11 MONTAGUE PLACE, WORTHING

FLOOD RISK ASSESSMENT

APRIL 2025

Ref: 16830/01/HOP/RPT/01

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CONSULTING CIVIL AND STRUCTURAL ENGINEERS

CONTENTS

APPENDICES

Client : Kelmend Murataj

Prepared by	Checked by	Approved by	Revision
Tom Butler	**Andrew Keen**	**Andrew Keen**	**P1 11.04.2025**
Tom Butler	**Andrew Keen**	**Andrew Keen**	**P2 14.04.2025**

1.0 INTRODUCTION

1.1 HOP Consulting (HOP) have been instructed by the Client, Connaught House (Marine Parade) Ltd, to undertake a Flood Risk Assessment (FRA) for the redevelopment of the 11 Montague Place site, Worthing, BN11 3BG.

1.2 The development proposals are to convert the existing commercial unit into commercial Class E at ground level and 4No. one-bedroom flats on the raised part of the ground floor level and above.

1.3 This report has been carried out in accordance with information provided by the Environment Agency (EA); the Adur & Worthing Strategic Flood Risk Assessment (SFRA); and the British Geological Survey (BGS) in accordance with the guidance on Flood Risk and Development, as laid out in the National Planning Policy Framework (NPPF) and its associated Planning Practice Guidance (PPG).

1.4 Details of the site and development proposals have been provided by the Client to clarify the scope of the proposed development and the existing site conditions. HOP cannot accept liability for the accuracy of the information received from third parties. Any amendment to the development proposals or end use should be highlighted to the engineer and may necessitate revisions to this report.

2.0 SITE SETTING AND LOCATION

2.1 As can be seen in Figure 2.1, the site is located in central Worthing, approximately 60m north of the seafront and 150m northwest of Worthing Pier.

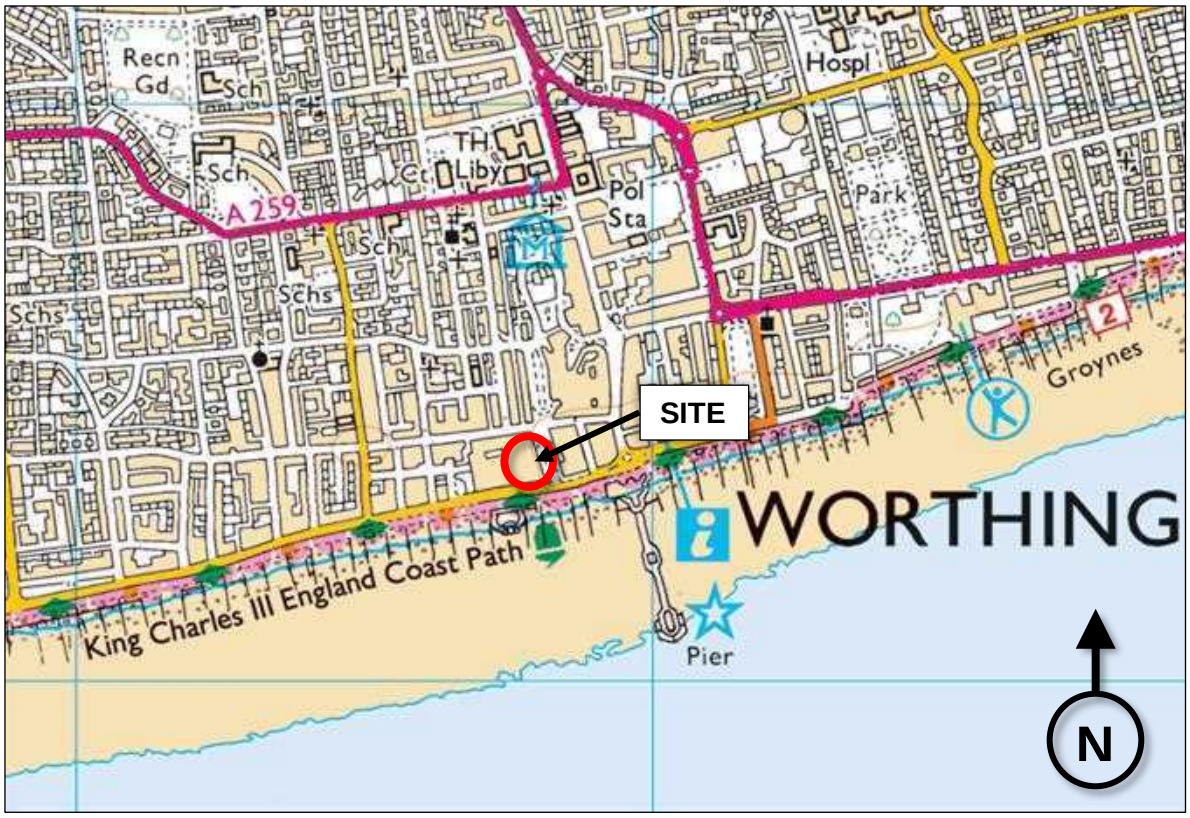

Figure 2.1 Location map

2.2 This area of Worthing along the coastline is characterised by a mixture of residential and commercial land use, with various businesses in the area including shops, cafés and restaurants. Further west towards Goring, the land use becomes increasingly residential.

2.3 The existing site layout plan in Figure 2.2 shows that the site is currently occupied by a hair and beauty salon at ground and lower ground level with associated staff and office space above. The shopfront opens onto Montague Place to the east and backs onto a shopping centre at the west with a small paved courtyard and fire escape to the rear of the property which is accessible by an alleyway to the west of the building. The site is bounded to the north and south by adjoined terraced properties accommodating shops and residential units.

Topographical survey data shows that finished floor levels (FFL) at the ground floor are approximately 5.18m above Ordnance Datum (AOD) in the shopfront to the east of the building. The ground floor steps up to the west of the building to a FFL of approximately 6.23mAOD. The lower ground floor FFL is approximately 4.13mAOD and the courtyard to

the rear of the property rises from 4.71mAOD to 6.12mAOD at the rear of the ground floor level. The topographical survey is included in Appendix A.

EXISTING LAYOUT PROPOSED LAYOUT

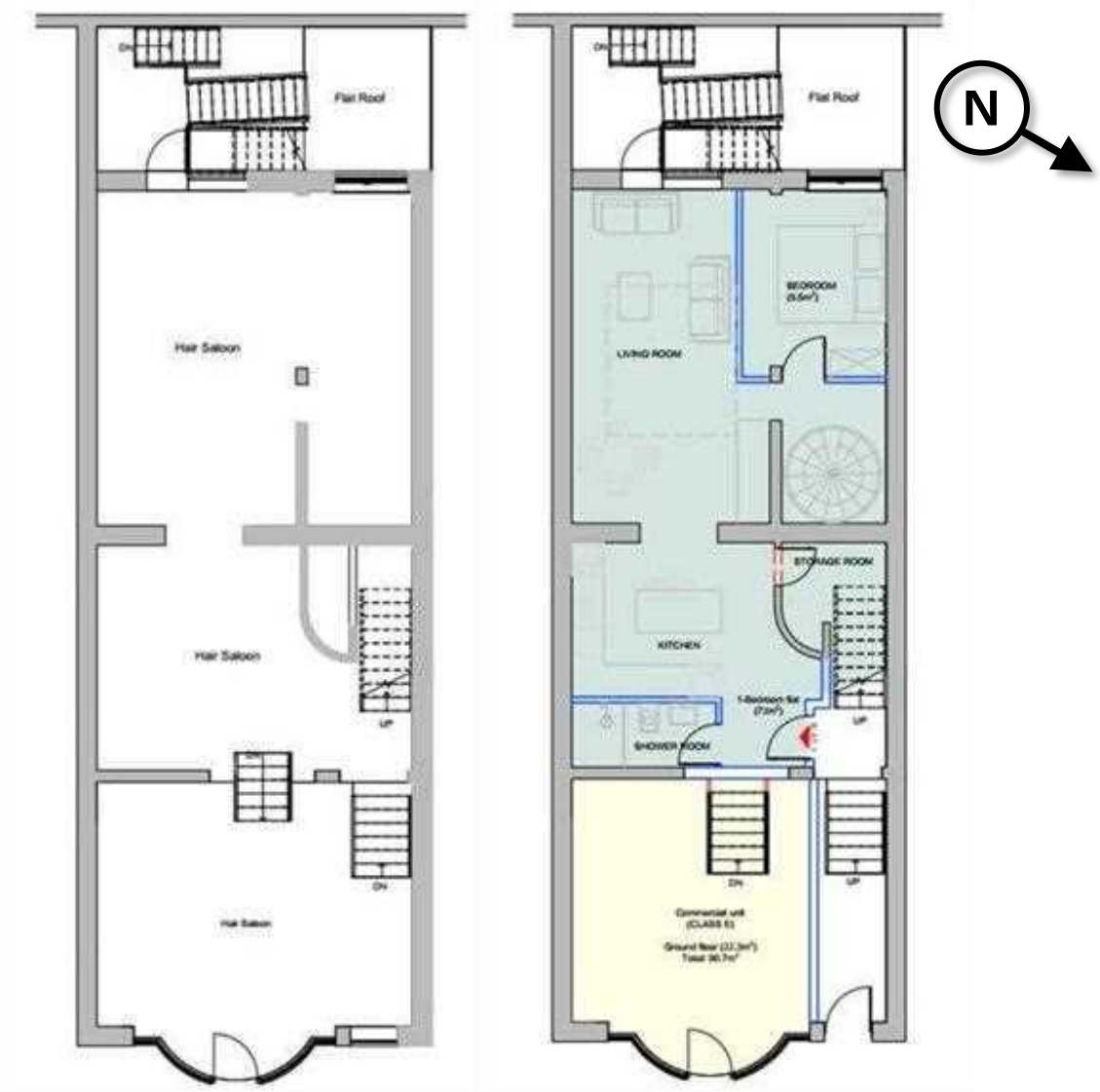

Figure 2.2 Existing and proposed site layout plans

2.4 A review of the existing building frontage on Google Streetview indicates that the roof area is drained via conventional gutters and downpipes rain water pipes. Foul drainage is expected to be directed to the local foul sewerage network that runs south to north under Montague Place road (ref: 8301 to 8401) or within the Alleyway to the west (ref: 7301 to 7406) - see Appendix B for Southern Water sewer records).

2.5 Online mapping from the BGS indicates the site to be underlain by bedrock geology of chalk, with overlying River Terrace Deposits (sand, silt and clay). Further information from the EA's online mapping data shows the site is not located within a groundwater Source Protection Zone (SPZ), with the nearest SPZ located approximately 1.8km to the north.

3.0 DEFINITION OF THE FLOOD HAZARD & PROBABILITY

3.1 An extract of the EA's flood map for planning is shown in Figure 3.1. This shows that the site is located within Flood Zone 3, classified as 'high probability'. The PPG to the NPPF defines land within this Flood Zone as having a greater than a 1 in 100 annual probability of fluvial flooding (>1%) or greater than a 1 in 200 annual probability of tidal flooding (>0.5%).

Figure 3.1 EA Flood Map for planning extract

3.2 The SFRA states that tidal flooding has been recorded in Lancing and Shoreham due to overtopping of defences, although tidal flooding is rare within Worthing Borough.

3.3 It can be seen in Figure 3.1 and data provided by the EA that the site lies within Flood Zone 3 (FZ3) and is not shown to benefit from the protection of coastal flood defences. However, management of the shingle beach and seafront infrastructure along this stretch of coastline is undertaken to manage the wider tidal flood risk.

3.4 Detailed flood data has been obtained from the EA (Appendix C). This is contained within the "Arun to Adur Coastal Modelling", completed in 2012 by JBA Consulting. Flood levels have been modelled at three nodes on site as shown in Figure 3.2; with corresponding flood

levels including the 0.5% (1 in 200 year) annual exceedance probability (AEP) and 0.1% AEP (1 in 1000 year) defended and undefended scenarios shown in Tables 3.3 and 3.4.

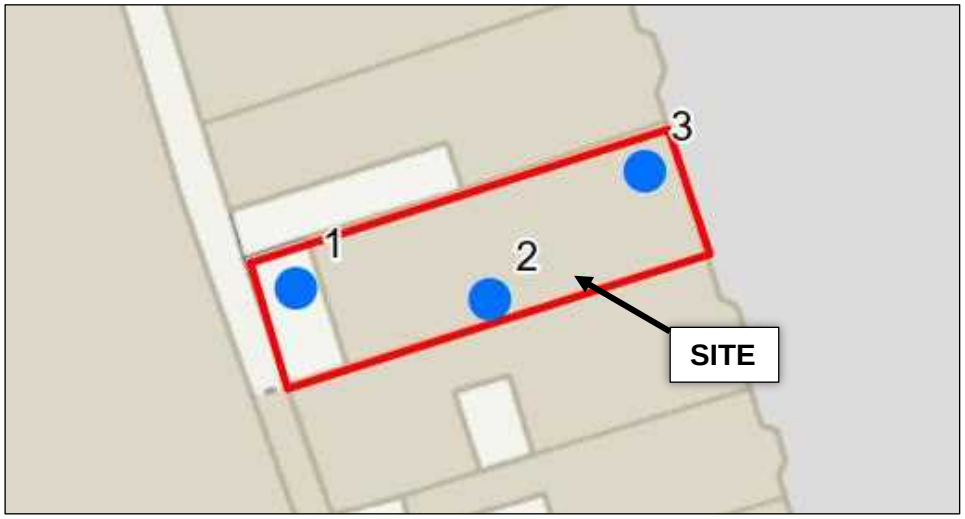

Figure 3.2 Modelled nodes (JBA Consulting)

Table 3.3 Flood Levels: Tidal Undefended

	NGR		Modelled Flood Levels in Metres AOD Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	514789	102386	-	-	5.26	-
2	514798	102386	-	-	5.26	-
3	514804	102392	-	-	5.26	-

Table 3.4 Flood Levels: Tidal Defended

	NGR		Modelled Flood Levels in Metres AOD Defended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	514789	102386	5.05	5.21	5.01	5.16
2	514798	102386	5.05	5.21	5.01	5.16
3	514804	102392	5.05	5.21	5.01	5.16

3.5 As can be seen in Tables 3.3 & 3.4, flood levels are provided for undefended scenarios, including increases due to climate change. At both nodes, the 0.5% (2115) level is shown to be 5.01mAOD. This is considered to be the design flood level.

3.6 The flood modelling as detailed above considers the primary risk of tidal flooding to the site. Other sources of flood risk are considered below with information taken from the EA's online mapping service and Adur & Worthing Council's SFRA.

Sequential Test

3.7 The Sequential Test provides a framework for Local Planning Authorities (LPA) through which development is steered towards the most appropriate Flood Zone.

3.8 As the development is an internal refurbishment of an existing property it is assumed that the Sequential Test is not applicable in this instance. However, a sequential approach to development within the site has been taken to locate more vulnerable accommodation on the upper floors while retaining the commercial accommodation at low level.

3.9 The proposed building use is for commercial space at ground and lower ground floor level, which is shown in Table 2 of the NPPF PPG to be classed as 'Less Vulnerable' development. Residential is classed as 'More Vulnerable' however this will only be included from the raised area of the ground floor upwards. The site lies within Flood Zone 3, therefore the Exception Test will need to be applied.

Exception Test

3.10 The NPPF requires that, where it has not been possible to locate development in zones of lower flood risk probability, the Exception Test should be applied. For the Exception Test to be passed, the guidance states that;

- it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared; and
- a site-specific FRA must demonstrate that the development will be safe for its lifetime taking into account the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

3.11 It is considered that the first element of the Exception Test is passed, as the development retains commercial space while increases residential space within the central Worthing area.

3.12 The second element of the Exception Test is demonstrated throughout this report in that the development plans do not represent an increase in the flood risk to the site, or to neighbouring properties.

3.13 The primary flood risk at the site comes from the tidal source where a storm surge combining with high tides provides potential for inundation from the English Channel. Other sources of flooding are discussed below.

Surface Water Flooding

3.14 Information contained within the SFRA shows that notable flooding incidents occurred in 1980, 2000, 2007, 2012, and 2013/14, largely caused by surface water flooding following heavy or prolonged rainfall. The last major surface water flood event occurred in June 2012, with widespread property flooding reported in Worthing.

3.15 EA online surface water flood data, as shown in Figure 3.5, indicates the site to be at medium risk of surface water flooding, with an area of high risk shown adjacent to the east on Montague Place, outside of the site.

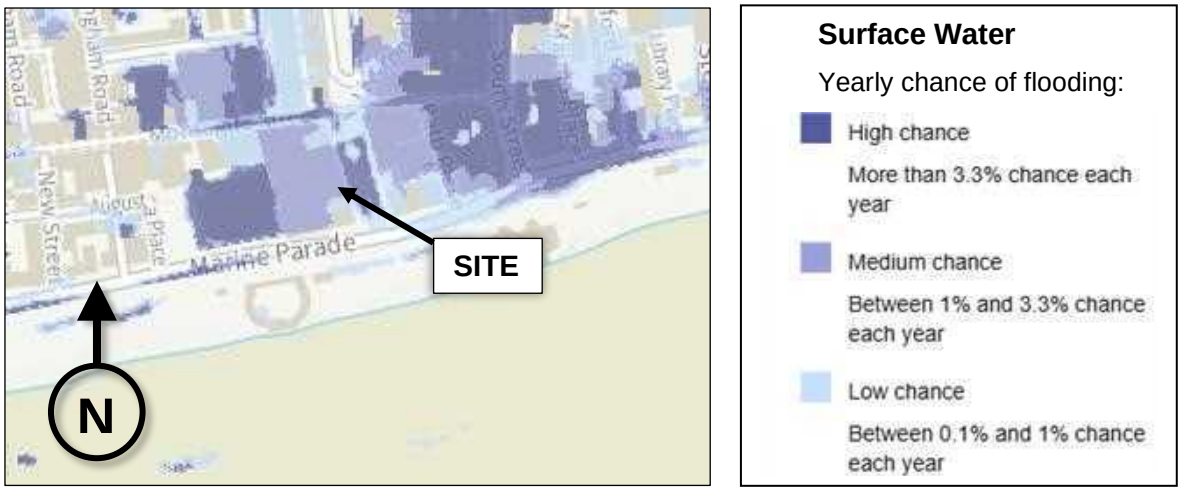

Figure 3.5 Surface water flood extent (Online EA mapping)

3.16 The topographic survey shows the finished floor level of the ground floor to be 160mm higher the external levels on Montague Place which also fall away from the building frontage. The rear courtyard is also shown to be raised 160mm higher than the adjacent alleyway. Online mapping also provides the predicted depth of surface water flooding, shown in Figure 3.6 below, which shows the likelihood of surface water flooding to 200mm depth.

Figure 3.6 Surface water flood risk of up to 200mm depth (Online EA mapping)

3.17 The mapping shows the risk of flooding to 200mm deep at the building frontage to be very low. It is expected that surface water flows will largely stay confined to Montague Place. With FFLs raised 160mm higher than the building frontage, and alleyway behind the building, surface water flood risk is considered to be low.

Groundwater Flooding

3.18 Groundwater levels on site are influenced by the tide due to the close proximity of the English Channel. Groundwater flood maps included in the SFRA show that large portions of the Local Plan areas are potentially at risk of groundwater flooding, with the most vulnerable areas including Durrington, Goring, East Worthing, Sompting and Lancing. Overall groundwater flood risk to the site itself is indicated to be low.

Sewer Flooding

3.19 Water Utilities' data relating to sewer flooding is included in the SFRA, which shows three incidents of surface water sewer flooding in the local postcode area, with data covering the period from 2014 to 2019.

3.20 The public foul water sewers to the east and west of the site convey flows to the north, away from the coastline. Any flooding of these chambers would be evident on the surface, with the existing topography conveying overland flows and draining away from and around the site to the north. As discussed previously, the building is raised 160mm above the surrounding external ground levels. The risk of sewer flooding at the site is considered to be low.

3.21 No change is proposed to the footprint of the building or the surface water drainage arrangement. No increase to the risk of surface water sewer flooding is therefore expected. Section 5.0 of this report demonstrates how the anticipated peak foul water flow rates from the proposed development can be managed to ensure there is no increase in flow to the public sewer, thereby ensuring there is no additional flood risk posed by the new development to neighbouring and downstream properties.

Reservoir Flooding

3.22 EA online mapping does not show the site to be at risk of flooding from reservoirs, therefore the risk from this source is considered to be very low.

4.0 DEVELOPMENT PROPOSALS

4.1 Development proposals are provided in the layout plans provided by the Client and can be found in Appendix D. It is understood that the proposals are to convert the existing commercial unit into commercial Class E at ground level and 4No. one-bedroom flats on the raised part of the ground level and above.

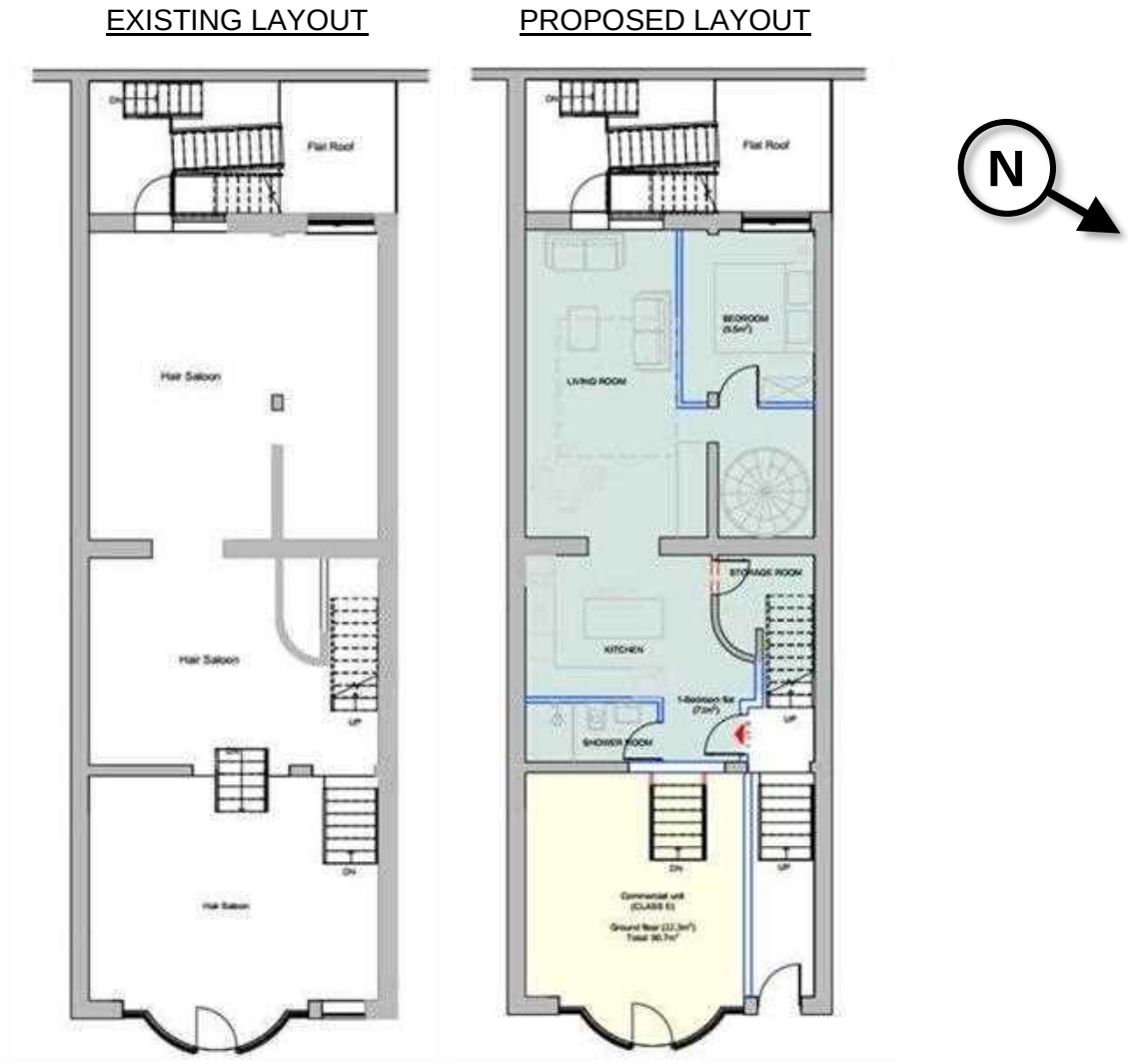

Figure 4.1 Existing and proposed site layout plans

4.2 Post-development, the site external space and plan area will be unchanged.

4.3 A new access is proposed to provide separate access from Montague Place to the commercial unit and the residential units above.

5.0 FOUL WATER DRAINAGE STRATEGY

Existing

5.1 The foul sewer from the property is expected to flow to the sewer under the alleyway to the west of the building at a point between manholes 7301 and 7406. It is understood that these will be retained following the development with no change to the drainage arrangement proposed beyond internal rearrangements to facilitate the residential units.

5.2 Southern Water's current guidance recommends a 2.5x Dry Weather Flow (DWF) plus 10% is used to estimate peak foul flows for non-residential buildings as reflects the existing building. The building's occupancy capacity is unknown so a recommended 3.0 litres per square meter of the 510m^2 commercial building is used.

$$\frac{3 * 510}{60 * 60 * 24} * 2.5 * 1.1 = 0.049 l/s$$

This equates to a 0.049l/s existing peak foul flow rate to the public foul sewer.

Proposed

5.3 The proposed foul flow from the mixed residential building incorporates 4No. one-bed flats and approximately 91m2 commercial space. For the commercial space, the same calculations is used as pervious, substituting the reduced floor area.

$$\frac{3 * 91}{60 * 60 * 24} * 2.5 * 1.1 = 0.009 l/s$$

This equates to a 0.009l/s proposed commercial peak foul flow rate to the public foul sewer.

5.4 The calculation for proposed residential peak foul flow, using the southern water current guidance, is shown in Table 5.1. The occupancy per unit per flat is 2.4 persons based on the Southern Water recommended default value.

Table 5.1 Proposed peak residential foul flow.

General housing peak foul flow		
Number of properties, N	4	Units
Occupancy, O	2.4	Persons / unit
Per capita flow, G (L/D)	125	litres / head / day
Population, P (NxO)	9.6	People
Storm duration, SD	300	Minutes
Peaking Factor, PF	2	
Peak Flow	0.029	l/s

5.5 The total proposed peak foul flow from the building is therefore 0.038l/s which is a decrease from the existing 0.049l/s. It is considered feasible that foul water can continue to discharge to the foul sewer using the existing connection.

6.0 FLOOD RISK MANAGEMENT MEASURES

6.1 According to the EA flood data, the site falls within Flood Zone 3 and is not currently afforded protection by flood defences. In the event of a 1 in 200 year flood event (in the year 2115), the flood level has been shown to be 5.26m AOD. This would result in flood depths within the ground floor commercial unit of 80mm with the lower ground floor inundated. The higher-level ground floor residential units would not be flooded sitting at least 970mm above the flood level with all residential units located above the flood level.

6.2 The safety of the commercial unit's users relies on the EA's flood warning protocols. The risk of flooding from tidal sources is dependent on the prediction of high tides in combination with atmospheric conditions generating a surge event. Given the likely predictable nature of such events potentially coinciding, flood warnings could be issued within a sufficient timeframe to allow site users to prepare for flooding, protect their property and evacuate if necessary.

6.3 Consideration should be given to the construction of the new commercial units at ground floor level in order to mitigate the impact from inundation. Flood resilient design should be implemented where practicable, for instance; raising threshold levels above the external ground level, the use of flood doors, self-sealing air vents, raised electrical sockets, concrete or tiled flooring and the use of retrofitted anti-flood valves on all external drainage connections could be used to protect properties in the event of flooding and minimise the potential for damage.

7.0 OFF SITE IMPACT

7.1 Proposal plans show that there will be no change in the impermeable area following the building conversion. No increase is therefore expected in the offsite surface water risk as a result of the development..

7.2 The proposals demonstrate that overall flood risk at the site, and to neighbouring and downstream properties, will not be adversely affected due to the development. The existing surface water flood risk at the site is considered to be low and the redevelopment of the site does not affect this risk classification.

8.0 RESIDUAL RISKS

8.1 Residual risk stems from a flood event that causes inundation of the site, most likely due to a high tide in combination with a tidal surge event. In such an event the safety of the commercial unit's users relies on the EA's flood warning protocols, which could be issued within a sufficient timeframe to allow site users to evacuate if necessary.

8.2 Residual risk also stems from a failure of the sewerage network infrastructure due to structural damage or blockage, however this risk is considered to be low.

8.3 The assumed raised thresholds of the building, and in particular the residential units, in relation to the surrounding external ground levels provides additional mitigation to residual risk, as potential overland conveyance routes from a minor flood event should follow the existing topography around the site along the footpath to lower lying areas off site.

9.0 CONCLUSIONS

9.1 The site has been confirmed through EA flood data to fall within Flood Zone 3. This report has demonstrated that the proposals for the redevelopment of the site can be considered appropriate for the Flood Zone, as laid out in the NPPF and the PPG, providing the LPA consider that the Sequential Test criteria has been met.

9.2 The existing foul sewer connections are to be retained.

9.3 Information from the EA's online mapping data shows that the area of Worthing containing the site is not located within a groundwater Source Protection Zone (SPZ). Infiltration drainage is not anticipated as the surface existing water management of the building is to be maintained and there is no external space in which to install infiltration SuDS measures.

9.4 Tidal flooding is the primary source of flood risk, while other sources of flooding are assessed in this report as being low or very low risk.

9.5 The impermeable area of the site will remain unchanged post-development. This results in no adverse impact on the surface water flood risk to neighbouring sites.

9.6 Residual risk is limited to flood events or infrastructure failure causing overland flows to be established from sewer surcharging and potential overland flows, or from a tidal event of sufficient magnitude to inundate the site.

9.7 The future site users and management are recommended to sign up to the EA's Flood Warnings Direct scheme to be advised of possible flooding in the area and to act accordingly. The tidal nature of the flood risk provides the opportunity for advanced warning of potential flooding through weather and tidal forecasting.

9.8 This report has identified measures that can mitigate the level of flood risk to the development and neighbouring properties and shows that the proposals for the redevelopment of the 11 Montague Place site can be successfully implemented and managed sustainably with no increase in risk to future users and neighbouring properties in regard to flooding from all sources over the expected lifetime of the development.

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APPENDIX A – TOPOGRAPHICAL SURVEY

NOTES
SURVEY IS BASED ON OS GRID SYSTEM
ORIGINATING FROM STATION 1
@ E 514823.803, N 102380.991, RL 4.936

Every effort has been made to survey the area as indicated. Where detail is inaccessible or obscured from view it has been deemed unable to survey.

LAYER INFORMATION

0	EMPTY
Bank	Bottom of bank arrows
Bottom of Bank	Bottom of bank / slope
BT	Telecom box and manholes
Buildinglines	Building outline
Edge of Concrete	Edge of concrete surface
Edge of Road	Edge of road surface
External Steps	External Step lines
Fenceline	Guardrails, fence and Boundary lines
Flow	Waste water flow
Footpath	Edge of footpath or surface changes
Gardenline	Edge of flowerbeds and garden surface changes
Gate	Gate and swing lines
Gully	Water drainage
Hedgeline	Edges of significant hedges
Kerbline	Front kerblines
Lamp Post	Lamp posts and lighting
Manhole	Manholes and utility covers
Overhead Cables	Overhead cables and utility poles
Plant	Significant ventilation and external plant
Road Markings	Significant road markings
Roofline	Edges of roofs, ridges and valley lines
Scrubline	Edges of dense or overgrown foliage
Sign Post	Sign posts and street signs
Spotlevels	Point elevations
Spotlevels text	Point elevations text
Survey Stations	Control and reference survey stations
Text	Notation
Top and Back of Kerb	Top and back line of kerb
Top of Bank	Top of bank line
Trees	Tree bore and spread
Unclassified Structure	Other structures
Wall	Walls

Line types and Symbols

Building Lines
Rooflines
Wall Lines
Wall Hatching
Furniture
Kitchen Fixtures
Plant
Gully
Fence
Steps
Metal
Spotlevel
Windows
Doors
Radiator
Sanitary
Soffit
Beams
Skylights
Ceiling Slope
Plinths / Platforms
Stairs

Control Stations

Co-ordinates in OSGB

Point Number	Easting	Northing	Elevation	Description
Stn1	514823.803	102380.991	4.936	HILTI NAIL
Stn2	514821.364	102406.630	4.867	HILTI NAIL

Orientation: North

Rev.	Date	Description

Client: Kelmend Murataj & Patrick Cloherty

SeSurveying

Drawing Title: Topographical Survey and Ground Floor Plan

Job Title: No11 Montague Place Worthing BN11 3BG

Scale	Date	Drawn	Job No.	Drawing No.	Rev.
1:50 @ A1	14/03/25	MF/TP	008 03 25	001	-
	Surveyed by: AR	Checked: SE			

Scale Bar (meters) 1:50

0 5 10

NOTES
SURVEY IS BASED ON OS GRID SYSTEM
ORIGINATING FROM STATION 1
@ E 514823.803, N 102380.991, RL 4.936

Every effort has been made to survey the area as indicated. Where detail is inaccessible or obscured from view it has been deemed unable to survey.

LAYER INFORMATION

0	EMPTY
Bank	Downhill bank arrows
Bottom of Bank	Bottom of bank / slope
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Unclassified Structure	Other structures
Wall	Walls

Line types and Symbols

Building Lines
Rooflines
Top & Back of Kerb
Edge of Surface / Footpath
Edge of Road
Edge of Concrete
Top of bank
Bottom of bank
Fence / Handrail
Overhead Cables
Garden Line
Scrub Line
Gullies / Waste Water
Man holes & Flow
Trees
Spot Levels
Road Markings
Hedge Line
Walls
Steps
Plant
Gates

Control Stations

Co-ordinates in OSGB

Point Number	Easting	Northing	Elevation	Description
Sm1	514823.803	102380.991	4.936	HILTI NAIL
Sm2	514821.364	102406.620	4.867	HILTI NAIL

Orientation

North

Rev.	Date	Description

Client
Kelmend Murataj & Patrick Cloherty

SeSurveying

Drawing Title
Topographical Survey and FFL's

Job Title
No11 Montague Place Worthing BN11 3BG

Scale	Date	Drawn	Job No.	Drawing No.	Rev.
1:50 @ A1	14/03/25	MF/TP	008 03 25	002	-
	Surveyed by: AR	Checked: SE			

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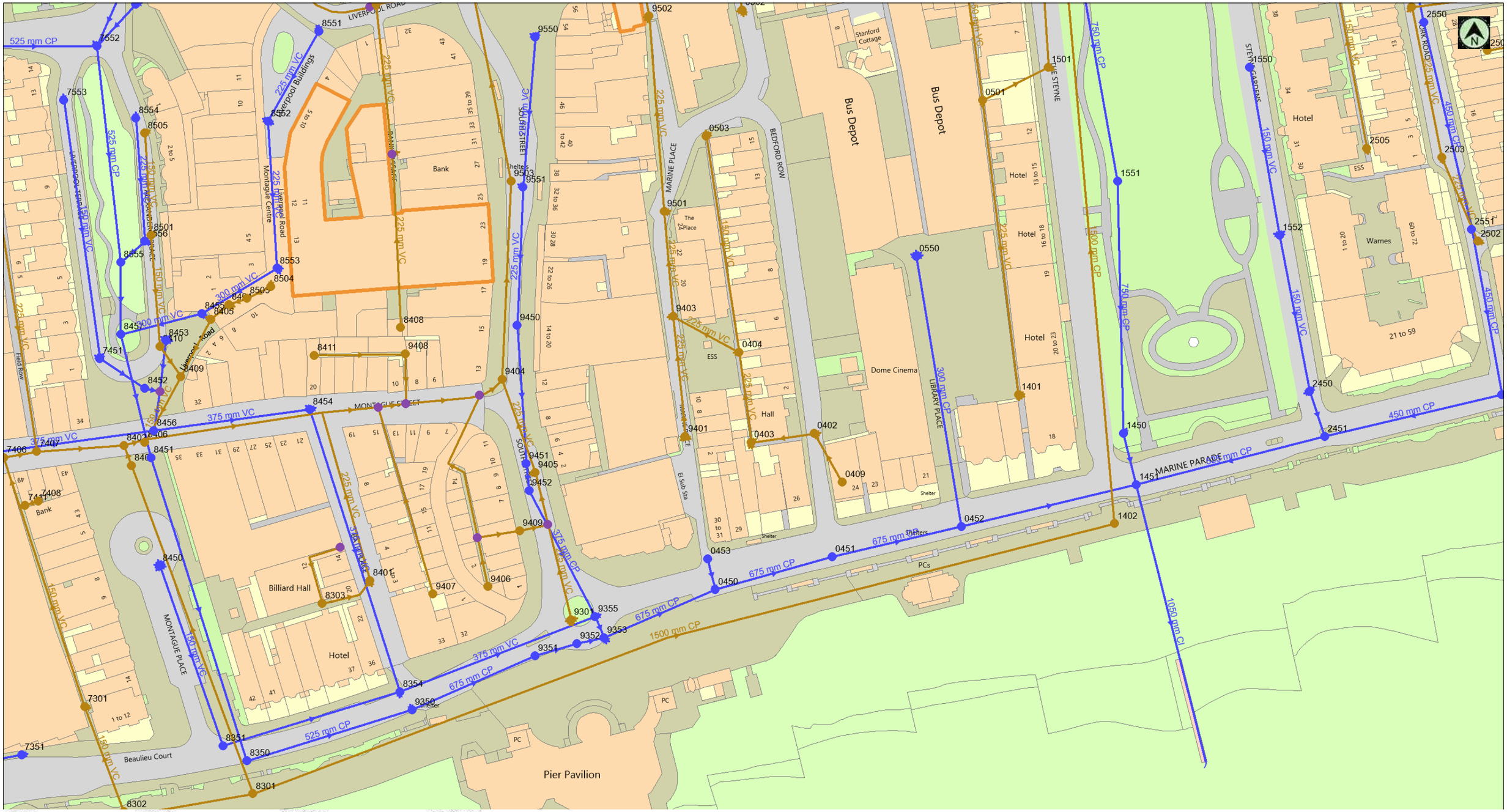
APPENDIX B – SOUTHERN WATER SEWER RECORDS

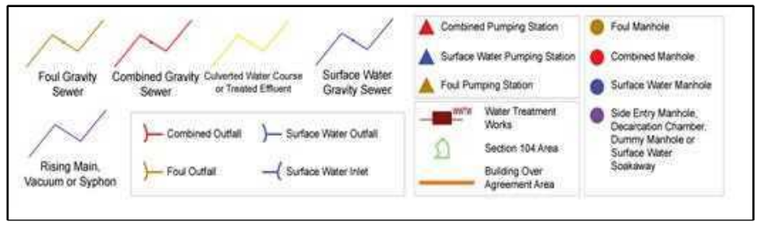


(c) Crown copyright and database rights 2022 Ordnance Survey 100031673 | Date: 15/03/22 | Scale: 1:1250 | Map Centre: 515017,102462 | Data updated: 17/01/22 | Our Ref: 806249 - 1 | Wastewater Plan A3

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2022 Ordnance Survey 100031673 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



oliverfk@hop.uk.com

Gospel Hall,Worthing

WATER for LIFE from Southern Water.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0402	F	4.67	2.45	
0403	F	4.67	2.31	
0404	F	4.53	2.00	
0409	F	4.67	2.45	
0501	F	5.08	1.50	
0502	F	5.27	2.60	
0503	F	5.66	3.54	
1401	F	4.08	2.15	
1402	F	5.46	-3.48	
1501	F	5.26	1.26	
2502	F	5.13	0.00	
2503	F	5.10	0.00	
2504	F	5.24	1.87	
2505	F	5.09	0.00	
2507	F	0.00	0.00	
7301	F	4.84	3.28	
7406	F	4.89	0.77	
7407	F	4.90	0.00	
7408	F	0.00	0.00	
7411	F	0.00	0.00	
8301	F	5.52	-3.03	
8302	F	5.54	3.60	
8303	F	0.00	0.00	
8401	F	4.67	0.00	
8402	F	4.92	0.00	
8403	F	4.97	0.00	
8404	F	5.05	2.79	
8405	F	5.07	2.70	
8406	F	4.89	0.00	
8408	F	0.00	0.00	
8409	F	4.96	2.37	
8410	F	5.14	2.45	
8411	F	0.00	0.00	
8501	F	5.08	2.78	
8502	F	5.58	1.17	
8503	F	5.05	2.83	
8504	F	5.10	3.22	
8505	F	5.24	3.16	
9301	F	5.11	2.26	
9401	F	4.64	2.22	
9403	F	4.94	1.78	
9404	F	4.40	0.60	
9405	F	4.27	0.99	
9406	F	0.00	0.00	
9407	F	0.00	0.00	
9408	F	0.00	0.00	
9409	F	0.00	0.00	
9501	F	5.23	1.64	
9502	F	5.44	1.38	
9503	F	0.00	0.00	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0450	S	4.43	1.59	
0451	S	0.00	0.00	
0452	S	0.00	0.00	
0453	S	0.00	0.00	
0550	S	5.29	3.58	
1450	S	4.90	0.00	
1451	S	4.93	0.00	
1550	S	5.29	0.00	
1551	S	5.00	3.19	
1552	S	5.16	4.00	
2450	S	4.96	3.73	
2451	S	4.96	0.00	
2452	S	4.91	1.71	
2550	S	5.19	2.34	
2551	S	5.12	1.94	
7351	S	5.19	3.44	
7451	S	6.08	4.33	
7552	S	5.50	3.52	
7553	S	6.86	5.38	
8350	S	5.00	2.24	
8351	S	0.00	0.00	
8354	S	4.98	3.07	
8450	S	4.83	3.67	
8451	S	4.91	0.00	
8452	S	5.24	3.86	
8453	S	5.05	3.86	
8454	S	4.63	3.35	
8455	S	5.08	0.00	
8456	S	4.89	3.63	
8457	S	0.00	0.00	
8550	S	5.54	3.79	
8551	S	5.60	4.14	
8552	S	5.47	4.05	
8553	S	5.11	3.67	
8554	S	5.25	3.63	
8555	S	5.29	0.00	
8556	S	5.04	3.46	
9350	S	4.86	1.95	
9351	S	4.79	1.81	
9352	S	4.66	1.81	
9353	S	4.57	1.73	
9355	S	4.65	1.94	
9450	S	4.50	0.00	
9451	S	4.37	2.45	
9452	S	0.00	0.00	
9550	S	5.07	3.49	
9551	S	4.72	3.06	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

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CONSULTING CIVIL AND STRUCTURAL ENGINEERS

APPENDIX C – EA FLOOD DATA

Flood risk assessment data

Location of site: 11 Montague Place, Worthing, BN11 3BG
Document created on: 25 March 2025
This information was previously known as a product 4.
Customer reference number: SSD399934

Map showing the location that flood risk assessment data has been requested for.

How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

> **We recommend that you work with a flood risk consultant to get your flood risk assessment.**

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- past floods
- flood defences and attributes

We do not have past flooding data for this location.

Please note that:

- flooding may have occurred that we do not have records for
- flooding can come from a range of different sources
- we can only supply flood risk data relating to floodng from rivers or the sea

You can contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

Surface water and other sources of flooding

Use the long term flood risk service to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

Or you can contact your Lead Local Flood Authority for further information.

Your Lead Local Flood Authority is West Sussex County.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Arun Coastal Model, 2012
Scenario(s): Defended tidal, Undefended tidal
Date: 20 August 2012

These models contain the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

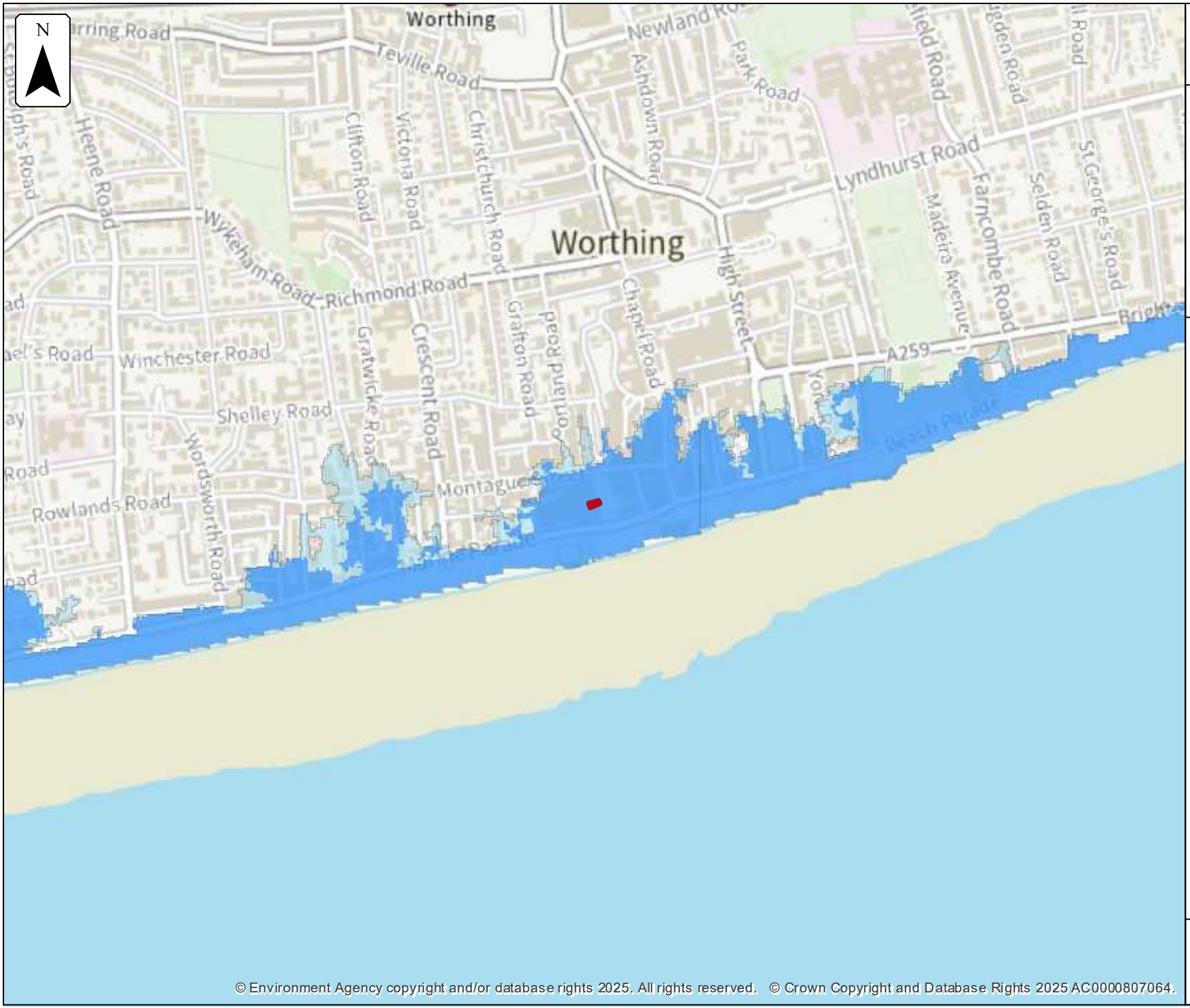
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

The flood zones are not currently being updated. The last update was in November 2023. Some of the flood zones may have changed, however all source data is included in the models below.



Environment Agency

Flood map for planning

Location (easting/northing)
514797/102388

Scale
1:10,000

Created
25 Mar 2025

Selected area
Flood zone 3
Flood zone 2

0 100 200 300 400 500
metres

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

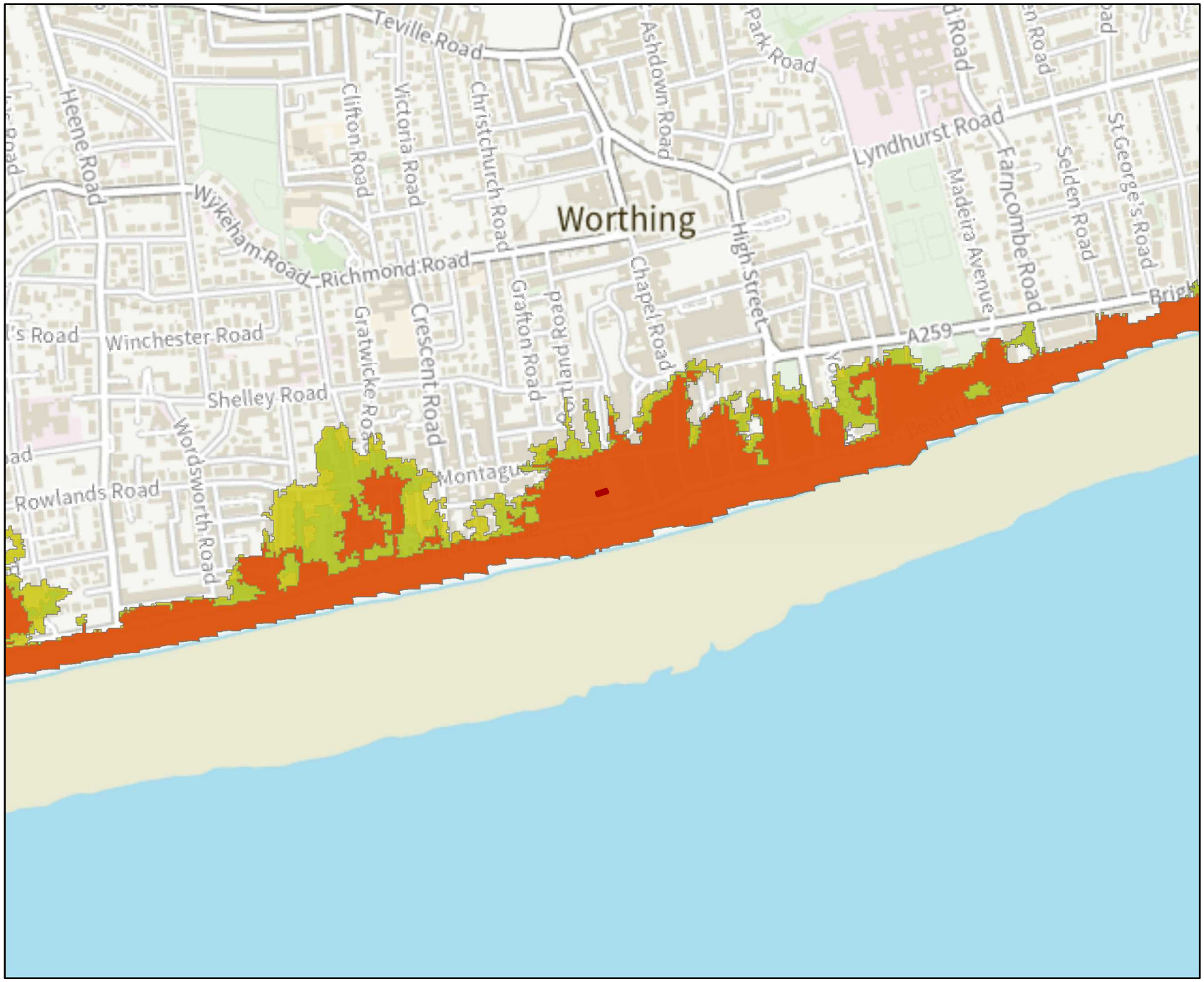
The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled tidal: risk of flooding from the sea where there are flood defences
- Defences removed modelled tidal: risk of flooding from the sea where flood defences have been removed

Modelled Flood Outlines (Defended Tidal). Centred BN11 3BG. Created 25/03/2025.



Environment Agency

N

Legend

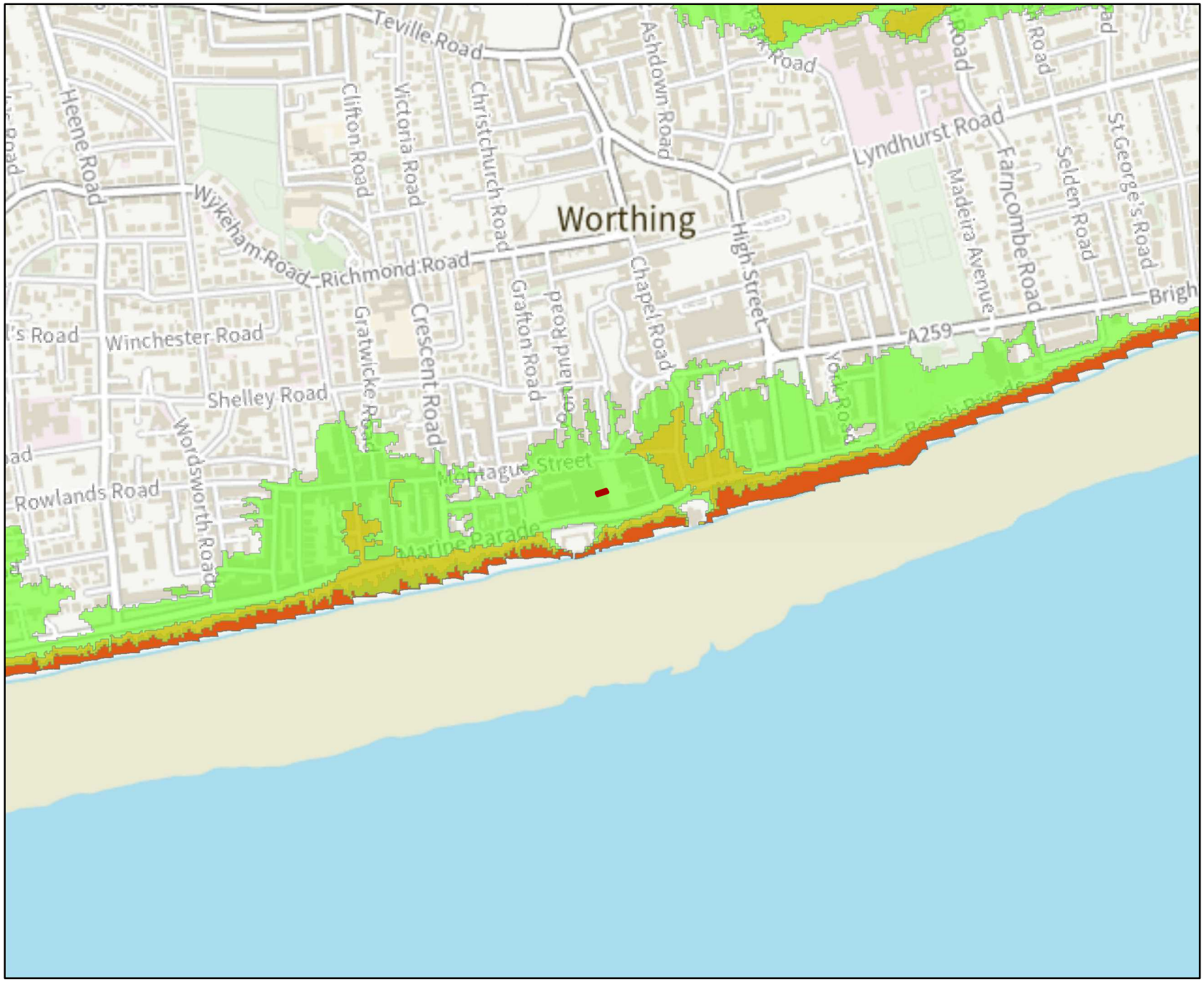
- Site Boundary
- 0.5% AEP (2012) (Defended)
- 0.5% AEP (2070) (Defended)
- 0.5% AEP (2115) (Defended)
- 0.1% AEP (2012) (Defended)

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

Modelled Flood Outlines (Undefended Tidal). Centred BN11 3BG. Created 25/03/2025.



Environment Agency

N

Legend

- Site Boundary
- 0.5% AEP (2012) (Undefended)
- 0.5% AEP (2070) (Undefended)
- 0.5% AEP (2115) (Undefended)
- 0.1% AEP (2012) (Undefended)

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

FRA Site Boundary & Node Points. Centred BN11 3BG. Created 25/03/2025.

Environment Agency

N

Legend

Site Nodes

Site Boundary

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:500

0 0.01 0.02

Kilometers

Product 4 Flood Risk Data Requested by: Andrew Keen

Site: 11 Montague Place, Worthing, BN11 3BG

Table 1: Water Levels: Tidal Undefended

	NGR		Modelled Flood Levels in Metres AOD Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	514789	102386	-	-	5.26	-
2	514798	102386	-	-	5.26	-
3	514804	102392	-	-	5.26	-

Table 2: Water Levels: Tidal Defended

	NGR		Modelled Flood Levels in Metres AOD Defended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	514789	102386	5.05	5.21	5.01	5.16
2	514798	102386	5.05	5.21	5.01	5.16
3	514804	102392	5.05	5.21	5.01	5.16

Table 3: Water Depths: Tidal Undefended

	NGR		Modelled Flood Depths in Metres Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	514789	102386	-	-	0.93	-
2	514798	102386	-	-	0.95	-
3	514804	102392	-	-	0.55	-

Table 4: Water Depths: Tidal Defended

	NGR		Modelled Flood Depths in Metres			
			Defended Annual Exceedance Probability			
Node Ref	**Eastings**	**Northings**	**0.5%**	**0.5% (2070)***	**0.5% (2115)***	**0.1%**
1	514789	102386	0.83	0.99	0.79	0.94
2	514798	102386	0.61	0.77	0.57	0.72
3	514804	102392	0.34	0.50	0.31	0.45

All levels taken from: Arun to Adur Coastal Modelling (2012), completed by JBA Consulting.

Produced on: 25/03/2025

*** The flood risk data provided is based on existing EA hydraulic models with an allowance for climate change. Please note the climate change allowances provided are not up to date. These were updated on 27 July 2021.**

You should refer to 'Flood risk assessments: climate change allowances' for the most up to date allowances. You will need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

There is no additional information or health warnings for these levels/depths or the model from which they have been produced.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is West Sussex County.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

Contact the Solent and South Downs Environment Agency team at ssdenquiries@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for

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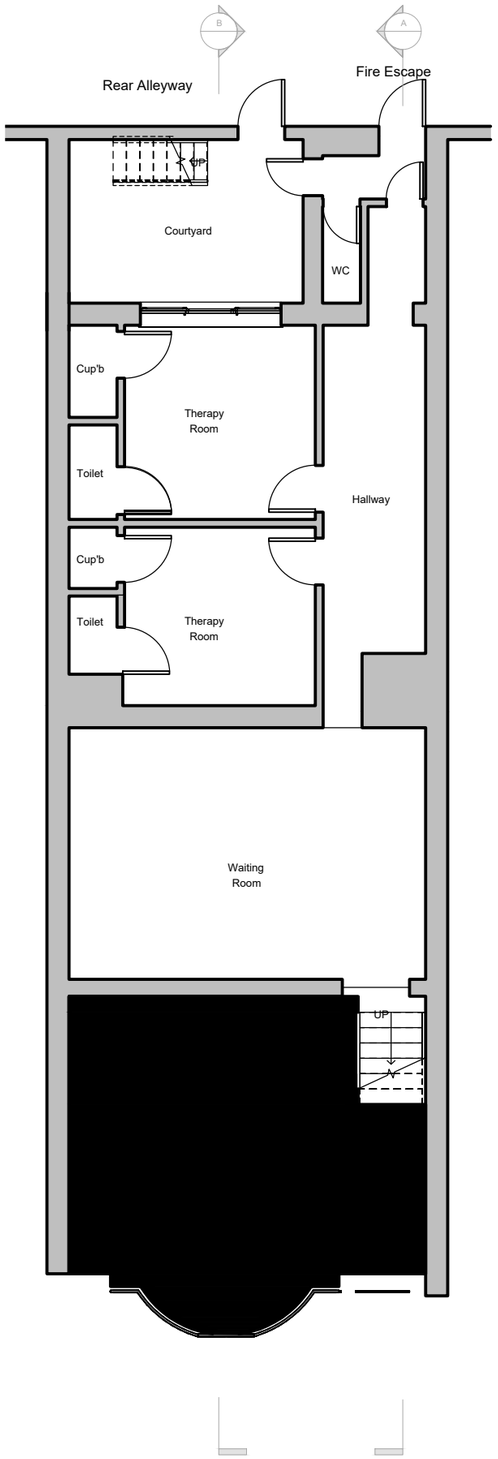
APPENDIX D – DEVELOPMENT PROPOSALS

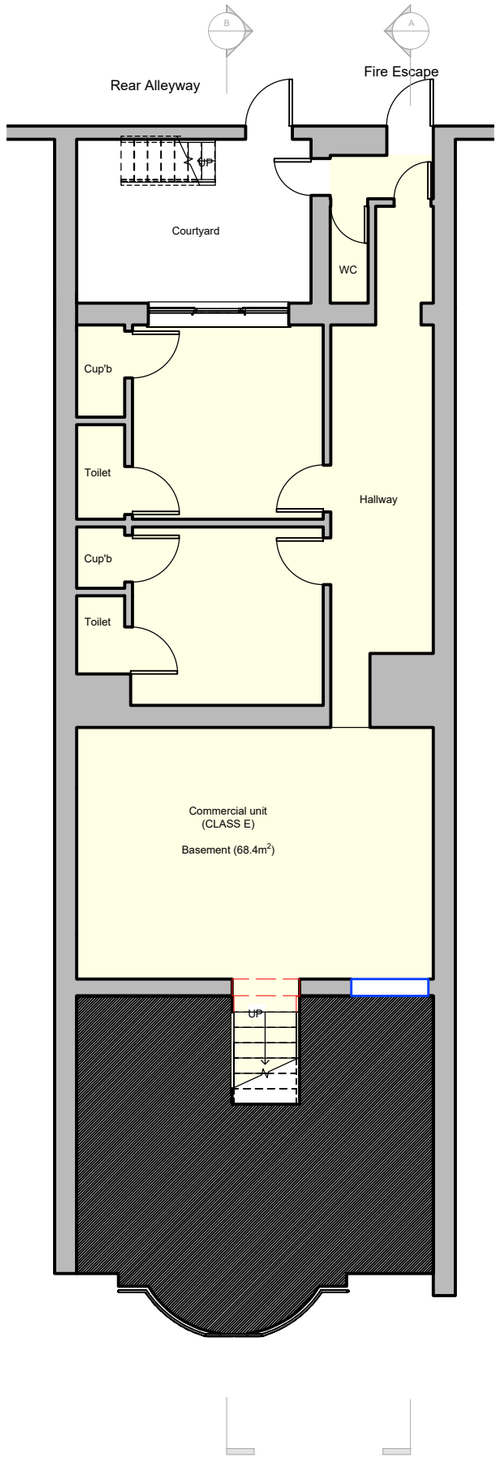
EXISTING LOWER GROUND FLOOR PLAN

SCALE 1:100



PROPOSED LOWER GROUND FLOOR PLAN

SCALE 1:100



EXISTING WALLS

DEMOLISHED WALLS

NEW WALLS

NOTES:

Plans drawn are indicative. Plans are not created with accurate surveying equipment and methods, it is therefore likely that discrepancies in dimension may be discovered.
Check all dimensions on site before any work commences.
All goods, material and workmanship must conform to current building regulations, British standards and codes of practice.
Do not scale off this drawing except for planning purposes.
Drawing to be printed in A3.

0 0.5 1 2 5m

Scale 1:100

PROJECT: 11 MONTAGUE PLACE - WORTHING - BN11 3BG

CLIENT: CONNAUGHT HOUSE (MARINE PARADE) LIMITED

DESIGN: JONIDA MURATAJ

TITLE: EXISTING / PROPOSED LOWER GROUND FLOOR PLAN

DATE: 10.01.2025

SCALE: 1:100 @ A3

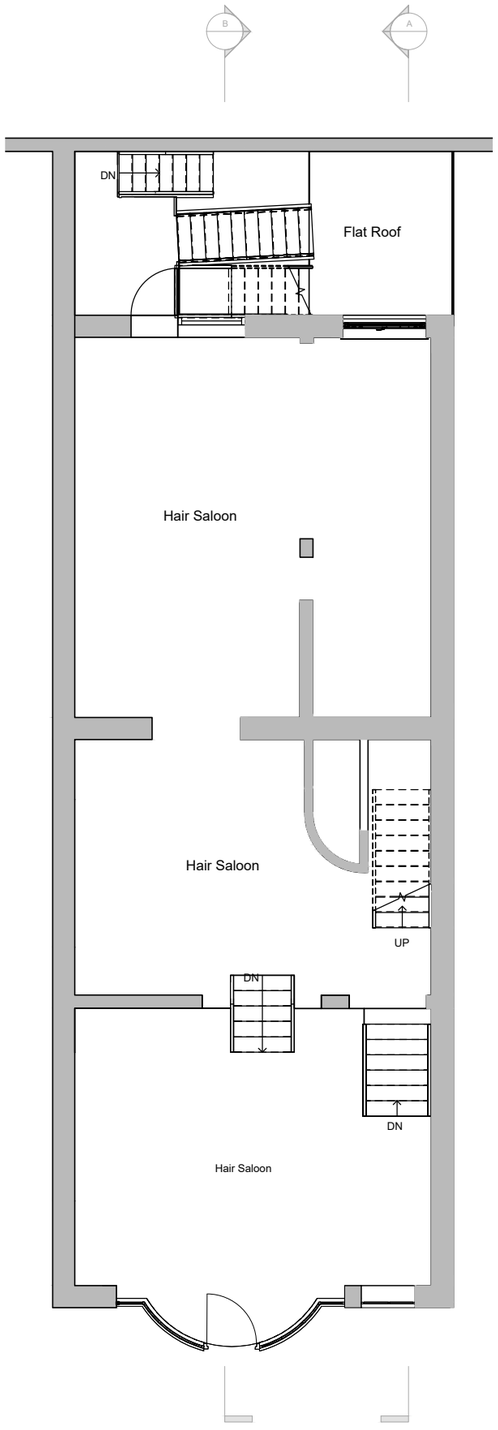
STATUS: FULL-APPLICATION

REV: A

DRAWING NO: A-02

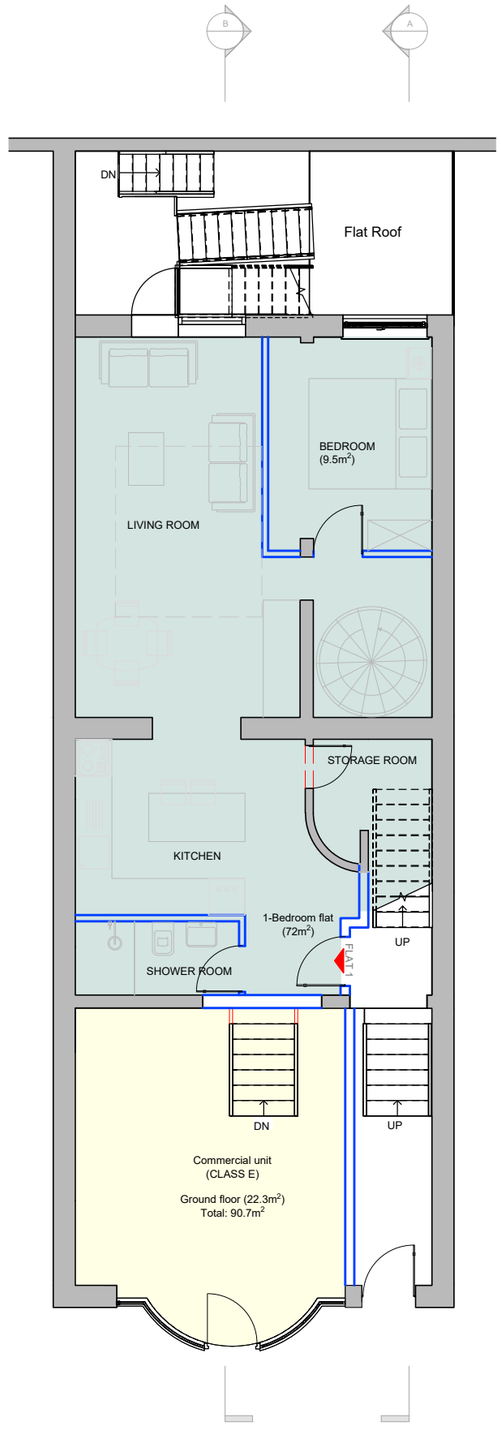
EXISTING GROUND FLOOR PLAN

SCALE 1:100



PROPOSED GROUND FLOOR PLAN

SCALE 1:100



EXISTING WALLS

DEMOLISHED WALLS

NEW WALLS

NOTES:

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Drawing to be printed in A3.

0 0.5 1 2 5m

Scale 1:100

PROJECT: 11 MONTAGUE PLACE - WORTHING - BN11 3BG

CLIENT: CONNAUGHT HOUSE (MARINE PARADE) LIMITED

DESIGN: JONIDA MURATAJ

TITLE: EXISTING / PROPOSED GROUND FLOOR PLAN

DATE: 10.01.2025

SCALE: 1:100 @ A3

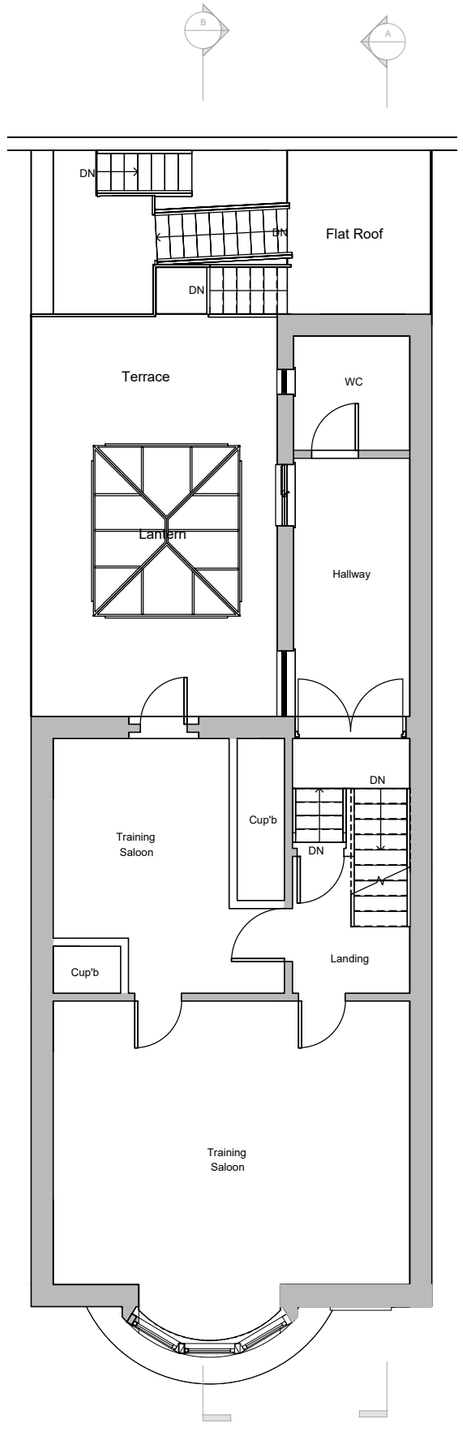
STATUS: FULL-APPLICATION

REV: A

DRAWING NO: A-03

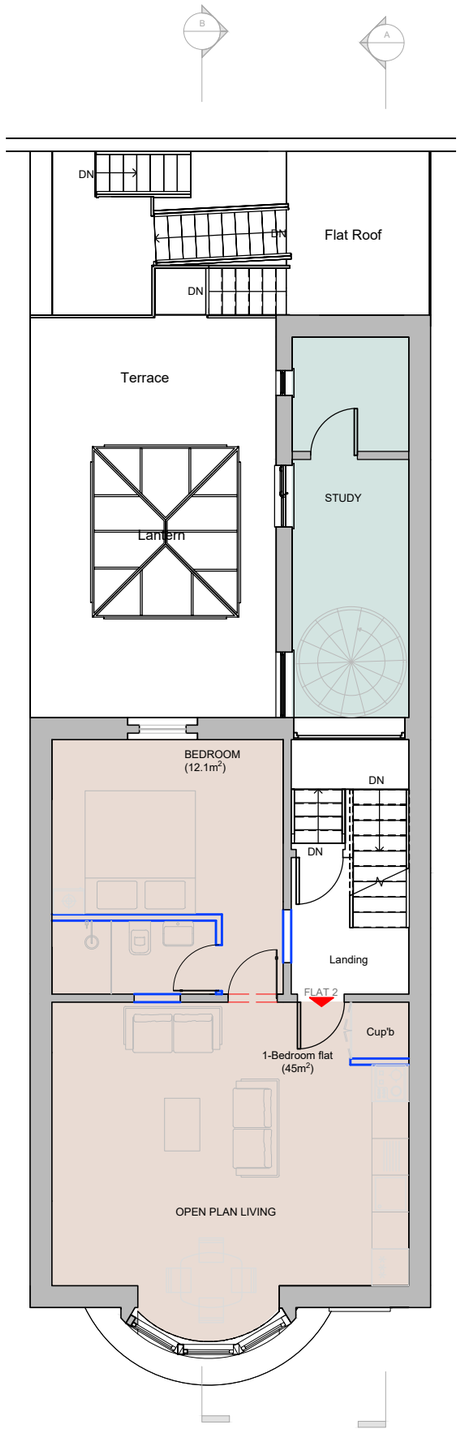
EXISTING FIRST FLOOR PLAN

SCALE 1:100



PROPOSED FIRST FLOOR PLAN

SCALE 1:100



EXISTING WALLS

DEMOLISHED WALLS

NEW WALLS

NOTES:

Plans drawn are indicative. Plans are not created with accurate surveying equipment and methods, it is therefore likely that discrepancies in dimension may be discovered.
Check all dimensions on site before any work commences.
All goods, material and workmanship must conform to current building regulations, British standards and codes of practice.
Do not scale off this drawing except for planning purposes.
Drawing to be printed in A3.

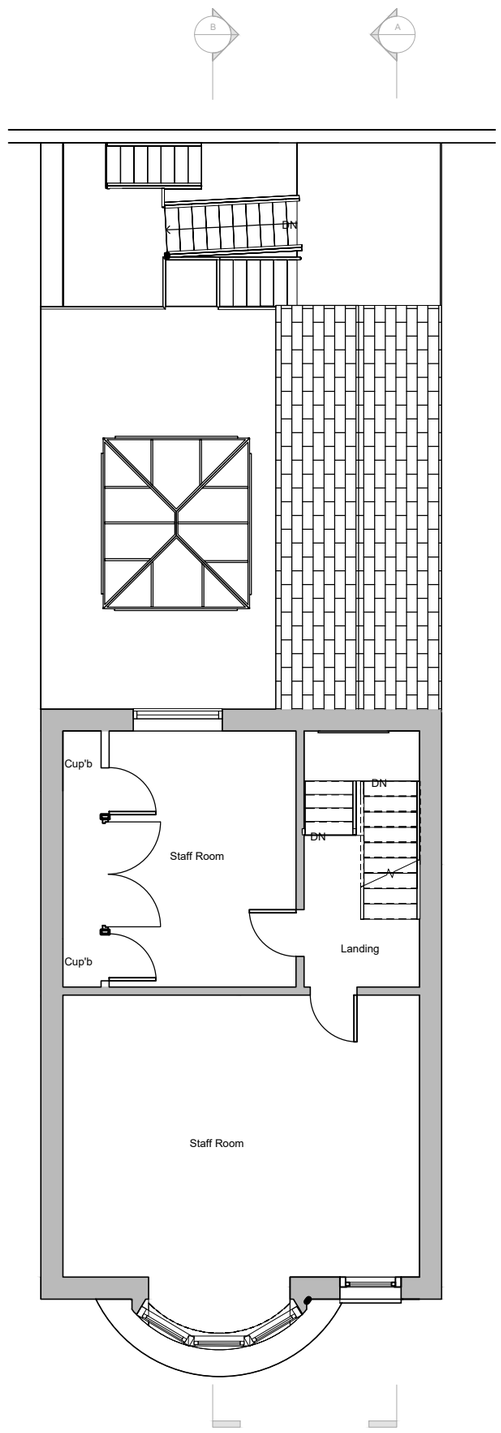
0 0.5 1 2 5m

Scale 1:100

PROJECT:	11 MONTAGUE PLACE - WORTHING - BN11 3BG
CLIENT:	CONNAUGHT HOUSE (MARINE PARADE) LIMITED
DESIGN:	JONIDA MURATAJ
TITLE:	EXISTING / PROPOSED FIRST FLOOR PLAN
DATE:	10.01.2025
SCALE:	1:100 @ A3
STATUS:	FULL-APPLICATION
REV:	A
DRAWING NO:	A-04

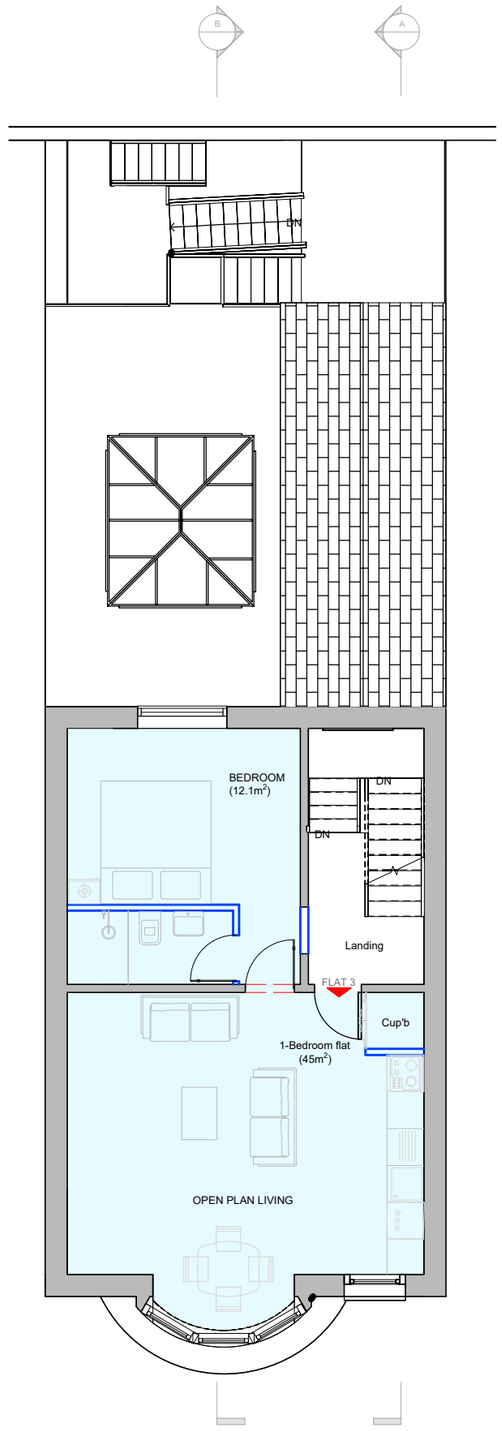
EXISTING SECOND FLOOR PLAN

SCALE 1:100



PROPOSED SECOND FLOOR PLAN

SCALE 1:100



EXISTING WALLS

DEMOLISHED WALLS

NEW WALLS

NOTES:

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Check all dimensions on site before any work commences.
All goods, material and workmanship must conform to current building regulations, British standards and codes of practice.
Do not scale off this drawing except for planning purposes.
Drawing to be printed in A3.

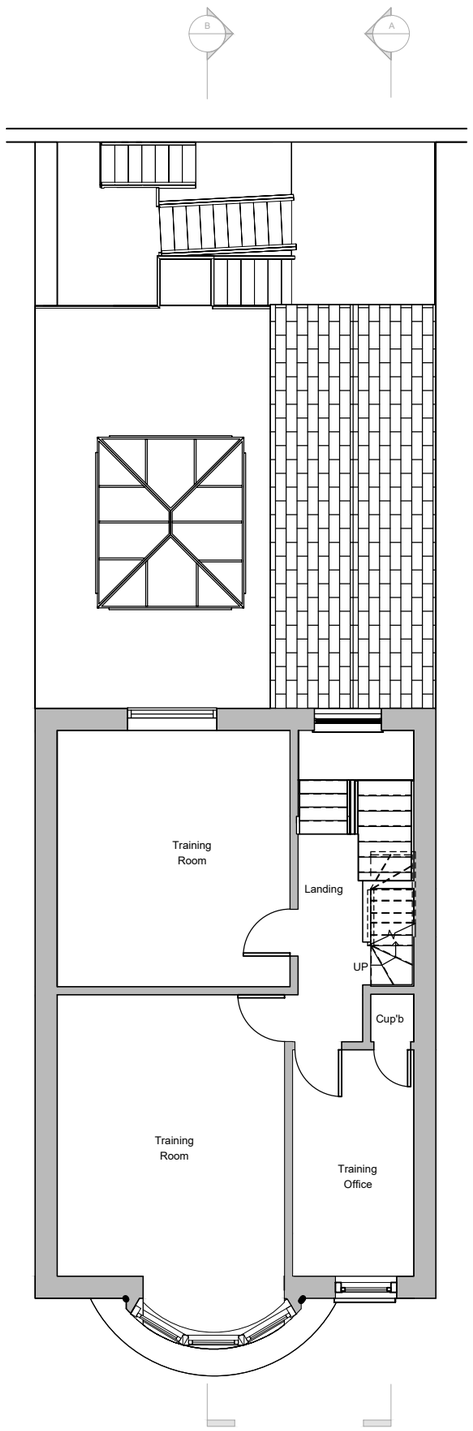
0 0.5 1 2 5m

Scale 1:100

PROJECT:	11 MONTAGUE PLACE - WORTHING - BN11 3BG
CLIENT:	CONNAUGHT HOUSE (MARINE PARADE) LIMITED
DESIGN:	JONIDA MURATAJ
TITLE:	EXISTING / PROPOSED SECOND FLOOR PLAN
DATE:	10.01.2025
SCALE:	1:100 @ A3
STATUS:	FULL-APPLICATION
REV:	A
DRAWING NO:	A-05

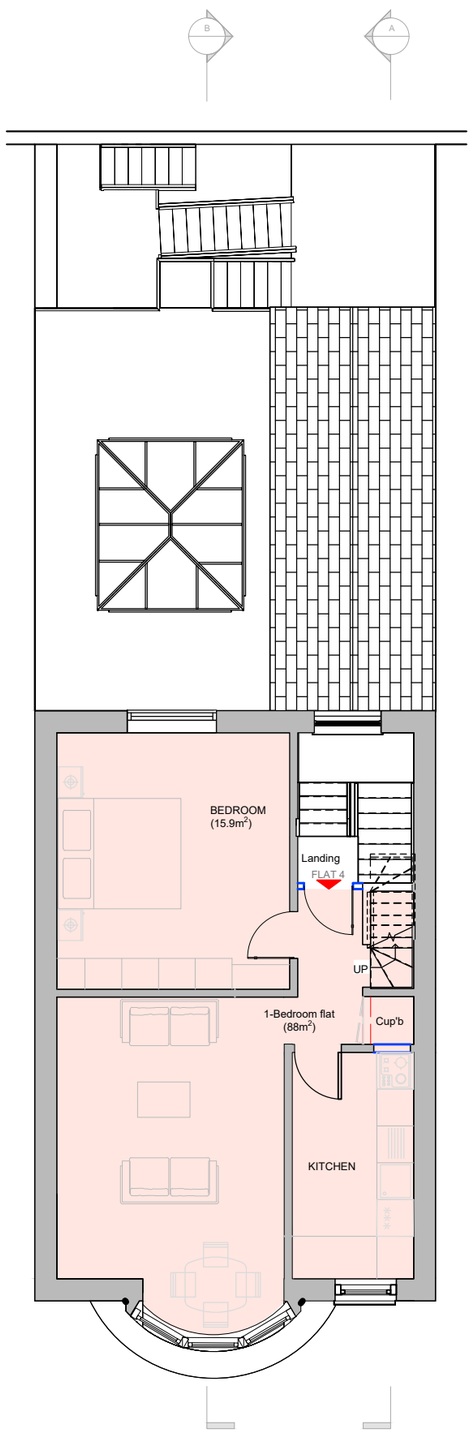
EXISTING THIRD FLOOR PLAN

SCALE 1:100



PROPOSED THIRD FLOOR PLAN

SCALE 1:100



EXISTING WALLS

DEMOLISHED WALLS

NEW WALLS

NOTES:

Plans drawn are indicative. Plans are not created with accurate surveying equipment and methods, it is therefore likely that discrepancies in dimension may be discovered.
Check all dimensions on site before any work commences.
All goods, material and workmanship must conform to current building regulations, British standards and codes of practice.
Do not scale off this drawing except for planning purposes.
Drawing to be printed in A3.

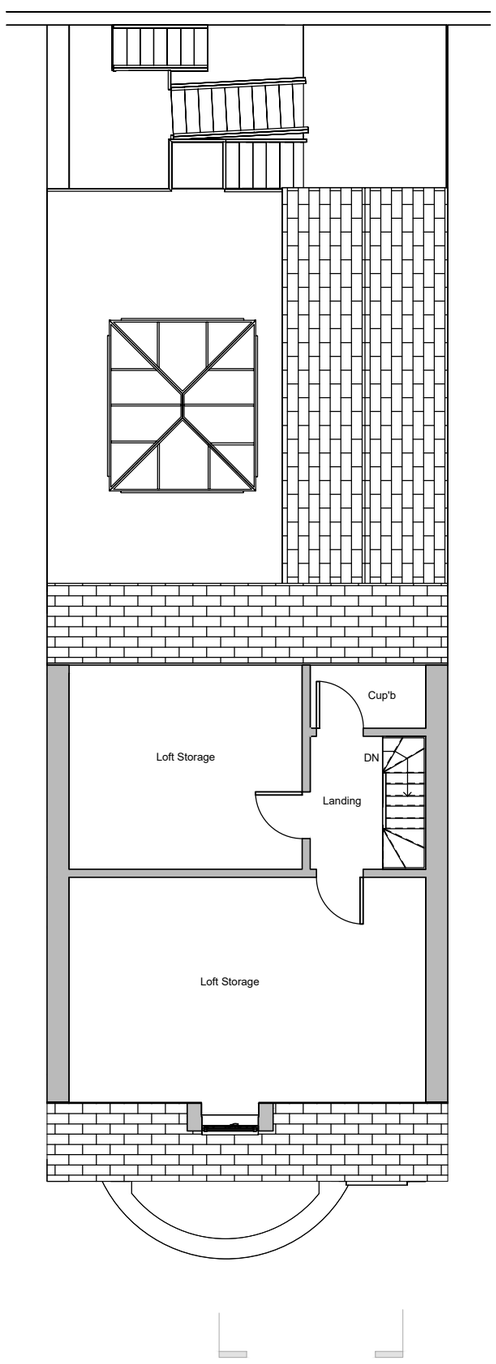
0 0.5 1 2 5m

Scale 1:100

PROJECT:	11 MONTAGUE PLACE - WORTHING - BN11 3BG
CLIENT:	CONNAUGHT HOUSE (MARINE PARADE) LIMITED
DESIGN:	JONIDA MURATAJ
TITLE:	EXISTING / PROPOSED THIRD FLOOR PLAN
DATE:	10.01.2025
SCALE:	1:100 @ A3
STATUS:	FULL-APPLICATION
REV:	A
DRAWING NO:	A-06

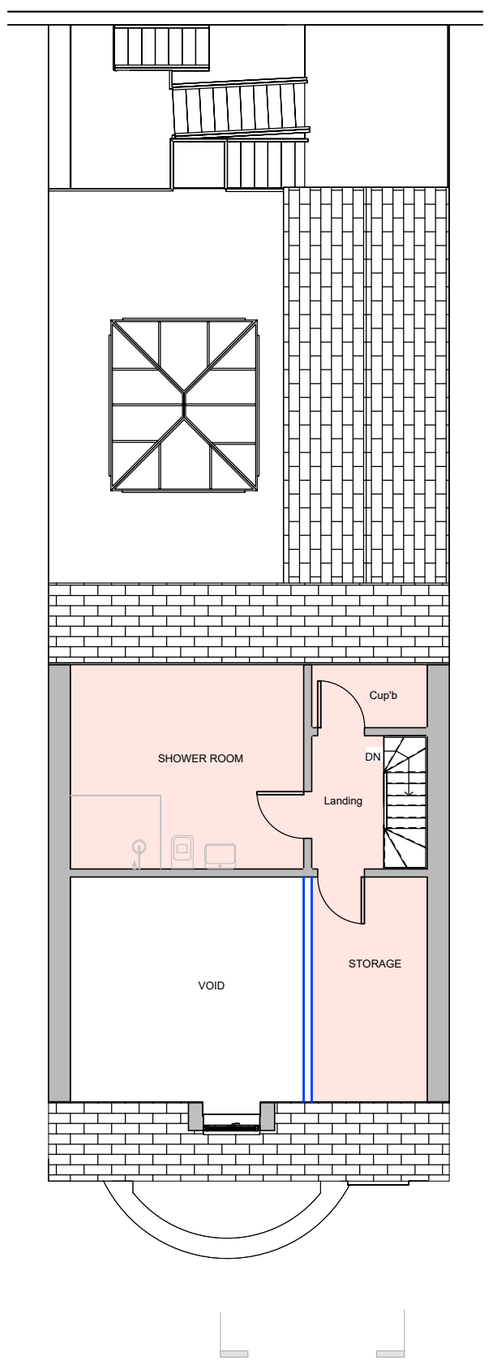
EXISTING LOFT PLAN

SCALE 1:100



PROPOSED LOFT PLAN

SCALE 1:100



EXISTING WALLS

DEMOLISHED WALLS

NEW WALLS

NOTES:

Plans drawn are indicative. Plans are not created with accurate surveying equipment and methods, it is therefore likely that discrepancies in dimension may be discovered.
Check all dimensions on site before any work commences.
All goods, material and workmanship must conform to current building regulations, British standards and codes of practice.
Do not scale off this drawing except for planning purposes.
Drawing to be printed in A3.

0 0.5 1 2 5m

Scale 1:100

PROJECT:	11 MONTAGUE PLACE - WORTHING - BN11 3BG
CLIENT:	CONNAUGHT HOUSE (MARINE PARADE) LIMITED
DESIGN:	JONIDA MURATAJ
TITLE:	EXISTING / PROPOSED LOFT PLAN
DATE: 10.01.2025	SCALE: 1:100 1:50 @ A3
STATUS: FULL-APPLICATION	
REV: A	DRAWING NO: A-07