Thornfield, 13 Vine Road, SW13 ONE
Flood Risk Assessment

Studio AF Engineering

Report Reference: 1007-C-RP-001

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Contents

1.0 Introduction

Studio AF Engineering have prepared this Flood Risk Assessment (FRA) to support of a planning application at Thornfield, 13 Vine Road, Barnes, SW13 0NE for the construct a rear extension, and building renovation

The report aims to outline and demonstrate compliance with the following national, regional, and local planning policy guidance and statutory requirement as far as reasonably possible.

- National Planning Policy Framework (2024)
- London Plan (2021)
- Richmond Strategic Flood Risk Assessment – Level 1 (2021)

2.0 Existing Development

2.1 Site Location

The site is located within the London Borough of Richmond-upon-Thames (LBRUT). The total site area is 0.09 hectares (900m^2). The site is centered at Easting and Northing 521781, 175640 and has a postcode of SW13 0NE.

A site location plan is shown in **Figure 1**.

The existing site forms single a detached residential property with conservatory, paved external area, an outdoor pool, soft landscaping with mature trees. To the front of the property there is an area of soft landscaping to the front of the property adjacent to Vine Road. To the rear of the plot an off-street parking forecourt and garage is accommodated, accessed via Woodlands Road with pedestrian access through to the rear garden.

The existing site area is approximately 400m^2 of permeable area and a total of 500m^2 of impermeable area. The garage and forecourt account for approximately 100m^2 of impermeable area.

Existing site plans are shown in **Appendix A.**

Figure 1 - Location Plan

2.2 Topography and Geology

The site is generally flat. Information available from British Geological Society (BGS) show that the site is situated within with Kempton Park Gravel Member - sand and gravel superficial deposits, underlain by London Clay Formation - clay and silt.

This information is provided in **Appendix B.**

The site is located outside of any Source Protection Zones or Site of Special Scientific Interest.

3.0 Proposed Development

The redevelopment proposals at 13 Vine Road for the demolition of the existing ground floor conservatory and construction of a new rear side extension, and internal renovations. The rear external areas are to remain.

The inclusion of a green roof on the extension will increase the permeable area of the site.

Proposed site plans are shown in **Appendix C.**

4.0 Flood Risk Assessment

In order to determine the risk of flooding for the development site, the Environment Agency (EA)'s website was referenced as well as flood maps published by LBRUT, including information contained in the SFRA.

4.1 Flood Risk Overview

In accordance with the Environment Agency (EA)'s Flood Map for Planning, the site falls within Flood Zone 3 (High Probability) which is defined as land assessed as having a 1 in 100 or greater annual probability of river flooding; or having a 1 in 200 or greater annual probability of sea flooding. An extract from this map is shown in **Figure 2**.

The mapping shows that the majority of the site is situated in Flood Zone 2, with only a minor extent of the western end of the site situated within Flood Zone 3.

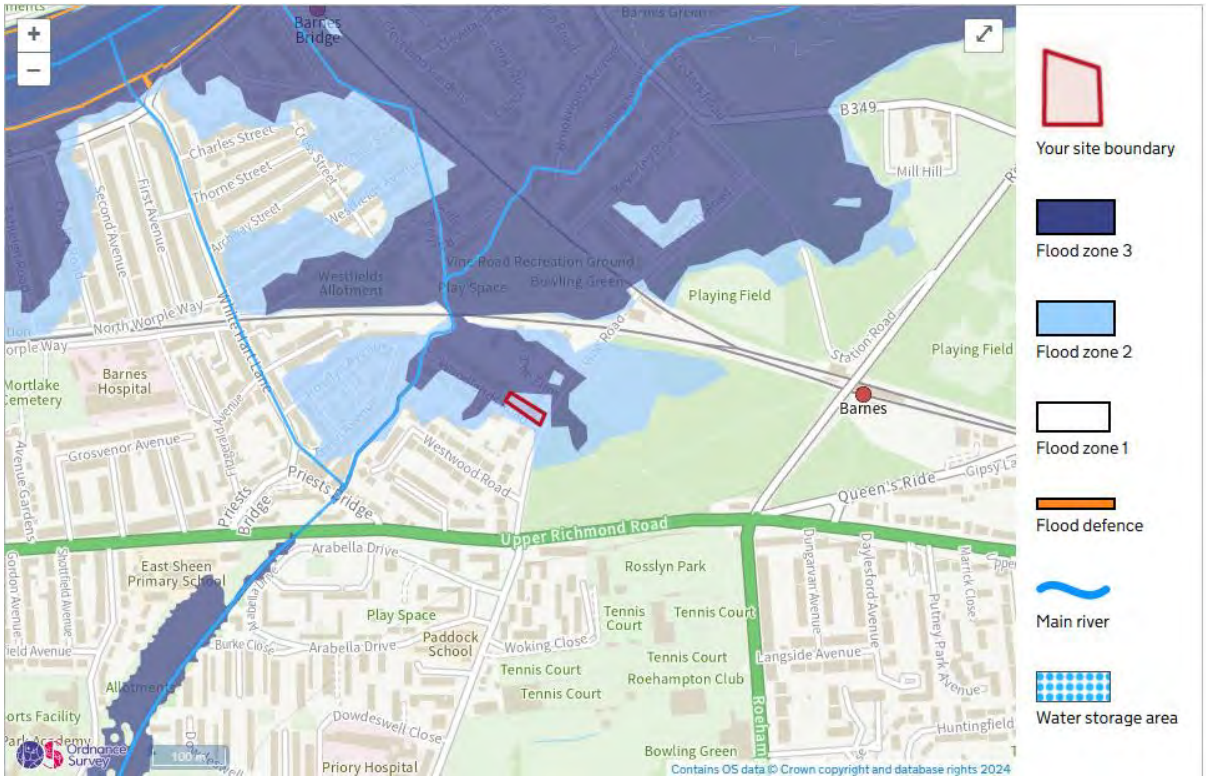

Figure 2 - EA Flood map for planning

Table 1 of the technical guidance document to the NPPF was referenced to determine the flood risk vulnerability classification for the existing and proposed developments. The existing and proposed development are classified as "More Vulnerable". An extract from the NPPF is presented outlining the various building uses in the existing and proposed situations. The proposed use of the rear garden studio as an office and gym means the unit is classified as Less Vulnerable.

NPPF Table 1 – Flood risk vulnerability classification

MORE VULNERABLE

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non–residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Table 2 of the NPPF sets out the compatibility of different land uses based on their flood risk vulnerability. As the proposed development falls in Flood Zone 2 and 3a and is classified as "More Vulnerable", an Exception Test is required and the development is deemed appropriate.

NPPF Table 2 – Flood risk vulnerability and flood zone 'compatibility'

Flood risk vulnerability classification	Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Zone 1	√	√	√	√	√
Zone 2	√	√	Exception Test required	√	√
Zone 3a	Exception Test required	√	x	Exception Test required	√
Zone 3b functional floodplain	Exception Test required	√	x	x	x

Key: √ Development is appropriate.
x Development should not be permitted.

4.1.1 Sequential Test

The primary objective of the Sequential Test, is to steer new development towards areas with the lowest probability of flooding. A sequential approach is encouraged to achieve this. If there are no reasonably available sites in Flood Zone 1, development can be considered in Flood Zone 2 and so forth.

The site is already developed and is currently being used for a More Vulnerable building use. Since the site is already in use as a more vulnerable category (residential), the Sequential Test is considered met in principle. Redevelopment of the site is within its existing use classification (more vulnerable) does not introduce a new or different vulnerability to flooding.

4.1.2 Exception Test

A summary of the requirements to demonstrate that the Exception Test has been passed is given below:

a) The development provides wider sustainability benefits to the community that outweigh the flood risk;
b) The development is located on previously developed land;

c) The development will not result in an increase in flood risk elsewhere.

The redevelopment of the conservatory accommodates a green roof, which is a recognized measure for enhancing sustainability by reduce surface water runoff, helping to manage flood risk; improves urban biodiversity and thermal efficiency; contributing to urban greening and climate change mitigation. By improving the building's environmental performance, the sustainability benefits of your redevelopment are clear.

The area of construction works remains within the existing building and hardstanding extents, meaning no additional encroachment into flood-prone areas.

The site benefits from Thames flood defences, and accounts for residual risks from breach or overtopping, such as all future occupants are made aware of the residual flood risk and encouraged to avail of the EA's "Flood Warning Direct Service". Should a flood event occur, this would allow the occupants to vacate the site. Measures such as this will ensure the development remains safe for its lifetime.

By maintaining the existing footprint and introducing a green roof, the proposal does not increase impermeable surface area. Instead, it contributes to reducing surface water runoff, aligning with sustainable drainage principles (SuDS). This approach prevents additional flood risk elsewhere..

Based on the above the proposed development is considered to meet the Exception Test.

4.2 Flood Risk from Rivers and/or Sea

The site is located approximately 600m south of the River Thames, and 150m south of the Beverly Brook situated at the northern end of Woodlands. The EA's Flood Map for Planning, **Figure 2**, shows that the site is partially located in Flood Zone 3 (High Probability) which is defined as land assessed as having a 1 in 100 or greater annual probability of river flooding; or having a 1 in 200 or greater annual probability of sea flooding. However the significant majority of the site, including the main residential building is situated Flood Zone 2, as the site benefits from flood defences along the River Thames and Beverly Brook, shown in **Figure 4**.

The standard of protection provided to the site is assessed to be to a high level - all properties are currently protected from combined tidal and fluvial flooding by the Thames Tidal Defences and river wall up to the 1 in 1000-year flood event. This network of flood defences are inspected and maintained by the EA.

The LBRUT SFRA confirms that the presence of defences at the site mean that the chance of flooding from the Thames is low.

This is verified by the EA's Long-Term Flood Risk Map in **Figure 3** showing that the site is at very low risk of flood risk from rivers or the sea when taking into account the flood defences afforded to the site. The defences are currently in good condition and there is a formal plan in place for their long-term maintenance.

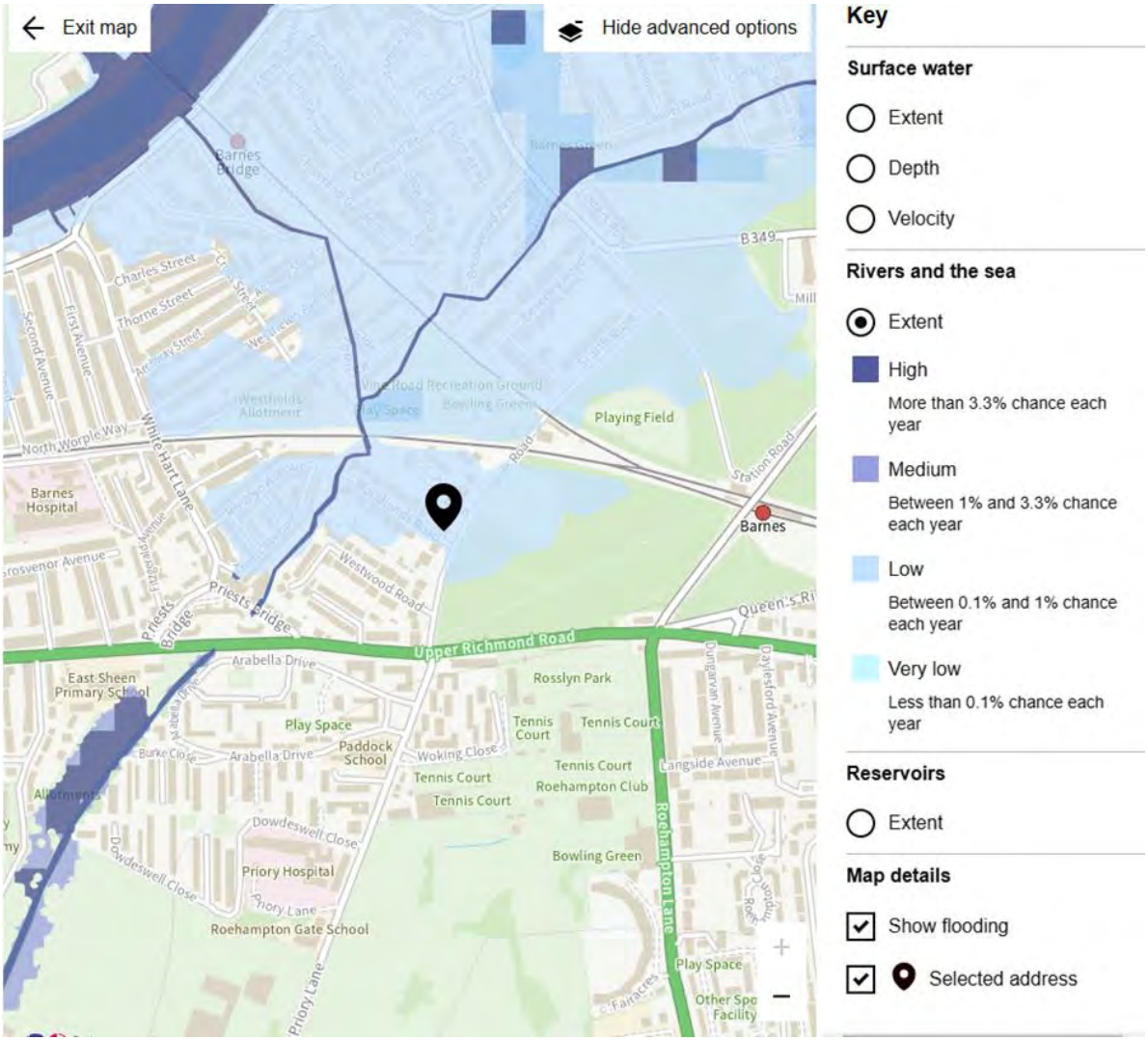

Figure 3 – Flood Risk from Rivers or the Sea (extract from EA website)

Despite this there is a residual risk of flooding from either an overtopping of, or breach in, the flood defences which has been considered later in this section.

Detailed Modelled Flood Water Levels

The Thames Estuary 2100 (TE2100) plan outlines future flood risk management that will be required for the Thames Estuary. The site falls within Action Zone 1 – West London, which requires flood defences to be maintained and repaired in the short term and raised by 2065 to keep up with climate change estimates.

The EA has provided present day and predicted future extreme water levels for the closest node to the site. In-channel flood levels for the River Thames provided by the EA reflect the Thames Estuary 2100 (TE2100) study completed by HR Wallingford. The TE2100 plan has set levels on which the flood risk management strategy is based. The plan is the principal flood management strategy for the Thames Estuary and therefore any development planning should be based on the same underlying data.

Figure 4 shows an extract of LBRUT online mapping noting that the TE2100 Extreme Water Level is modelled as 5.17m AOD at the closest node to the site at Mortlake High Street. This extreme water

level is lower than the existing levels in Mortlake High Street (5.8-6m) and of that at the site ~8m. Therefore the risk of fluvial flooding is considered low.

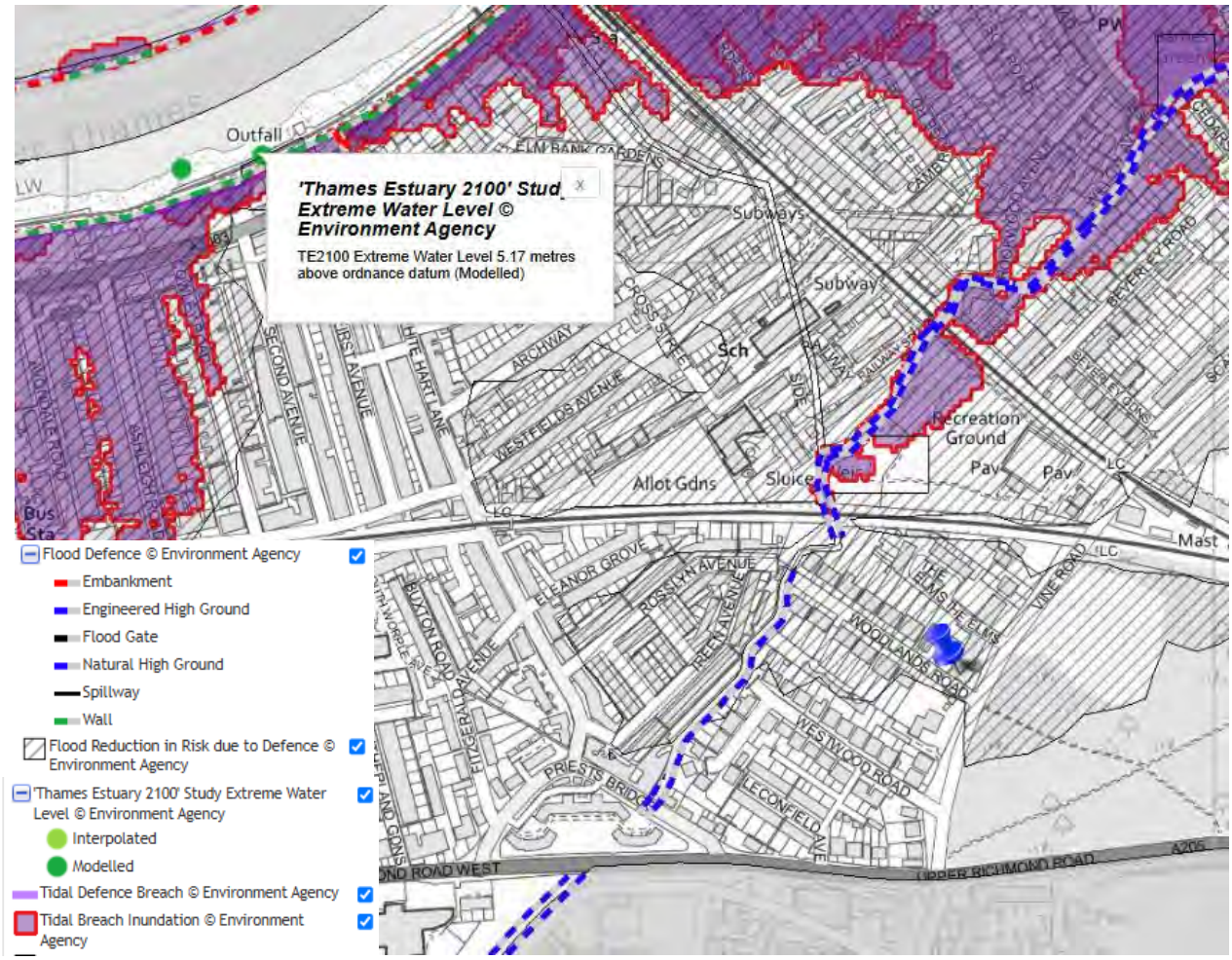

Figure 4 – Flood Risk from Rivers or the Sea (extract from LBRUT SFRA Online Mapping)

Residual Flood Risk – Breach Analysis

While the site is defended from fluvial/tidal flooding by a network flood defences there is a residual risk of flooding should the defences fail or be breached. if there is a breach of the flood defences the development site will be at risk of flooding. In order to mitigate against this risk, flood resilient design and construction techniques will be explored for the proposed development at basement and ground floors, ensuring that current best practice is utilised. This will be developed at the detailed design stage. This is deemed to be appropriate mitigation as the site is a less vulnerable use without habitable space.

Safe Access and Egress

The site is defended against flooding in the Thames Estuary by flood walls and will therefore remain dry during an extreme flood event in the River Thames provided the defences are operational. However, a residual flood risk exists should the defences fail or be breached.

The site lies within the designated Flood Warning Area and Flood Alert Area of the EA. The Flood Warning Service provides early warning of flooding in the catchment and will provide notice to implement precautionary measures where required. The full EA flood warning service comprises four

staged warning codes, each indicating the severity of flooding and the level of danger. These are; All Clear, Flood Watch, Flood Warning and Severe Flood Warning. The flood status of an area is updated at 15-minute intervals on the internet and is also available by telephone on a 24-hour Floodline. Subscribers to this service are eligible to receive free warnings by telephone, mobile, email, SMS text message or fax, whichever is most convenient. Businesses who sign up for the telephonic service, for instance, will receive an automated message via the phone telling them that flooding is expected and giving advice as to what actions should be taken.

It is recommended that all future occupants are made aware of the residual flood risk and encouraged to avail of the EA's "Flood Warning Direct Service". Should a flood event occur, this would allow the occupants to vacate the site.

The risk of fluvial and tidal flooding to the site is hence assessed to be low.

4.3 Flood Risk from Surface Water and Overland Flow

The site is located outside of a critical drainage area.

Figure 5 and Figure 6 shows the surface water flood risk mapping of the LBRUT and EA respectively. The mapping confirms that the site is at low risk of surface water flooding.

Therefore, the surface water flood risk of the proposed development is considered low.

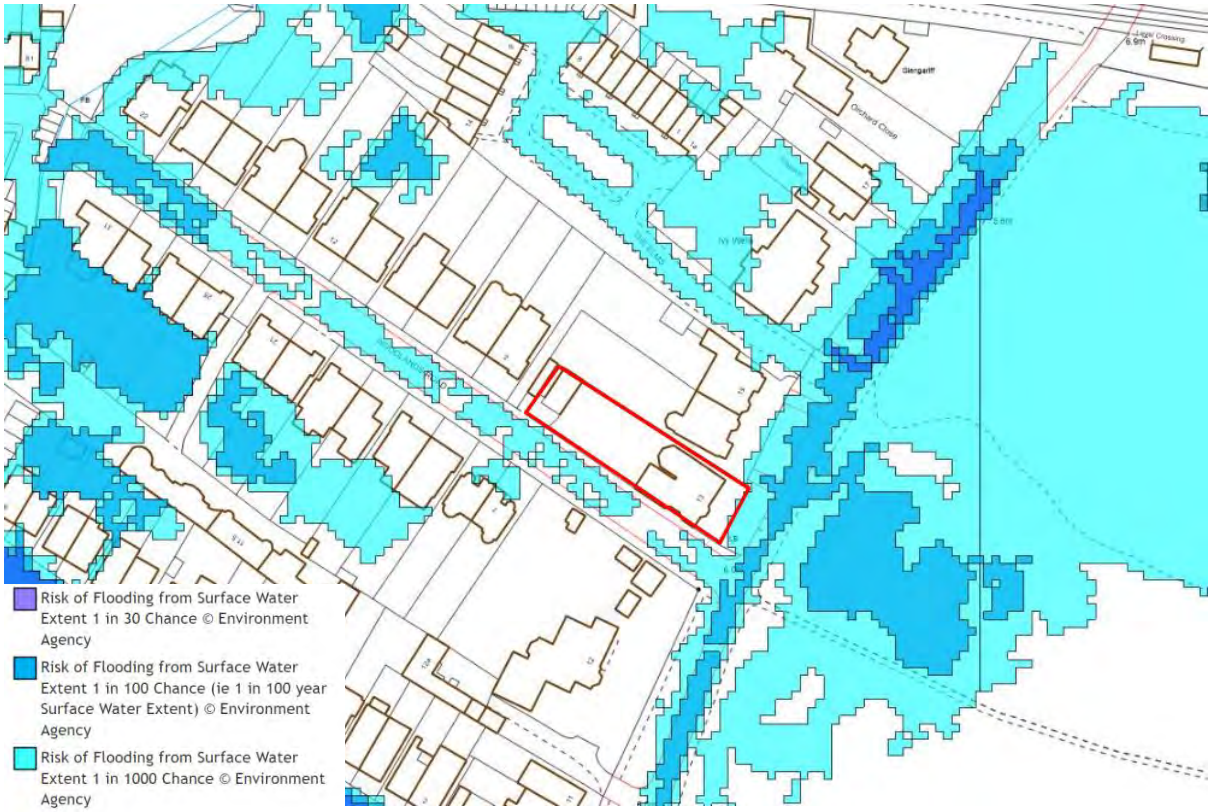

Figure 5 - Flood Risk from Surface Water (SFRA Extract)

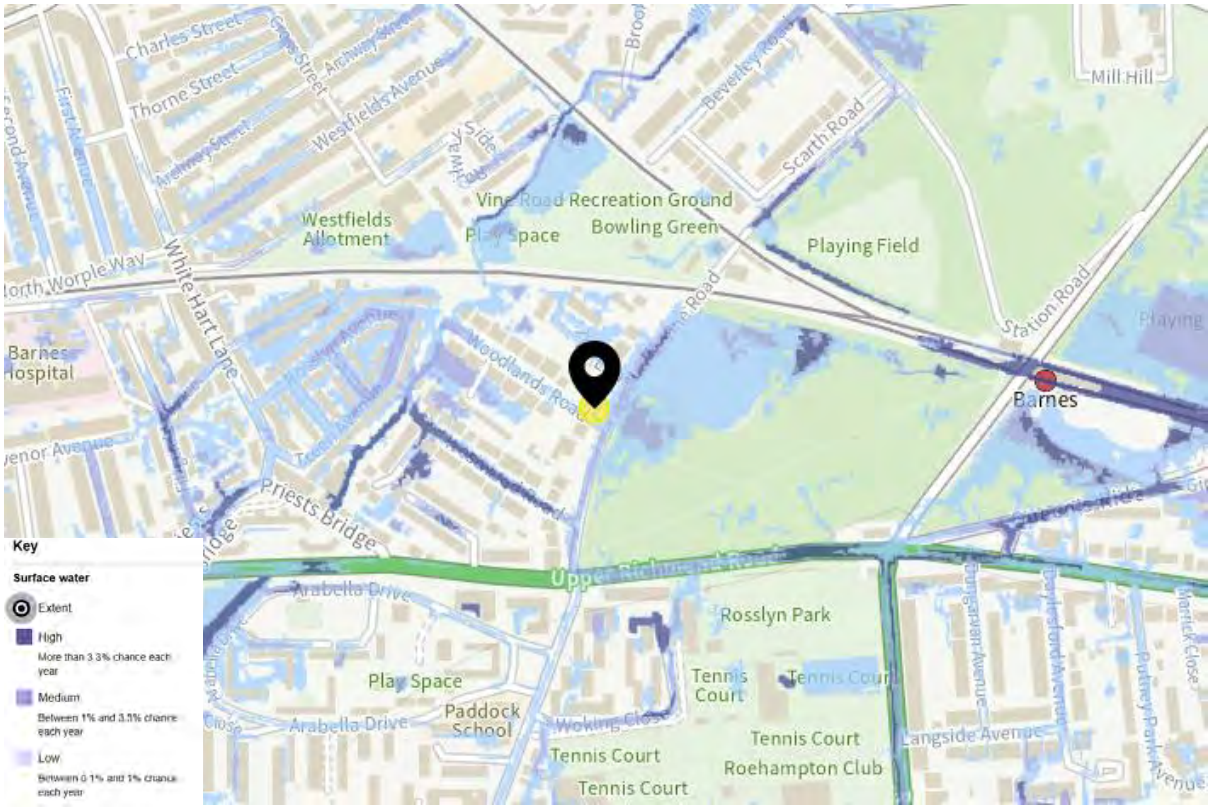

Figure 6 - Flood Risk from Surface Water (extract from EA website)

4.4 Flood Risk from Sewers

Figure 7 provides an extract form the SFRA mapping showing Thames Water Recorded Flood Events, and shows the site is situated in an area of 0-10 recorded incidents.

Figure 7 - Thames Water Reported Flood Incidents (SFRA Extract)

The proposed redevelopment will not increase discharge rates to the public sewer, therefore the likelihood of the existing network becoming surcharged and causing sewer or surface water flooding as a result of the development is considered to be low.

Therefore, the flood risk from sewers is considered low.

4.5 Flood Risk from Groundwater Flooding

Extracts from LBRUT's SFRA online mapping shows EA mapping of areas susceptible to groundwater flooding, as shown in **Figure 8.** The map shows that the site is situated in an area defined as 75% or more susceptible to groundwater flooding on the basis of geological and hydrogeological conditions. It does not show the likelihood of groundwater flooding occurring, i.e. it is a hazard not risk-based dataset.

Groundwater flooding and areas of increased potential for elevated groundwater as shown in **Figure 9.** This shows that the site is located in an area of permeable superficial deposits. It is recommended that a Site investigation is undertaken to determine groundwater levels on site and that proposed waterproofing of the proposed ground floor structure is implemented in line with BS 8102. Based upon suitable waterproofing resulting risk of flooding from groundwater is considered to be low.

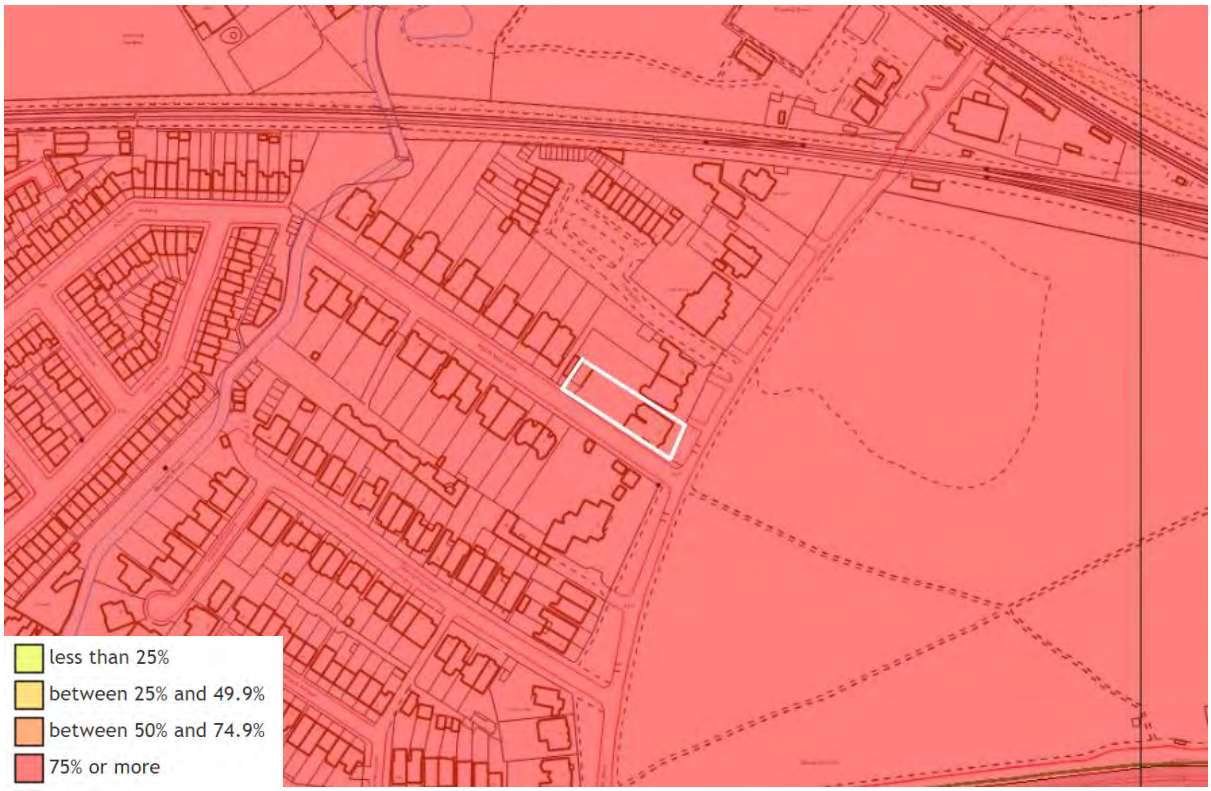

Figure 8 –Groundwater flood risk (SFRA Extract)

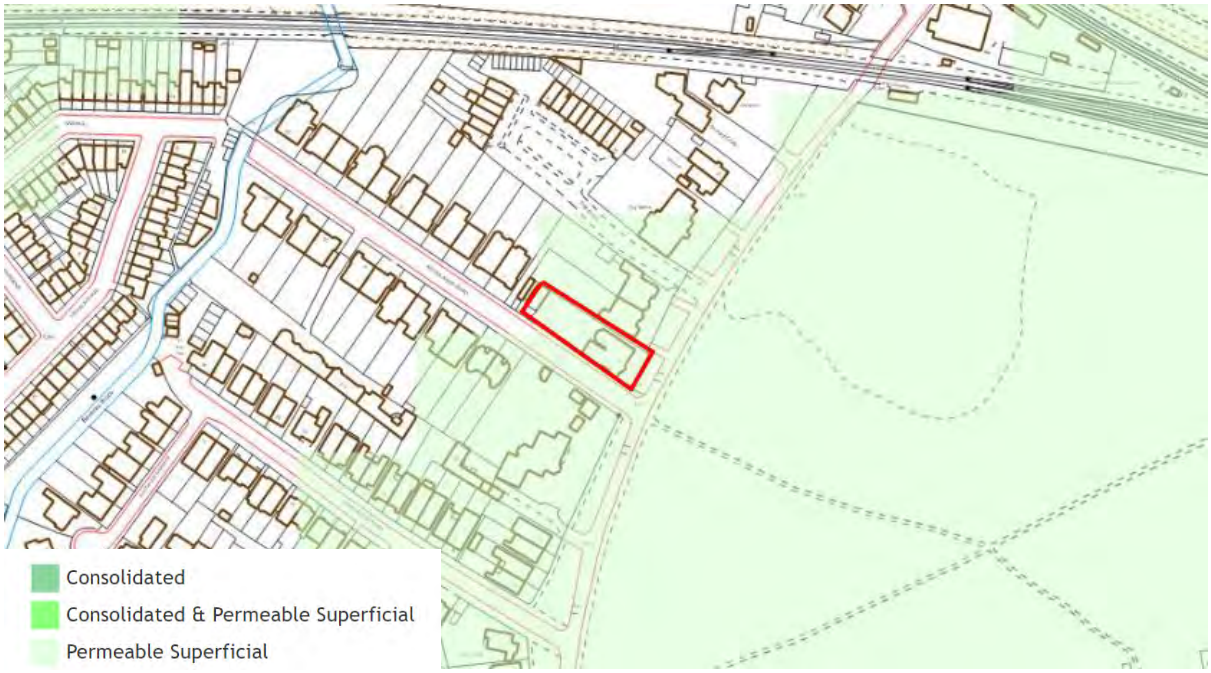

Figure 9 – GLA Drain London Increased Potential for Elevated Groundwater (SFRA Extract)

5.0 Existing Drainage Infrastructure

5.1 Public Sewer Network

A Thames Water (TW) asset search is provided in **Appendix D**, with an extract provided in **Figure 10.**

As shown below, separate foul and surface water sewers are located in Woodlands Road, and Vine Road. The foul water sewer has a diameter of 225mm with an approximate 2m depth of invert level 3.65mAOD adjacent to the property.

The surface water sewer is 225m in diameter and approximately 1.7m deep with an invert level of approximately 4.26m AOD adjacent to the site.

It is not considered that the proposed works at 13 Vine Road will impede on, nor increase the loading on either the foul and surface water asset.

It is proposed to re-use the existing connections to the TW Assets.

Figure 10 - Thames Water Asset Map (Extract)

5.2 Private Sewer Network

It is assumed the site is served by pipes that discharge the surface and the foul water runoff to the separate sewers in Vine Road and Woodlands Road.

A CCTV drainage survey will be undertaken at the site to confirm the arrangement and condition of the existing below-ground drainage.

6.0 Proposed Drainage Arrangements

It is intended to re-use the existing combined outfalls to the public sewer for proposed foul and surface water drainage.

Drainage from the new rear extension is proposed to accommodate a green roof drained to be drained via an existing gravity outfall to the public sewers, as will the drainage for the existing retained areas.

This will be designed in accordance with Building Regulations Part H.

It is recommended to retrofit a non-return valve to the existing outfall connection to the public sewer to protect the site drainage system from any surcharges in the public sewer.

7.0 Conclusion

This FRA and SuDS Strategy report has been prepared in accordance with local and national planning policy and guidance documents including LBRUT's SFRA, the London Plan (2021) and the NPPF (2024). The proposed development complies with local and national planning policy on flood risk and sustainable drainage.

A residual risk remains from a breach event of the River Thames' flood defences, it is recommended that all future occupants are made aware of the residual flood risk and encouraged to avail of the EA's "Flood Warning Direct Service". Should a flood event occur, this would allow the occupants to vacate the site.

This report confirmed that the development site is at low risk from all sources of flooding.

APPENDIX A
EXISTING PLANS

Site Location Plan

Undercover

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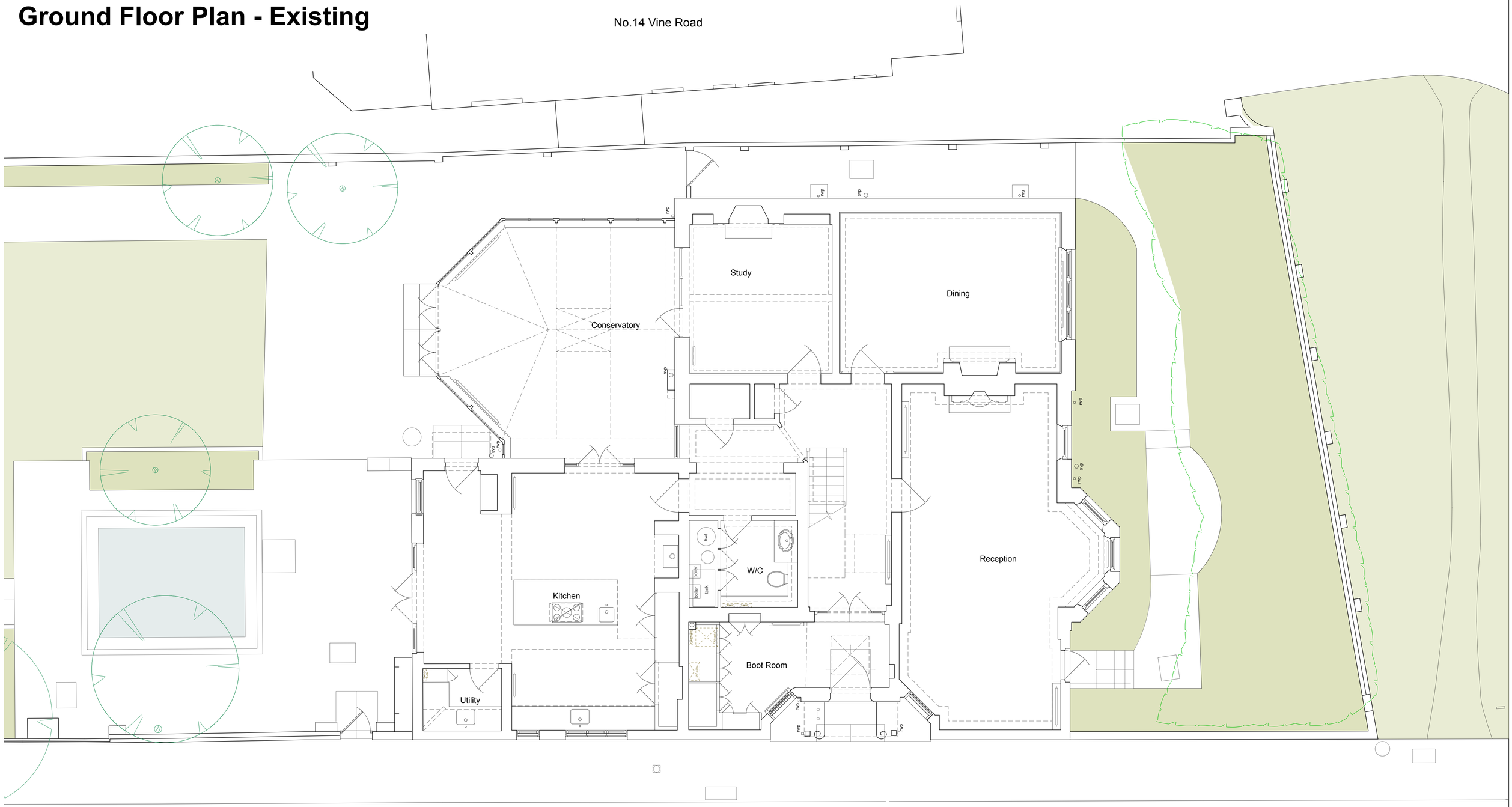
General Notes:

Revisions:

Project Thornfield	**Sheet Number** 100
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1
Sheet Title Site Location Plan	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

Ground Floor Plan - Existing

No.14 Vine Road



WOODLANDS ROAD

N

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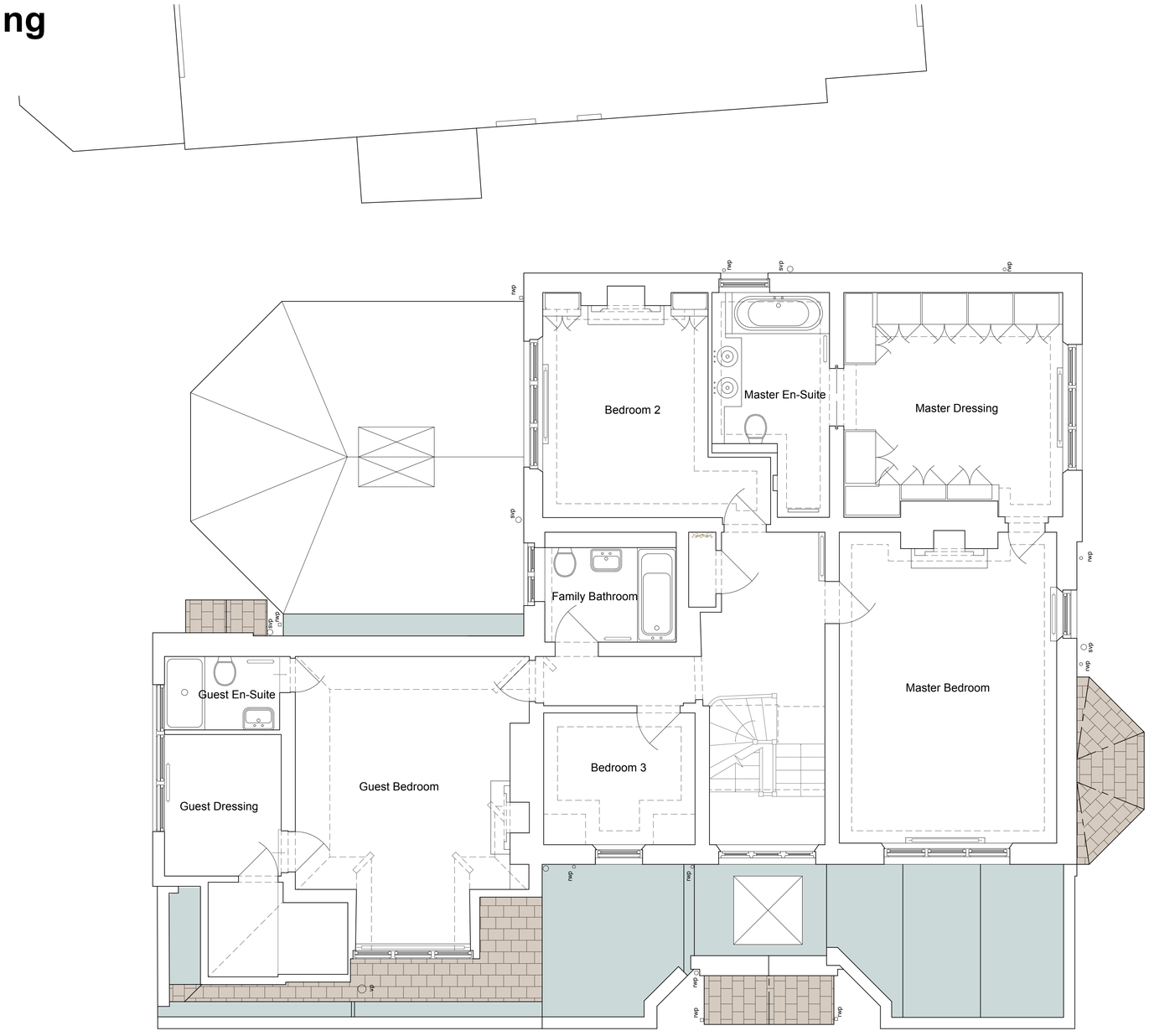
0 1 2 3 5 Metres

Project Thornfield	**Sheet Number** 101
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1
Sheet Title Ground Floor Plan - Existing	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

First Floor Plan - Existing



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Project Thornfield	**Sheet Number** 102
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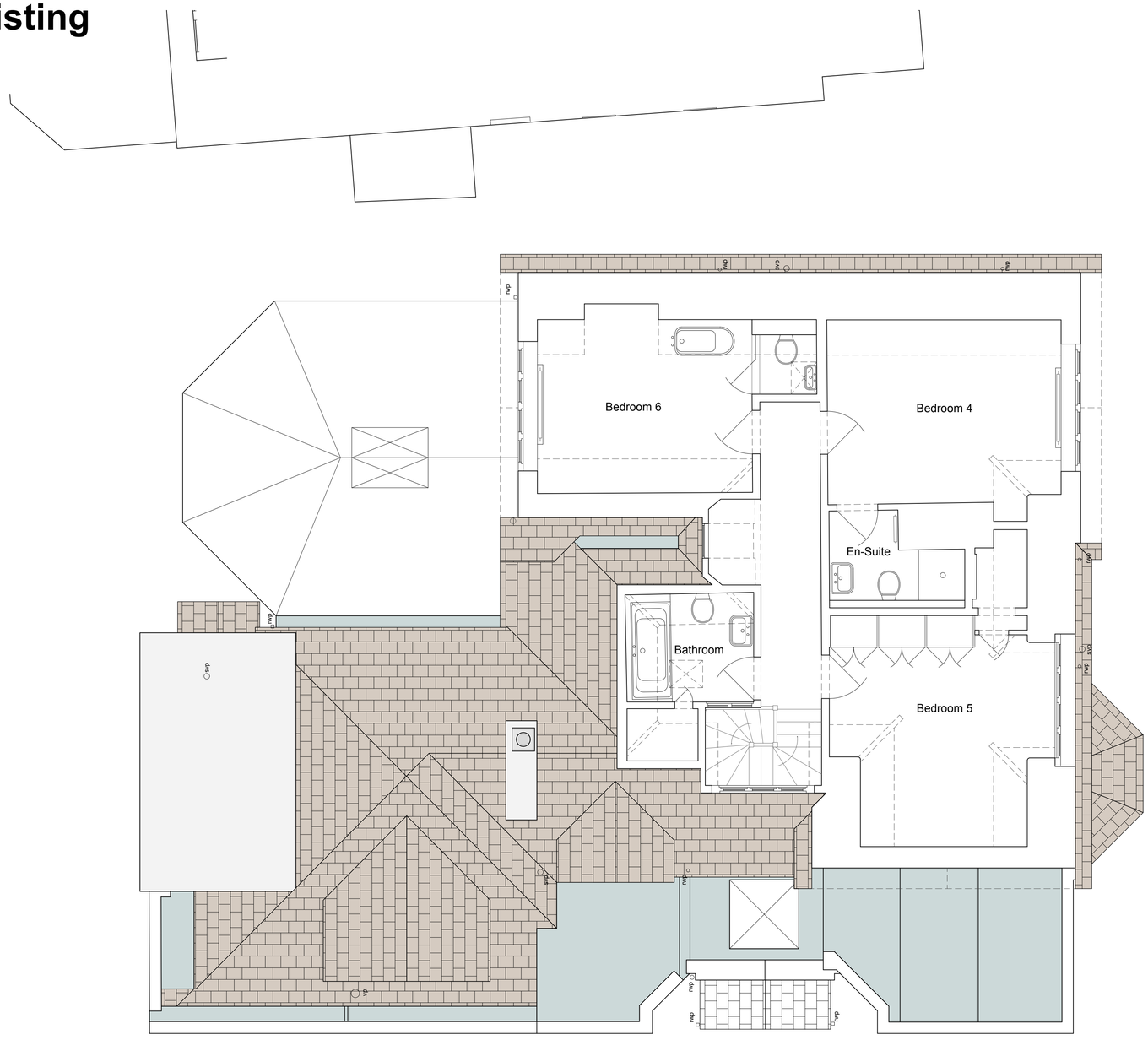
Sheet Title First Floor Plan - Existing	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

Second Floor Plan - Existing



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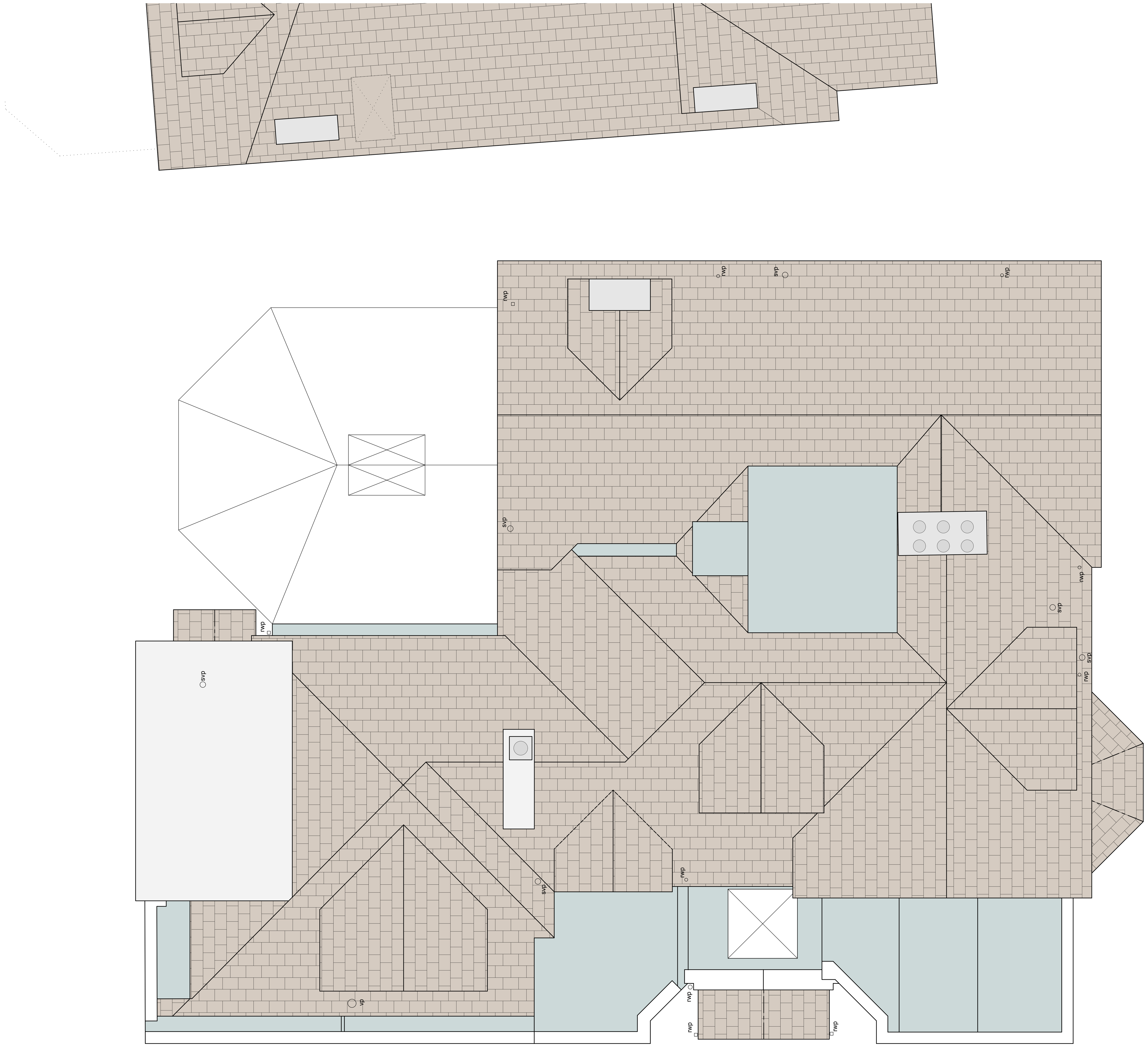
Roof Plan - Existing



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Sheet Title Roof Plan - Existing	**DWG By:** LW	**Control By:** XX	
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Rear Elevation - Existing

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Sheet Title Rear Elevation - Existing	**DWG By:** LW / **Control By:** XX
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North East Elevation - Existing

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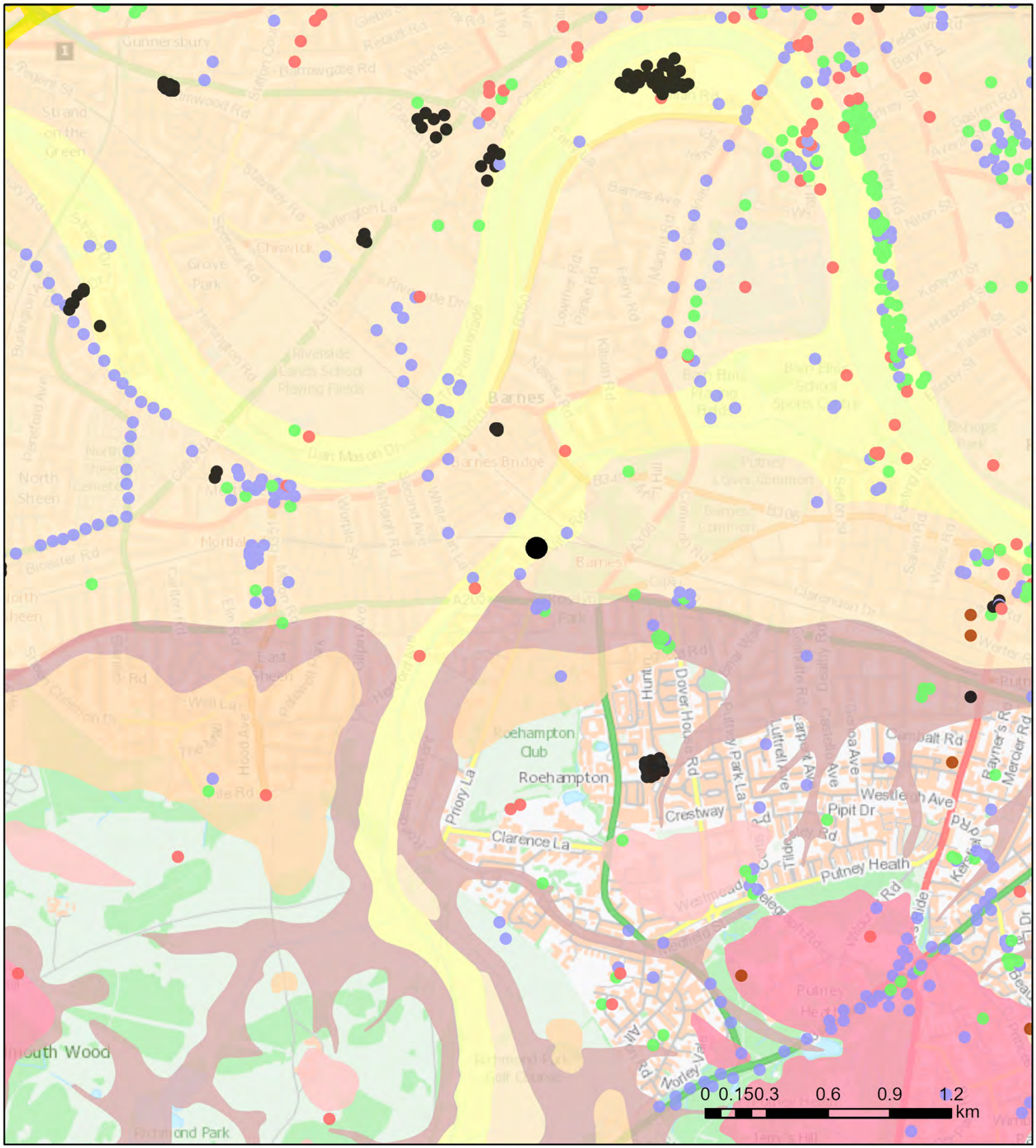
Sheet Title North East Elevation - Existing	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

APPENDIX B
BGS INFORMATION

GeoIndex Report

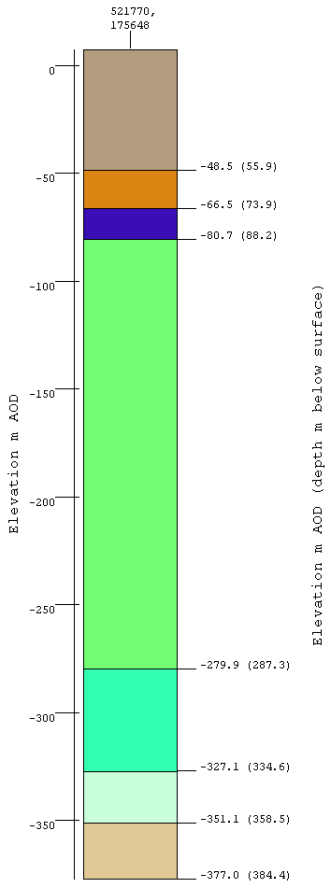
British Geological Survey



GeoIndex Onshore Data Sources: NERC, Natural England, English Heritage and Ordnance Survey

3D geological model synthetic log

Synthetic borehole log derived from the BGS **London and Thames Valley** model



Legend

- London Clay Formation
- Lambeth Group
- Thanet Formation
- Chalk Group
- Gault Formation And Upper Greensand Formation (Undifferentiated)
- Lower Greensand Group
- Upper Jurassic Rocks (Undifferentiated)

Vertical Exaggeration is 2.31

Further information about the model:
Mathers, S J, Burke, H F, Terrington, R L, Thorpe, S, Dearden, R A, Williamson, J P, Ford, J R. 2014. A geological model of London and the Thames Valley, southeast England. *Proceedings of the Geologists' Association*, 125 (4). 373-382.

This synthetic log is derived from a model with a 50 m grid resolution and should not be used as a replacement for site investigation.

The 3D geological model is a generalisation of reality constrained by the data available at the time of the model construction. It is an interpretation only and actual ground conditions encountered may be different from those shown. Users should consult additional information provided and users of the model outputs do so at their own risk.

For comprehensive information on the geology and hydrogeology at this point, please use our BGS GeoReport Service at https://shop.bgs.ac.uk/Shop/Department/GeoReports.

Gridded surfaces from geological models are available to licence. Further information about available data can be found on the GeoIndex BGS Lithoframe layer, the BGS Lithoframe webpage, or by contacting our enquiries service.

Map Key

Borehole records

- Unknown Length
- Confidential
- 0 - 10m
- 10 - 30m
- 30m+

Superficial deposits 1:50,000 scale

- KEMPTON PARK GRAVEL MEMBER - SAND AND GRAVEL
- BOYN HILL GRAVEL MEMBER - SAND AND GRAVEL
- ALLUVIUM - CLAY, SILT, SAND AND PEAT
- ALLUVIUM - CLAY, SILT, SAND AND GRAVEL
- TAPLOW GRAVEL MEMBER - SAND AND GRAVEL
- BLACK PARK GRAVEL MEMBER - SAND AND GRAVEL
- HEAD - CLAY, SILT, SAND AND GRAVEL
- HACKNEY GRAVEL MEMBER - SAND AND GRAVEL
- LANGLEY SILT MEMBER - CLAY AND SILT

Selection Results

APPENDIX C
PROPOSED PLANS

Site Location Plan - Proposed

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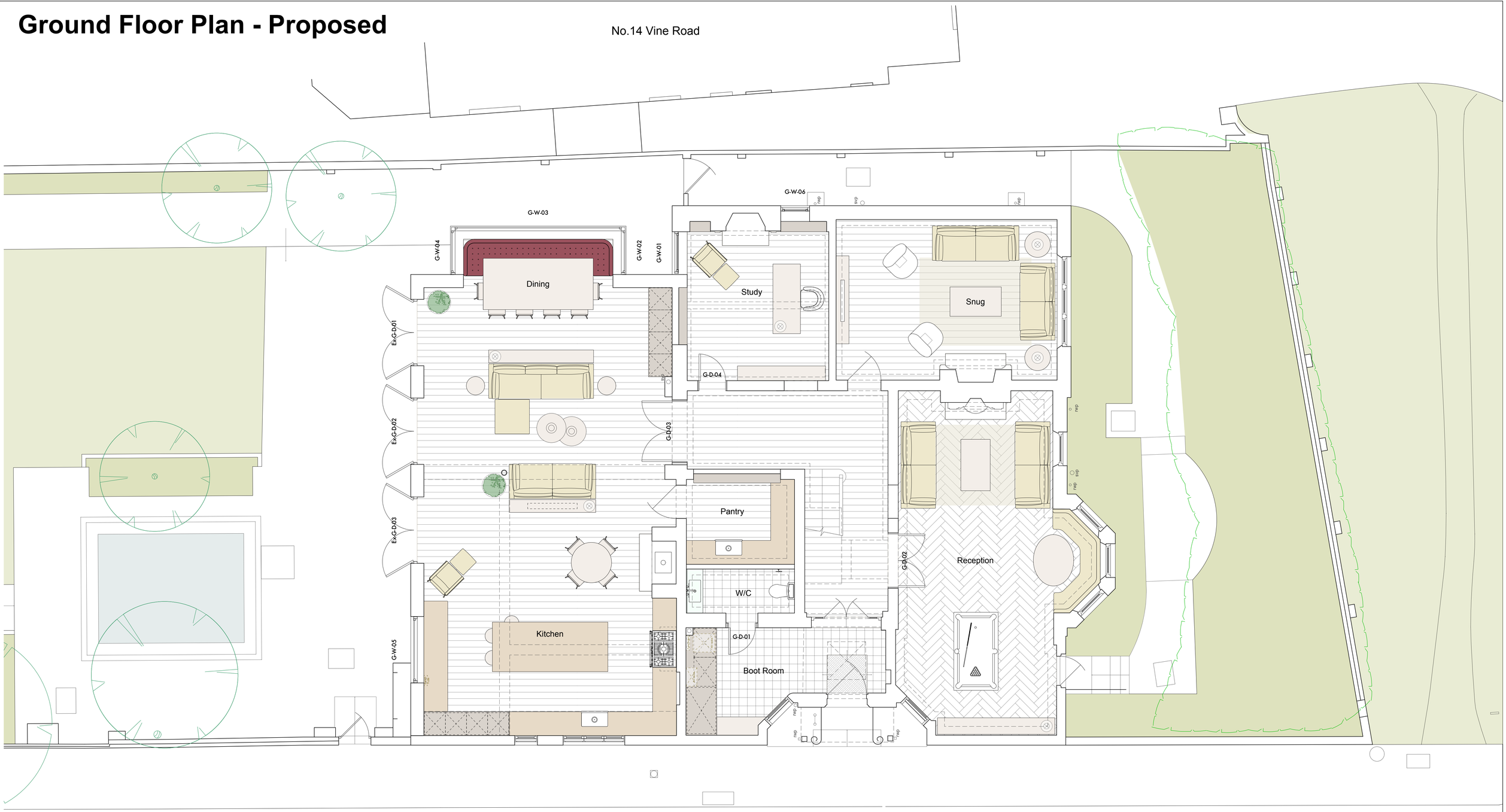
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1
Sheet Title Site Location Plan - Proposed	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

Ground Floor Plan - Proposed

No.14 Vine Road



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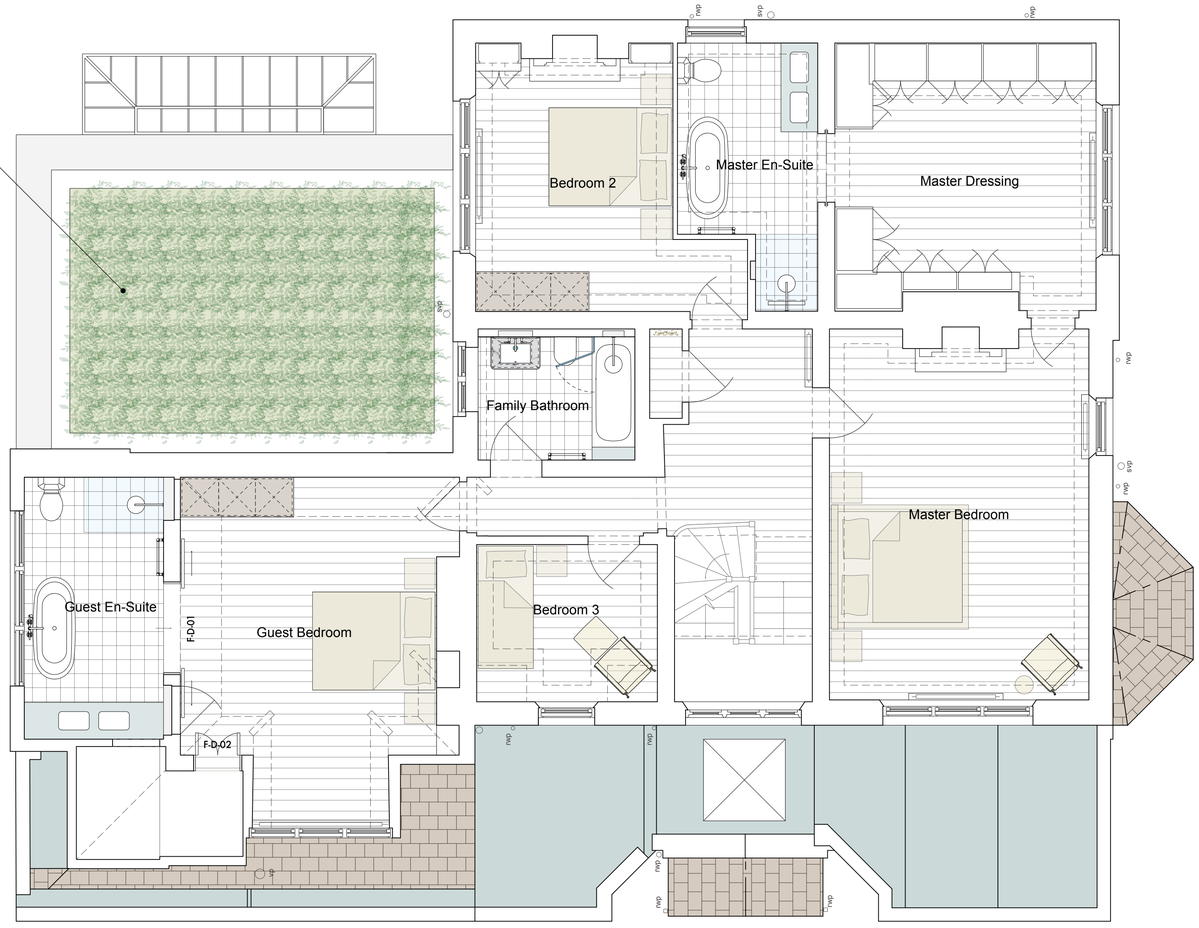
Sheet Title Ground Floor Plan - Proposed	**DWG By:** LW	**Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3	

First Floor Plan - Proposed

Living green roof system - Biodiverse green roof planted with native plug plants



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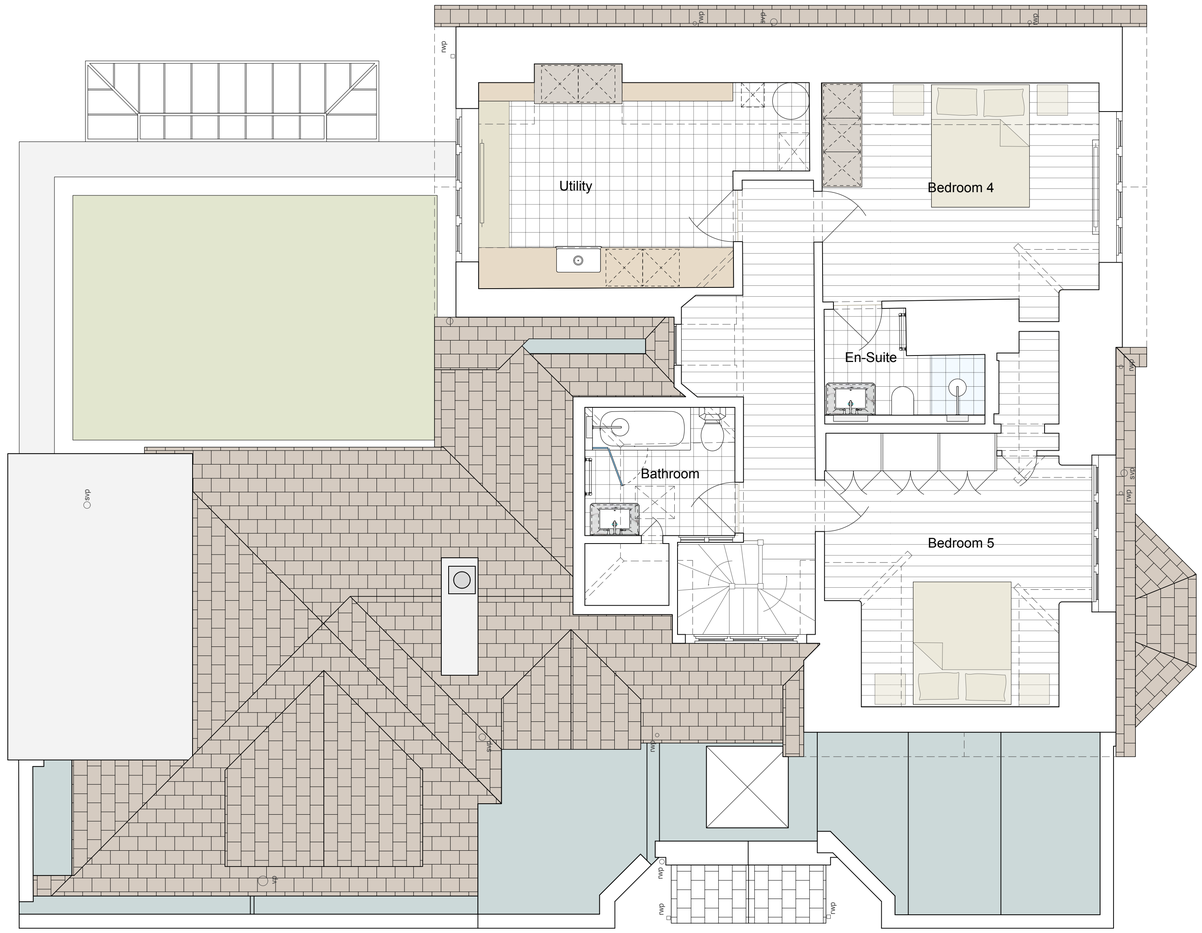
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1
Sheet Title First Floor Plan - Proposed	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

Second Floor Plan - Proposed



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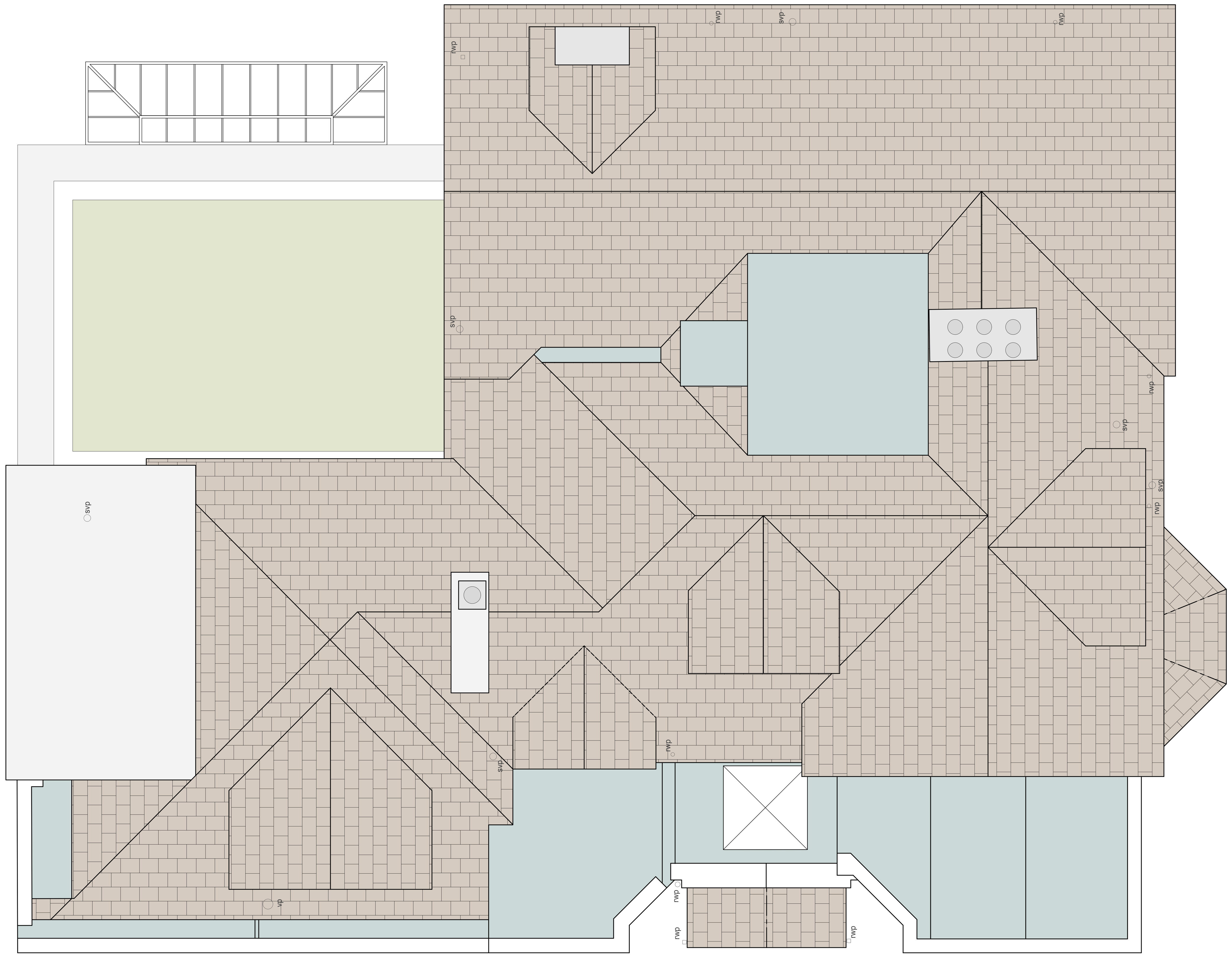
General Notes:

Revisions:

Project Thornfield	**Sheet Number** 303
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1
Sheet Title Second Floor Plan - Proposed	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

Roof Plan - Proposed



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General Notes:

Revisions:

0 1 2 3 5
Metres

Project Thornfield	**Sheet Number** 304		
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1		
Sheet Title Roof Plan - Proposed	**DWG By:** LW	**Control By:** XX	
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3		

Rear Elevation - Proposed

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General Notes:

Revisions:

0 1 2 3 5
Metres

Project Thornfield	**Sheet Number** 311	
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1	
Sheet Title Rear Elevation - Proposed	**DWG By:** LW	**Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3	

North East Elevation - Proposed

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General Notes:

Revisions:

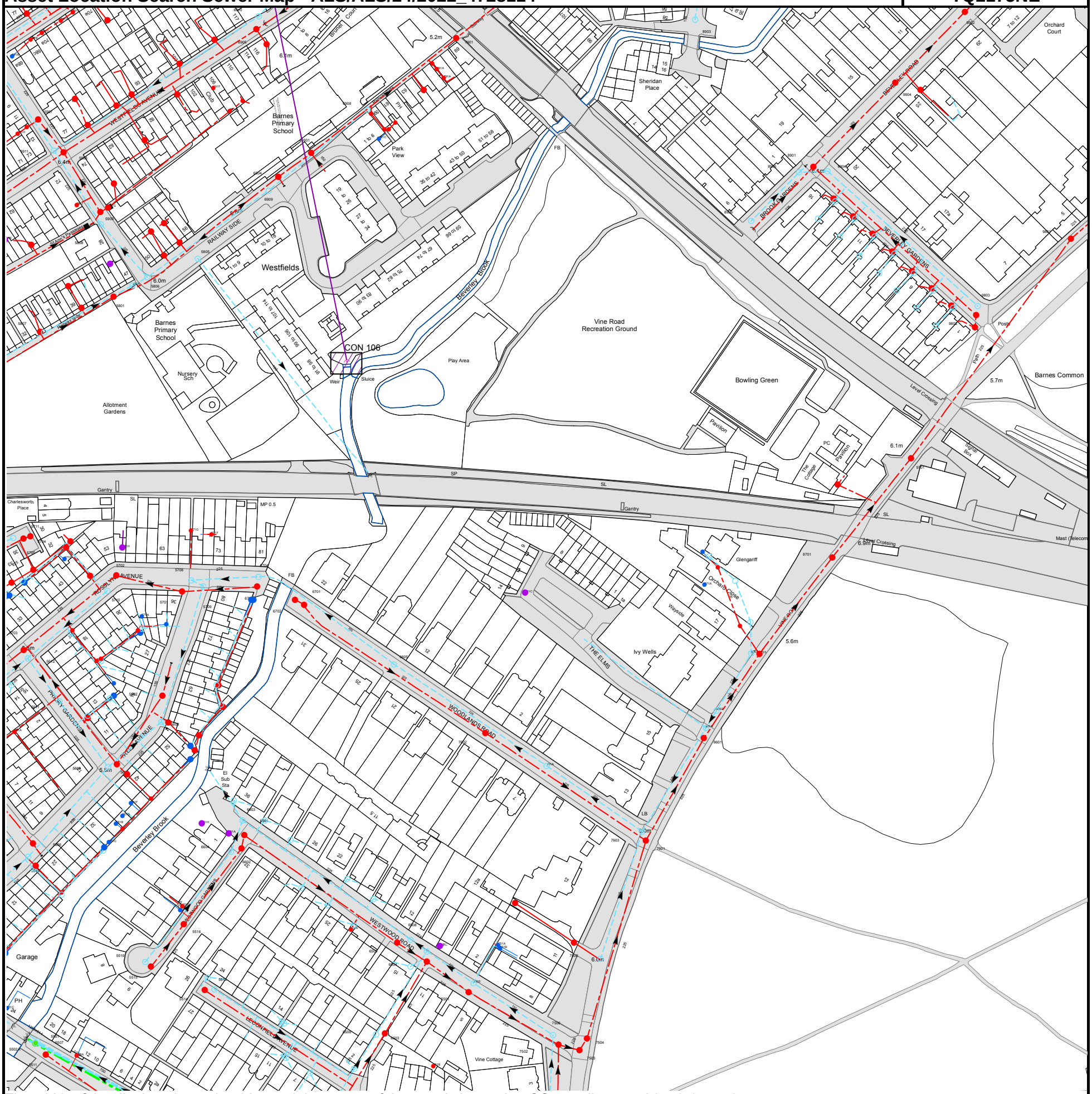
0 1 2 3 5 Metres

Project Thornfield	**Sheet Number** 312
Client Sebastian Franke-Matthecka & Olivia Crawford	**Issue** P1
Sheet Title North East Elevation - Proposed	**DWG By:** LW / **Control By:** XX
Date 21/10/24	**Scale** 1:50@A1 / 1:100@A3

APPENDIX D
THAMES WATER ASSET PLANS

Asset Location Search Sewer Map - ALS/ALS/24/2022_4728114

TQ2175NE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 521750,175750

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 and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
5807	n/a	n/a
58XT	n/a	n/a
58XZ	n/a	n/a
58YP	n/a	n/a
5711	n/a	n/a
57VZ	n/a	n/a
5705	n/a	n/a
5704	n/a	n/a
57TP	n/a	n/a
571E	n/a	n/a
57TT	n/a	n/a
57VV	n/a	n/a
57SX	n/a	n/a
57WS	n/a	n/a
57WQ	n/a	n/a
57TQ	n/a	n/a
5703	5.68	3.22
57VP	n/a	n/a
5612	5.67	4.5
57YR	n/a	n/a
57XP	n/a	n/a
69YT	n/a	n/a
69YW	n/a	n/a
691A	n/a	n/a
791A	n/a	n/a
7901	n/a	n/a
8903	n/a	n/a
8905	5.94	3.62
8901	n/a	n/a
8904	6.01	4.22
9904	n/a	n/a
591A	n/a	n/a
59TX	n/a	n/a
591B	n/a	n/a
591C	n/a	n/a
591D	n/a	n/a
591E	n/a	n/a
98WW	n/a	n/a
98YY	n/a	n/a
9802	6.08	4.65
98ZQ	n/a	n/a
98YX	n/a	n/a
9803	6.05	4.91
98XP	n/a	n/a
98ZP	n/a	n/a
98XT	n/a	n/a
98ZS	n/a	n/a
98XY	n/a	n/a
9801	5.96	4.91
99YW	n/a	n/a
9902	4.91	2.61
9701	6.08	2.94
87ZY	n/a	n/a
87YZ	n/a	n/a
98ZT	n/a	n/a
98ZX	n/a	n/a
88ZX	n/a	n/a
98ZW	n/a	n/a
98YR	n/a	n/a
88ZW	n/a	n/a
88ZY	n/a	n/a
88ZS	n/a	n/a
8906	6.02	4.56
89YY	n/a	n/a
89ZQ	n/a	n/a
89YP	n/a	n/a
89ZP	n/a	n/a
89YT	n/a	n/a
7602	5.98	3.87
861C	n/a	n/a
761A	n/a	n/a
8601	n/a	n/a
871A	n/a	n/a
861A	n/a	n/a
87ZT	n/a	n/a
8602	n/a	n/a
87ZX	n/a	n/a
87ZS	n/a	n/a
87ZW	n/a	n/a
87ZR	n/a	n/a
8702	5.51	4.52
8703	5.53	3.34
8701	6.56	3.19
651B	n/a	n/a
7503	6.57	n/a
7502	6.4	3.78
7504	6.44	3.76
7506	6.38	5.52
7501	9.18	3.92
7505	6.13	4.57

Manhole Reference	Manhole Cover Level	Manhole Invert Level
65XR	n/a	n/a
6504	6.06	3.93
7508	6.17	5.02
6507	6.07	4.45
751B	n/a	n/a
651C	n/a	n/a
751A	n/a	n/a
6505	6.07	3.98
75ZW	n/a	n/a
6508	6.04	4.42
75ZX	n/a	n/a
7601	5.87	3.64
7603	5.94	4.26
6905	6.41	3.72
6910	6.36	n/a
69ZQ	n/a	n/a
6901	n/a	n/a
6908	n/a	n/a
69ZV	n/a	n/a
691C	n/a	n/a
69ZW	n/a	n/a
69ZX	n/a	n/a
69ZY	n/a	n/a
65ZX	n/a	n/a
65YR	n/a	n/a
65ZT	n/a	n/a
65ZQ	n/a	n/a
6506	6.24	4.9
6503	6.23	4.4
65YY	n/a	n/a
65YV	n/a	n/a
5514	6.96	5.54
5518	6.82	5.57
55ZT	n/a	n/a
5515	6.14	4.95
5519	6.35	5.29
56VV	n/a	n/a
56VP	n/a	n/a
5609	5.73	4.29
561C	n/a	n/a
561B	n/a	n/a
5601	5.68	3.85
561G	n/a	n/a
56PY	n/a	n/a
56QP	n/a	n/a
561F	n/a	n/a
56QQ	n/a	n/a
551B	n/a	n/a
551D	n/a	n/a
5516	n/a	n/a
561H	n/a	n/a
661A	n/a	n/a
6604	6.08	4.69
66ZV	n/a	n/a
6602	6.07	4.24
6603	5.98	4.22
6601	5.96	4.19
66ZR	n/a	n/a
66YZ	n/a	n/a
65WR	n/a	n/a
65WW	n/a	n/a
65VZ	n/a	n/a
651A	n/a	n/a
65WZ	n/a	n/a
65VW	n/a	n/a
561D	n/a	n/a
56US	n/a	n/a
56TR	n/a	n/a
56XT	n/a	n/a
56WX	n/a	n/a
56OY	n/a	n/a
57YT	n/a	n/a
57XT	n/a	n/a
571A	n/a	n/a
57ZT	n/a	n/a
5608	5.59	4.16
5602	5.68	4.08
57YZ	n/a	n/a
56RZ	n/a	n/a
56RQ	n/a	n/a
56QX	n/a	n/a
56SP	n/a	n/a
56SQ	n/a	n/a
56RV	n/a	n/a
56SW	n/a	n/a
56RS	n/a	n/a
66YW	n/a	n/a
67YW	n/a	n/a
67ZS	n/a	n/a
6702	5.71	n/a
6701	5.71	3.96
6605	5.98	3.84
5701	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
5710	5.76	4.62
6703	5.84	4.13
5709	5.69	4.44
5708	5.62	4.42
6704	5.83	4.66
57TS	n/a	n/a
57VT	n/a	n/a
5702	5.58	3.52
571H	n/a	n/a
571F	n/a	n/a
571G	n/a	n/a
5801	5.87	3.71
581A	n/a	n/a
5806	5.98	4.53
581B	n/a	n/a
5805	n/a	n/a
58YX	n/a	n/a
58ZR	n/a	n/a
58YY	n/a	n/a
5808	6.48	4.33
58ZS	n/a	n/a
5909	n/a	n/a
591G	n/a	n/a
6909	n/a	n/a
59VW	n/a	n/a
6904	n/a	n/a
59TY	n/a	n/a
59XT	n/a	n/a
59XY	n/a	n/a
59WV	n/a	n/a
59YT	n/a	n/a
59YZ	n/a	n/a
591F	n/a	n/a
59ZS	n/a	n/a
691B	n/a	n/a
69YY	n/a	n/a
55YT	n/a	n/a
551C	n/a	n/a
5502A	6.97	4.2
5501	6.89	4.12
5507	n/a	n/a
5511	6.98	4.09
55YV	n/a	n/a
55XY	n/a	n/a
551A	n/a	n/a
591H	n/a	n/a
59VR	n/a	n/a
58ZV	n/a	n/a
5907	6.26	n/a
5911	6.09	4.13
5908	6.39	3.34
59WR	n/a	n/a
591I	n/a	n/a
59VZ	n/a	n/a
56VX	n/a	n/a
56TV	n/a	n/a
5610	5.81	4.49
5606	5.82	3.71
561A	n/a	n/a
56WS	n/a	n/a
56XQ	n/a	n/a
5611	5.75	4.29
56AP	n/a	n/a

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 and established on site before any works are undertaken.

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

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

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

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

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

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
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

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

- Ancillary
- Drop Pipe
- Control Valve
- 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.

- Inlet
- Outfall
- Undefined End

Other Symbols

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

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement — Ducts may contain high voltage cables. Please check with Thames Water.
- Conduit Bridge
- Subway
- Tunnel

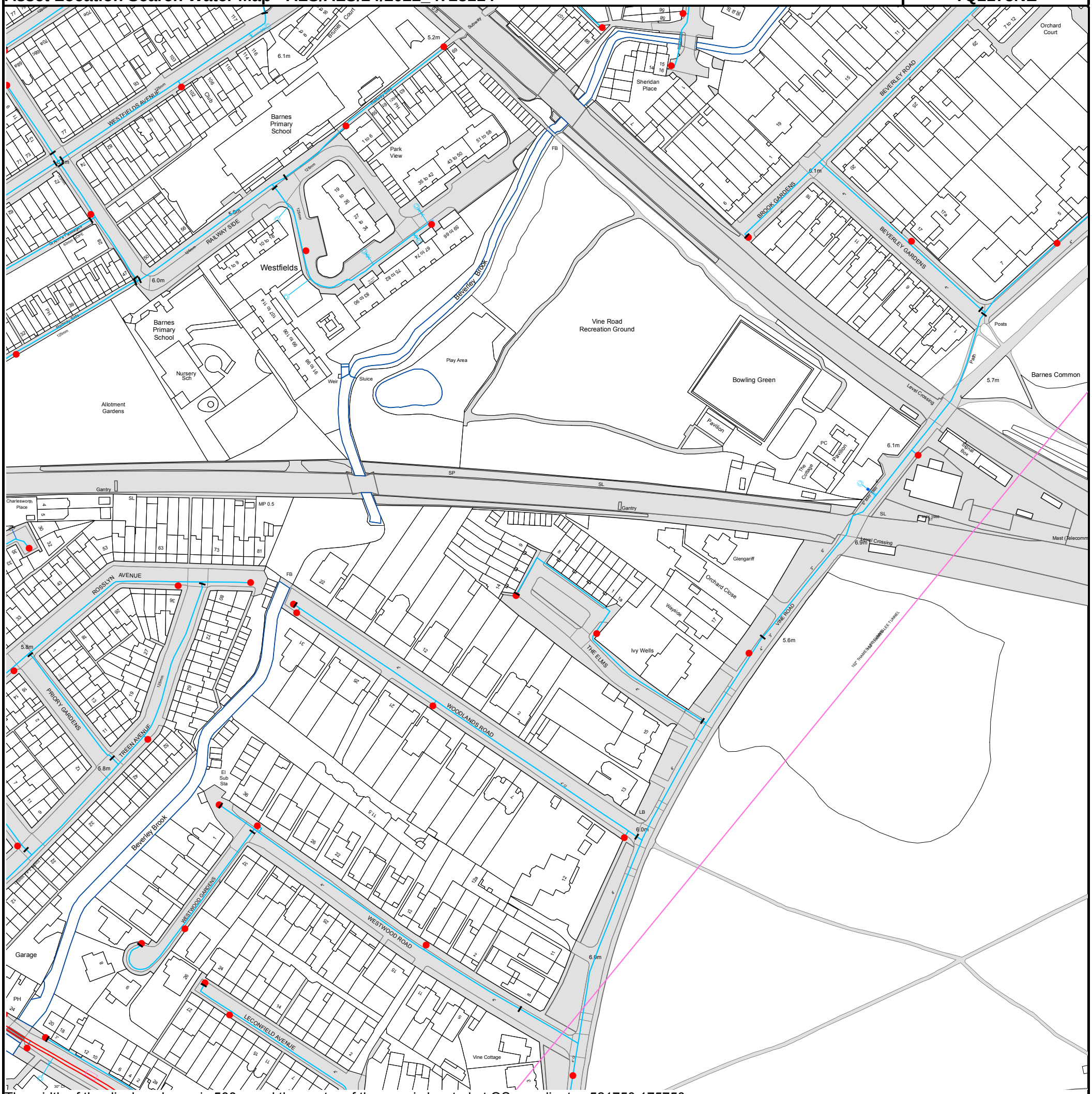
Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the 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 indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. 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, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS/24/2022_4728114

TQ2175NE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 521750,175750

Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger
- **Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.