional drainage systems and can help to:

- Reduce run-off rates.
- Reduce the risk of flooding.
- Encourage natural groundwater re-charge.
- Reduce pollutant concentrations in storm water.
- Reduce volume of surface water run-off,
- Provide habitats for wildlife.

7.2 SuDS Appraisal

There are many site-specific factors which will influence the choice of any SuDS devices used within a development. The primary factors are:

- How the land is to be used- whether domestic, commercial or industrial.
- Soil contamination.
- Existing soil conditions i.e. ground permeability, water table levels.
- Site topography e.g. steeply sloping.
- Space availability – urban or non-urban.

In considering the above and taking into account that infiltration is very unlikely to work, the following SuDS are proposed to be introduced for this development:

- Biodiverse/Green roofs.
- Off-site flow control and above/below ground attenuation.

7.3 Biodiverse Roofs

Biodiverse/green roofs involve various types of soil and vegetation cover of roof areas, which are generally underlain by a drainage blanket linked to the rainwater down-pipe system. The provision of these systems can improve the water quality of the run-off generated at roof level while also contributing towards the removal of air pollutants and dust. Additionally, they can also provide an ecosystem that can replace natural habitats that have been lost due to urbanization.

In dry climatic conditions, they can significantly reduce the volume of run-off from roof areas due to the water demand of the vegetation and/or evaporation from the granular surfaces.

It is understood that the proposed development will incorporate a biodiverse roof system across the majority of the roof area.

7.4 Off-site Flow Control and Above/Below Ground Attenuation

The use of off-site flow controls in conjunction with attenuation tanks have proven to be beneficial with reducing flood risk both within and beyond the site, as they significantly reduce the peak discharge rate into the sewer network downstream of the site.

As discussed in Section 8.5, the current proposals allow for the installation of both above and below ground attenuation storage structures, so that off-site discharge rates for all storm events up to and including the 1 in 100 + 40% CC can be restricted as far as practically possible.

Refer to Appendices G and H for the indicative Drainage Strategy plan and associated MicroDrainage Calculations.

7.5 Other SuDS Devices Considered Not Suitable for the Development – Drainage Hierarchy

In developing the surface water drainage strategy and selecting appropriate SuDS features for the development, the drainage hierarchy contained within the new London Plan Draft Policy SI.13 has been considered. This recommends the following methods for surface water disposal (in order of preference):

1. Rainwater harvesting (including a combination of green and blue roofs).
2. Infiltration techniques and green roofs.
3. Rainwater harvesting (including a combination of green and blue roofs).
4. Infiltration techniques and green roofs.
5. Rainwater harvesting (including a combination of green and blue roofs).
6. Infiltration techniques and green roofs.
7. Rainwater attenuation in open water features for gradual release.
8. Rainwater discharge direct to a watercourse (unless not appropriate).
9. Rainwater attenuation above ground (including blue roofs).
10. Rainwater attenuation below ground.
11. Rainwater discharge to a surface water sewer or drain
12. Rainwater discharge to a combined sewer.

As described in Section 8.5, the drainage strategy generally follows the above hierarchy in that, where feasible, it incorporates the preferred drainage features. This includes the provision of green and blue roofs as well as a below ground attenuation tank (Items 1, 2, 5 and 6).

With that said, it is worth noting that there are certain items of the hierarchy that could not be incorporated due to the below reasons:

Rainwater Harvesting (Item 1)

Rainwater harvesting systems currently available do not cater for the catchment of surface water from non-roof external surfaces such as roads, car parks and pedestrian areas due to the increased levels of treatment required. The inclusion of rainwater harvesting can therefore increase the complexity of the required surface water drainage network and thus the environmental impact involved in its construction.

In addition to this, it is anticipated that the proposed development will incorporate green roofs which would have a detrimental effect on the potential rainwater harvesting system. From a hydraulic/hydrological point of view, green roofs provide certain degree of runoff retention, which would therefore reduce the volume of water reaching the harvesting tank, resulting in a reduced available volume of rainwater for the resident's use and therefore, making the system less cost efficient.

Also, from a water quality perspective, rainwater from green roofs usually contain high levels of dissolved organic carbon as well as pesticides and fertilizers that may be used for its maintenance and therefore, the combination of both green roofs and rainwater harvesting systems is questionable.

Given the above, rainwater harvesting is not considered to be appropriate in this instance and will therefore not be provided for this development.

Infiltration Techniques (Item 2)

As described in section 3.4, the anticipated sub-soil conditions would prevent the use of infiltration techniques as a suitable means of surface water disposal.

Attenuation in Ponds or Open Water Features (Item 3)

In the right circumstances these facilities can also provide aesthetic and amenity value.

As with many developments in an urban area it is difficult to accommodate SuDS such as this in view of the limited space available for landscaping.

Accordingly, this form of SuDS will not be incorporated into the development.

Discharge Direct to a Watercourse (Item 4), or to a Surface Water Sewer (Item 7)

As noted in Chapter 3, there are no watercourses or surface water sewers in the vicinity of the area and therefore, the discharge of surface water flows via these will not be possible.

8.0 Sustainable Drainage Options

8.1 Existing and Proposed Impermeable Areas

With reference to the plans included in Appendices B and F, the existing and proposed impermeable areas have been estimated as:

- Existing Impermeable Area: 140m²
- Proposed Impermeable Area: 275m²

These figures indicate a net increase of 135m² in impermeable areas as a result of the proposed development.

8.2 Existing Surface Water Discharges

Whilst no drainage survey has been undertaken it can be seen from the survey that a rain water pipe and a gully currently existing on the site, which suggests that there is a connection into the adjacent sewerage system.

Considering the existing impermeable area of 140m², and based upon the standard rainfall rates from TRRL 595, the existing peak surface water discharge rates from the site can be estimated as follows:

- 1 in 1 Year Storm Event: 50mm/hr x 140m² = 2 l/s
- 1 in 30 Year Storm Event: 113mm/hr x 140m² = 4.4 l/s
- 1 in 100 Year Storm Event: 144mm/hr x 140m² = 5.6 l/s

8.3 Ground Infiltration

The most favorable form of surface water discharge involves the retention of surface water within the development, where it is allowed to soak into the underlying ground. This requires suitable permeable and un-contaminated ground conditions beneath the site. In order to avoid any potential detrimental effects upon building foundations, soakage facilities generally need to be located at a minimum off- set of 5m from any building structure.

With reference to Section 3.4, the presence of clay sub-soils implies that the site has very poor infiltration capacity. Additionally, the proposed site layout would prevent the installation of any soakage feature at least 5m away from the building foundations.

Due to the above, surface water flows will need to be drained off-site.

8.4 Proposed Surface Water Off-site Connection

Having discounted ground infiltration and given the absence of watercourses and surface water sewers in the vicinity of the site, it became apparent that the only feasible means of surface water disposal will involve a new connection into the 1016 x 686mm adopted combined sewer that runs along Maygrove Road.

In particular, the proposed drainage strategy allows for the surface water flows from the site (restricted as per Section 8.5) to be discharged into the adopted combined sewer in Maygrove Road via a new 150mm dia. combined gravity connection.

Refer to Appendix G for an indicative Drainage Strategy Plan.

8.5 Flow Control and Attenuation

As stated with Camden's Local Policy CC3, new developments should aim to restrict off site surface water flows to values that are as close as practically possible to greenfield rates. Such criteria should apply for all storm events up to and including the 1 in 100-year storm with an additional 40% allowance for climate change.

Based upon the total site area of 290m², the greenfield runoff rates have been calculated using Micro Drainage Software's Source Control programme 'ICP SuDS'. A summary of the results can be found below:

Return Period	Greenfield Runoff Rate (l/s)	Proposed Discharge Rate (l/s)
1 in 1 year	<0.1	2.5
1 in 30 year	0.1	2.5
1 in 100 year	0.1	2.5

From an initial feasibility assessment, it became apparent that achieving such low rates would have a series of future maintenance implications, which would be mainly related to the very small size of the aperture that would need to be incorporated within the flow control device.

Flow control will be provided via a vortex flow control (VFC) – e.g. Hydrobrake or similar- and therefore, it is worth taking into account the VFC manufacturer's recommendations when it comes to minimum orifice sizes. In particular, the proposed off-site discharge rates (also shown within the table above) are based on restricting the orifice size within the VFC to a minimum size of 75mm, which is widely considered as the minimum aperture that still provides an acceptable level of protection against potential blockages.

With this in mind and based upon the available gravity head over the VFC, it is proposed that off-site discharge rates are restricted to a maximum of 2.5 l/s for all storm events up to and including the 1 in 100 + 40% CC storm event.

To achieve the above, and given the constraints imposed by the proposed site layout (i.e. limited external space available for below ground attenuation storage), the current proposals allow for surface water flows from the roof to be restricted 'at source' to the minimum rate practically possible, via the provision of an 85mm deep blue roof system with bespoke flow control outlets designed to limit roof outflows to a maximum of 1.0 l/s. The detailed design of the blue roof system will need to be undertaken by the supplier of the installed system based upon the parameters mentioned above.

This restricted flow from the blue roof system, along with any additional runoff generated within the rest of the proposed impermeable areas on site, will be in turn conveyed into a below ground attenuation tank located at the rear of the ground floor terrace, and designed to accommodate a minimum of 7.6m³ of attenuation storage.

It has been calculated that this volume will be sufficient to restrict the surface water discharge rate to a maximum of 2.5 l/s for all storm events up to the 1 in 100 + 40% CC event.

Refer to Appendix H for Micro-Drainage calculations and Appendix I for the Camden SuDS Proforma.

8.6 Surface water attenuation has been provided to accommodate a 1 in 100-year event with an additional 40% allowance for climate change. However, to mitigate the potential impact of an exceedance storm event, external ground levels will be designed to fall away from the building.

9.0 Foul Drainage Strategy

Based on the peak daily flow of 4000 litres per dwelling specified in Sewers for Adoption 7th Edition, the introduction of 6 No. residential units within the proposed development will produce a peak foul design flow of approximately 0.28 l/s.

The existing site does not appear to have a foul drainage system; however, the new foul flows are very low and are unlikely to have a negative impact on the capacity of the adopted sewerage system.

Due to recent changes in legislation the sewerage undertakers are not able to object to a planning application due to a lack of foul water capacity.

Should it be established that the existing onsite drainage is connected to the combined sewers, the new reduction in surface water flows for the larger return periods will more than offset the small increase in foul flows.

With reference to the indicative Drainage Strategy drawing included in Appendix G, the new foul drainage system will connect to the combined sewer within Maygrove Road via a new 150mm dia. gravity connection, which will be subject to a S106 Agreement with Thames Water.

10.0 Maintenance

Maintenance of any drainage scheme is essential to ensure that it continues to perform as designed.

Maintenance of the drainage for this development will be the responsibility of the developer. Within the site's 'Health & Safety File' details of routine maintenance inspections should be included together with guidance on how and when these should be undertaken.

Generally, the drainage system requires regular inspection/clearing to prevent blockages due to the accumulation of silt. It also needs to be maintained on a regular basis. It is recommended that the system is initially inspected and cleared by a suitably trained person every six months for at least the first two years of operation to establish the long-term inspection/clearing interval appropriate for this site. Inspection/clearing should also be carried out after every major storm event.

In addition to any specific requirements from relevant manufacturers, regular maintenance of the drainage system should include the following:

- Checking all inspection chambers and clearing of silt, debris and other blockages as required.
- Rainwater downpipes and gullies to be cleaned-out at roof and ground levels.
- Trapped gullies and drainage channels within the drainage network should be inspected and cleared of silt.
- Green roof areas to be kept clear of weeds, debris and dead leaves. The outlet gullies on the green roofs must be inspected and cleared on a regular basis.

All maintenance must be carried out by suitably trained individuals. Refer to Appendix J for detailed maintenance schedule.

11.0 Conclusions

11.1 Flood Risk

The information contained within the Gov.uk flood maps indicates that the site lies within a Flood Zone 1 area. This represents a low risk of flooding from both tidal and fluvial sources (less than a 1 in 1000 probability in any given year).

The Camden's Strategic Flood Risk Assessment maps show that the site is entirely within an area not at risk from groundwater flooding.

The site is not located within an area which is subject to surface water flooding, although it is noted that the adjacent site to the west is located within a high flood risk area, which appears to be related to a localised low spot.

With reference to Figure 5a 'DG5 Internal Sewer Flooding' of Camden's Strategic Flood Risk Assessment, no internal sewer flooding events have been recorded in the postcode area where the site is located. With regards to exterior sewer flooding, the records show that only two properties have been affected by this type of flooding over the past 10 years, although the exact location of such properties is not specified.

As indicated within the Gov.uk maps, the site and nearby areas are not at risk of flooding from reservoir sources.

Based on the above, it is considered that the proposed development will be subject to a low risk of flooding and will not increase the flood risk beyond the site.

11.2 Drainage

In view of the anticipated geological formations beneath the site, surface water drainage via infiltration devices is not considered to be feasible. Instead, surface water flows will be discharged off-site via a new 150mm dia. combined gravity connection into the 1016 x 686mm combined adopted sewer in Maygrove Road.

The proposed drainage strategy includes the provision of surface water attenuation, both above and below ground, to reduce the off-site surface water discharge rates to the minimum practically possible (2.5l/s) for all storm events up to and including the 1 in 100 year + 40%CC event. A variety of SuDS such as green and blue roofs will be incorporated to control and treat surface water run-off from the site.

In terms of foul drainage, flows will also be discharged into the 1016 x 686mm combined adopted sewer in Maygrove Rd via the new 150mm dia. gravity connection.

The anticipated foul peak flow of 0.28 l/s is likely to have no detrimental impact on the hydraulic capacity of the adopted sewer network.

Approval to connect to the existing adopted combined sewer in Maygrove Rd will be subject to an Agreement with Thames Water under the terms of a Section 106 in accordance with the Water Industry Act 1991.

The on-site drainage system will be maintained by a Notting Hill Genesis for the lifetime of the development. Maintenance will be in accordance with a site-specific maintenance strategy.

Appendix A – Site Location Plan

HILL

GARLI

Claudius Court

SHOOT-UP HILL

MAYGROVE Rd

EXETER Rd

n Station (LU)

01 Site Plan
1:200

N

Key:

Existing Tree

Removed Tree
(Category C)

Site Boundary

0 1 2 3 4
m 1:100

notes

Copyright : the copyright of this drawing is vested in Fraser Brown MacKenna Architects ltd. It shall not be used without permission by anyone for any purpose.
Do not scale drawings - use figured dimensions only.
All dimensions to be verified and checked on site.
Read the drawing in conjunction with all related drawings and specifications. Notify architect immediately of any discrepancy found therein.

drawing notes

REV	BY	CHKD	DATE	AMENDMENT DETAILS

REV	BY	CHKD	DATE	AMENDMENT DETAILS

project
Shoot-Up Hill
London
NW2 3QN

client
Notting Hill Genesis

FraserBrownMacKennaArchitects
15-18 Featherstone St. London EC1Y 8SL www.fbmarchitects.com
T:020 7251 0543

drawing title
Proposed Site Plan

SKETCH

scale	drawn by	checked by	date
1/250-@A1 1/500-@A3	LJM	FBM	©2019.10.18

DRAWING NUMBER | project **956** | status **SK** | **0002** | revision **-**

A1LH
0

Appendix B – Topographical Survey and Existing Impermeable Areas

Original Drawing Size: A1

NOTES:–

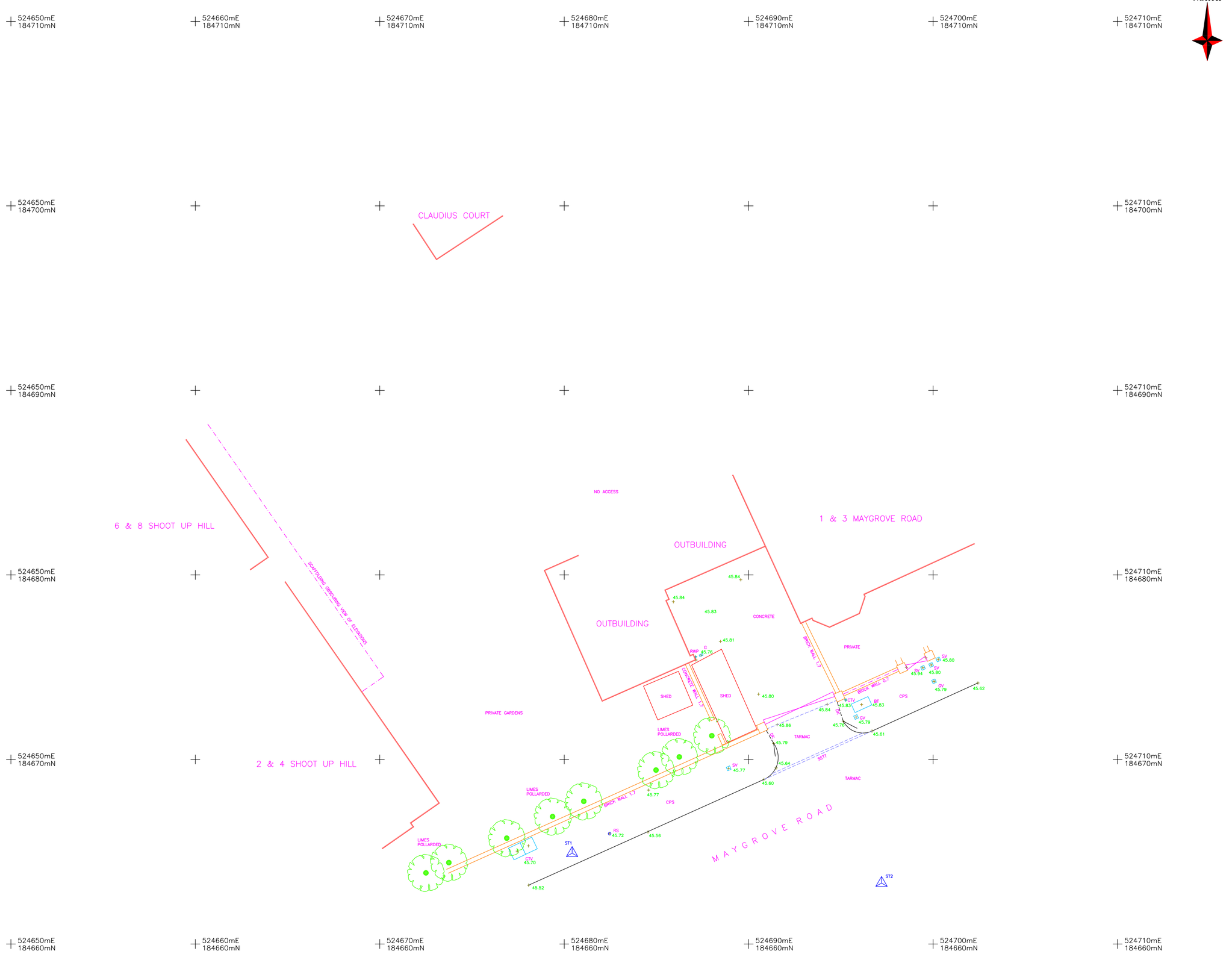
The accuracy and content of this drawing are dependent on the original specification and EDI should be consulted before use at other scales.

Where underground services are shown, all reasonable care has been taken within the spirit of the original specification and requirement. Before use of this information the user should consult EDI and satisfy themselves of the completeness and accuracy of such detail before undertaking any works. Due to the nature of this work and limitations imposed by ground conditions and the detection equipment no guarantee can be given that all services have been recorded. Trial holes should be dug at critical locations.

All reasonable care has been taken in the survey detail represented on this drawing but any discrepancies must be reported to EDI immediately.

Our aim is to produce the best possible results within the specification and cost constraints of our clients. Any comments are most welcome.

Levels shown at kerbs are channel level unless stated.



LEGEND

Features:

AV Air Valve
AB Air Brick
BD Bollard
BH Borehole
BM Benchmark
BP Boundary Post
BS Bus Stop
BT British Telecom
CL Cover Level
COL Column
CTV Closed TV Cover
DCH Drainage Channel
DF Drinking Fountain
DIS Disused
DK Drop Kerb
DPC Damp proof Course
EC Electricity IC
EJ Expansion Joint
ER Earth Rod
FH Fire Hydrant
FHR Fire Hose Reel
FS Flagstaff
G Gully
GV Gas Valve
IC Inspection Cover
IL Invert Level
JBX Junction Box
KO Kerb Outlet
LB Letter Box
LBN Litter Bin
LLP Low Level LP
LP Lamp Post
MP Marker Post
MS Mile Stone
MT Mercury Telecom
OHL Overhead Line
OP Overflow Pipe
PM Parking Meter
PP Power Pole
RAD Radiator
RE Rodding Eye
RNP Road Name Plate
RS Road Sign
RSD Roller Shutter Door
RWP Rain Water Pipe
SD Service Duct
SV Stop Valve
TCB Telephone Call Box
TCP Telephone Pole
TS Traffic Signal
UB Universal Beam
UNK Unknown
UR Urinal
UTL Unable to lift
V Vent
VP Vent Pipe
WM Water Meter
WO Wash Out
WP Waste Pipe

Building Level Details:

D Door
EL Eave Level
FFL Floor Level
FRL Flat Roof Level
HL Head Level
PPL Parapet Level
RL Ridge Level
SLS Sill Level
SOA Springer of Arch
TA Top of Arch
W Window
12.34 Ceiling/Beam Soffit

Boundary Types:

BW Barbed Wire
CB Close Boarded
CH Chainlink
CI Corrugated Iron
CP Chestnut Paling
IR Iron Railing
IW Interwoven
LL Larch Lap
PAL Palisade
PR Post & Rail
PW Post & Wire
TNR Timber Knee Rail
RTW Retaining Wall
VSF Vehicle Safety Fence
WMF Wire Mesh Fence

Surfaces & Finishes:

B Brickwork
BB Breeze Block
C Concrete
CLT Ceiling Tiles
CP Carpet
CPS Concrete Paving Slabs
CPT Carpet Tiles
CR Concrete Render
CT Ceramic Tiles
FT Floor Tiles
HBD Hardboard
L Linoleum
P Plaster
PAV Brick Pavlors
S Steel work
T Tarmac
TSP Textured Safety Paving
VT Vinyl Tiles

Services:

C CATV cables
CCTV CCTV cables
D Data cables
E Electric cables
FW Foul water
G Gas pipes
HD Heating duct
50 Service ducts
SW Storm water
T Telecom cab.
UI Unidentified
W Water pipes
150ø Pipe Diameter/Flow
Overhead Lines

Survey Station
Fence
Gate
Painted Road Markings
Edge of Vegetation
Kerb/Drop Kerb
Tree
Top / Bottom
Banks
Building
Overhead Building Detail
Wall

Control: All levels and co-ordinates are related to the datums described.

The horizontal control of this survey is based on Ordnance Survey grid as translated from GPS coordinates using Leica's SmartNet service. We have not applied a reverse scale factor and therefore all dimensions will be scaled by the local OS scale factor. The vertical control of this survey is based on OS datum as translated from GPS coordinates using the OSGM15 transformation as supplied by the OS. This may differ from the existing OS benchmarks in the area which should be disregarded; all levels should be taken from EDI survey stations.

Station Schedule

Station	Easting	Northing	Level	Type
1	524680.427	184664.920	45.704	Hilti Nail
2	524697.202	184663.300	45.703	Hilti Nail

Rev.	Job No.	Date	Revision Detail	Surveyor	Chkd

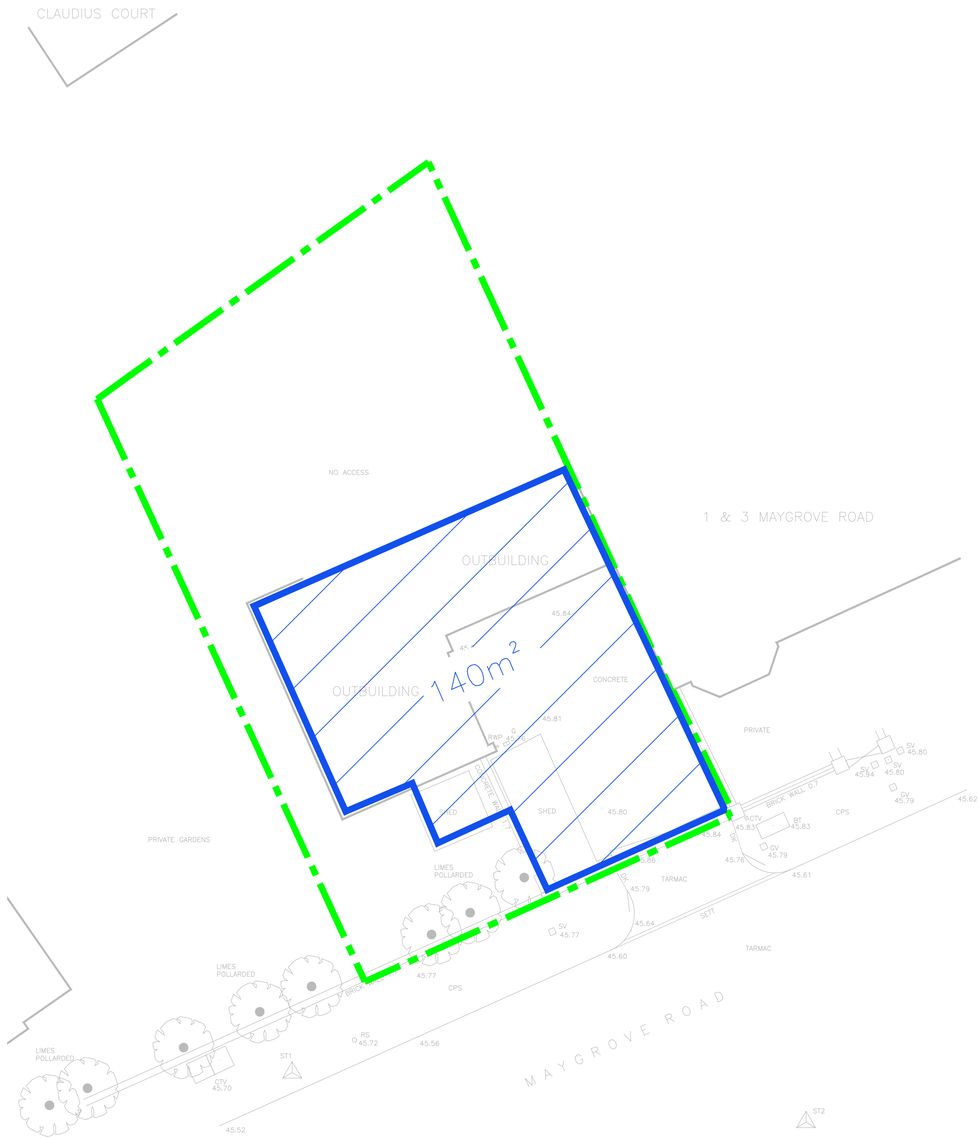
CLIENT
Genesis Housing Association Limited
Atelier House
64 Pratt Street
Camden, London
NW1 0DL

PROJECT
Topographic Survey
2 and 4 Shoot Up Hill
Camden
NW2 3QN

Job No.	Surveyor	Checked	Date	Scale
17309	G.Garland	GMP	Aug. 2018	1:100

EDI SURVEYS LTD
163–165 Ranelagh Road, Ipswich, Suffolk IP2 0AH
Telephone | 01473 211222 Fax | 01473 221660
Email | enquiries@edisurveys.co.uk
Our Services:– Topographic Surveys, Measured Building Surveys, GPS Surveying and Control, 3D laser Scanning, Utility Surveying and Drainage Investigation.
Click the link below to visit our website and find out more.
www.edisurveys.co.uk

DRAWING No. 17309/T/01–01
REV. –



General Notes

N

LEGEND

Site Boundary

Impermeable Area

Total Impermeable Area = 140m²

PRELIMINARY - FOR PLANNING

REV	DATE	DESCRIPTION	BY	CHK'D

Notting Hill Genesis

TITLE:

Existing Impermeable Area

PROJECT:

Shoot–Up Hill
London NW2 3QN

SCALE: 1:200 @A1 DATE: March 20 DRAWN: MFD CHK'D: AJP

DRG NO.

14065–TDA–XX–GR–DR–C–25102

REV.

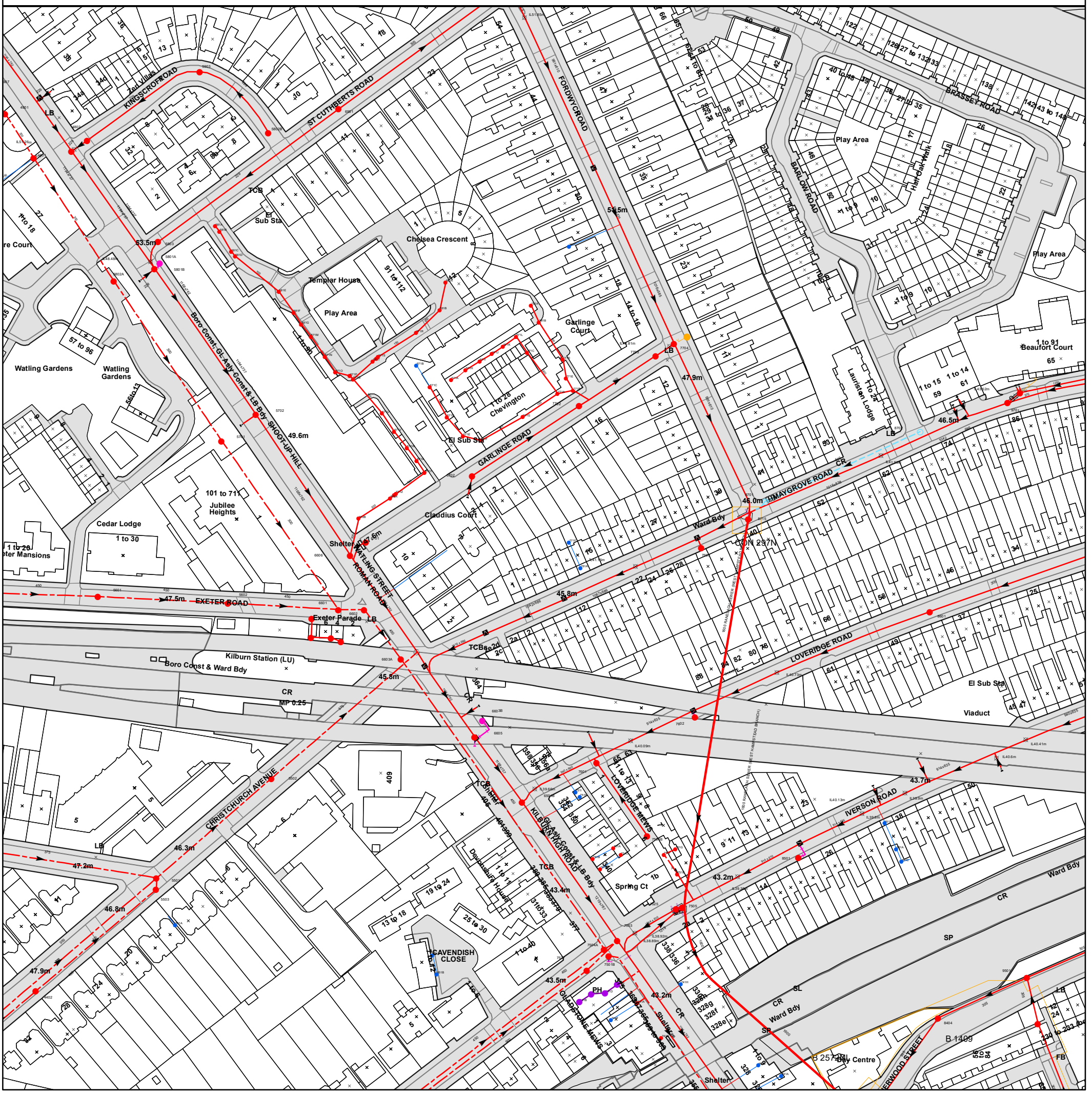
TDA PROJECT NUMBER.
14065

Tully De'Ath consultants
Engineering at its Best
T: 01342 828 000 E: info@tullydeath.com W: www.tullydeath.com

Appendix C – Thames Water Sewer Records

Based on the Ordnance Survey Map with the sanction of the Controller of H.M Stationary Office License Number 10019345

ALS/ALS Standard/2020_4133713



0 10 20 40 60 80 Meters

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale:	1:1792
Width:	500m
Printed By:	G1KANAGA
Print Date:	08/01/2020
Map Centre:	524708,184699
Grid Reference:	TQ2484NE

Comments:

ALS/ALS Standard/2020_4133713

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
741G		
751I		
781C		
7703	48.64	44.7
5701	49.86	47.35
6702	47.77	45.43
603B		
5903	57.39	54.39
501B	43.17	40.43
8404		
4801	55.09	41.46
56AD		
501B	43.83	39.58
6606	47.5	40.61
5803		
9401		
8501		
7603		
7527		
7503	43.13	38.83
504A	43.24	40.39
603A	45.57	42.57
8702	46.36	43.61
6701	47.45	44.83
4802	55.56	52.5
671B		
671G		
851B		
7702	48.31	45.01
841A		
7704	48.7	44.7
671X		
671Z		
672B		
781B		
751A		
581B		
581D		
581F		
751B		
581G		
671N		
671P		
681A		
671R		
671T		
671V		
481A		
741B		
741D		
751E		
751G		
971C	46.47	43.55
671A		
671E		
771B		
671I		
671K		
771C		
771F		
5501	46.61	43.41
551A		
5503		
651B		

REFERENCE	COVER LEVEL	INVERT LEVEL
751H		
851C		
4901	56.93	54.31
7505	43.09	31.6
5602	47.27	44.35
6605		
504B	43.37	
7602		
9501		
5702	50.06	40.96
6901	57.08	53.22
802A	52.88	50.82
56AE		
801B	52.81	41.29
801A		
8601	44.83	41.34
66BC		
6601	46.81	43.86
7601		
802B	57.4	54.53
8701	46.05	40.1
5601	48.09	45.09
6602	46.61	43.41
5502	45.84	43.05
771A		
671C		
851A		
7525	43.11	
8715		31.84
66BD		
841C		
671Y		
672A		
781A		
771D		
581A		
581C		
581E		
751D		
751C		
671M		
671O		
671Q		
681B		
671S		
671U		
671W		
741A		
741C		
741E		
751F		
9701	46.43	42.265
741F		
671D		
671F		
671H		
671J		
671L		
771E		
761A		
741H		
4402		
651A		

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Control Valve

Drop Pipe

Ancillary

Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Outfall

Undefined End

Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

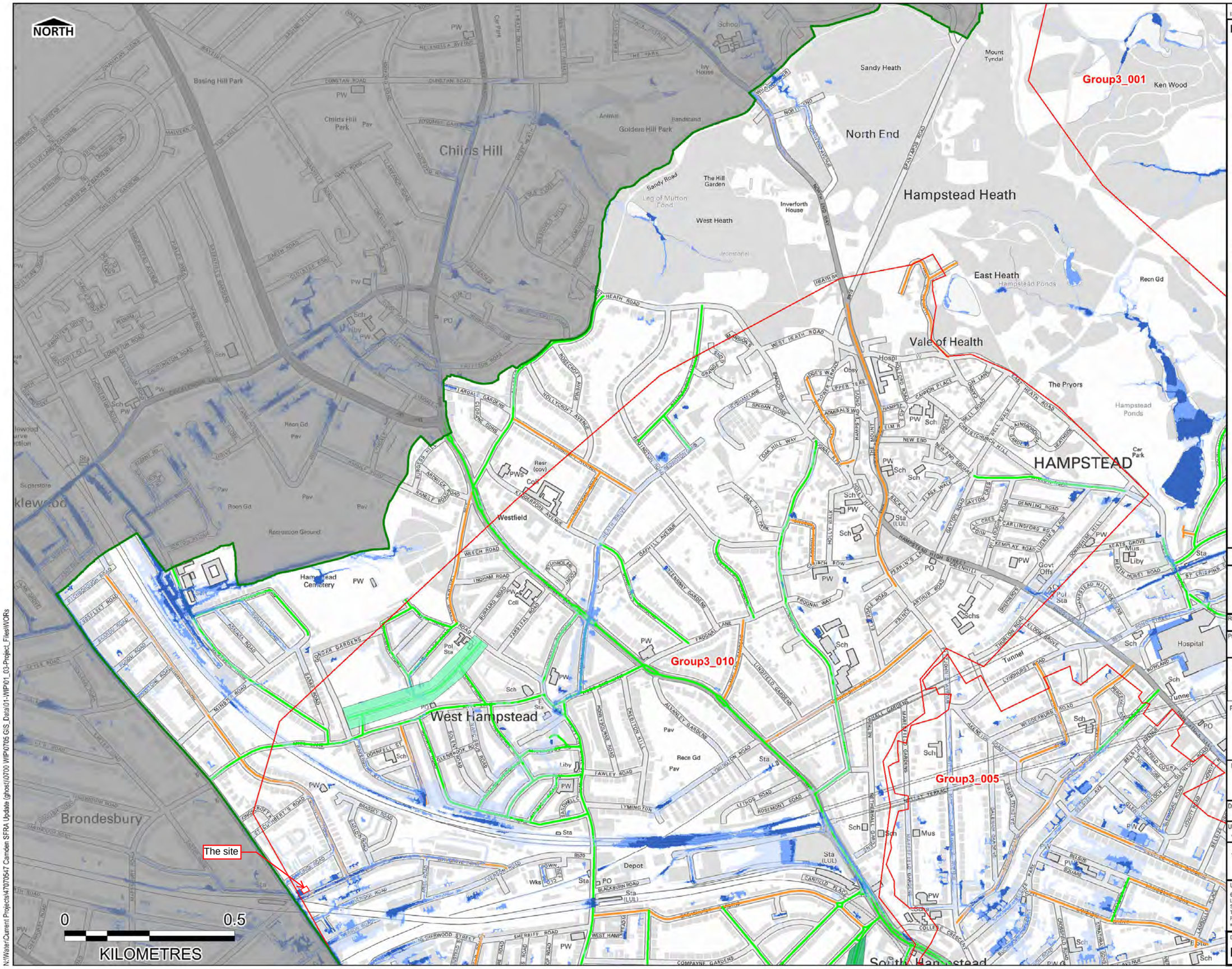
Proposed

Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plans are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole level indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Appendix D – SFRA Flood Maps



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- London Borough Camden Boundary
- Critical Drainage Area
- Flooded Streets (2002)
- Flooded Streets (1975)

LBC Historic SW Flooding Record
No. Properties affected

- 1
- 2

Risk of Flooding from Surface Water

- High (1 in 30 year)
- Medium (1 in 100 year)
- Low (1 in 1000 year)
- Very Low (<1 in 1000 year)

Contains Ordnance Survey data © Crown copyright and database right 2014

Revision Details	By	Check	Date	Suffix

Purpose of Issue: FINAL

Client: Camden

Project Title: LONDON BOROUGH OF CAMDEN STRATEGIC FLOOD RISK ASSESSMENT

Drawing Title: Updated Flood Maps for Surface Water Flooding (uFMfSW)

Drawn	Checked	Approved	Date
CB	JS	MT	03/07/2014

URS Internal Project No.	Scale at A3
47070547	1:15,000

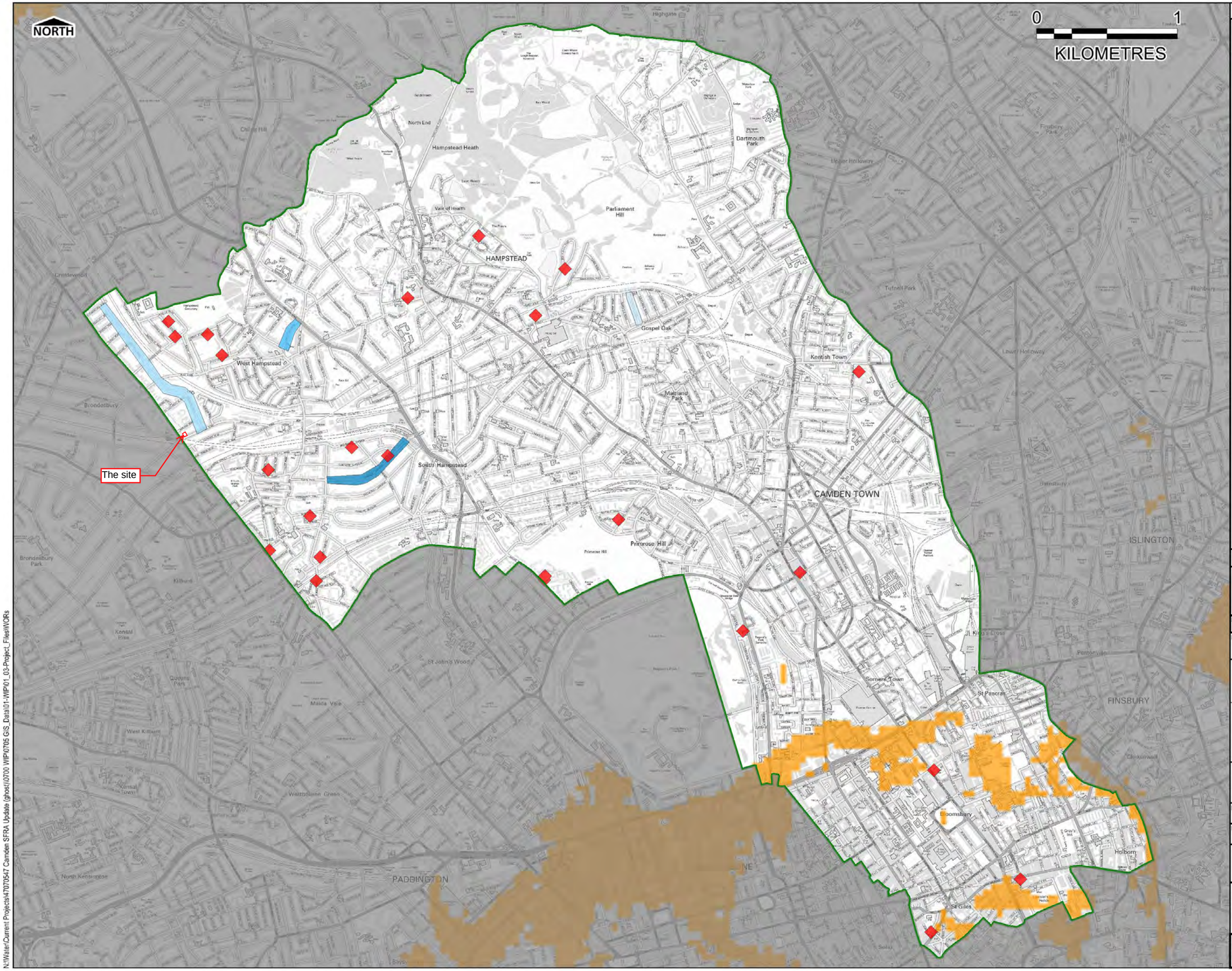
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

URS Infrastructure & Environment UK Limited
6 - 8 Greencoat Place
London
SW1P 1PL
Telephone +44 (0)207 7985000
Fax +44 (0)207 7985001
www.ursglobal.com

Drawing Number: FIGURE 3 iv

Rev: Rev 1

N:\Water\Current Projects\47070547 Camden SFRA Update (ghost)\0700 WIP\0705 GIS_Data\01-WIP\01_03-Project_Files\MXDs



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- London Borough Camden Boundary
- LBC Historic GW Flooding Record
  No. Properties affected
  - 1
  - 6
  - 7
  - 8
- Increased Susceptibility to Elevated Groundwater
- Environment Agency groundwater flood incidents

Contains Ordnance Survey data © Crown copyright and database right 2014

Revision Details	By / Check	Check Date	Suffix

Purpose of Issue: FINAL

Client: Camden

Project Title: LONDON BOROUGH OF CAMDEN STRATEGIC FLOOD RISK ASSESSMENT

Drawing Title: Increased Susceptibility to Elevated Groundwater

Drawn	Checked	Approved	Date
CB	JS	MT	03/07/2014

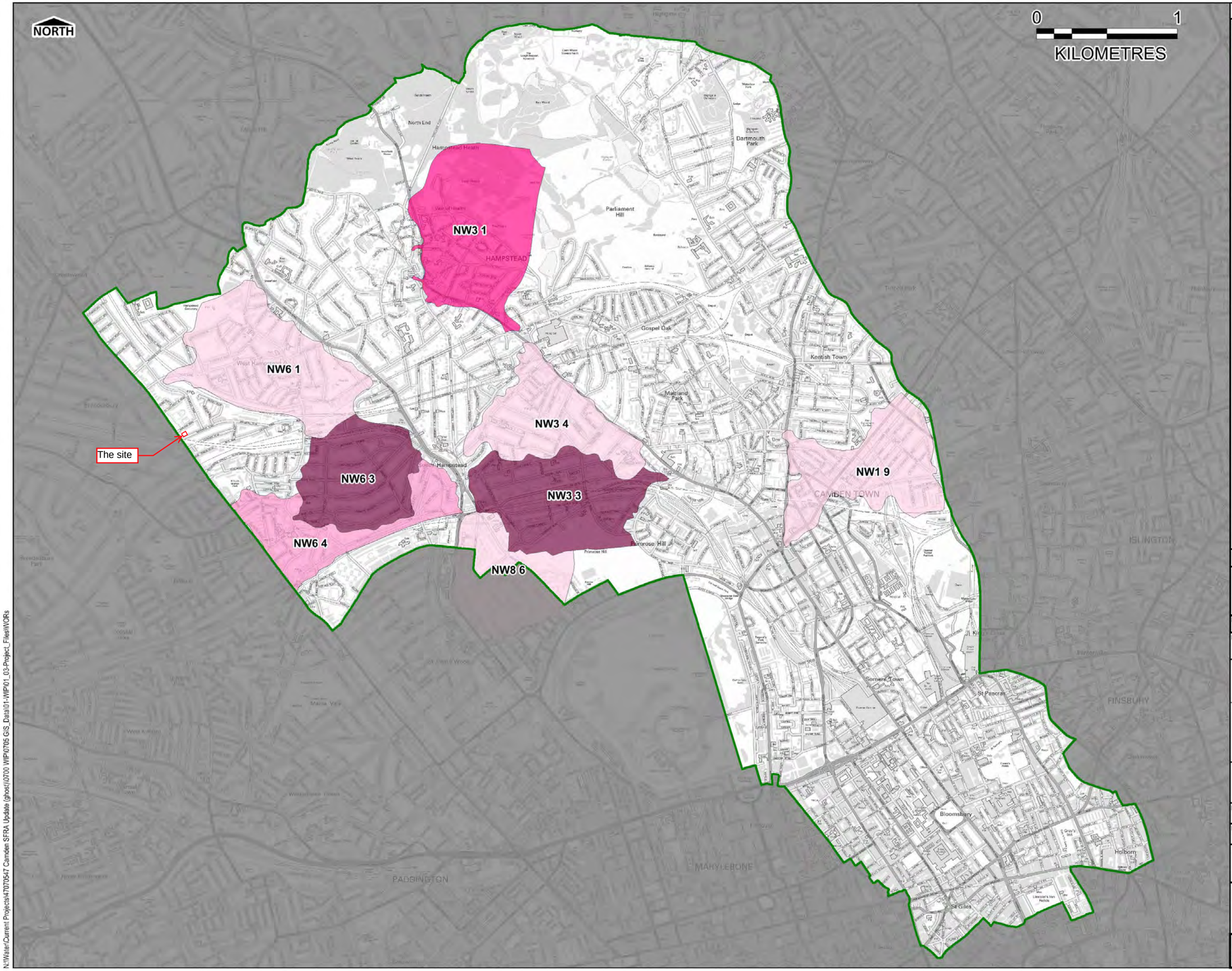
URS Internal Project No.	Scale at A3
47070547	1: 40,000

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

URS Infrastructure & Environment UK Limited
6 - 8 Greencoat Place
London
SW1P 1PL
Telephone +44 (0)207 7985000
Fax +44 (0)207 7985001
www.ursglobal.com

Drawing Number: **FIGURE 4e** Rev: **Rev 1**

N:\Water\Current Projects\47070547 Camden SFRA Update (ghost)\0700 WIP\0705 GIS_Data\01-WIP\01_03-Project_Files\WORs



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

London Borough Camden Boundary

Internal Sewer Flooding
No. of Properties affected

- 1
- 2
- 4
- 8

Contains Ordnance Survey data © Crown copyright and database right 2014

Revision Details	By / Check	Check Date	Suffix

Purpose of Issue: FINAL

Client: Camden

Project Title: LONDON BOROUGH OF CAMDEN STRATEGIC FLOOD RISK ASSESSMENT

Drawing Title: DG5 Internal Sewer Flooding

Drawn	Checked	Approved	Date
CB	JS	MT	03/07/2014

URS Internal Project No.	Scale at A3
47070547	1:40,000

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

URS Infrastructure & Environment UK Limited
6 - 8 Greencoat Place
London
SW1P 1PL
Telephone +44 (0)207 7985000
Fax +44 (0)207 7985001
www.ursglobal.com

Drawing Number	Rev
FIGURE 5a	Rev 1

N:\Water\Current Projects\47070547 Camden SFRA Update (ghost)\0700 WIP\0705 GIS_Data\01-WIP\01_03-Project_Files\MXDs

NORTH

0 1
KILOMETRES

NW3 1

NW3 5

NW6 2

NW6 3

NW6 4

The site

North End
Hampstead Heath
Dartmouth Park
Parliament Hill
HAMPSTEAD
Gospel Oak
West Hampstead
Kentish Town
Maitland Park
CAMDEN TOWN
Primrose Hill
Somers Town
St Pancras
Bloomsbury
Holborn
St Giles
ISLINGTON
FINSBURY
MARYLEBONE
PADDINGTON

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

London Borough Camden Boundary

Exterior Sewer Flooding
No. of Properties affected

- 1
- 2
- 4
- 18

Contains Ordnance Survey data © Crown copyright and database right 2014

Revision Details	By / Check	Check Date	Suffix

Purpose of Issue: FINAL

Client: Camden

Project Title: LONDON BOROUGH OF CAMDEN STRATEGIC FLOOD RISK ASSESSMENT

Drawing Title: DG5 External Sewer Flooding

Drawn	Checked	Approved	Date
CB	JS	MT	03/07/2014

URS Internal Project No.	Scale at A3
47070547	1:40,000

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

URS Infrastructure & Environment UK Limited
6 - 8 Greencoat Place
London
SW1P 1PL
Telephone +44 (0)207 7985000
Fax +44 (0)207 7985001
www.ursglobal.com

URS

Drawing Number	Rev
FIGURE 5b	Rev 1

N:\Water\Current Projects\47070547 Camden SFRA Update (ghost)\0700 WIP\0705 GIS_Data\01-WIP\01_03-Project_Files\MXDRs

NORTH

0 1
KILOMETRES

Group3_001
Group3_010
Group3_005
Group3_003
Group3_011

Hampstead Heath
North End
Parliament Hill
Dartmouth Park
HAMPSTEAD
Frognal Lane
Cannon Hill
West Hampstead
Sumatra Road
Gospel Oak
Maitland Park
Kentish Town
Goldhurst
Kingsgate
South Hampstead
CAMDEN TOWN
Primrose Hill
King's Cross
North Swinton Street
Somers Town
FINSBURY
South East Regent's Park
Bloomsbury
Holborn
Farringdon
MARYLEBONE
PADDINGTON
St Giles
SLINGTON

The site

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- London Borough Camden Boundary
- Critical Drainage Area
- Local Flood Risk Zone

Contains Ordnance Survey data © Crown copyright and database right 2014

Revision Details	By / Check	Check Date	Suffix

Purpose of Issue: FINAL

Client: Camden

Project Title: LONDON BOROUGH OF CAMDEN STRATEGIC FLOOD RISK ASSESSMENT

Drawing Title: Critical Drainage Areas / Local Flood Risk Zones

Drawn	Checked	Approved	Date
CB/EB	EY	MT	04/06/2014

URS Internal Project No.	Scale at A3
47070547	1:40,000

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

URS Infrastructure & Environment UK Limited
6 - 8 Greencoat Place
London
SW1P 1PL
Telephone +44 (0)207 7985000
Fax +44 (0)207 7985001
www.ursglobal.com

URS

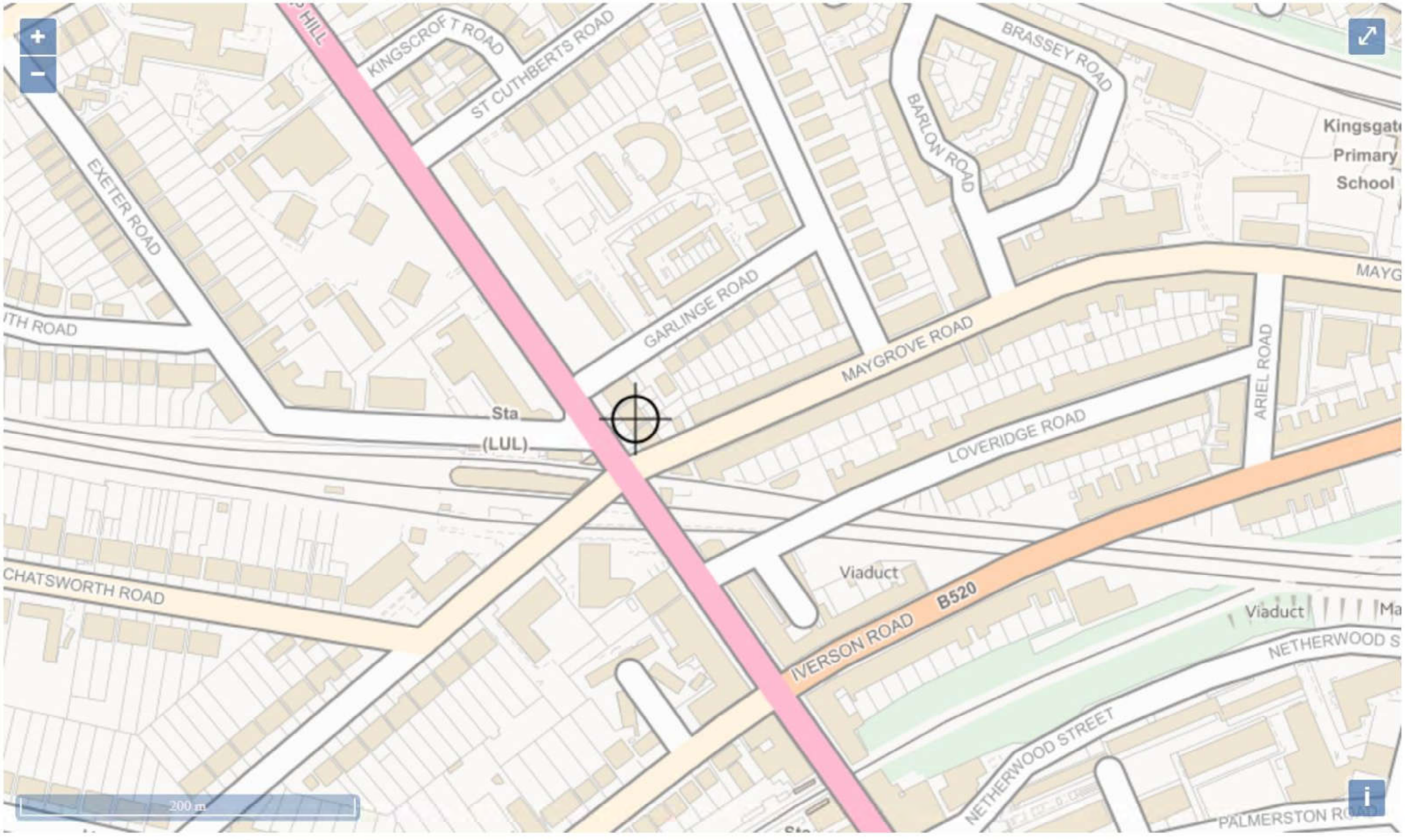
Drawing Number	Rev
FIGURE 6	Rev 2

N:\Water\Current Projects\47070547 Camden SFRA Update (ghost)\0700 WIP\0705 GIS_Data\01-WIP\01_03-Project_Files\WORs

Appendix E – Gov.uk Flood Maps

Extent of flooding ▾

Enter a place or postcode

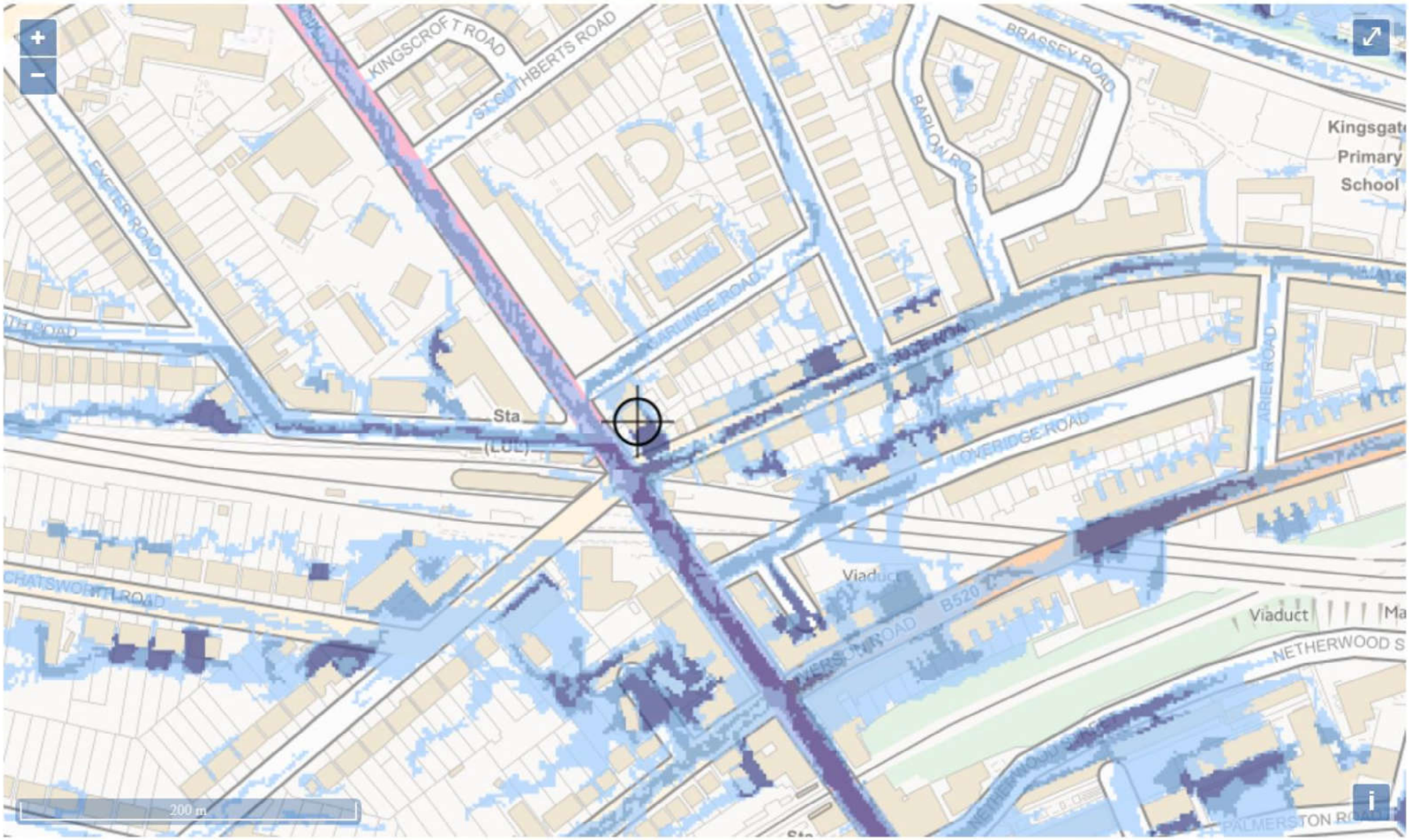


Extent of flooding from rivers or the sea

High Medium Low Very low Location you selected

Extent of flooding

Enter a place or postcode

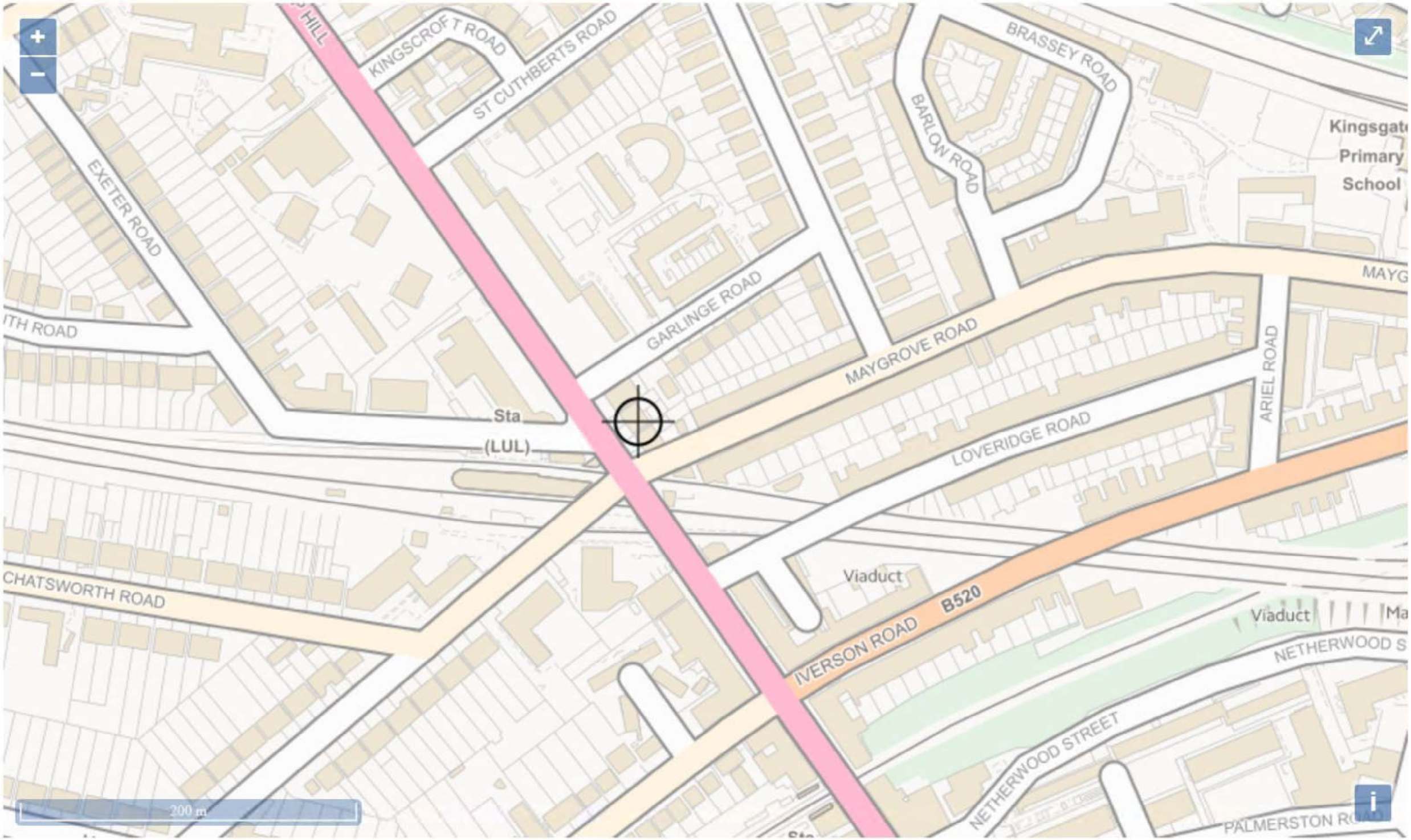


Extent of flooding from surface water

High Medium Low Very low Location you selected

Extent of flooding ▾

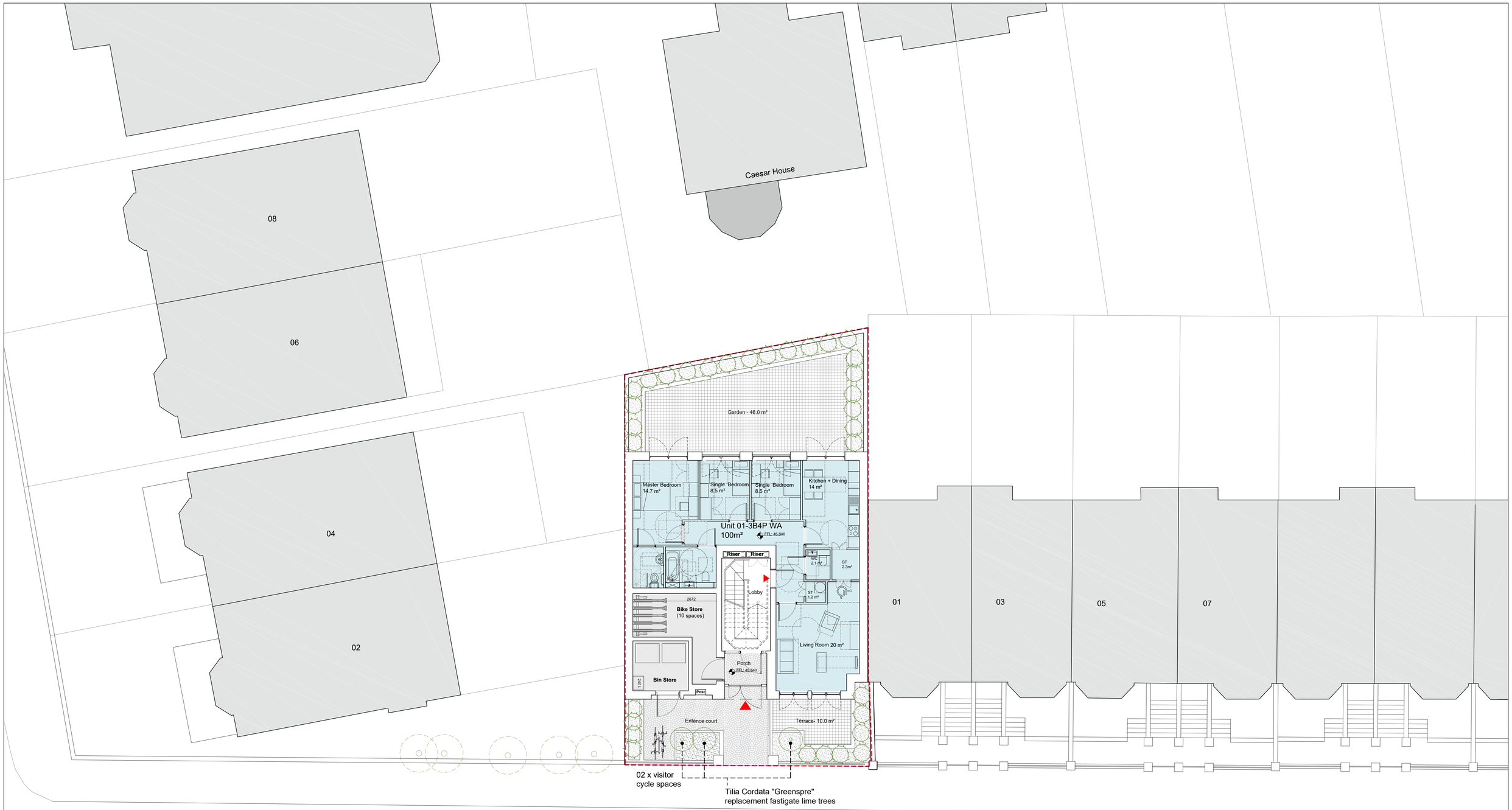
Enter a place or postcode



Extent of flooding from reservoirs

Maximum extent of flooding Location you selected

Appendix F – Development Proposals



notes

Copyright : the copyright of this drawing is vested in Fraser Brown MacKenna Architects ltd. It shall not be used without permission by anyone for any purpose. Do not scale drawings - use figured dimensions only. All dimensions to be verified and checked on site. Read the drawing in conjunction with all related drawings and specifications. Notify architect immediately of any discrepancy found therein.

drawing notes

Key:

Site Boundary

Bio Diverse Roof

0 2m 5m 10m
1:200

0 1m 2m 3m 4m 5m
1:100

REV	BY	CHKD	DATE	AMENDMENT DETAILS
B	FBM	FBM	18.05.2021	Landscape layout updated
A	RDA	SR	07.12.2020	Basement removed and layout modified

REV	BY	CHKD	DATE	AMENDMENT DETAILS

project
Shoot-Up Hill
London
NW2 3QN

client
Notting Hill Genesis

FraserBrownMacKennaArchitects
15-18 Featherstone St. London EC1Y 8SL www.fbmarchitects.com
T:020 7251 0543

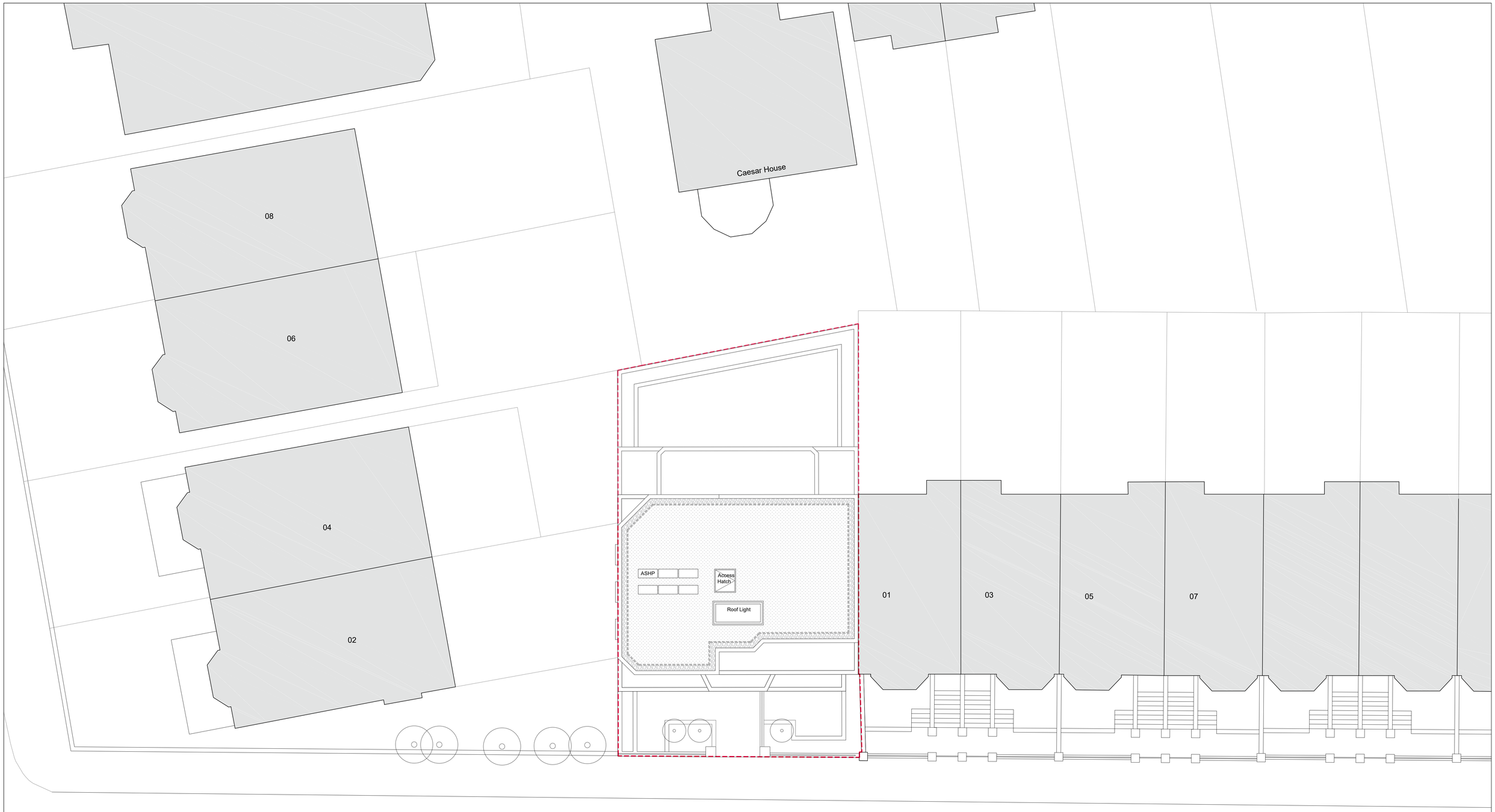
drawing title
Proposed Ground Floor Plan

PLANNING

scale	drawn by	checked by	date
1/100-@A1 1/200-@A3	LJM	FBM	©04/02/2020

DRAWING NUMBER	project	status	revision
	956	P	1002 B

A1LH
0



notes

Copyright : the copyright of this drawing is vested in Fraser Brown MacKenna Architects ltd. It shall not be used without permission by anyone for any purpose.
Do not scale drawings - use figured dimensions only.
All dimensions to be verified and checked on site.
Read the drawing in conjunction with all related drawings and specifications. Notify architect immediately of any discrepancy found therein.

drawing notes

Key: Site Boundary

Bio Diverse Roof

N

0 2m 5m 10m
1:200

0 1m 2m 3m 4m 5m
1:100

REV	BY	CHKD	DATE	AMENDMENT DETAILS
B	FBM	FBM	18.05.2021	Landscape Layout Updated
A	RDA	SR	07.12.2020	Basement level removed and layout modified

REV	BY	CHKD	DATE	AMENDMENT DETAILS

project
Shoot-Up Hill
London
NW2 3QN

client
Notting Hill Genesis

FraserBrownMacKennaArchitects
15-18 Featherstone St. London EC1Y 8SL www.fbmarchitects.com
T:020 7251 0543

drawing title
Proposed Roof Level Plan

PLANNING

scale	drawn by	checked by	date
1/100-@A1 1/200-@A3	LJM	FBM	© 04/02/2020

DRAWING NUMBER | project **956** | status **P** | revision **1006** | **B**

A1LH
0

GARDEN OF CLAUDIUS COURT

PROPOSED DEVELOPMENT

MAYGROVE ROAD

Masonry + Cladding

1.1. Facing Brick - High Quality Light buff/brown brick, Wienerberger Marziale or equal and approved.215 x 102.5 x 65mm format. Laid in Flemish Bond with flush mortar Joints. Mortar colour to match lighter tones of brickwork
1.2. Full Brick (215mm) returns to Window and Door reveals.
1.3. Precast concrete lintel to Window and Door heads
1.4. Hit and Miss Brickwork. To Match Facing Brick
1.5. Brick Cills. To Match Facing Brick
1.6. High Density Brickwork to Below DPC level to mitigate staining. Brick to match facing Brickwork. Laid in english garden wall bond
1.7. Precast Concrete Mullions +Columns - Fair faced, light acid etched, with colour matched flush mortar joints. Integrated drips and beveled edges to exposed edges. Portland cement. To be manufactured as a single complete length

Masonry + Cladding

1.8. Precast Concrete Lintels - Inset half brick. Fair faced, light acid etched, with colour matched flush mortar joints. Integrated drips and beveled edges to exposed edges. Portland cement. To be manufactured as single complete length.
1.9. Precast Concrete Lintels - Flush to facing brickwork. Fair faced, light acid etched, with colour matched flush mortar joints. Integrated drips and beveled edges to exposed edges. Portland cement. To be manufactured as simple complete length.
1.10. Precast Concrete Spandrel panels - Inset half brick. Fair faced, light acid etched, with colour matched flush mortar joints.Integrated drips and beveled edges to exposed edges. Portland cement. To be manufactured as single complete length.
1.11. Precast Concrete cills - Fair faced, light acid etched, with colour matched flush mortar joints. Integrated drips and beveled edges to exposed edges.Cills to have stooling detail for interface with mullions and facing brickwork Portland cement. To be manufactured as single complete length.
1.12. Precast Concrete copings - Fair faced, light acid etched, with colour matched flush mortar joints. Integrated drips and beveled edges to exposed edges. Portland cement. To be manufactured as single complete length

Windows + Doors

2.1. Aluminum composite windows and doors. Combination of inward opening, outward opening and sliding panes. IGP-DURA xal 42 Classic 01 or equal and approved. Maximum 55 mm profile width.
2.2 Communal Entrance doorset in engineered hardwood. Accoya Door with integrated glazing panel. Satin Stainless Steel ironmongery. Door entry system to adjacent brickwork.
2.3 Private residential entrance doorset in engineered hardwood. Accoya Door with integrated glazed Fanlight and letterbox. Finish to match communal entrance door set
2.4 Galvanised Steel doors to bike and bin stores.Powder coated to match Aluminum windows and other metal work elements.

Metalwork

3.1. Galvanised Steel perorated entrance gates with integrated door entry system to fixed panel. PPC Finish: IGP-DURA xal 42 Classic 01 or equal and approved.
3.2. Galvanised Steel peforated panels. PPC Finish: IGP-DURA xal 42 Classic 01 or equal and approved.
3.3. Aluminum balcony soffit cladding panel. Solid cassette panel system with concealed fixings. PPC finish to match other elements of metalwork
3.4. Balustrades + Railings : Nominal 50 x 8 mm Galvanised fin bar steel balustrades with PPC Finish: IGP-DURA xal 42 Classic 01 or equal and approved.
3.5. Aluminum rainwater downpipes with concealed brackets and sqaure hopper heads. Mill finished.

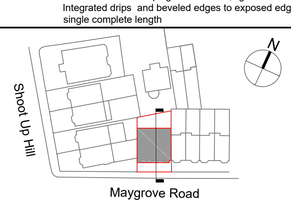
External Terraces / Decks/ Roof

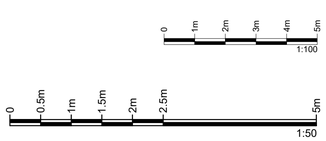
4.1. Concrete pavers
4.2. Concrete paving flags on pedestal system
4.3. Bio - Diverse/ Brown Roof with planting and gravel borders
4.4. Horizontal Cable Fall Restraint System for areas of accessible roof for maintenance.
4.5. Individual Air Source Heat Pumps with acoustic attenuation enclosure - Galvanised Steel perforated panels. PPC Finish: IPG-DURA xal 42 Classic 01 or equal and approved.

notes

Copyright : the copyright of this drawing is vested in Fraser Brown MacKenna Architects ltd. It shall not be used without permission by anyone for any purpose.
Do not scale drawings - use figured dimensions only.
All dimensions to be verified and checked on site.
Read the drawing in conjunction with all related drawings and specifications. Notify architect immediately of any discrepancy found therein.

drawing notes





REV	BY	CHKD	DATE	AMENDMENT DETAILS
B	FBM	FBM	18.05.2021	Minor drawing amendments
A	RDA	SR	07.12.2020	Basement level removed and layout modified

project
Shoot Up Hill

Maygrove Road, NW6

client
Notting Hill Genesis

London Borough of Camden

FraserBrownMacKennaArchitects
15-18 Featherstone St. London EC1Y 8SL www.fbmarchitects.com
T:020 7251 0543

drawing title
Proposed Section AA

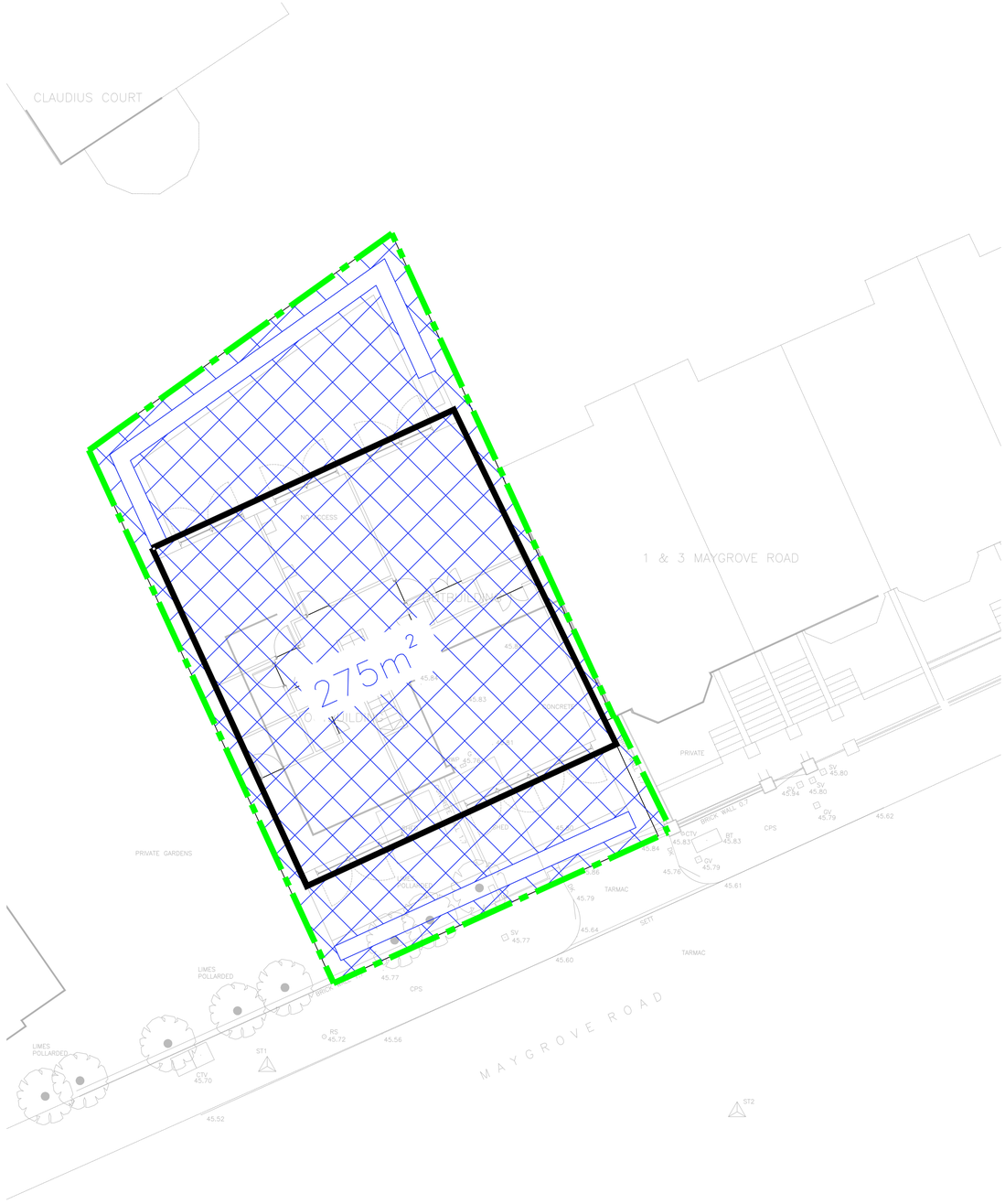
PLANNING

scale	drawn by	checked by	date
1:50@A1/1:100@A3	MW	FBM	© 04/02/2020

DRAWING NUMBER	project	status	revision
	956	P	3101 | B

A1LH
0

General Notes



N

LEGEND

Site Boundary

Impermeable Area

Total Impermeable
Area = 275m²

PRELIMINARY - FOR PLANNING

REV	DATE	DESCRIPTION	BY	CHK'D

Notting Hill Genesis

TITLE:

Proposed Impermeable Area

PROJECT:

Shoot–Up Hill
London NW2 3QN

SCALE: 1:200 @A1 DATE: March 20 DRAWN: MFD CHK'D: AJP

DRG NO.

14065–TDA–XX–GR–DR–C–25702

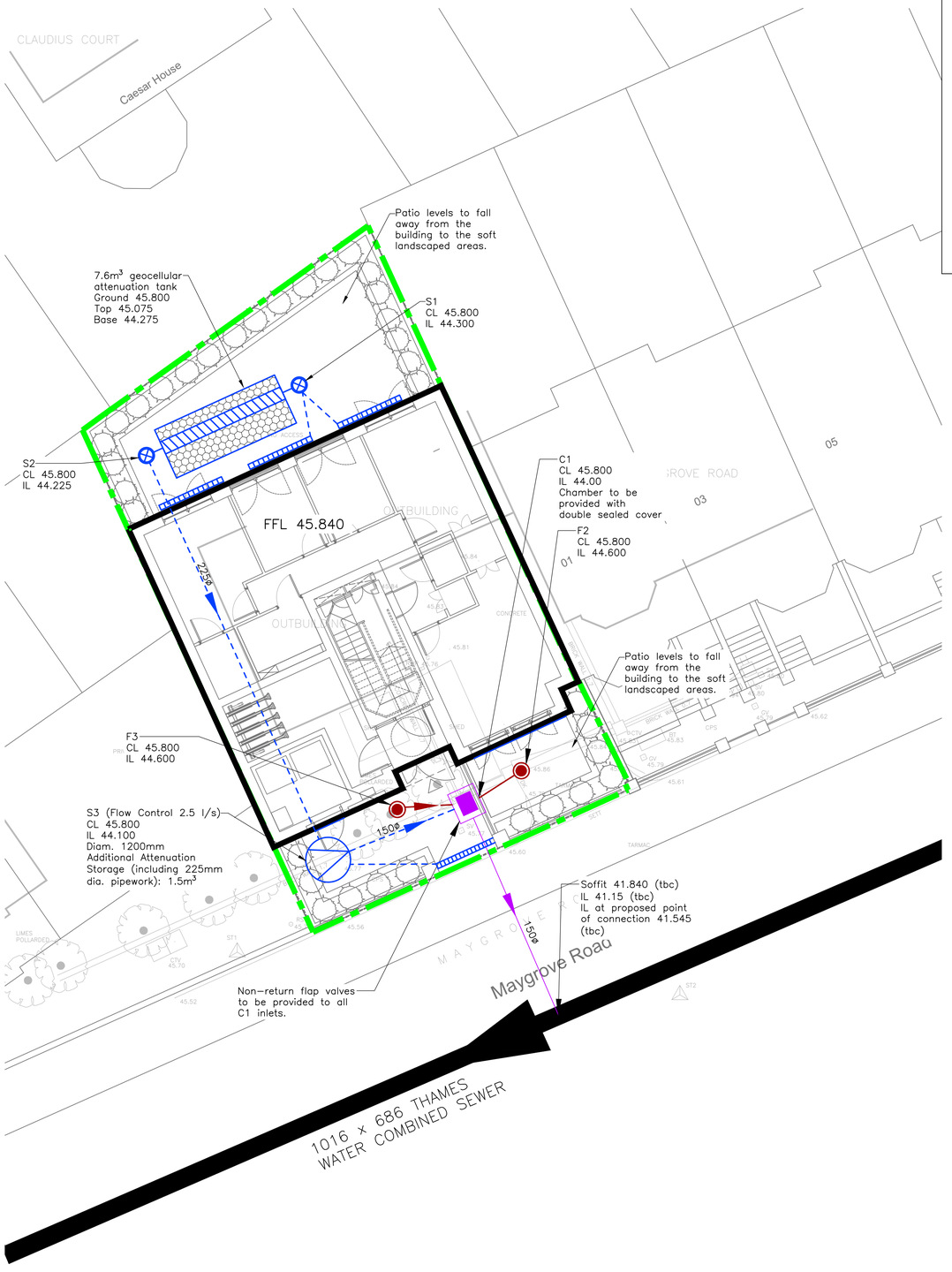
REV.

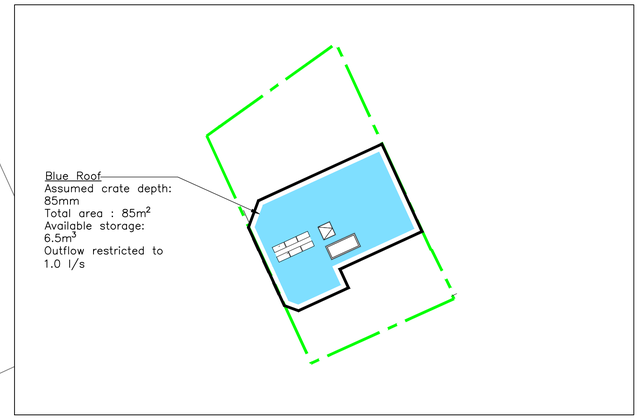
TDA PROJECT NUMBER:
14065

Tully De'Ath consultants
Engineering at its Best
T: 01342 828 000 E: info@tullydeath.com W: www.tullydeath.com

Appendix G – Indicative Drainage Strategy

General Notes





Indicative Blue Roof Extent

Drainage Strategy

Off-site surface water flows from the proposed development will be restricted to a maximum of 2.5 l/s for all storm events up to and including the 1 in 100 year + 40% Climate change. It is worth noting that restricting the flow rate any further would require the installation of a flow control device with an aperture size <75mm, which is widely considered as the minimum orifice size that can be provided without an unacceptable risk of blockage.

Given the constraints imposed by the proposed site layout (ie very limited external space available for below ground attenuation storage), the current strategy aims to restrict surface water flows from the roof to the minimum rate practically possible 'at-source. This restriction will be achieved via the provision of an 85mm deep blue roof system with bespoke flow control outlets designed to limit roof outflows to a maximum of 1.0 l/s.

The restricted flows from the blue roof system, along with any additional runoff generated within the rest of the proposed impermeable areas on site, will be in turn conveyed into a below ground attenuation tank designed to accommodate a minimum of 7.6m³ of attenuation storage. It has been calculated that this volume will be sufficient to restrict the off-site surface water discharge rate to a maximum of 2.5 l/s for all storm events up to and including the 1 in 100 + 40% CC.

In terms of the off-site connection, the current proposal is to discharge both the restricted surface water flows and foul water flows into the existing adopted 1016x686mm combined water sewer that runs along Maygrove Road, via a new gravity direct combined connection. This connection will be subject to a Section 106 agreement with Thames Water.

N

Legend

	Foul	S.W.	C.W.
Adoptable Drainage			
Existing Sewer			
Private Drainage			
Manhole			
Catchpit Chamber			
Flow Control Chamber			
Geocellular Storage Tank			
Other			
Site Boundary			

PRELIMINARY - FOR PLANNING

REV	DATE	DESCRIPTION	BY	CHK'D
A	10.03.21	Architect layout updated and drainage strategy amended to suit.	CH	AJP

Notting Hill Genesis

TITLE:
Drainage Strategy

PROJECT:
Shoot-Up Hill
London NW2 3QN

SCALE: 1:100@A1 DATE: March 2020 DRAWN: MFD CHK'D: AJP

DRG NO.
14065-TDA-XX-GR-DR-C-25001

REV.
A

TDA PROJECT NUMBER.
14065

Tully De'Ath consultants
Engineering at its Best
T: 01342 828 000 E: info@tullydeath.com W: www.tullydeath.com

Appendix H – Micro-Drainage Calculations

ICP SUDS Mean Annual Flood

Input

Return Period (years) 100 SAAR (mm) 600 Urban 0.000
Area (ha) 0.029 Soil 0.300 Region Number Region 6

Results l/s

QBAR Rural 0.0
QBAR Urban 0.0

Q100 years 0.1

Q1 year 0.0
Q30 years 0.1
Q100 years 0.1

©1982-2019 Innovyze

Cascade Summary of Results for Blue Roof - Rev A.SRCX

Upstream Structures	Outflow To	Overflow To
(None)	Tank - Rev A.SRCX	(None)

Half Drain Time : 53 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	49.552	0.052	0.0	1.0	1.0	4.2	O K
30 min Summer	49.562	0.062	0.0	1.0	1.0	5.0	O K
60 min Summer	49.565	0.065	0.0	1.0	1.0	5.3	O K
120 min Summer	49.569	0.069	0.0	1.0	1.0	5.6	O K
180 min Summer	49.567	0.067	0.0	1.0	1.0	5.4	O K
240 min Summer	49.563	0.063	0.0	1.0	1.0	5.1	O K
360 min Summer	49.553	0.053	0.0	1.0	1.0	4.3	O K
480 min Summer	49.543	0.043	0.0	1.0	1.0	3.4	O K
600 min Summer	49.534	0.034	0.0	1.0	1.0	2.7	O K
720 min Summer	49.527	0.027	0.0	1.0	1.0	2.2	O K
960 min Summer	49.519	0.019	0.0	1.0	1.0	1.6	O K
1440 min Summer	49.514	0.014	0.0	0.7	0.7	1.1	O K
2160 min Summer	49.510	0.010	0.0	0.5	0.5	0.8	O K
2880 min Summer	49.508	0.008	0.0	0.4	0.4	0.6	O K
4320 min Summer	49.506	0.006	0.0	0.3	0.3	0.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	181.656	0.0	4.9	17
30 min Summer	116.908	0.0	6.3	31
60 min Summer	71.589	0.0	7.7	50
120 min Summer	46.272	0.0	10.0	84
180 min Summer	35.217	0.0	11.4	120
240 min Summer	28.709	0.0	12.4	154
360 min Summer	21.137	0.0	13.7	218
480 min Summer	16.763	0.0	14.4	280
600 min Summer	13.911	0.0	15.0	338
720 min Summer	11.902	0.0	15.4	392
960 min Summer	9.254	0.0	16.0	500
1440 min Summer	6.417	0.0	16.6	736
2160 min Summer	4.428	0.0	17.2	1100
2880 min Summer	3.406	0.0	17.6	1468
4320 min Summer	2.365	0.0	18.3	2184

©1982-2019 Innovyze

Cascade Summary of Results for Blue Roof - Rev A.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
5760 min Summer	49.504	0.004	0.0	0.2	0.2	0.3	O K
7200 min Summer	49.504	0.004	0.0	0.2	0.2	0.3	O K
8640 min Summer	49.503	0.003	0.0	0.2	0.2	0.2	O K
10080 min Summer	49.503	0.003	0.0	0.1	0.1	0.2	O K
15 min Winter	49.552	0.052	0.0	1.0	1.0	4.2	O K
30 min Winter	49.562	0.062	0.0	1.0	1.0	5.0	O K
60 min Winter	49.564	0.064	0.0	1.0	1.0	5.2	O K
120 min Winter	49.567	0.067	0.0	1.0	1.0	5.4	O K
180 min Winter	49.562	0.062	0.0	1.0	1.0	5.0	O K
240 min Winter	49.555	0.055	0.0	1.0	1.0	4.5	O K
360 min Winter	49.540	0.040	0.0	1.0	1.0	3.2	O K
480 min Winter	49.527	0.027	0.0	1.0	1.0	2.2	O K
600 min Winter	49.520	0.020	0.0	1.0	1.0	1.6	O K
720 min Winter	49.517	0.017	0.0	0.9	0.9	1.4	O K
960 min Winter	49.514	0.014	0.0	0.7	0.7	1.1	O K
1440 min Winter	49.510	0.010	0.0	0.5	0.5	0.8	O K
2160 min Winter	49.507	0.007	0.0	0.3	0.3	0.5	O K
2880 min Winter	49.505	0.005	0.0	0.3	0.3	0.4	O K
4320 min Winter	49.504	0.004	0.0	0.2	0.2	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
5760 min Summer	1.836	0.0	19.0	2936
7200 min Summer	1.519	0.0	19.7	3592
8640 min Summer	1.307	0.0	20.3	4408
10080 min Summer	1.156	0.0	21.0	5120
15 min Winter	181.656	0.0	4.9	17
30 min Winter	116.908	0.0	6.3	30
60 min Winter	71.589	0.0	7.7	52
120 min Winter	46.272	0.0	10.0	90
180 min Winter	35.217	0.0	11.4	128
240 min Winter	28.709	0.0	12.4	162
360 min Winter	21.137	0.0	13.7	228
480 min Winter	16.763	0.0	14.4	282
600 min Winter	13.911	0.0	15.0	326
720 min Winter	11.902	0.0	15.4	384
960 min Winter	9.254	0.0	15.9	500
1440 min Winter	6.417	0.0	16.6	726
2160 min Winter	4.428	0.0	17.2	1092
2880 min Winter	3.406	0.0	17.6	1468
4320 min Winter	2.365	0.0	18.4	2196

©1982-2019 Innovyze

Cascade Summary of Results for Blue Roof - Rev A.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
5760 min Winter	49.503	0.003	0.0	0.1	0.1	0.2	O K
7200 min Winter	49.502	0.002	0.0	0.1	0.1	0.2	O K
8640 min Winter	49.502	0.002	0.0	0.1	0.1	0.2	O K
10080 min Winter	49.502	0.002	0.0	0.1	0.1	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
5760 min Winter	1.836	0.0	19.0	2952
7200 min Winter	1.519	0.0	19.7	3752
8640 min Winter	1.307	0.0	20.3	4720
10080 min Winter	1.156	0.0	21.0	5136

©1982-2019 Innovyze

Cascade Rainfall Details for Blue Roof - Rev A.SRCX

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 524679 184670 TQ 24679 84670
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.900
Cv (Winter)	0.900
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.012

Time (mins) From:	To:	Area (ha)
0	4	0.012

©1982-2019 Innovyze

Cascade Model Details for Blue Roof - Rev A.SRCX

Storage is Online Cover Level (m) 50.000

Cellular Storage Structure

Invert Level (m) 49.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	85.0	85.0	0.086	0.0	88.2
0.085	85.0	88.1			

Depth/Flow Relationship Outflow Control

Invert Level (m) 49.500

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.010	0.5000	0.020	1.0000	0.800	1.0000

©1982-2019 Innovyze

Cascade Summary of Results for Tank - Rev A.SRCX

	Upstream Structures	Outflow To	Overflow To
Blue Roof - Rev A.SRCX		(None)	(None)

Half Drain Time : 24 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	44.842	0.567	0.0	2.5	2.5	5.4	O K
30 min Summer	44.921	0.646	0.0	2.5	2.5	6.1	O K
60 min Summer	44.925	0.650	0.0	2.5	2.5	6.2	O K
120 min Summer	44.952	0.677	0.0	2.5	2.5	6.4	O K
180 min Summer	44.929	0.654	0.0	2.5	2.5	6.2	O K
240 min Summer	44.883	0.608	0.0	2.5	2.5	5.8	O K
360 min Summer	44.758	0.483	0.0	2.5	2.5	4.6	O K
480 min Summer	44.568	0.293	0.0	2.5	2.5	2.8	O K
600 min Summer	44.447	0.172	0.0	2.5	2.5	1.6	O K
720 min Summer	44.367	0.092	0.0	2.5	2.5	0.9	O K
960 min Summer	44.281	0.006	0.0	2.4	2.4	0.1	O K
1440 min Summer	44.275	0.000	0.0	1.8	1.8	0.0	O K
2160 min Summer	44.275	0.000	0.0	1.3	1.3	0.0	O K
2880 min Summer	44.275	0.000	0.0	1.0	1.0	0.0	O K
4320 min Summer	44.275	0.000	0.0	0.7	0.7	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	181.656	0.0	11.8	17
30 min Summer	116.908	0.0	15.2	31
60 min Summer	71.589	0.0	18.7	52
120 min Summer	46.272	0.0	24.1	86
180 min Summer	35.217	0.0	27.6	120
240 min Summer	28.709	0.0	29.8	156
360 min Summer	21.137	0.0	33.0	228
480 min Summer	16.763	0.0	34.9	280
600 min Summer	13.911	0.0	36.3	334
720 min Summer	11.902	0.0	37.3	390
960 min Summer	9.254	0.0	38.6	492
1440 min Summer	6.417	0.0	40.2	0
2160 min Summer	4.428	0.0	41.6	0
2880 min Summer	3.406	0.0	42.6	0
4320 min Summer	2.365	0.0	44.4	0

©1982-2019 Innovyze

Cascade Summary of Results for Tank - Rev A.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
5760 min Summer	44.275	0.000	0.0	0.5	0.5	0.0	O K
7200 min Summer	44.275	0.000	0.0	0.4	0.4	0.0	O K
8640 min Summer	44.275	0.000	0.0	0.4	0.4	0.0	O K
10080 min Summer	44.275	0.000	0.0	0.3	0.3	0.0	O K
15 min Winter	44.845	0.570	0.0	2.5	2.5	5.4	O K
30 min Winter	44.928	0.653	0.0	2.5	2.5	6.2	O K
60 min Winter	44.927	0.652	0.0	2.5	2.5	6.2	O K
120 min Winter	44.931	0.656	0.0	2.5	2.5	6.2	O K
180 min Winter	44.875	0.600	0.0	2.5	2.5	5.7	O K
240 min Winter	44.789	0.514	0.0	2.5	2.5	4.9	O K
360 min Winter	44.524	0.249	0.0	2.5	2.5	2.4	O K
480 min Winter	44.363	0.088	0.0	2.5	2.5	0.8	O K
600 min Winter	44.282	0.007	0.0	2.4	2.4	0.1	O K
720 min Winter	44.275	0.000	0.0	2.1	2.1	0.0	O K
960 min Winter	44.275	0.000	0.0	1.7	1.7	0.0	O K
1440 min Winter	44.275	0.000	0.0	1.2	1.2	0.0	O K
2160 min Winter	44.275	0.000	0.0	0.8	0.8	0.0	O K
2880 min Winter	44.275	0.000	0.0	0.6	0.6	0.0	O K
4320 min Winter	44.275	0.000	0.0	0.4	0.4	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
5760 min Summer	1.836	0.0	46.0	0
7200 min Summer	1.519	0.0	47.6	0
8640 min Summer	1.307	0.0	49.1	0
10080 min Summer	1.156	0.0	50.7	0
15 min Winter	181.656	0.0	11.8	17
30 min Winter	116.908	0.0	15.2	31
60 min Winter	71.589	0.0	18.7	56
120 min Winter	46.272	0.0	24.0	90
180 min Winter	35.217	0.0	27.5	130
240 min Winter	28.709	0.0	30.0	170
360 min Winter	21.137	0.0	33.0	226
480 min Winter	16.763	0.0	35.0	276
600 min Winter	13.911	0.0	36.3	322
720 min Winter	11.902	0.0	37.2	0
960 min Winter	9.254	0.0	38.6	0
1440 min Winter	6.417	0.0	40.2	0
2160 min Winter	4.428	0.0	41.6	0
2880 min Winter	3.406	0.0	42.6	0
4320 min Winter	2.365	0.0	44.4	0

©1982-2019 Innovyze

Cascade Summary of Results for Tank - Rev A.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
5760 min Winter	44.275	0.000	0.0	0.3	0.3	0.0	O K
7200 min Winter	44.275	0.000	0.0	0.3	0.3	0.0	O K
8640 min Winter	44.275	0.000	0.0	0.3	0.3	0.0	O K
10080 min Winter	44.275	0.000	0.0	0.2	0.2	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
5760 min Winter	1.836	0.0	46.0	0
7200 min Winter	1.519	0.0	47.6	0
8640 min Winter	1.307	0.0	49.1	0
10080 min Winter	1.156	0.0	50.7	0

©1982-2019 Innovyze

Cascade Rainfall Details for Tank - Rev A.SRCX

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 524679 184670 TQ 24679 84670
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.900
Cv (Winter)	0.900
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.017

Time (mins) From:	To:	Area (ha)
0	4	0.017

©1982-2019 Innovyze

Cascade Model Details for Tank - Rev A.SRCX

Storage is Online Cover Level (m) 45.875

Cellular Storage Structure

Invert Level (m) 44.275 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	10.0	10.0	0.801	0.0	20.1
0.800	10.0	20.1			

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0076-2500-0975-2500
Design Head (m)	0.975
Design Flow (l/s)	2.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	76
Invert Level (m)	44.100
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.975	2.5	Kick-Flo®	0.610	2.0
Flush-Flo™	0.295	2.5	Mean Flow over Head Range	-	2.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.1	1.200	2.7	3.000	4.2	7.000	6.2
0.200	2.4	1.400	2.9	3.500	4.5	7.500	6.5
0.300	2.5	1.600	3.1	4.000	4.8	8.000	6.7
0.400	2.5	1.800	3.3	4.500	5.1	8.500	6.8
0.500	2.3	2.000	3.5	5.000	5.3	9.000	7.0
0.600	2.1	2.200	3.6	5.500	5.6	9.500	7.2
0.800	2.3	2.400	3.8	6.000	5.8		
1.000	2.5	2.600	3.9	6.500	6.0		

©1982-2019 Innovyze

Appendix I – London Borough of Camden SuDS Pro-Forma

Camden

GREATERLONDONAUTHORITY

LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	2a Shoot-Up Hill
Address & post code	2a Shoot-Up Hill, London NW2 3QN
OS Grid ref. (Easting, Northing)	E 524663
	N 184685
LPA reference (if applicable)	
Brief description of proposed work	The proposed development will provide 6 flats within a four-storey block, which includes a lower ground floor level covering the whole site. Terrace areas are proposed at this lower ground floor level to the front and back of the
Total site Area	290 m^2
Total existing impervious area	140 m^2
Total proposed impervious area	275 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	Yes
Existing drainage connection type and location	RWP and gulies are noted on the site but no drainage survey undertaken
Designer Name	Martin Deus
Designer Position	Civil Engineer
Designer Company	Tully De'Ath

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	n/a	
Bedrock geology classification	London Clay	
Site infiltration rate	N/A	m/s
Depth to groundwater level	>19	m below ground level
Is infiltration feasible?	No	

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	N	N
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	N	N
7 discharge rainwater to the combined sewer.	Y	Y

2c. Proposed Discharge Details

Proposed discharge location	Adopted combined sewer in Maygrove Rd.
Has the owner/regulator of the discharge location been consulted?	To be consulted at detailed design stage

Camden

GREATERLONDONAUTHORITY

LoDEG

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	<0.1			
1 in 1	<0.1	2	n/a	2.5
1 in 30	0.1	4.4	n/a	2.5
1 in 100	0.1	5.6	n/a	2.5
1 in 100 + CC			13.2	2.5
Climate change allowance used		40%		

3b. Principal Method of Flow Control	Vortex Flow Control Device

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	119	119	0
Blue roofs	115	85	6.5
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	0	0	0
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	275		7.6
Total	**509**	**204**	**14.1**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Section 3.4
Drainage hierarchy (2b)	Chapter 7
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Section 8.4 and Appendix C
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Section 8.5 and Appendix H
Proposed SuDS measures & specifications (3b)	Chapter 7
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Appendix F
Detailed drainage design drawings, including exceedance flow routes	Appendix G
Detailed landscaping plans	Appendix F
Maintenance strategy	Chapter 10 & Appendix J
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Section 7.3
b) biodiversity?	Section 7.3
c) amenity?	Section 7.3

Appendix J – Detailed Maintenance Schedules

SuDS Maintenance Schedule

Item	Task	Frequency	Location	Access	Comments
Main Drainage Network					
Rainwater downpipes	Clean out at roof level and ground level	Twice yearly for the first 2 years of operation then annually	Roof level, around building perimeter and internal system suspended beneath first floor slab and ground floor slab	High level access required to roof outlets. Communal hard and soft landscaping	Works undertaken by appropriately qualified person(s). For RWP outlets at roof level follow health & safety regulations dealing with working at height
Chambers, silt-traps & catchpits	Clean out chamber/sump		Outside building	Communal hard and soft landscaping	
Pipe network & drainage channels	Pipes to be inspected and condition assessed. Pipes/channels to be cleaned (jetted) as necessary				
Flow Control Devices					
Hydrobrake chambers	Clean out chamber/sump	Monthly for first 3 months then twice yearly	Front garden	Communal hard landscaped area.	Works undertaken by appropriately qualified person(s)
	Inspect flow control unit and remove debris				
Geocellular Attenuation Tanks					
Upstream & downstream catchpit chambers	Clean out chamber/sump	Twice yearly for the first 2 years of operation then annually	Rear communal garden	Rear Communal garden	Works undertaken by appropriately qualified person(s)
Inlets, outlets, vents and overflows	Inspect/check to ensure in good condition and correct operation	Annually and after large storms			
Geocellular units	CCTV inspection. Clean (jet) if required	5 Years or if excessive silt/debris observed in upstream & downstream catchpit chambers			

Item	Task	Frequency	Location	Access	Comments
Biodiverse & Blue Roofs					
Generally	Inspect all components including soil substrate, inlet/outlets, fire breaks, underside of roof for structural integrity & signs of leakage. Remove litter/debris.	Monthly for first 12 months then annually or after severe storms	Biodiverse roof: All roof areas Blue roof: Higher level roof	High level access to roof	Works undertaken by appropriately qualified person(s) following health & safety regulations dealing with working at height
Biodiverse areas/planting/shrubs/trees	Pruning, remove cuttings/debris/fallen leaves, weeding, remove invasive species, replace dead plants	Monthly for first 12 months every 6 months or as required			
Grassed areas	Mowing, remove debris/cuttings	Fortnightly or monthly as appropriate during growing season.			
Hard landscaped areas (Resin bound gravel e.g. Addaset, Addabound or Terrabound by Addagrip)	Remove organic matter from surface (with brush and suction cleaner)	Monthly for first 3 months then twice yearly (in spring and autumn)			
Roof outlets	Clean out, inspect, remove plant growth	Monthly for first 12 months every 6 months or as required and always after severe storms			

Feasibility Research

EIA, Flood Risk &
Transportation
Assessment

Urban Planning and
Design

Integrated
Transport Solutions

Infrastructure
Development

Structural Design

Eco and MMC
Focused

Tully De'Ath offers a range of excellent design services to a wide client base. If you want to find out more about the services we offer, please contact your nearest office on the details below.

Sheridan House,
Forest Row,
East Sussex,
RH18 5EA

01342 828000 ph