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Building Assessments for a Sustainable Environment

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Surface Water and SuDS Assessment Rev2

5 Templewood Avenue,
London,
NW3 7UY

18 December 2024

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Prepared by	Checked by	Date
Carina Hassall BSc (Hons)	Shirley Hunter	18 December 2024

This document has been prepared solely as a Surface Water and SuDS Assessment for Shirley and Alan Stone. Base Energy accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared.

1. Introduction

This Surface Water and SuDS Assessment has been prepared to support the planning application for the proposed residential redevelopment at 5 Templewood Avenue, London, NW3 7UY.

A site location plan is provided in **Appendix A**.

Existing Site Description and Background

The application site comprises 3 residential units.

A copy of the existing site plan is provided in **Appendix B**.

Planning permission was previously granted for a similar (albeit slightly larger) scheme at the site (LPA Ref. 2021/2793/P) for the: '*Conversion of 3 existing units to provide 2 units (C3); erection of rear extension with terrace above and part replacement side extension; installation of plant enclosure to rear; excavation of single storey basement and car lift for 1 vehicle; hard and soft landscaping works; and alterations to fenestration on all elevations*'. The current proposal is somewhat smaller in scale than the previous approval, particularly at basement level.

Development Proposals

Proposals are for a full planning for residential extensions at side, rear and basement levels, internal re-configuration, boundary alterations, landscaping and associated works.

A copy of the proposed site plan is provided in **Appendix C**.

2. Planning Policy

Camden Council

Draft New Camden Local Plan - Regulation 18 Consultation Version, January 2024

Consultation has commenced on the New Camden Local Plan, and within the current consultation version, Policy C12 - Sustainable drainage states:

A. The Council will seek to control surface water run-off from development to reduce the risk of flooding. The Council will: i. Require all development to include permeable surfaces, incorporate green and blue roofs, and seek to replace non-permeable surfaces where feasible. This should be documented within the Sustainability Statement, or Drainage report if required. ii. Resist proposals including impermeable surfacing unless it can be demonstrated to the Council's satisfaction that this is unavoidable. iii. Require all major development to reduce surface water run off rates to greenfield run-off rates, through the application of Sustainable Drainage Systems, following the drainage hierarchy in the London Plan. iv. Require Sustainable Drainage Systems to be designed to provide multifunctional benefits and be integrated into the development. v. Expect sustainable drainage system proposals to meet national and local guidance to ensure they are adequately designed, built and maintained for the lifetime of development. vi. Require a drainage report to be submitted with all major applications. A drainage report for basement developments and other vulnerable development (as set out in Annex 3 NPPF) is to be submitted in areas identified at risk of flooding (Policy CC11).

The London Plan 2021

Policy SI 13 Sustainable Drainage states:

A *Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.*

B *Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:*

1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)

2) rainwater infiltration to ground at or close to source

3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
4) rainwater discharge direct to a watercourse (unless not appropriate)
5) controlled rainwater discharge to a surface water sewer or drain
6) controlled rainwater discharge to a combined sewer.
***C** Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.*
***D** Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.*

***9.13.1** London is at particular risk from surface water flooding, mainly due to the large extent of impermeable surfaces. Lead Local Flood Authorities have responsibility for managing surface water drainage through the planning system, as well as ensuring that appropriate maintenance arrangements are put in place. Local Flood Risk Management Strategies and Surface Water Management Plans should ensure they address flooding from multiple sources including surface water, groundwater and small watercourses that occurs as a result of heavy rainfall.*

***9.13.2 Development proposals should aim to get as close to greenfield run-off rates as possible depending on site conditions.** The well-established drainage hierarchy set out in this policy helps to reduce the rate and volume of surface water run-off.*
***Rainwater should be managed as close to the top of the hierarchy as possible. There should be a preference for green over grey features, and drainage by gravity over pumped systems**. A blue roof is an attenuation tank at roof or podium level; the combination of a blue and green roof is particularly beneficial, as the attenuated water is used to irrigate the green roof.*

***9.13.3** For many sites, **it may be appropriate to use more than one form of drainage**, for example a proportion of rainwater can be managed by more sustainable methods, with residual rainwater managed lower down the hierarchy. In some cases, direct discharge into the watercourse is an appropriate approach, for example rainwater discharge into the tidal Thames or a dock. This should include suitable pollution prevention filtering measures, ideally by using soft engineering or green infrastructure.*
In addition, if direct discharge is to a watercourse where the outfall is likely to be affected by tide-locking, suitable storage should be designed into the system. However, in other cases direct discharge will not be appropriate, for example discharge into a small stream at the headwaters of a

catchment, which may cause flooding. This will need to be assessed on a case-by-case basis, taking into account the location, scale and quality of the discharge and the receiving watercourse. The maintenance of identified drainage measures should also be considered in development proposals.

9.13.4 *The London Sustainable Drainage Action Plan complements this policy. It contains a series of actions to make the drainage system work in a more natural way with a particular emphasis on retrofitting.*

Non-Statutory Technical Standards for SuDS

The Non-Statutory Technical Standards for SuDS, (and accompanying Local Authority SuDS Officer Organisation (LASOO) Practice Guidance) sets out the details which should be addressed within a SuDS Report, including:

- Flood Risk Outside of the Development
- Peak Flow Control and Volume Control
- Flood Risk Within the Development
- Runoff Destinations
- Structural Integrity
- Designing for Maintenance Considerations
- Construction

3. Surface Water and SuDS

Site Area

The total comprises ~1150m^2.

Greenfield Rates of Runoff from the Existing Total Site Area

As previously noted, Local Plan Policy 32 states the following:

Previously developed sites: ensure that peak run-off rates and volumes for the 1 in 100 year event achieve greenfield run-off rates for the same event, unless it can be demonstrated that all opportunities to minimise final site run-off, as close as reasonably practicable to greenfield runoff rates, have been taken in line with the Mayor's drainage hierarchy. In such cases, run-off rates must not exceed 3 times the calculated greenfield rate.

As such, in the first instance the **ICP SuDS** method within Micro Drainage has been used to calculate flow rates from ~1150m^2 (as detailed in **Appendix D** and shown in **Table 1**).

Table 1 – ICP SuDS – Existing Site Runoff Rates (l/s)

Return Period	Flow Rate from 1150m^2 (l/s)
Qbar	0.4
1 in 30 year	1.1
1 in 100 year	1.5

The London Plan Hierarchy

As noted previously, proposals are for a full planning for residential extensions at side, rear and basement levels, internal re-configuration, boundary alterations, landscaping and associated works.

The extensions will be located within areas that are currently 'hardstanding' – there will be no increase in hardstanding areas as a result of the proposals, and the proposals will not increase surface water runoff from the site. Surface water runoff will continue to drain as existing.

However, the proposals do afford the opportunity for SuDS to be incorporated which will provide betterment when compared with the existing situation. The following outlines the most feasible ways SuDS in line with the London Plan hierarchy.

1) Rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
There is the potential for simple rainwater recycling.

2) Rainwater infiltration to ground at or close to source
The British Geology Survey (BGS) Geology Maps show that the site is underlain by the Claygate Member. The Claygate Member forms the uppermost unit of the London Clay Formation and is described in the relevant BGS memoir (Ellison et al, 2004) as '*alternating beds of clayey silt, very silty clay, sandy silt and glauconitic silty fine sand. Beds are generally 1 to 5m thick, although the boundaries are generally diffuse as a result of bioturbation*'.

On this basis, we would not recommend a strategy based on infiltration.

3) Rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
The proposals include areas of landscaping, and a rain planter could feasibility be installed.

4) Rainwater discharge direct to a watercourse (unless not appropriate)
There are no watercourses in the immediate vicinity of the site.

5) Controlled rainwater discharge to a surface water sewer or drain, and 6) Controlled rainwater discharge to a combined sewer.
Surface water runoff will continue to drain as existing into the public sewer system.

SuDS Options

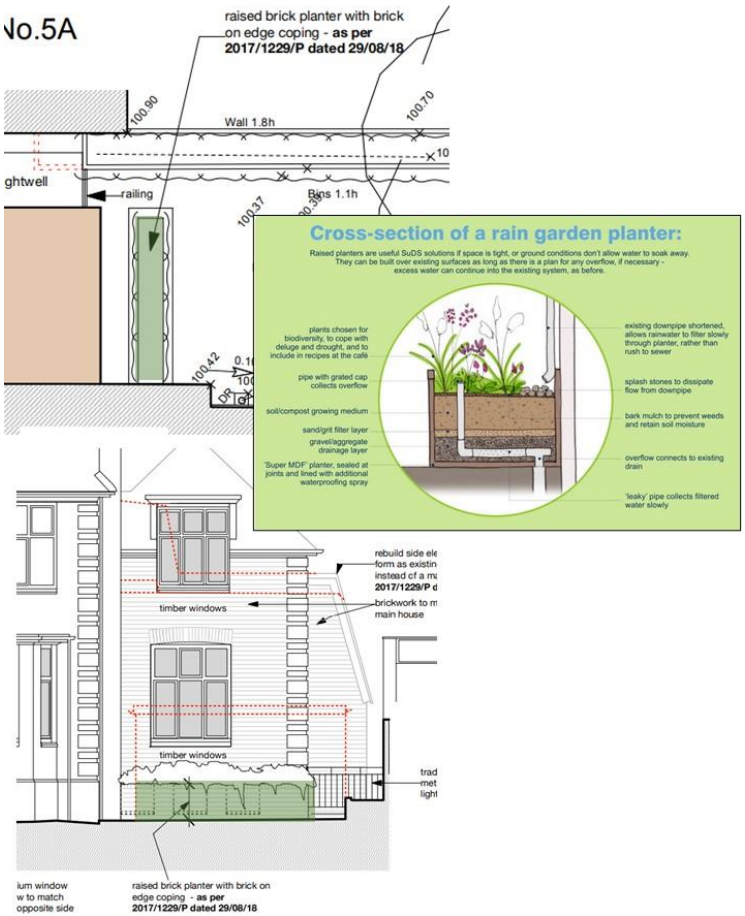
SuDS aim to mimic natural drainage and can achieve multiple objectives such as removing pollutants from urban runoff at source, controlling surface water runoff from developments, ensuring that flood risk is not increased further downstream and combining water management with green space which can increase amenity and biodiversity value. When selecting SuDS, consideration needs to be given to a range of factors including the ground conditions, type of proposals, and the constraints of the site.

In line with the London Plan hierarchy, the following SuDS are proposed to provide betterment (in terms of surface water management) when compared with the existing situation.

- Simple rainwater recycling (water butt)
- Rain planter
- Surface water to continue to drain as existing

Water Butt

In order to provide a level of rainwater recycling, a water butt will be provided. Water butts afford the opportunity to reduce the impact on already stretched potable water supply by enabling future occupants to reuse water collected in the water butt, for example when watering the garden/or washing cars etc. If this supply is used frequently this may also ensure that some additional storage is available during an extreme rainfall event (noting that there is a possibility that the tank may be full before the onset of a storm and as such there is no guarantee as to the level of attenuation storage they can provided).



Ideally, an overflow should be provided to prevent the rainwater tank from overflowing. This could be via a perforated hose to allow the tank to empty after a rainfall event thus making capacity for the next event.

Rain Planter

As detailed above, the proposal will introduce areas of planting; these should include a rain planter.

Typical Design

- Freeboard – 100mm
- Topsoil – 300mm (ratio of approximately 50% sand, 30% topsoil and 20% compost)
- Subbase –400mm, underdrain needs to be above the base.
- Underdrain at 550mm below ground level
- Orifice to reduce flows to 1.5l/s – this is the existing 1 in 100 year greenfield rate of runoff
- Overflow into newly constructed gully.
- Connecting into manhole – public sewer
- Planting to be shrubs / wildflowers / perennial flowering plants
- The downpipe will feed water directly onto the rain planter. Stones or gravel will be used to dissipate the energy of the water and prevent heavy flows from washing away soil.

Please note:

- *Detailed drainage drawings will be submitted at detailed drainage design stage.*
- *The SuDS strategy has been put together based on our understanding of the ground conditions and site layout. Building Control will need to be consulted on the siting of the SuDS, and the recommendations and advice of the SuDS manufacturer / installer should always be followed.*

SuDS Maintenance

Operation and maintenance schedules are provided below (taken from Ciria C753 The SuDS Manual): these, or similar schedules, will be adopted by the management company.

Water Butt

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	*The water butt should be routinely checked for litter – leaves can become trapped in the water butt which could lead to blockage of the taps and overflow*	*Monthly*
	Where appropriate, and if safe to do so, the water butt should be cleaned annually to prevent smells associated with stagnant water, and to remove any algae.	*Annually*

Rain Planter

Maintenance Schedule	Required Action	Typical Frequency
During Establishment Period (Years 1 and 2)	Watering	Weekly
	Weeding Litter picking Pruning and trimming Check / clean channels, inlets and outlets	3 Monthly
	Mulching	Annually or as required
Following Establishment Period (Year 3 onwards)	Weeding Litter picking Pruning and trimming Check / clean channels, inlets and outlets	6 Monthly
	Replanting	Annually or as required

4. Conclusions

This Surface Water and SuDS Assessment has been prepared to support the planning application for the proposed residential redevelopment at 5 Templewood Avenue, London, NW3 7UY.

The application site comprises 3 residential units.

Proposals are for a full planning for residential extensions at side, rear and basement levels, internal re-configuration, boundary alterations, landscaping and associated works.

The extensions will be located within areas that are currently 'hardstanding' – there will be no increase in hardstanding areas as a result of the proposals, and the proposals will not increase surface water runoff from the site. Surface water runoff will continue to drain as existing.

However, the proposals do afford the opportunity for SuDS to be incorporated which will provide betterment when compared with the existing situation.

In line with the London Plan hierarchy, the following SuDS are proposed:

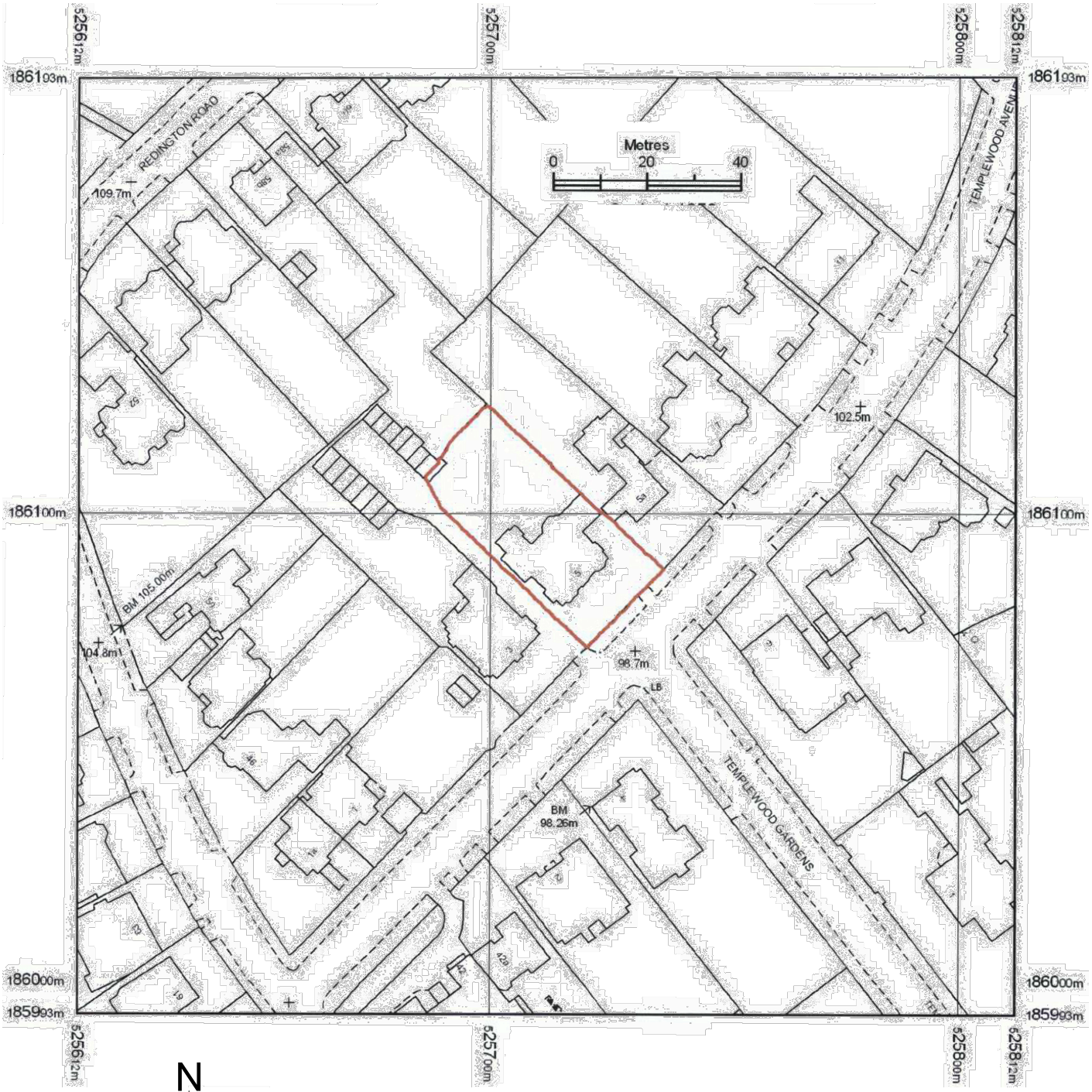
- Simple rainwater recycling (water butt)
- Rain planter
- Surface water to continue to drain as existing

Please note:

- *Detailed drainage drawings will be submitted at detailed drainage design stage.*
- *The SuDS strategy has been put together based on our understanding of the ground conditions and site layout. Building Control will need to be consulted on the siting of the SuDS, and the recommendations and advice of the SuDS manufacturer / installer should always be followed.*

Appendices

Appendix A - Site Location Plan



5 Templewood Avenue
Hampstead NW3 7UY

Location Plan

1046-S2-15

1:1250@ A4

BROD WIGHT Architects
8a Baynes Mews --- London --- NW3 5BH
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Tel 020 7722 0810

Appendix B - Existing Site Layout Plans

scale bar - metric 1:100 @ A3

0 1 2 3 4 5

scale bar - imperial

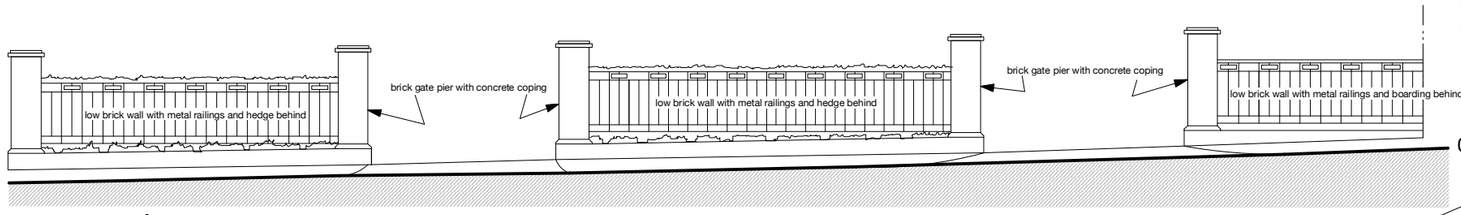
0 6 12

scale bar - metric 1:200 @ A3

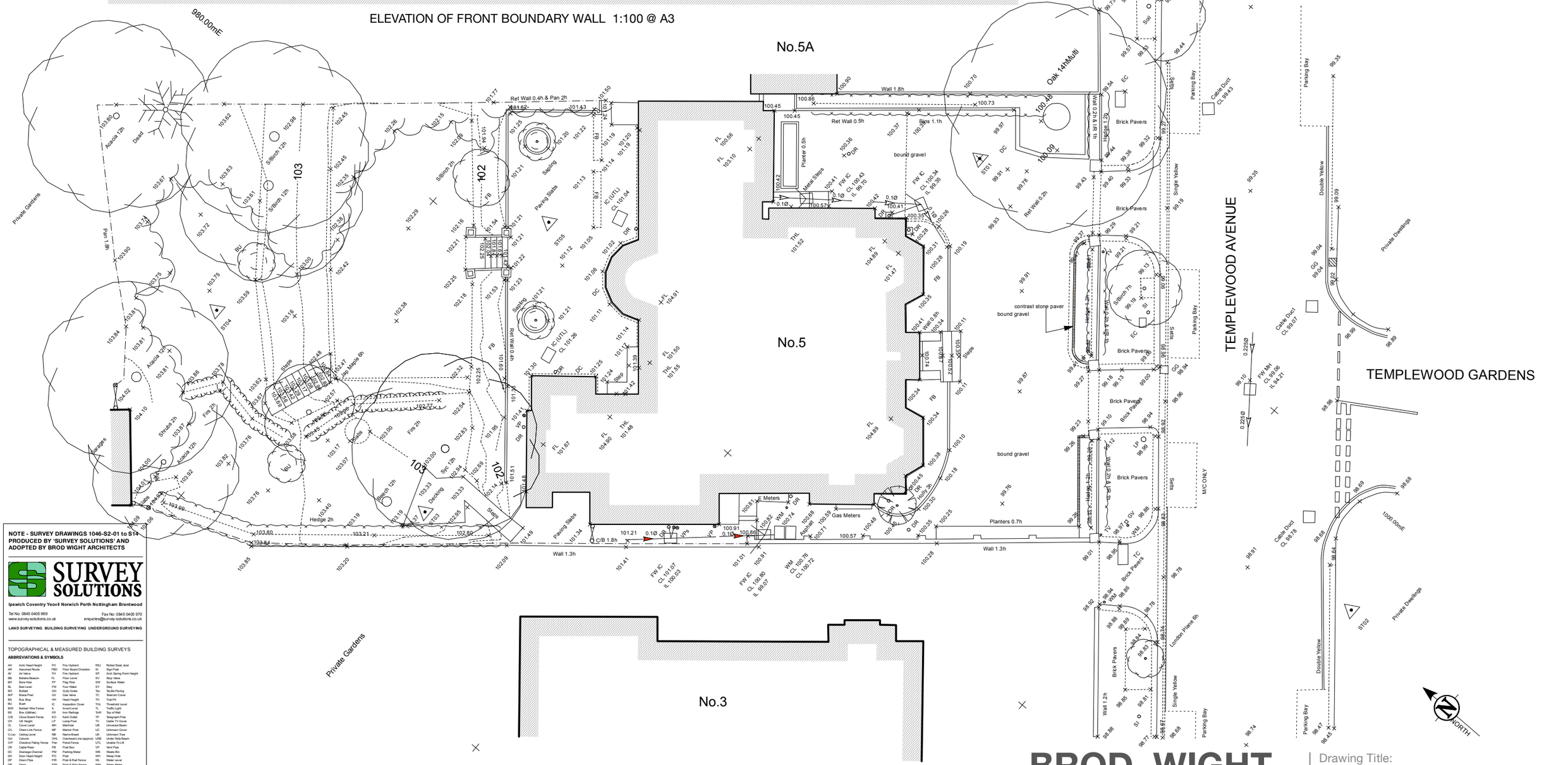
0 5 10 15m

scale bar - imperial

0 6 12 18 24 30 36 42 48 54ft



ELEVATION OF FRONT BOUNDARY WALL 1:100 @ A3



SITE PLAN 1:200 @ A3

NOTE - SURVEY DRAWINGS 1046-S2-01 to S14 PRODUCED BY 'SURVEY SOLUTIONS' AND ADOPTED BY BROD WIGHT ARCHITECTS

SURVEY SOLUTIONS

Ipswich Coventry Yeovil Norwich Perth Nottingham Brentwood

Tel No: 0845 0405 969 Fax No: 0845 0405 970

www.survey-solutions.co.uk enquiries@survey-solutions.co.uk

LAND SURVEYING BUILDING SURVEYING UNDERGROUND SURVEYING

TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS

AH	Arch Head Height	FH	Fire Hydrant	RSJ	Rolled Steel Joist
AR	Assumed Route	FBD	Floor Board Direction	SI	Sign Post
AV	Air Valve	FH	Fire Hydrant	SIP	Arch Spring Point Height
BB	Bellaha Beacon	FL	Floor Level	SV	Stop Valve
BH	Bore Hole	FP	Flag Pole	SW	Surface Water
BL	Bed Level	FW	Foul Water	SY	Stay
BO	Bollard	GG	Gully Grate	Tac	Tactile Paving
BrP	Brace Post	GV	Gas Valve	TC	Telecom Cover
BS	Bus Stop	HH	Head Height	TH	Trial Pit
BU	Bush	IC	Inspection Cover	THL	Threshold Level
BW	Barbed Wire Fence	IL	Invert Level	TL	Traffic Light
BX	Box (Utilities)	IR	Iron Railings	ToW	Top of Wall
CB	Close Board Fence	KO	Kerb Outlet	TP	Telegraph Pole
CH	CE Height	LP	Lamp Post	TV	Cable TV Cover
CL	Cover Level	MH	Manhole	UB	Universal Beam
CL	Chain Link Fence	MP	Marker Post	UC	Unknown Cover
C-Lev	Ceiling Level	NB	Name Board	UK	Unknown Tree
Col	Column	OHL	Overhead Line (approx)	USB	Under Side Beam
CrP	Chestnut Paling Fence	Pan	Panel Fence	UTL	Unable To Lift
CR	Cable Riser	PB	Post Box	VP	Vent Pipe
DC	Drainage Channel	PM	Parking Meter	WB	Waste Bin
DH	Door Head Height	PO	Post	WH	Weep Hole
DP	Down Pipe	PR	Post & Rail Fence	WL	Water Level
DR	Drain	PW	Post & Wire Fence	WM	Water Meter
EL	Eaves Level	PWall	Partition Wall	WO	Wash Out
EP	Electric Pole	RE	Retaining Eye		Pipe to Ceiling Height
ER	Earth Rod	RL	Ridge Level		F/C Floor to Fallow Ceiling Ht
ET	EP+Transformer	RP	Reflector Post		
FB	Flower Bed	RS	Road Sign		
FBD	Floor Board Direction	RSD	Roller Shutter Door		Survey Control Station

DRAWING NOTE

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including, sizes, depth, description etc. will be approximate only. All construction dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

BROD WIGHT Architects

8a Baynes Mews --- London --- NW3 5BH

Drawing Title:

Existing Site Plan

Project Address:

5 Templewood Avenue
Hampstead NW3 7UY

Drawing Ref:

1046-S2-01B

www.brodwight.co.uk office@brodwight.co.uk

Tel 020 7722 0810

Date: May 2024

Scale: 1:200@A3/1:100@A1

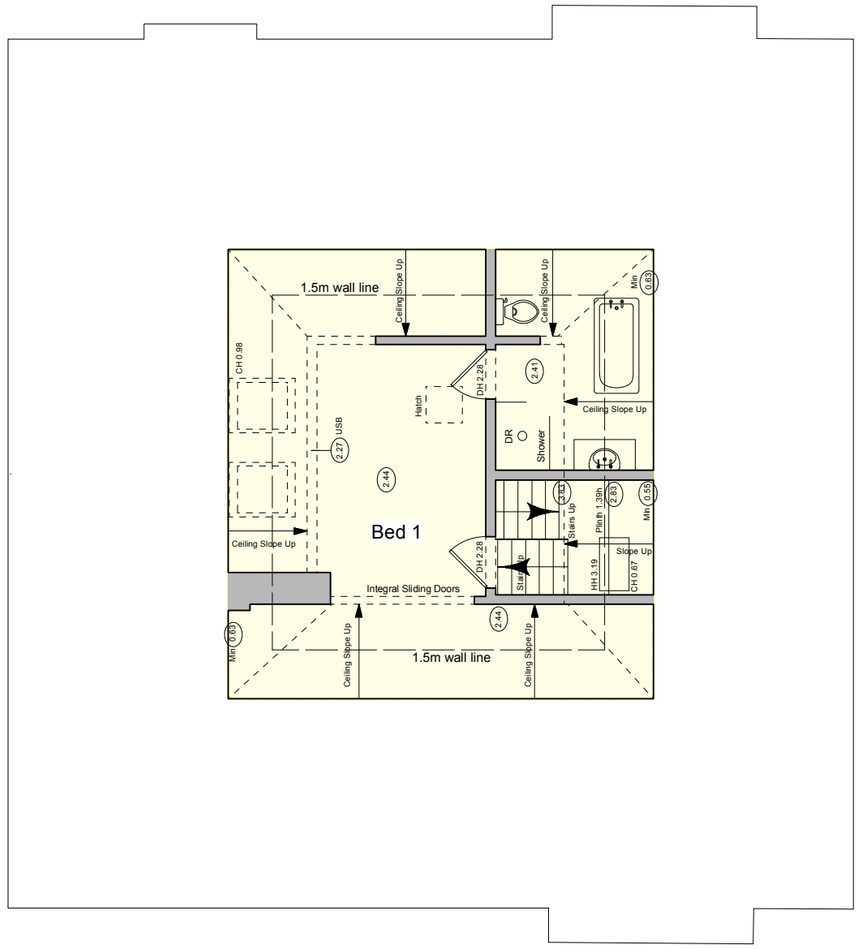
Appendix C - Proposed Site Layout Plans

scale bar - metric

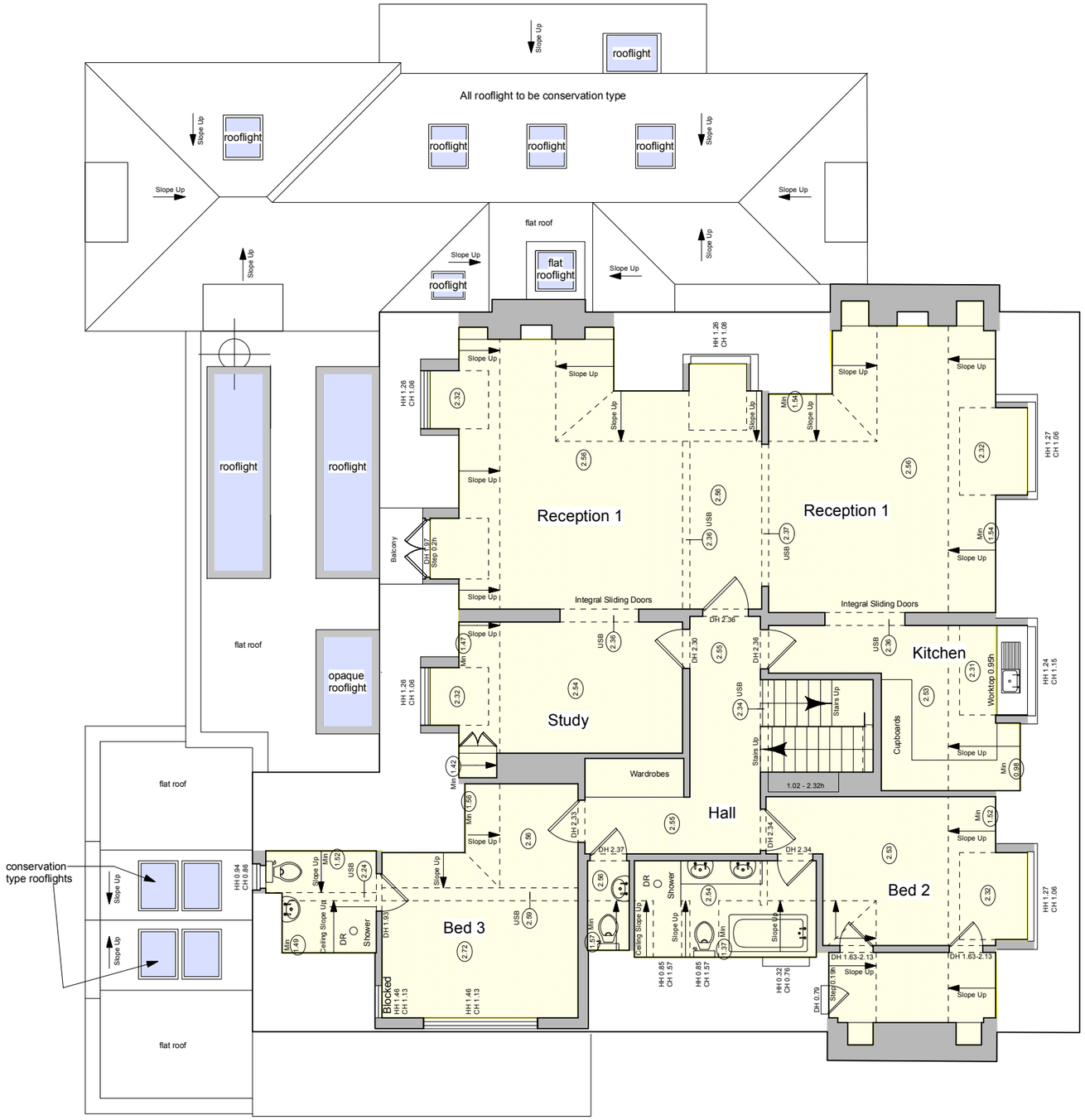
0 1 2 3 4 5 6 7 8 9m

scale bar - imperial

0 6 12 18 24 30ft



THIRD FLOOR
NOT PART OF THIS APPLICATION



SECOND FLOOR/FIRST FLOOR ROOF PLAN

Flat 1
Flat 2
Flat 3

BROD WIGHT Architects
8a Baynes Mews --- London --- NW3 5BH

Drawing Title:
Proposed 2nd & 3rd Floor Plans

Project Address:
5 Templewood Avenue
Hampstead NW3 7UY

Drawing Ref:
1046-AP4-05A

www.brodwight.co.uk office@brodwight.co.uk
Tel 020 7722 0810

Date
May 2024

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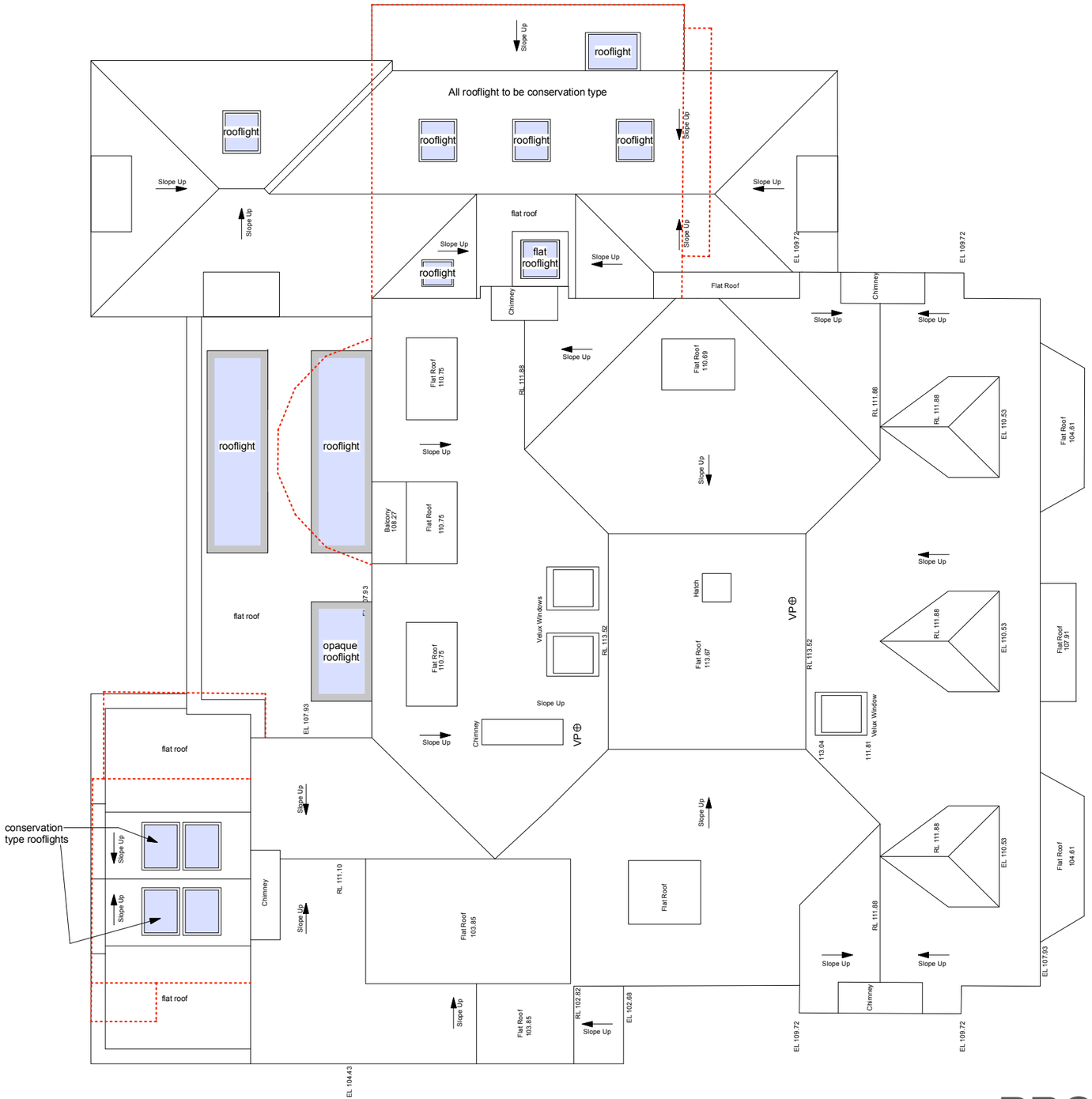

scale bar - metric

0 1 2 3 4 5 6 7 8 9m

scale bar - imperial

0 6 12 18 24 30ft

NORTH

Flat 1
Flat 2
Flat 3

Existing Walls
Proposed/New Walls
Existing items to be removed

BROD WIGHT Architects
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Tel 020 7722 0810

Drawing Title:
Proposed Roof Plan

Project Address:
5 Templewood Avenue
Hampstead NW3 7UY

Drawing Ref:
1046-AP4-06A

Date
May 2024

Scale
1:100@A3/1:50@A1

scale bar - metric

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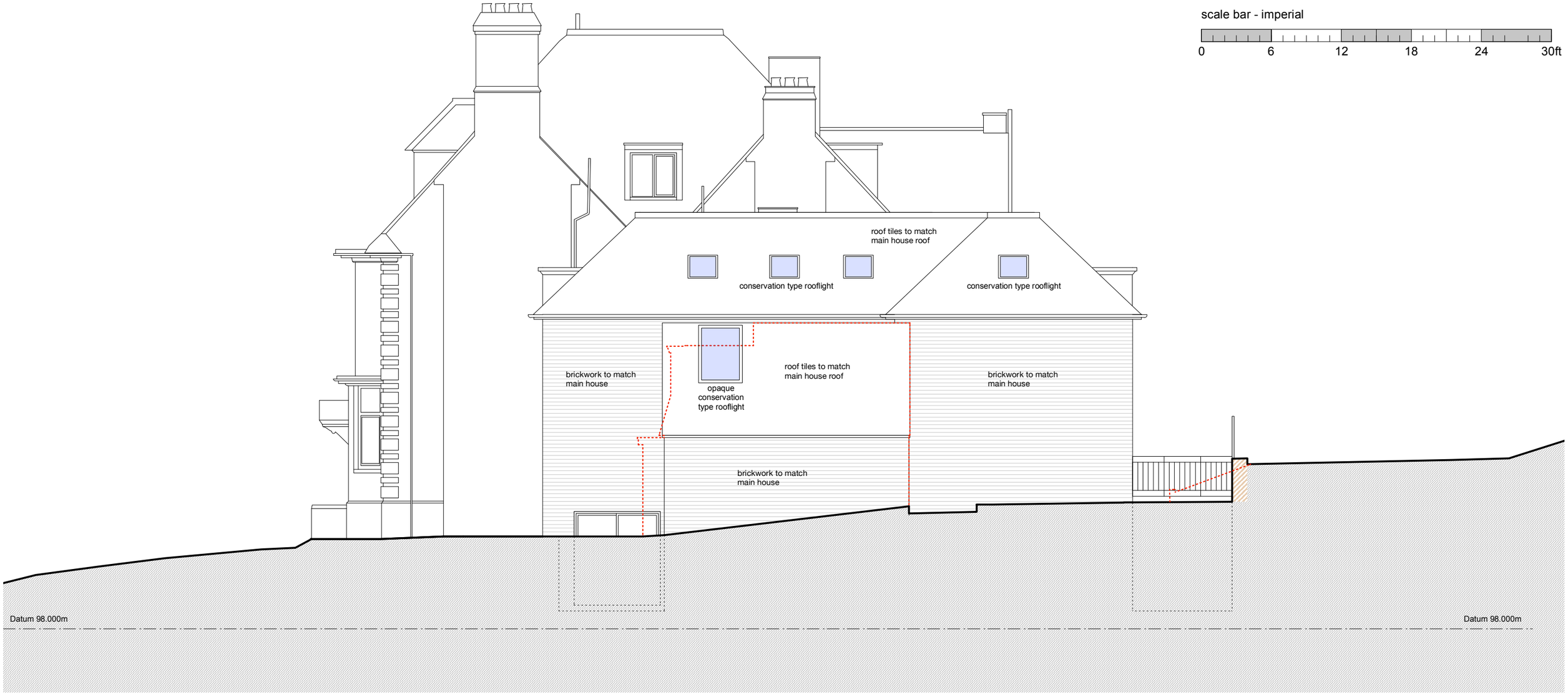
scale bar - imperial

0 6 12 18 24 30ft



Existing Walls

Proposed/New Walls

Existing items to be removed

BROD WIGHT Architects
8a Baynes Mews --- London --- NW3 5BH
www.brodwight.co.uk office@brodwight.co.uk
Tel 020 7722 0810

Drawing Title:
Proposed N-E Side Elevation

Project Address:
5 Templewood Avenue
Hampstead NW3 7UY

Drawing Ref:
1046-AP4-09B

Date
May 2024

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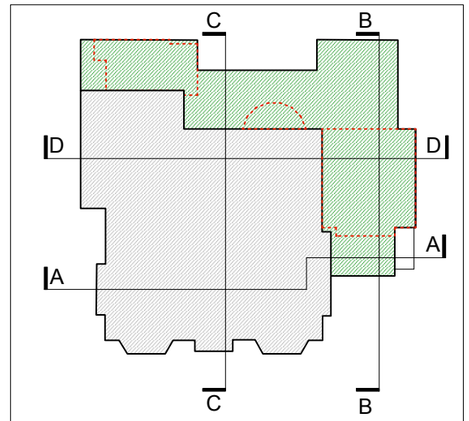
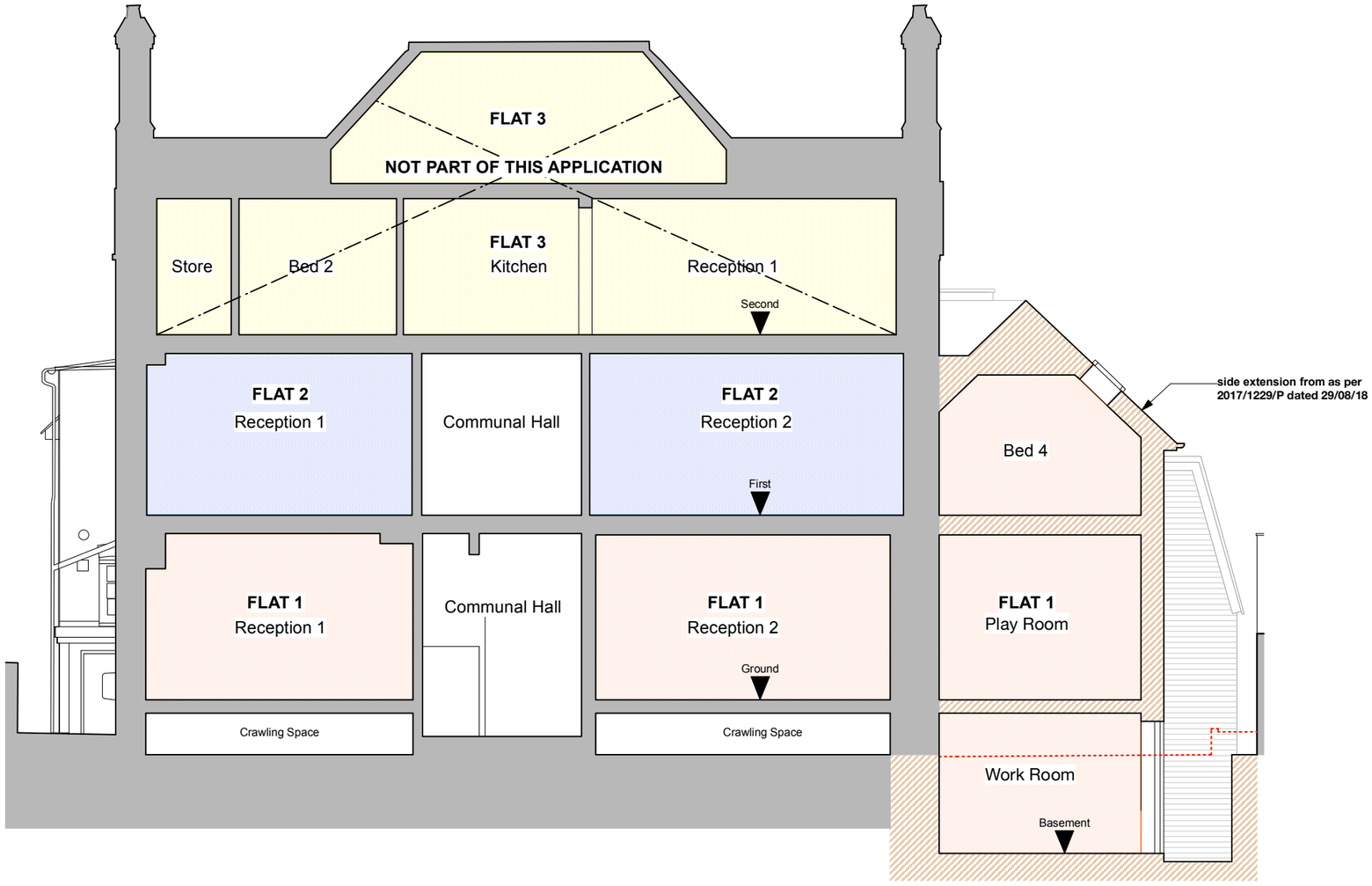


SECTION LAYOUT



scale bar - metric

0 1 2 3 4 5 6 7 8 9m

scale bar - imperial

0 6 12 18 24 30ft

Flat 1

Flat 2

Flat 3

Existing Walls

Proposed/New Walls

Existing items to be removed

BROD WIGHT Architects
8a Baynes Mews --- London --- NW3 5BH
www.brodwight.co.uk office@brodwight.co.uk
Tel 020 7722 0810

Drawing Title:
Proposed Section A - A

Project Address:
5 Templewood Avenue
Hampstead NW3 7UY

Drawing Ref:
1046-AP4-11A

Date
May 2024

Scale
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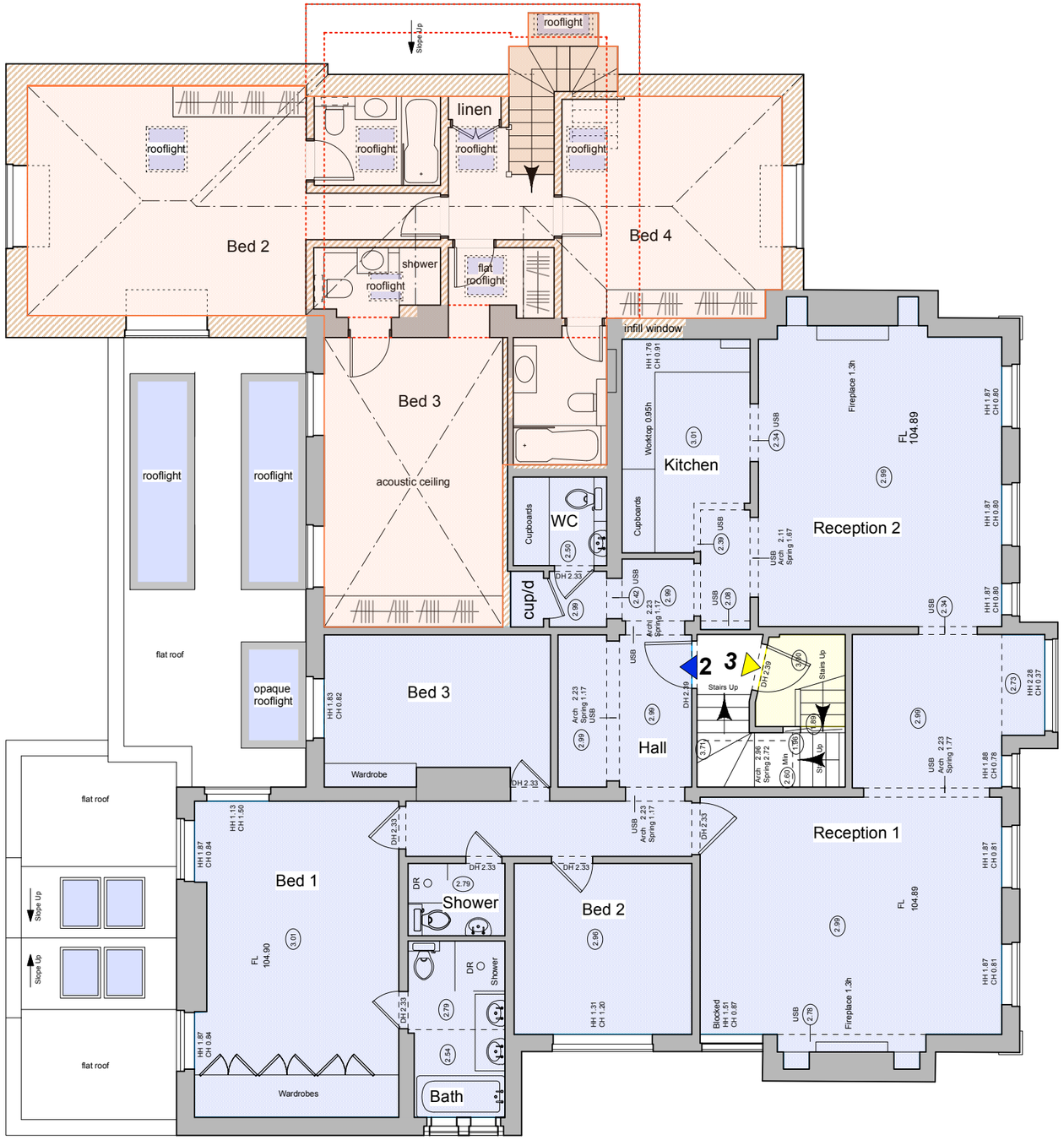
scale bar - imperial

0 6 12 18 24 30ft



Flat 1

Flat 2

Flat 3

Existing Walls

Proposed/New Walls

Existing items to be removed

BROD WIGHT Architects

8a Baynes Mews --- London --- NW3 5BH

Drawing Title:

Proposed First Floor Plan

Project Address:

5 Templewood Avenue
Hampstead NW3 7UY

Drawing Ref:

1046-AP4-04A

www.brodwight.co.uk office@brodwight.co.uk

Tel 020 7722 0810

Date

May 2024

Scale

1:100@A3/1:50@A1

Appendix D - Greenfield Runoff Calculation

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	0.115	Urban	0.000
SAAR (mm)	671	Region Number	Region 6

Results l/s

QBAR Rural	0.5
QBAR Urban	0.5
Q100 years	1.5
Q1 year	0.4
Q30 years	1.1
Q100 years	1.5