



Norfolk House, 1-2 Beach Road, Littlehampton, BN17
5HZ

Flood Risk Assessment

For Tony Rutherford
KRS.0515.005.R.001.A
October 2022

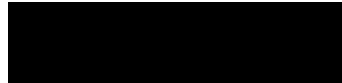
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Norfolk House, 1-2 Beach Road, Littlehampton, BN17 5HZ

Project	Flood Risk Assessment
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Status	Final
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EXECUTIVE SUMMARY

The Site would be expected to remain dry in all but the most extreme conditions. The consequences of flooding are acceptable, and the development would be in accordance with the requirements of the National Planning Policy Framework (NPPF). The Proposed Development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF.

The Proposed Development should not therefore be precluded on the grounds of flood risk or drainage.

1.0 INTRODUCTION

1.1 Background

This Flood Risk Assessment (FRA) has been prepared by KRS Enviro at the request of Tony Rutherford to support a planning application for two on bedrooms flats on the first floor (“the Proposed Development”) at Norfolk House, 1-2 Beach Road, Littlehampton, BN17 5HZ (“the Site”).

This FRA has been carried out in accordance with guidance contained in the National Planning Policy Framework (NPPF)¹, associated Planning Practice Guidance on flood risk and coastal change² (PPG) and the PPG ‘Site-specific flood risk assessment checklist. This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

It is recognised that developments which are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. The development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues.

1.2 National Planning Policy Framework (NPPF)

One of the key aims of the NPPF is to ensure that flood risk is taken into account at all stages of the planning process; to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk.

It advises that where new development is exceptionally necessary in areas of higher risk, this should be safe, without increasing flood risk elsewhere, and where possible, reduce flood risk overall. A risk-based approach is adopted at stages of the planning process, applying a source pathway receptor model to planning and flood risk. To demonstrate this, an FRA is required and should include:

- whether a Proposed Development is likely to be affected by current or future flooding from all sources;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- if necessary, provide the evidence to the Local Planning Authority (LPA) that the Sequential Test can be applied; and
- whether the development will be safe and pass part c) of the Exception Test if this is appropriate.

The report findings are based upon professional judgement and are summarised below with detailed recommendations provided at the end of the report. The report includes rainfall data from the Flood Estimation Handbook (FEH) and hydrogeological information from the British

¹ Ministry for Housing, Communities and Local Government (2021) National Planning Policy Framework: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

² Communities and Local Government (2014) Planning Practice Guidance - Flood Risk and Coastal Change: <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

Geological Survey (BGS). The assessment will summarise and refer to these datasets in the text.

1.3 Report Structure

This FRA has the following report structure:

- Section 2 describes the location and the existing and Proposed Development;
- Section 3 outlines the flood risk to the existing and Proposed Development;
- Section 4 details the proposed surface water drainage for the Site and assesses the potential impacts of the Proposed Development on surface water drainage;
- Section 5 outlines the mitigation measures used to reduce the overall level of flood risk;
- Section 6 details the Sequential and Exception Tests; and
- Section 7 presents conclusions.

2.0 LOCATION & DEVELOPMENT DESCRIPTION

2.1 Site Location

The Site is located at Norfolk House, 1-5 Beach Road, Littlehampton, BN17 5HZ (see Figure 1).

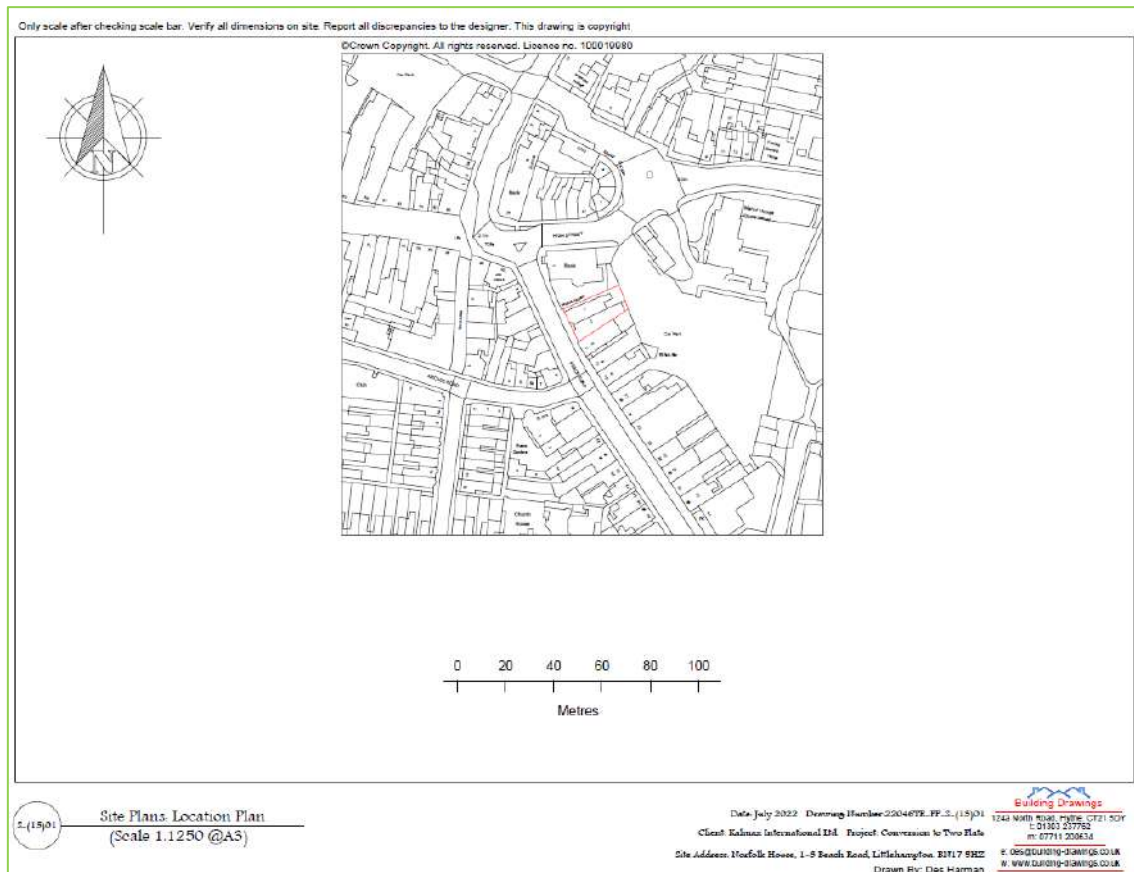


Figure 1 - Site Location

2.2 Existing Development

The existing Site is used for retail purposes on the ground floor, with offices on the first floor (see Appendix 1).

2.3 Proposed Development

It is understood the Proposed Development is to convert the first floor offices into two one bedroom flats with only the entrances being located on the ground floor (see Appendix 1). Further details with regard to the Proposed Development can be found in the accompanying information submitted with the planning application.

2.4 Ground Levels

The Site is relatively flat with a ground level of approximately of 2.80 meters Above Ordnance Datum (mAOD), as shown the Ordnance Survey Datum Digital Terrain Model (DTM).

2.5 Catchment Hydrology

The River Arun is located approximately 360m to the south east of the Site and English Channel is located approximately 750m to the south of the Site. There are no other watercourses evident on or within the Site.

2.6 Ground Conditions

The British Geological Survey (BGS) map³ shows that the bedrock deposits underneath the Site consist of the Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (undifferentiated) - chalk. The superficial deposits consist of River Terrace Deposits (undifferentiated) - sand, silt and clay and Raised Beach Deposits, 1 - sand and gravel.

Information from the National Soil Resources Institute⁴ details the Site area as being situated on freely draining slightly acid loamy soils.

³ https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.14476159.932338379.1655890995-1831306757.1655472887

⁴ <http://www.landis.org.uk/soilscapes/>

3.0 FLOOD RISK

3.1 Sources of Flooding

All sources of flooding have been considered, these are; fluvial (river) flooding, tidal (coastal) flooding, groundwater flooding, surface water (pluvial) flooding, sewer flooding and flooding from artificial drainage systems/infrastructure failure.

3.2 Environment Agency

Information regarding the current flood risk at the application Site and local flood defences has been obtained from the Environment Agency (see Appendix 2).

3.3 Historic Flooding

The Environment Agency data shows that the Site has not historically flooded. There are no other records of anecdotal information of flooding at the Site. The British Hydrological Society “Chronology of British Hydrological Event⁵” has no information on flooding within the vicinity of the Site. No other historical records of flooding for the Site have been recorded.

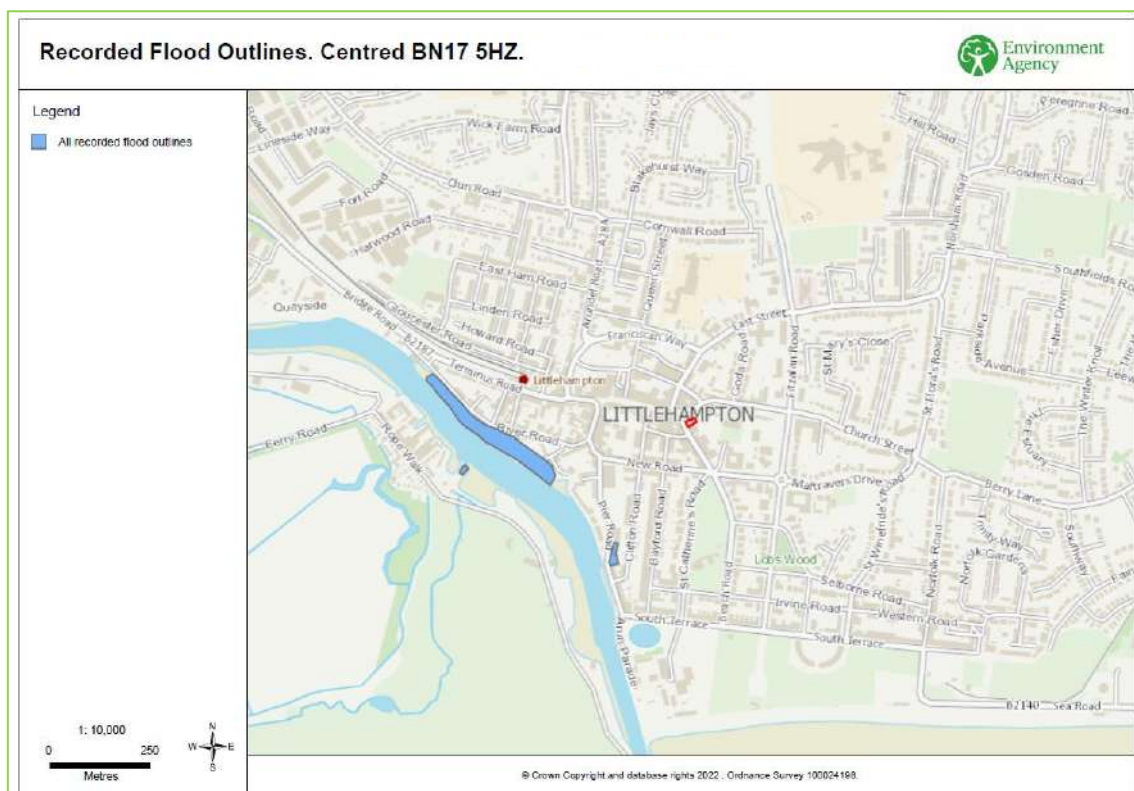


Figure 2 - Environment Agency Historic Flood Map

3.4 Existing and Planned Flood Defence Measures

The Environment Agency have confirmed this location is currently protected by formal defences, to the south east of the Site, along the course of the River Arun, there is a flood

⁵ <https://cbhe.hydrology.org.uk/>

wall which is maintained by a private third party. Further property level protection measures will be used to protect the Site from flooding these are discussed in Section 5.0.

3.5 Environment Agency Flood Zones

A review of the Environment Agency’s Flood Zones indicates that the Site is located within Flood Zone 3 and therefore has a ‘high probability’ of flooding as shown in Figure 3. Flood Zone 3 has a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

The Flood Zones are the current best information on the extent of the extremes of flooding from rivers or the sea that would occur without the presence of flood defences, because these can be breached, overtopped and may not be in existence for the lifetime of the development. They show the worst case scenario.

The Environment Agency Flood Zones and acceptable development types are explained in Table 1. Table 1 shows that some development types are generally acceptable in Flood Zone 3.

It should be noted that the flats will be located on the first floor with only the entrances being located on the ground floor.

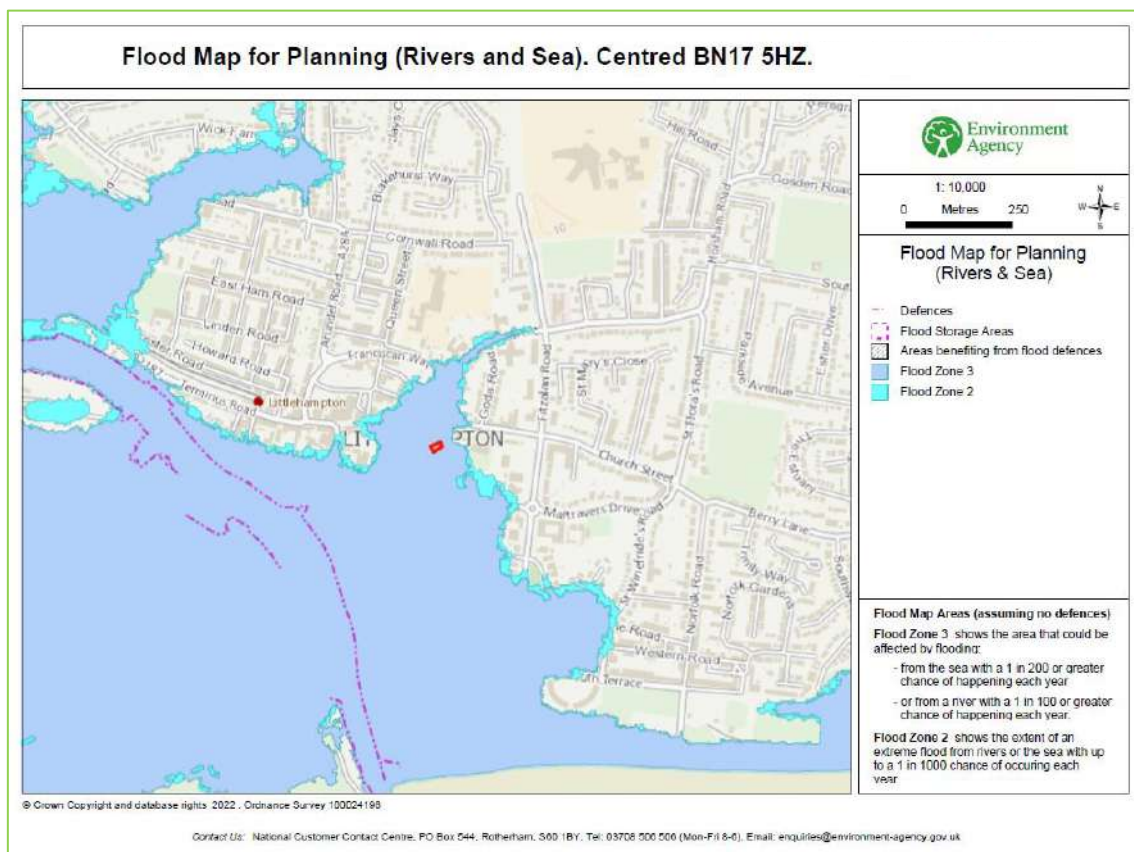


Figure 3 - Environment Agency Flood Zones

Table 1 - Environment Agency Flood Zones and Appropriate Land Use

Flood Zone	Probability	Explanation	Appropriate Land Use
Zone 1	Low	Less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)	All development types generally acceptable
Zone 2	Medium	Between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% 0.1%) in any year	Most development type are generally acceptable
Zone 3a	High	A 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year	Some development types not acceptable
Zone 3b	'Functional Floodplain'	Land where water has to be flow or be stored in times of flood. SFRAs should identify this zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1% flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes)	Some development types not acceptable

3.6 Flood Vulnerability

In the Planning Practice Guidance to the NPPF, appropriate uses have been identified for the Flood Zones. Applying the Flood Risk Vulnerability Classification in the Planning Practice Guidance to the NPPF, the proposed use is classified as 'more vulnerable'. Table 2 of this report and the Planning Practice Guidance state that 'more vulnerable' uses are appropriate within Flood Zone 3 after the completion of a satisfactory FRA.

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	✓	✗	Exception test required	✓
Zone 3b 'Functional Floodplain'	Exception test required	✓	✗	✗	✗

Key: ✓: Development is appropriate, ✗: Development should not be permitted.

3.7 Climate Change

Projections of future climate change, in the UK, indicate more frequent, short-duration, high intensity rainfall and more frequent periods of long duration rainfall. Guidance included within the NPPF recommends that the effects of climate change are incorporated into FRA's.

Recommended precautionary sensitivity ranges for peak rainfall intensities and peak river flows are outlined in the flood risk assessments: climate change allowances guidance⁶.

The flood risk assessments: climate change allowances guidance recommends that for 'more vulnerable' uses in Flood Zone 3 that the central allowances are used to assess climate change throughout the lifetime of the development which is 100 years.

Table 3 shows the peak river flow allowances by river catchment. Therefore, the fluvial design event for the Site is the 1 in 100 year (+26%) event. The increases in sea level due to climate change are shown in Table 4. The tidal design event for the site is the 1 in 200 year in 2122 event.

Table 3 - Peak River Flow Allowances by River Catchment

River Catchment	Allowance Category	2020s	2050s	2080s
Arun and Western Streams Management Catchment	Upper	+27%	+36%	+64%
	Higher	+16%	+19%	+36%
	Central	+11%	+13%	+26%

Table 4 - Sea Level Allowances by River Basin District for Each Epoch (mm per year)

River Catchment	Allowance Category	2000 to 2035	2036 to 2065	2066 to 2095	2096 to 2125
South east	Upper end	6.90	11.30	15.80	18.20
	Higher central	5.70	8.70	11.60	13.10

3.8 Fluvial (River) Flooding

The site is not located within the vicinity of fluvial flooding sources and the risk of fluvial flooding is considered to be **not significant**.

3.9 Tidal (Coastal) Flooding

The Site is located near to tidal flooding sources therefore, tidal flooding poses the primary flood risk to the Site.

Actual Risk

Flood defence measures provide protection against tidal flooding and reduce the flood risk to the Site. Tables 5 and 6 show the Environment Agency defended modelled data for the Site and Figure 4 shows the defended modelled flood outlines.

The Site is not located within the defended present day 1 in 200 year, 1 in 200 year in 2065 and 1 in 1000 year event flood outlines. The actual flood risk posed to the Site is low and is less than the 1 in 200 year in 2065 event. The Site will only be inundated with floodwater during the 1 in 200 year in 2115 flood event.

⁶ <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#high-allowances>

Table 5 - Environment Agency Defended Modelled Water Levels (mAOD)

Node Ref	Eastings	Northings	200	2000 in 2070	200 in 2115	1000
1	502940	102071	Null	Null	3.71	Null
2	502959	102080	Null	Null	3.79	Null
3	502947	102070	Null	Null	3.71	Null
4	502955	102074	Null	Null	3.65	Null
5	502944	102061	Null	Null	3.74	Null
6	502962	102072	Null	Null	3.79	Null

Table 6 - Environment Agency Defended Modelled Water Depths (m)

Node Ref	Eastings	Northings	200	2000 in 2070	200 in 2115	1000
1	502940	102071	Null	Null	1.33	Null
2	502959	102080	Null	Null	1.35	Null
3	502947	102070	Null	Null	1.24	Null
4	502955	102074	Null	Null	1.20	Null
5	502944	102061	Null	Null	1.30	Null
6	502962	102072	Null	Null	1.28	Null

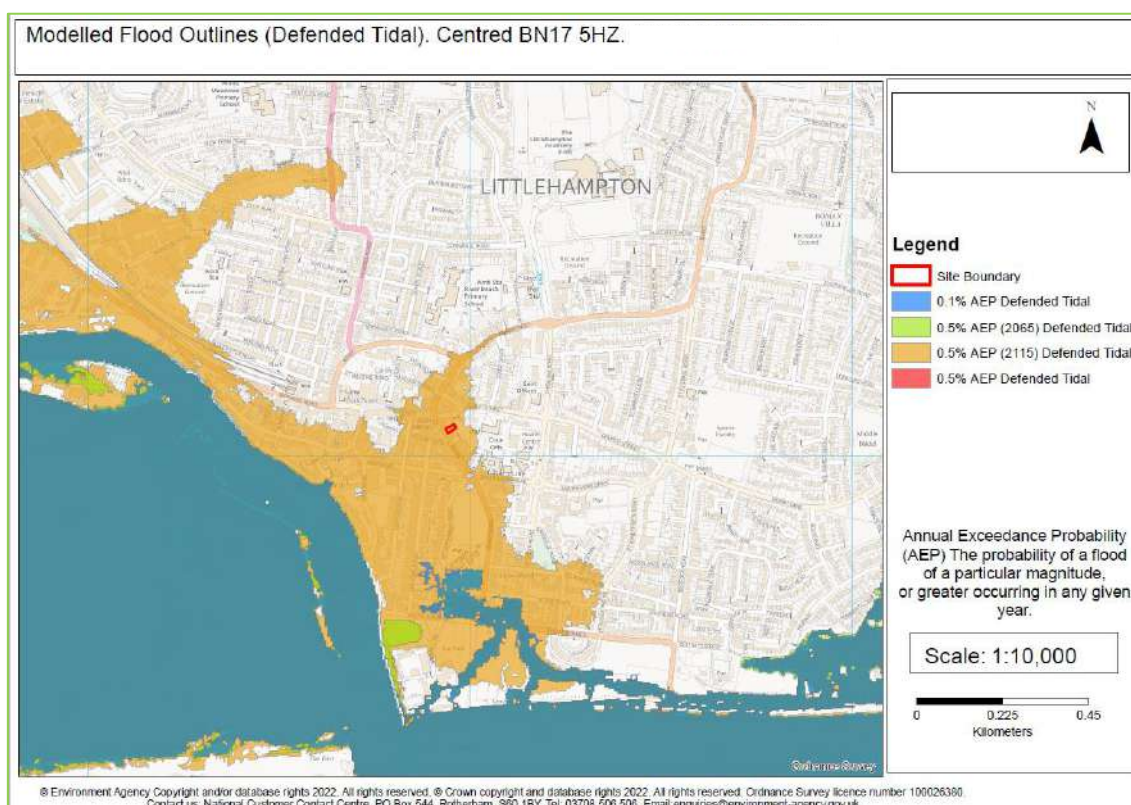


Figure 4 - Environment Agency Defended Modelled Flood Outlines

Residual Risk

Considerable investment has been made in the provision of the flood defences to protect the site from tidal flooding. However, the flood defences can only protect up to a point, they may malfunction, can be breached and have a finite structure life. Therefore, there is a residual risk

of tidal flooding. The condition of the defences is good to fair therefore; it is unlikely that a breach in the flood defences would occur.

If the flood defences were not there, the area would be flooded. However, an area of land may benefit from the presence of flood defences even if the flood defences are overtopped, the presence of the flood defences means that the floodwater does not extend as far as it would if the flood defences were not there.

Tables 7 and 8 show the Environment Agency undefended modelled data for the Site and Figure 5 shows the undefended modelled flood outlines. The site would be inundated with floodwater during the 1 in 200 year, 1 in 200 year in 2115 and 1 in 1000 year events. The residual flood risk posed to the Site is low and is greater than the 1 in 200 year event. It should be noted that these water depths would only occur if the flood defences were to be overtopped and/or removed which is highly unlikely.

It should be noted that the flats will be located on the first floor with only the entrances being located on the ground floor. Therefore, the risk of flooding from tidal sources is considered to be of **medium significance**. The risk from tidal sources will be further managed and mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the site (see Section 5.0).

Table 7 - Environment Agency Undefended Modelled Water Levels (mAOD)

Node Ref	Eastings	Northings	200	2000 in 2070	200 in 2115	1000
1	502940	102071	3.74	4.35	4.94	4.05
2	502959	102080	3.74	4.35	4.94	4.05
3	502947	102070	3.74	4.35	4.94	4.05
4	502955	102074	3.74	4.35	4.94	4.05
5	502944	102061	3.74	4.35	4.94	4.05
6	502962	102072	3.74	4.35	4.94	4.05

Table 8 - Environment Agency Undefended Modelled Water Depths (m)

Node Ref	Eastings	Northings	200	2000 in 2070	200 in 2115	1000
1	502940	102071	1.38	1.99	2.58	1.69
2	502959	102080	1.25	1.86	2.45	1.56
3	502947	102070	1.27	1.88	2.48	1.59
4	502955	102074	1.25	1.86	2.45	1.56
5	502944	102061	1.38	1.99	2.58	1.69
6	502962	102072	1.14	1.75	2.34	1.45

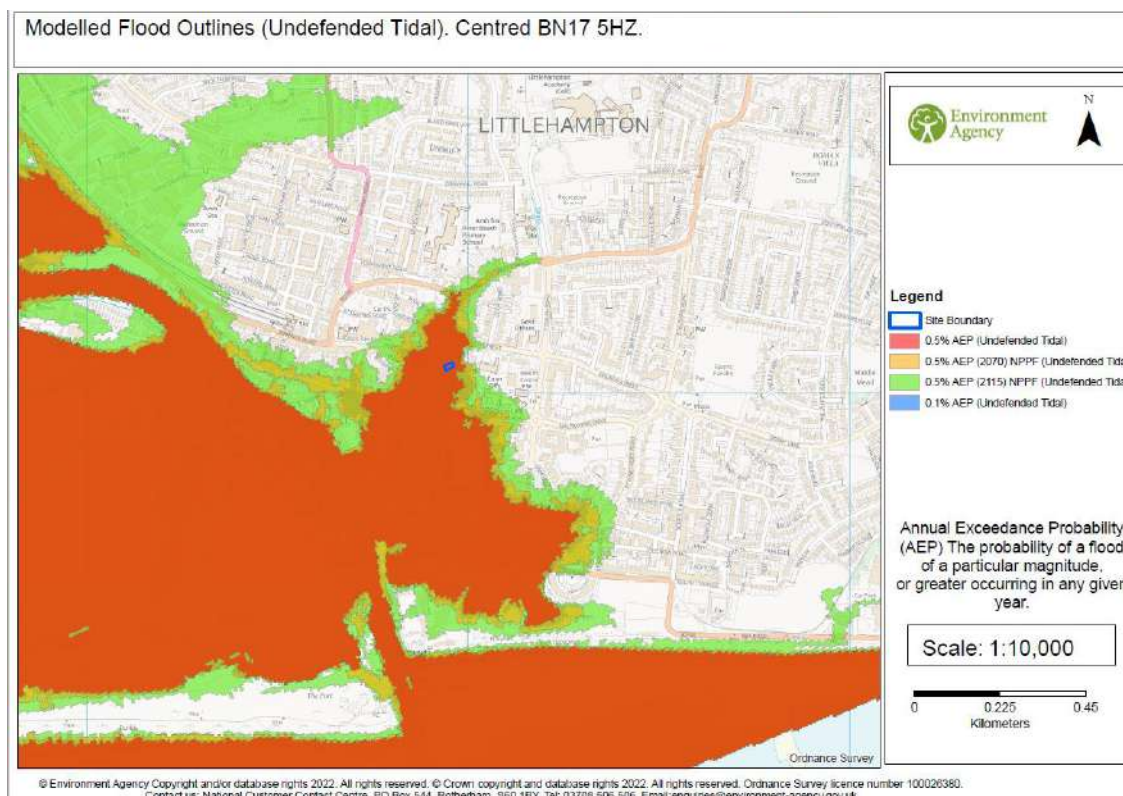


Figure 5 - Environment Agency Undefended Modelled Flood Outlines

3.10 Groundwater Flooding

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

Groundwater flooding tends to occur sporadically in both location and time. When groundwater flooding does occur, it tends to mostly affect low-lying areas, below surface infrastructure and buildings (for example, tunnels, basements and car parks) underlain by permeable rocks (aquifers). Site ground conditions suggest a low potential for groundwater flooding. The risk of flooding from groundwater flooding is considered to be **not significant**.

3.11 Surface Water (Pluvial) Flooding

The Site is not situated near to large areas of poor permeability or areas with the geology and/or topography which may result in surface water flooding. The Site surroundings are relatively flat and there are no large catchments that would tend to generate surface water runoff towards the site. Surface water flow flooding tends to occur sporadically in both location and time such surface water flows would tend to be confined to the streets around the development.

The Environment Agency Surface Water flood map shows that the Site has a low risk of surface water flooding (see Figure 6) with a chance of flooding 1 in 1000 (0.1%) to 1 in 100 (1%) years. This may result in water depths of less than 300mm and velocities of less than 0.25m/s.

However, it should be noted that areas within the vicinity of the Site have a medium risk of surface water flooding with a chance of flooding of between 1 in 100 (1%) and 1 in 30 years (3.3%).

Therefore the risk of flooding from surface water flooding is considered to be of **low significance**. The risk from this source will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the Site (see Section 5.0).

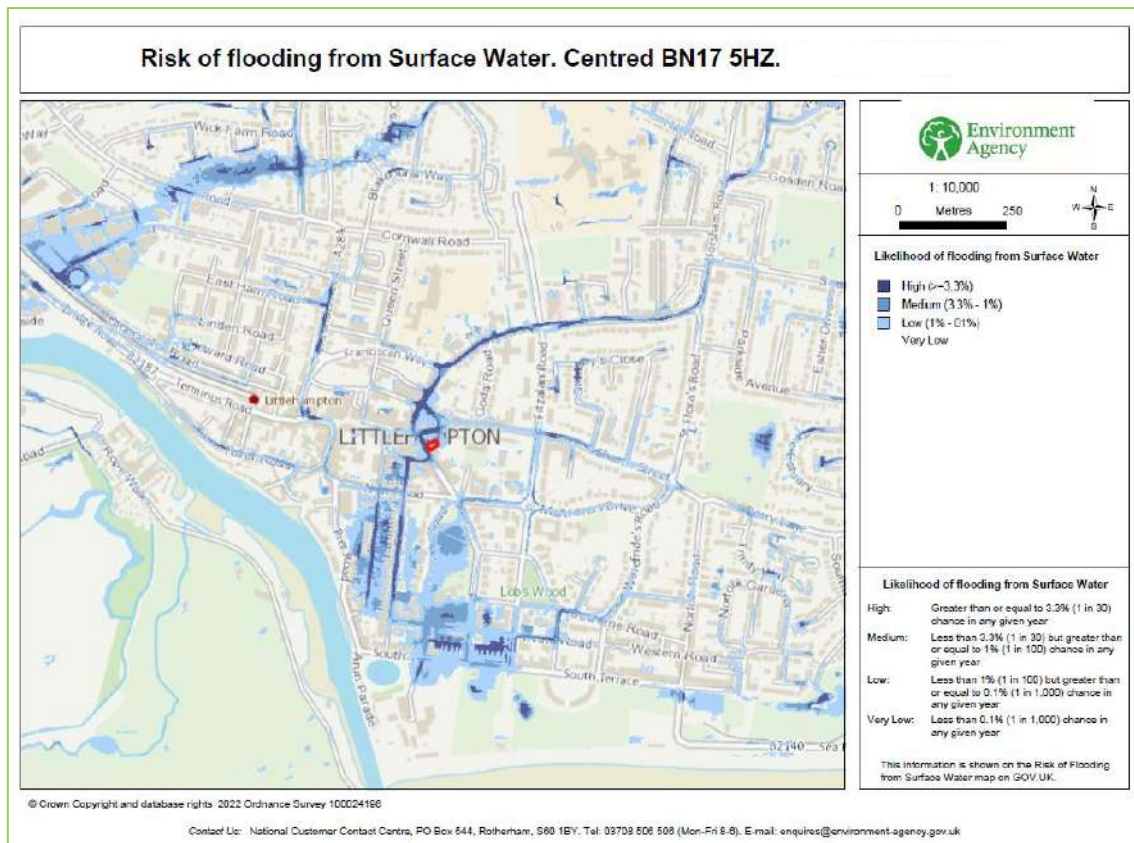


Figure 6 - Environment Agency Surface Water Flood Map

3.12 Sewer Flooding

Sewer flooding occurs when urban drainage networks become overwhelmed and maximum capacity is reached. This can occur if there is a blockage in the network causing water to back up behind it or if the sheer volume of water draining into the system is too great to be handled. Sewer flooding tends to occur sporadically in both location and time such flood flows would tend to be confined to the streets around the development.

There are existing sewers located within the vicinity of the Site and these will inevitably have a limited capacity so in extreme conditions there would be surcharges, which may in turn cause flooding. Flood flows could also be generated by burst water mains, but these would tend to be of a restricted and much lower volume than weather generated events and so can be discounted for the purposes of this assessment.

Given the design parameters normally used for drainage design in recent times and allowing for some deterioration in the performance of the installed systems, which are likely to have been in place for many years, an appropriate flood risk probability from this source could be assumed to have a return period in the order of 1 in 10 to 1 in 20 years. The provision of adequate level difference between the ground floors and adjacent ground level would reduce the annual probability of damage to property from this source to 1 in 100 years or less.

Therefore, the risk of flooding from sewer flooding is considered to be of **low significance**. The risk from this source will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the Site (see Section 6.0).

3.13 Flooding from Artificial Drainage Systems/Infrastructure Failure

There are no other nearby artificial water bodies, reservoirs, water channels and artificial drainage systems that could be considered a flood risk to the Site. The Environment Agency Reservoir flood map shows that the Site is not at risk of reservoir flooding (see Figure 7). The risk of flooding from artificial drainage systems/infrastructure failure is considered to be **not significant**.



Figure 7 - Environment Agency Reservoir Flood Map

3.14 Impact of the Proposed Development on Flood Risk

The building is existing therefore, the overall direction of the movement of water will be maintained within the developed Site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed. The Proposed Development will have no impact on flood risk.

3.15 Summary of Site Specific Flood Risk

A summary of the sources of flooding and a review of the risk posed by each source at the Site is shown in Table 9.

Table 9 - Risk Posed by Flooding Sources

Sources of Flooding	Potential Flood Risk	Potential Source	Probability/Significance
Fluvial Flooding	No	None Reported	None
Tidal Flooding	Yes	River Arun	Medium
Groundwater Flooding	No	None Reported	None
Surface Water Flooding	Yes	Poor Permeability	Low
Sewer Flooding	Yes	Local Sewers	Low
Flooding from Artificial Drainage Systems/Infrastructure Failure	No	None Reported	None

The primary, but unlikely, flood risk to the site is posed by tidal flooding. The site is located within Flood Zone 3 and therefore has a 'high probability' of tidal flooding, with a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. However, the flood defence measures identified are expected to afford the site significant protection from tidal flooding. The proposed use is classified as 'more vulnerable', 'more vulnerable' uses are appropriate within Flood Zone 3 after the completion of a satisfactory FRA.

Actual Risk

Flood defence measures provide protection against tidal flooding and reduce the flood risk to the Site. The Site is not located within the defended present day 1 in 200 year, 1 in 200 year in 2065 and 1 in 1000 year event flood outlines. The actual flood risk posed to the Site is low and is less than the 1 in 200 year in 2065 event. The Site will only be inundated with floodwater during the 1 in 200 year in 2115 flood event.

Residual Risk

Considerable investment has been made in the provision of the flood defences to protect the site from tidal flooding. However, the flood defences can only protect up to a point, they may malfunction, can be breached and have a finite structure life. Therefore, there is a residual risk of tidal flooding. The condition of the defences is good to fair therefore; it is unlikely that a breach in the flood defences would occur.

If the flood defences were not there, the area would be flooded. However, an area of land may benefit from the presence of flood defences even if the flood defences are overtopped, the presence of the flood defences means that the floodwater does not extend as far as it would if the flood defences were not there.

The site would be inundated with floodwater during the 1 in 200 year, 1 in 200 year in 2115 and 1 in 1000 year events. The residual flood risk posed to the Site is low and is greater than the 1 in 200 year event. It should be noted that these water depths would only occur if the flood defences were to be overtopped and/or removed which is highly unlikely.

It should be noted that the flats will be located on the first floor with only the entrances being located on the ground floor. Therefore, the risk of flooding from tidal sources is considered to be of **medium significance**. A secondary flooding source has been identified which may pose a **low significant** risk to the site. This is:

- Sewer Flooding

The building is existing therefore, the overall direction of the movement of water will be maintained within the developed Site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed. The Proposed Development will have no impact on flood risk.

The risk from all sources will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the site (see Section 5.0). The application is for a new, suitable flood-resilient design. The exposure of people and property will be reduced and minimised compared to existing site conditions. The chance of flooding each year is low each year. This takes into account the effect of any flood defences that may be located within the vicinity of the site as well property level protection measures.

4.0 SURFACE WATER DRAINAGE

4.1 Surface Water Management Overview

It is recognised that consideration of flood issues should not be confined to the floodplain. The alteration of natural surface water flow patterns through developments can lead to problems elsewhere in the catchment, particularly flooding downstream. For example, replacing vegetated areas with roofs, roads and other paved areas can increase both the total and the peak flow of surface water runoff from the Site. Changes of land use on previously developed land can also have significant downstream impacts where the existing drainage system may not have sufficient capacity for the additional drainage.

An assessment of the surface water runoff rates has been undertaken, in order to determine the surface water options and attenuation requirements for the Site. The assessment considers the impact of the proposals compared to current conditions. Therefore, the surface water attenuation requirement for the developed Site can be determined and reviewed against existing arrangements.

The surface water drainage arrangements for any development site should be such that the volumes and peak flow rates of surface water leaving a developed site are no greater than the rates prior to the Proposed Development unless specific off-site arrangements are made and result in the same net effect.

4.2 Proposed Surface Water Drainage Strategy

It is understood that the existing site discharges surface water to the public sewers. It is deemed sustainable to re-use this connection and to continue to discharge surface water runoff to the public sewers. The Surface Water Drainage Strategy will take the form of:

- Outfall via the existing connection to the adjacent public sewers.

The surface water runoff from the developed site will be no different to pre-and post-application. There will be no increase in surface water runoff or exacerbation of off-site risk as a result of the development.

The risk of flooding from surface water is considered to be low and it is likely that the current drainage system is sufficient for the proposed use. No changes to the current surface water network are proposed.

5.0 RISK MANAGEMENT

5.1 Introduction

The flood risk at this location is considered suitable for 'more vulnerable' developments within the NPPF. In this flood zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development and the use of flood mitigation measures.

The flooding sources will be mitigated on the Site by using a number of techniques, and mitigation strategies to manage and reduce the overall flood risk at the Site. This will ensure the development will be safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the Proposed Development on flood risk generally; and;
- Minimal disruption to natural heritage.

The flood risk at the Site will be reduced by mitigation measures; these are discussed in more detail below.

5.2 Finished Floor Levels

The finished floor levels will be set at the existing finished floor levels. It should be noted that the flats will be located on the first floor with only the entrances being located on the ground floor.

It is recognised however that owing to limited headroom constraints, massing, planning policy and Building Regulations it is considered impractical to raise the finished floor levels further. Therefore, in order to mitigate against this, it is recommended that the occupants of the proposed flats sign up to receive flood warnings from the Environment Agency and implement a Flood Plan to a safe area away from the building during times of flood. It is also proposed that flood protection measures are employed within the building design to reduce the overall risk to the occupants. This is discussed below.

5.3 First Floor Accommodation

All residential accommodation, including the sleeping accommodation, will be located on the first floor, with only the entrances being located on the ground floor. The levels of the first floor are located well above any floodwater levels. This provides a 'safe haven' above any floodwater levels.

5.4 Flood Warning and Evacuation

The Site is located in a flood risk area therefore; the Site will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0845 988 1188) in order to receive Flood Warnings. The Environment Agency operate a free flood warning service providing alerts by phone, text or email when flooding is anticipated providing an opportunity for home owners

to take necessary precautions, giving enough time for the building to be safely evacuated and mitigation measures to be put in place.

All occupants/visitors of the Site will be made aware of the Environment Agency Floodline telephone number (Call Floodline on 0345 988 1188 or 0845 988 1188 to get more information) and the three Flood Warning Codes and their meaning. The owner of the Site will carry out the role of Flood Warden for the Site and ensure they have an understanding of the flood mechanisms of the Site and will ensure that the safety of the occupants and visitors will not be compromised.

The Environment Agency uses three Flood Warnings Codes. They can be issued in any order, usually ending with an 'all clear'. They are issued by the Environment Agency through their website and Floodline Warning Service. The flood warning will be passed onto the occupier/visitors of the Site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

5.5 Flood Plan

A Flood Plan outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause will be developed. Sensible precautions would include raising electrical items, irreplaceable items and sentimental items off the ground or where possible moving them to a higher floor, rolling up carpets and rugs and turning off utilities. In addition, consider what actions you would take should the property need to be evacuated including access and egress routes and preparing a flood kit in advance containing warm clothing, medication, a torch, food and wellingtons.

The Flood Plan is a 'living' document and therefore should be periodically reviewed and updated to provide advice and guidance to occupants in the event of an extreme flood. The Flood Plan will therefore reduce the vulnerability of the occupants to flooding and makes them aware of the mechanisms of flooding at the Site.

Residual Risk

If flooding starts to affect the Site without any pre-warning i.e. in real time (e.g. through a failure of the flood warning delivery) the following actions will be taken:

- Occupants and visitors should consider evacuating the Site.
- If flood levels continue to rise, occupants and visitors are advised to evacuate before safe access is lost. Occupants and visitors should monitor the flood progression and evacuate.

The Flood Warden will monitor flood levels and keep occupants and visitors informed and will decide whether to initiate the Flood Plan. If required a 'safe haven' can also be maintained and may be required in very extreme events if a flood warning has not been received.

5.6 Safe Access and Egress Route

The NPPF requires that, where required, safe access and escape is available to/from new developments in flood risk areas. Access routes should be such that occupants can safely access and exit their houses in design flood conditions. These routes must also provide the emergency services with access to the development during a flood event and enable flood defence authorities to carry out any necessary duties during the period of flood.

A safe access and egress route, including emergency access can be maintained for vehicles and/or by foot. The Site is at such a ground level that it would only flood in the most extreme flood event. Likewise, the access and egress route will remain dry in all but these most extreme scenarios. A safe access and egress route with minimum water depths would be possible for many hours if not days. This would provide more than an adequate amount of time for the Site to be evacuated, if required.

The actual risk of flooding caused by overtopping during a flood event will be reduced compared to the extent of flooding shown on the Environment Agency's Flood Zones. The Site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2.

Facilities such as community centres, shops etc. are located to the east of the Site. There may also be large areas than those shown in Figure 3 that are flood free located nearer and within the vicinity of the Site. In the event of a Flood Warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the Site are accounted for, and then exit the Site using the routes shown in Figure 8.

The Safe Access and Egress Route shown in Figure 8 indicates the exit routes that all people (i.e. occupants and visitors) on Site should follow once a flood warning has been received. People should make their way to areas outside of the flood zone. Therefore, safe access and egress can be maintained in accordance with the NPPF and Environment Agency guidance.

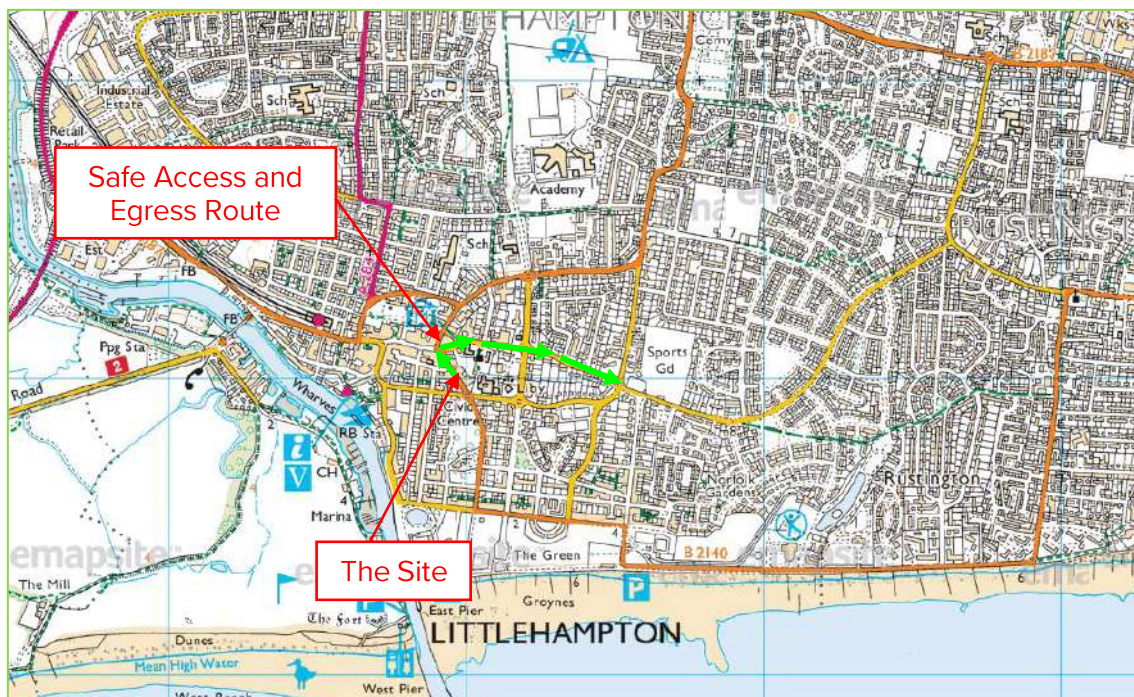


Figure 8 - Safe Access and Egress Route

5.7 Flood Warning Codes / Flood Evacuation Procedures

In order for the following evacuation procedures to be effective:

- The Site will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0345 988 1188) in order to receive Flood Warnings/Alerts.
- The flood warning will be passed onto the visitors of the Site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

Flood Alert



'Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out!'

The Environment Agency will issue a Flood Alert status when flooding is possible, based upon weather and river/sea conditions. Be prepared to act on your flood plan. At this stage occupants and visitors should make themselves aware of the Flood Plan and evacuation routes. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast.

Flood Warning



'Flooding of homes and businesses is expected. Act now!'

The Flood Warning alert will be issued when water levels are rising, and further rain is expected. The Site will be evacuated. Move family, pets and valuables to a safe place.

Safe access and egress, including emergency access can be maintained for vehicles and/or by foot. Water, electricity and gas supplies should be located and switched off before evacuating. The Environment Agency Floodline on 0345 988 1188 to get more information should be contacted to get more information, periodically and listen to and watch for weather and flood warnings on local radio and television stations.

Severe Flood Warning



'Severe Flooding is expected. There is extreme danger life and property. Act now!'

If the Site has not already been evacuated, it will be evacuated immediately. Co-operate with the emergency services and call 999 if immediately in danger. Safe access and egress, including emergency access can be maintained for vehicles and/or by foot.

Warning No Longer in Force

'Flood Watches or Flood Warnings are no longer in force for this area'.

Occupants and visitors should contact the Council to check that it is safe to return to the Site. Please be careful water may be around for several days. If there is any doubt that appliances may be water damaged, they must be checked before switching the power or gas back on. Contact your insurance company as soon as possible to get their approval before arranging any clean-up or repairs.

5.8 Residual Risk

The mitigation measures detailed above show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable. The Site is unlikely to flood except in extreme conditions. This takes into account the property level protection measures.

6.0 SEQUENTIAL APPROACH

6.1 Sequential / Exception Tests

The risk-based Sequential Test in accordance with the NPPF aims to steer new development to areas at the lowest probability of flooding (i.e. Flood Zone 1). However, paragraph 168 of the NPPF confirms that: *'Applications for minor development and changes of use should not be subject to the Sequential or Exception Tests⁷ but should still meet the requirements for site-specific flood risk assessments'*.

The development proposals should therefore be considered by the LPA to satisfy the Sequential and Exception Tests as set out in the NPPF.

⁷ Except for any proposal involving a change of use to a caravan, camping or chalet site, or to a mobile home or park home site, where the Sequential and Exception Tests should be applied as appropriate.

7.0 SUMMARY AND CONCLUSIONS

7.1 Introduction

This report presents a FRA in accordance with the NPPF for the Proposed Development at Norfolk House, 1-2 Beach Road, Littlehampton, BN17 5HZ.

This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

7.2 Flood Risk

The primary, but unlikely, flood risk to the site is posed by tidal flooding. The site is located within Flood Zone 3 and therefore has a 'high probability' of tidal flooding, with a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. However, the flood defence measures identified are expected to afford the site significant protection from tidal flooding. The proposed use is classified as 'more vulnerable', 'more vulnerable' uses are appropriate within Flood Zone 3 after the completion of a satisfactory FRA.

Actual Risk

Flood defence measures provide protection against tidal flooding and reduce the flood risk to the Site. The Site is not located within the defended present day 1 in 200 year, 1 in 200 year in 2065 and 1 in 1000 year event flood outlines. The actual flood risk posed to the Site is low and is less than the 1 in 200 year in 2065 event. The Site will only be inundated with floodwater during the 1 in 200 year in 2115 flood event.

Residual Risk

Considerable investment has been made in the provision of the flood defences to protect the site from tidal flooding. However, the flood defences can only protect up to a point, they may malfunction, can be breached and have a finite structure life. Therefore, there is a residual risk of tidal flooding. The condition of the defences is good to fair therefore; it is unlikely that a breach in the flood defences would occur.

If the flood defences were not there, the area would be flooded. However, an area of land may benefit from the presence of flood defences even if the flood defences are overtopped, the presence of the flood defences means that the floodwater does not extend as far as it would if the flood defences were not there.

The site would be inundated with floodwater during the 1 in 200 year, 1 in 200 year in 2115 and 1 in 1000 year events. The residual flood risk posed to the Site is low and is greater than the 1 in 200 year event. It should be noted that these water depths would only occur if the flood defences were to be overtopped and/or removed which is highly unlikely.

It should be noted that the flats will be located on the first floor with only the entrances being located on the ground floor. Therefore, the risk of flooding from tidal sources is considered to be of **medium significance**. A secondary flooding source has been identified which may pose a **low significant** risk to the site. This is:

- Sewer Flooding

The building is existing therefore, the overall direction of the movement of water will be maintained within the developed Site and surrounding area. The conveyance routes (flow

paths) will not be blocked or obstructed. The Proposed Development will have no impact on flood risk.

The risk from all sources will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the site (see Section 5.0). The application is for a new, suitable flood-resilient design. The exposure of people and property will be reduced and minimised compared to existing site conditions. The chance of flooding each year is low each year. This takes into account the effect of any flood defences that may be located within the vicinity of the site as well property level protection measures.

7.3 Surface Water Drainage

It is understood that the existing site discharges surface water to the public sewers. It is deemed sustainable to re-use this connection and to continue to discharge surface water runoff to the public sewers. The Surface Water Drainage Strategy will take the form of:

- Outfall via the existing connection to the adjacent public sewers.

The surface water runoff from the developed site will be no different to pre-and post-application. There will be no increase in surface water runoff or exacerbation of off-site risk as a result of the development.

The risk of flooding from surface water is considered to be low and it is likely that the current drainage system is sufficient for the proposed use. No changes to the current surface water network are proposed.

7.4 Risk Management

The flood risk at the Site will be reduced by mitigation measures, discussed below.

Finished Floor Levels: The finished floor levels will be set at the existing finished floor levels. It should be noted that the flats will be located on the first floor with only the entrances being located on the ground floor.

It is recognised however that owing to limited headroom constraints, massing, planning policy and Building Regulations it is considered impractical to raise the finished floor levels further. Therefore, in order to mitigate against this, it is recommended that the occupants of the proposed flats sign up to receive flood warnings from the Environment Agency and implement a Flood Plan to a safe area away from the building during times of flood. It is also proposed that flood protection measures are employed within the building design to reduce the overall risk to the occupants. This is discussed below.

First Floor Accommodation: All residential accommodation, including the sleeping accommodation, will be located on the first floor, with only the entrances being located on the ground floor. The levels of the first floor are located well above any floodwater levels. This provides a 'safe haven' above any floodwater levels.

Flood Warning and Evacuation: The Site is located in a flood risk area therefore; the Site will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0845 988 1188) in order to receive Flood Warnings.

Flood Plan: A Flood Plan outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause will be developed.

Safe Access and Egress Route: A safe access and egress route, including emergency access can be maintained for vehicles and/or by foot. The Site is at such a ground level that it would only flood in the most extreme flood event. Likewise, the access and egress route will remain dry in all but these most extreme scenarios. A safe access and egress route with minimum water depths would be possible for many hours if not days. This would provide more than an adequate amount of time for the Site to be evacuated, if required.

Facilities such as community centres, shops etc. are located to the north of the Site, the hazard rating is shown to be low to the north of the site, which may be used in the event of a flood. The Safe Access and Egress Route indicates the exit routes that all people (i.e. occupants and visitors) on Site should follow once a flood warning has been received. People should make their way to areas outside of the flood zone. Therefore, safe access and egress can be maintained in accordance with the NPPF and Environment Agency guidance.

Flood Warning Codes / Flood Evacuation Procedures: The flood evacuation procedures have been developed so that the Site can be safely evacuated. The property will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Direct Service (Floodline 0345 988 1188) in order to receive Flood Warnings. Flood warning will be passed onto the visitors of the Site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

7.5 Sequential Approach

The development proposals should be considered by the LPA to satisfy the Sequential and Exception Tests as set out in the NPPF.

7.6 Conclusion

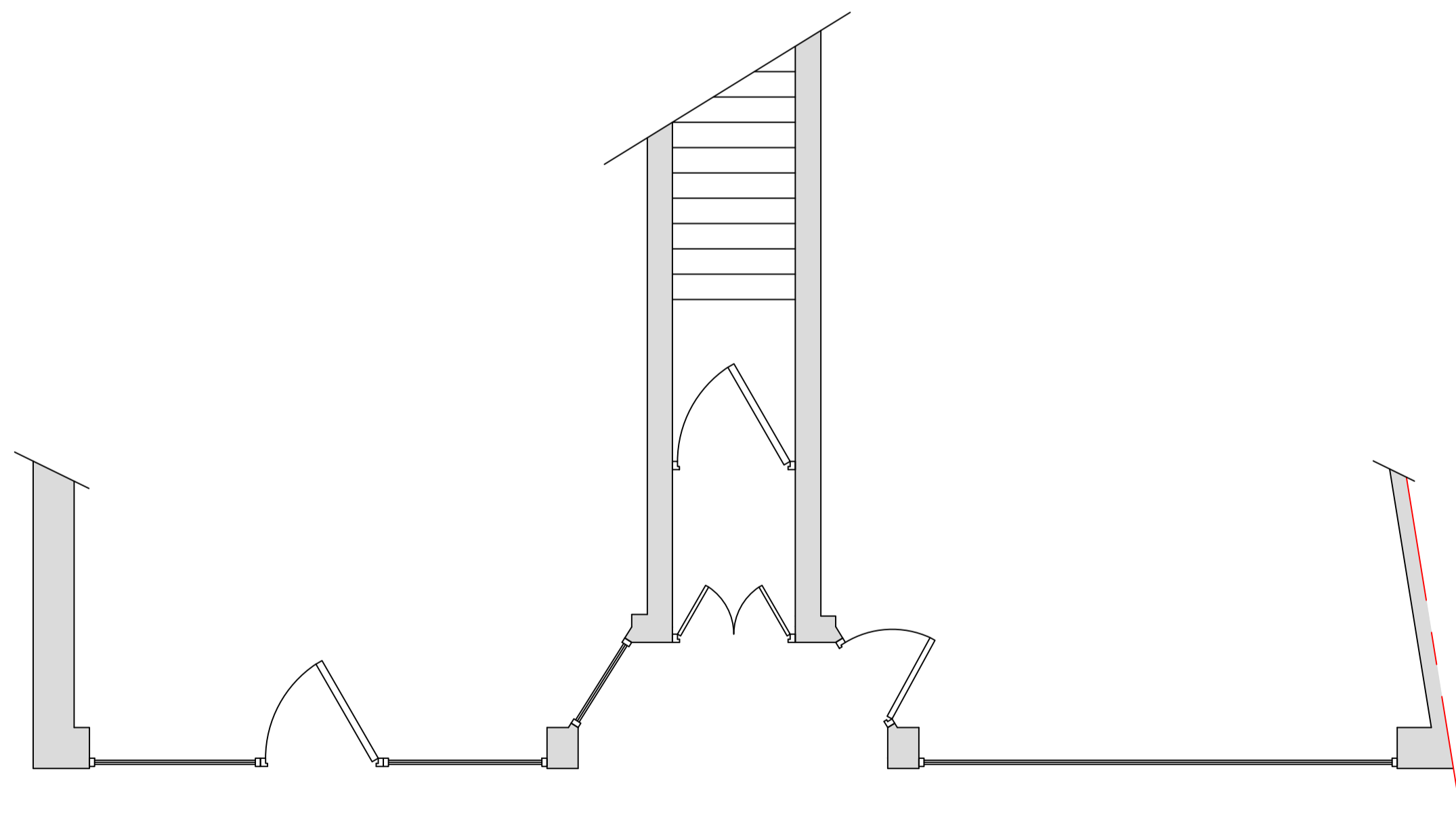
In conclusion, the Proposed Development would be expected to remain dry in all but the most extreme conditions. The Site is unlikely to flood except in extreme conditions.

Providing the recommendations made in this FRA are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable, and the development would be in accordance with the requirements of the NPPF. This FRA demonstrates that the Proposed Development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF. The development should not therefore be precluded on the grounds of flood risk.

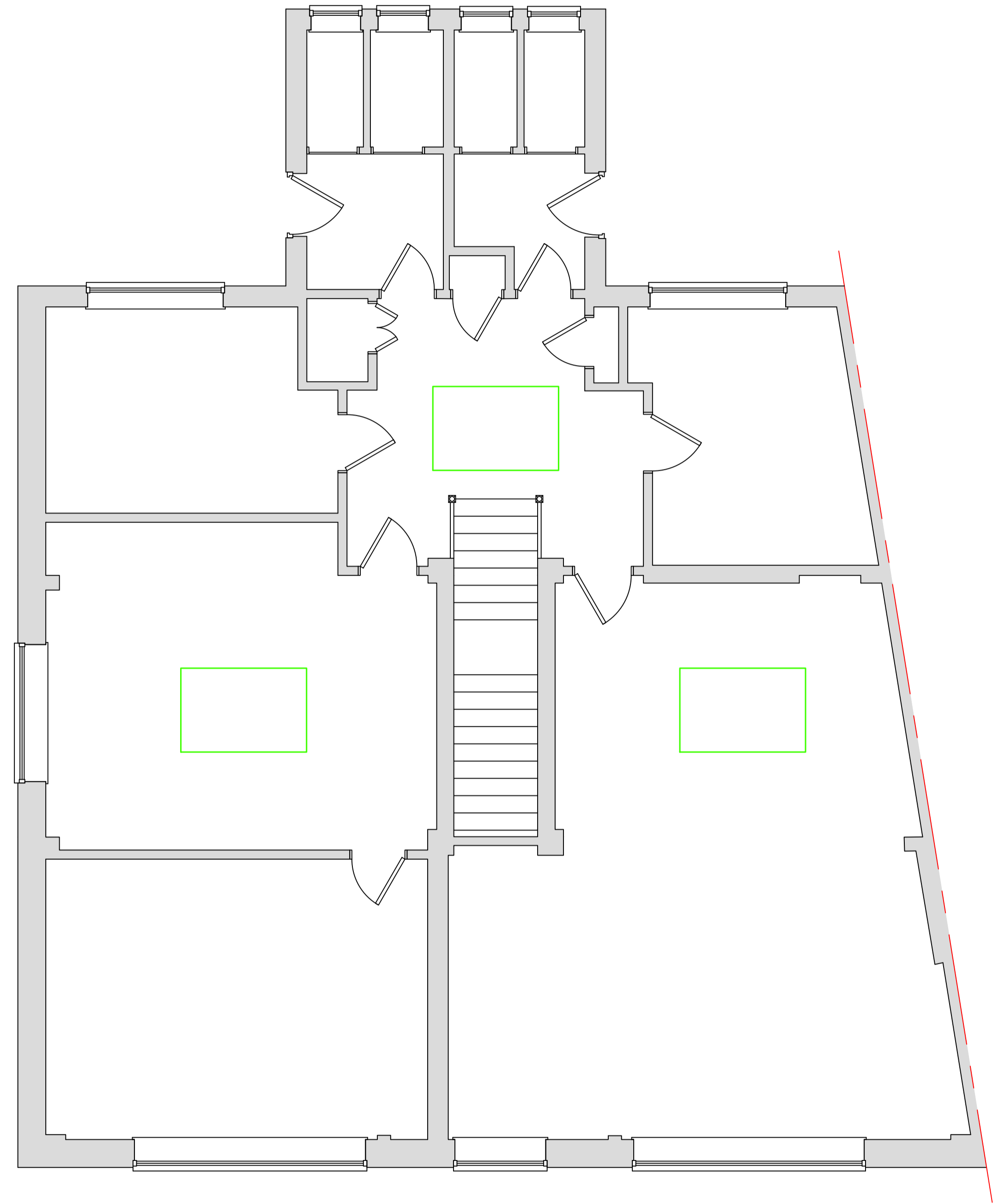


APPENDICES

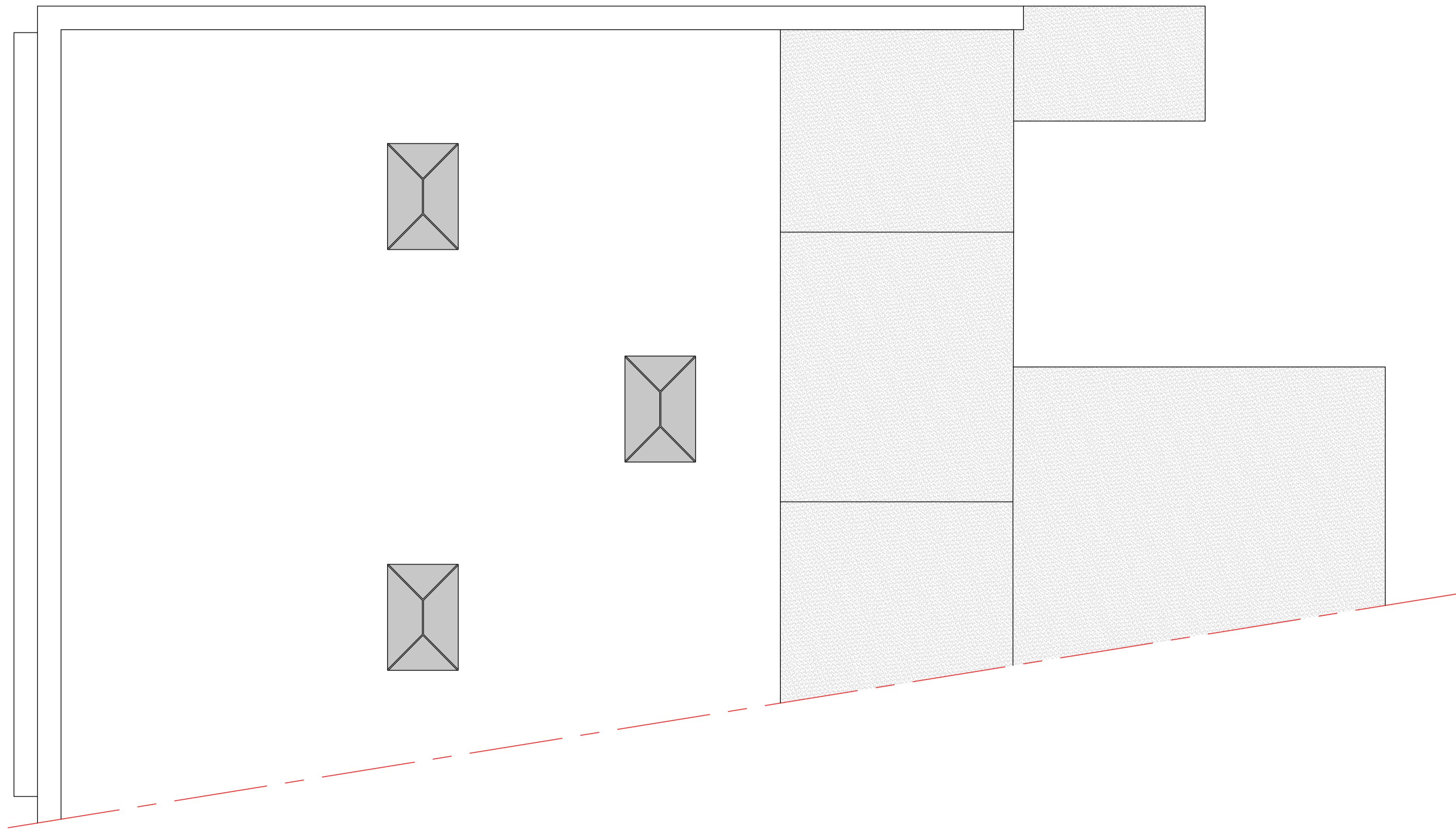
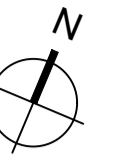
APPENDIX 1 – Existing and Proposed Site Layout



Ground Floor

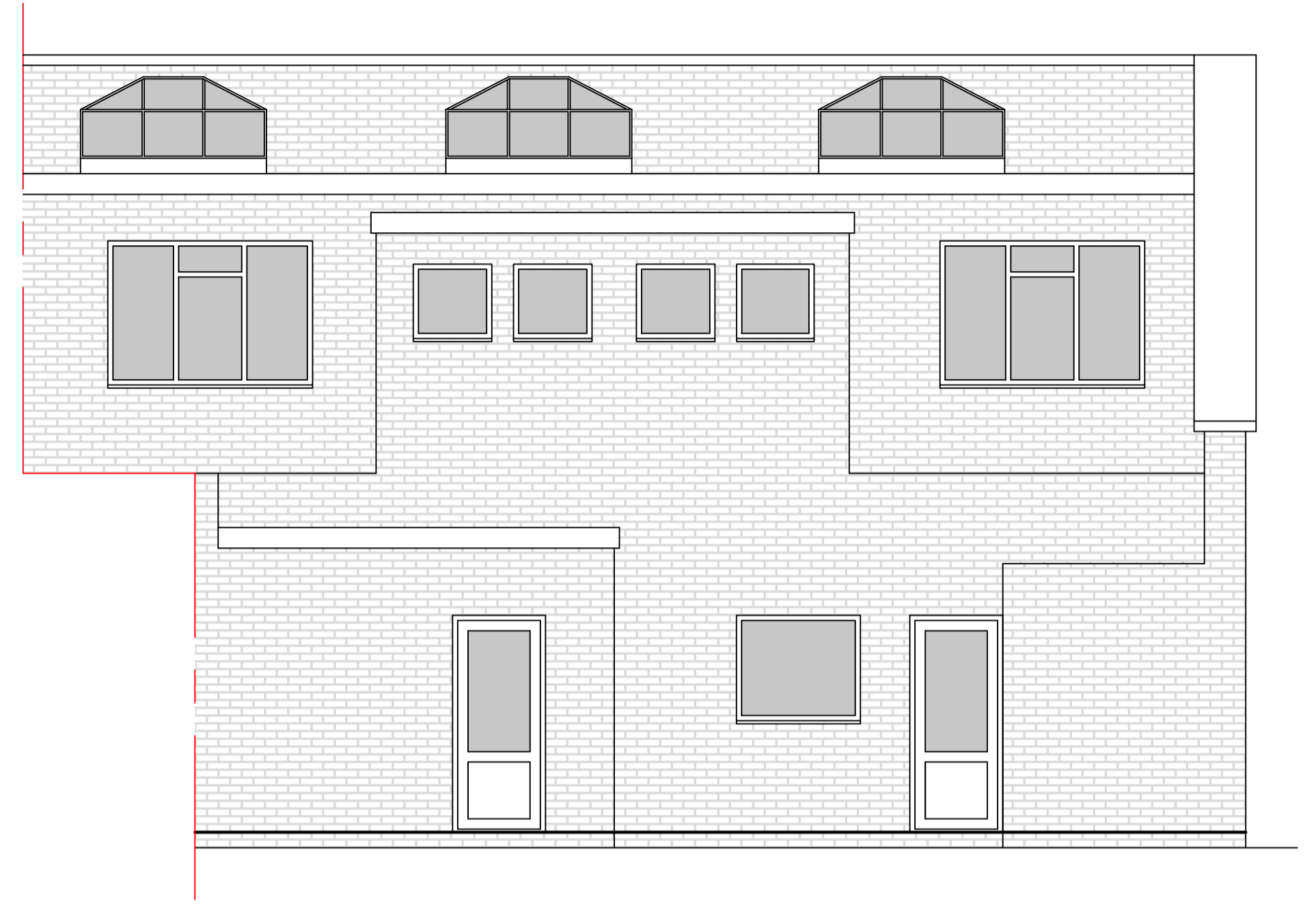


First Floor

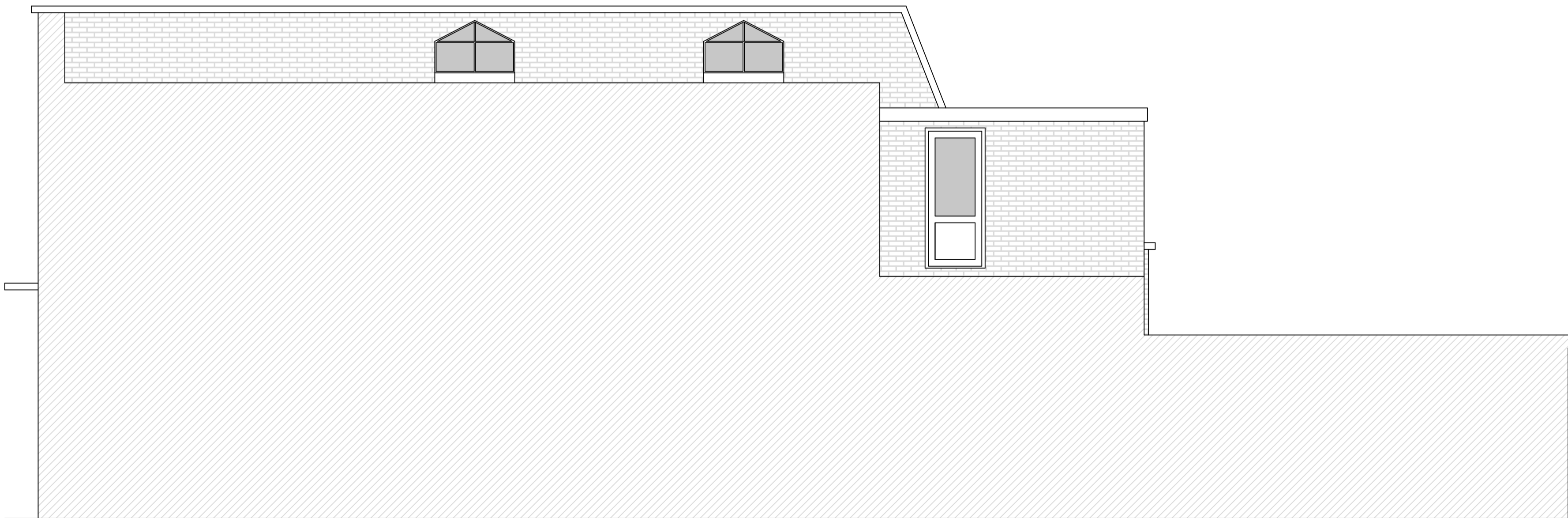




North Elevation



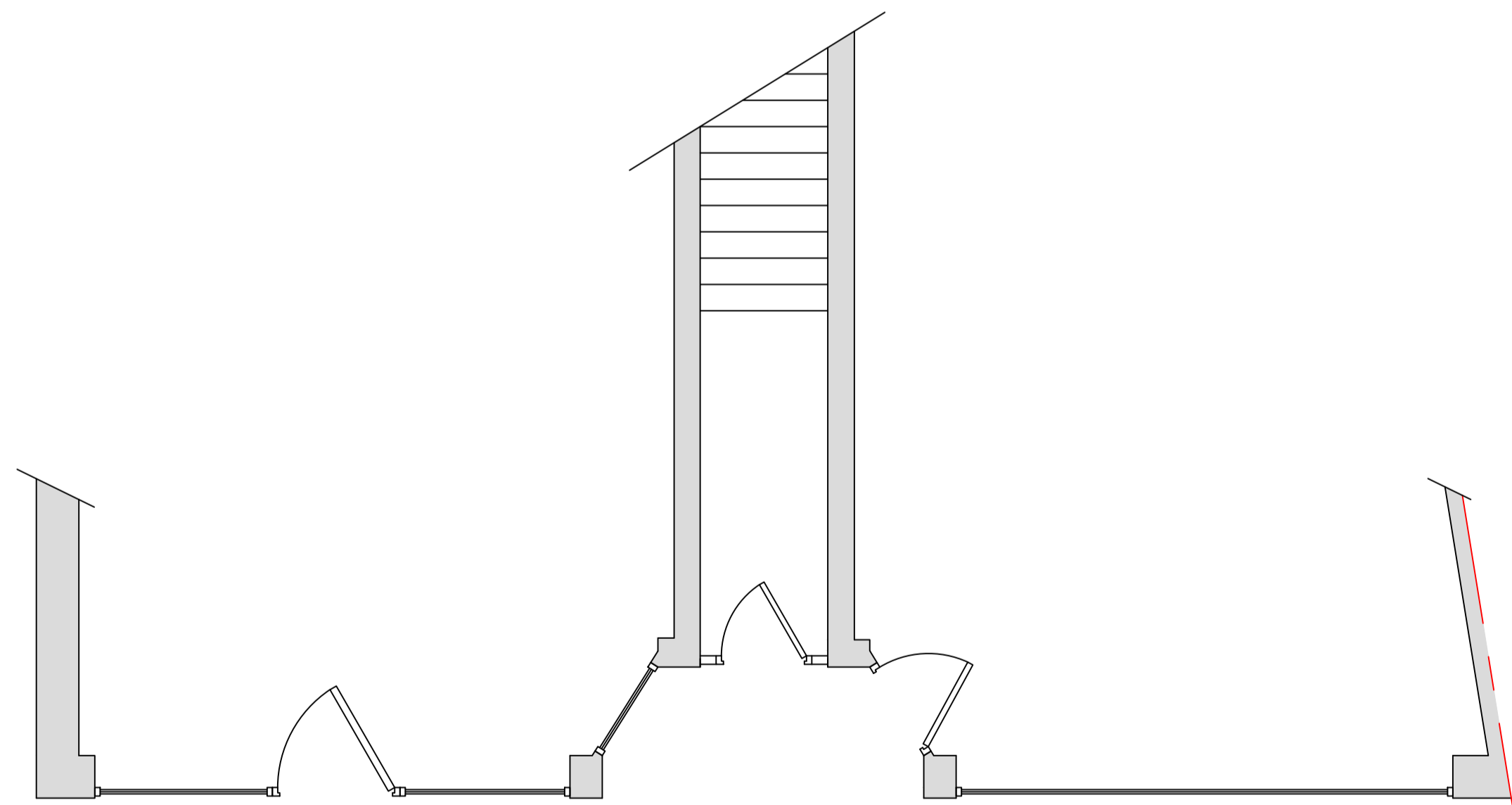
East Elevation



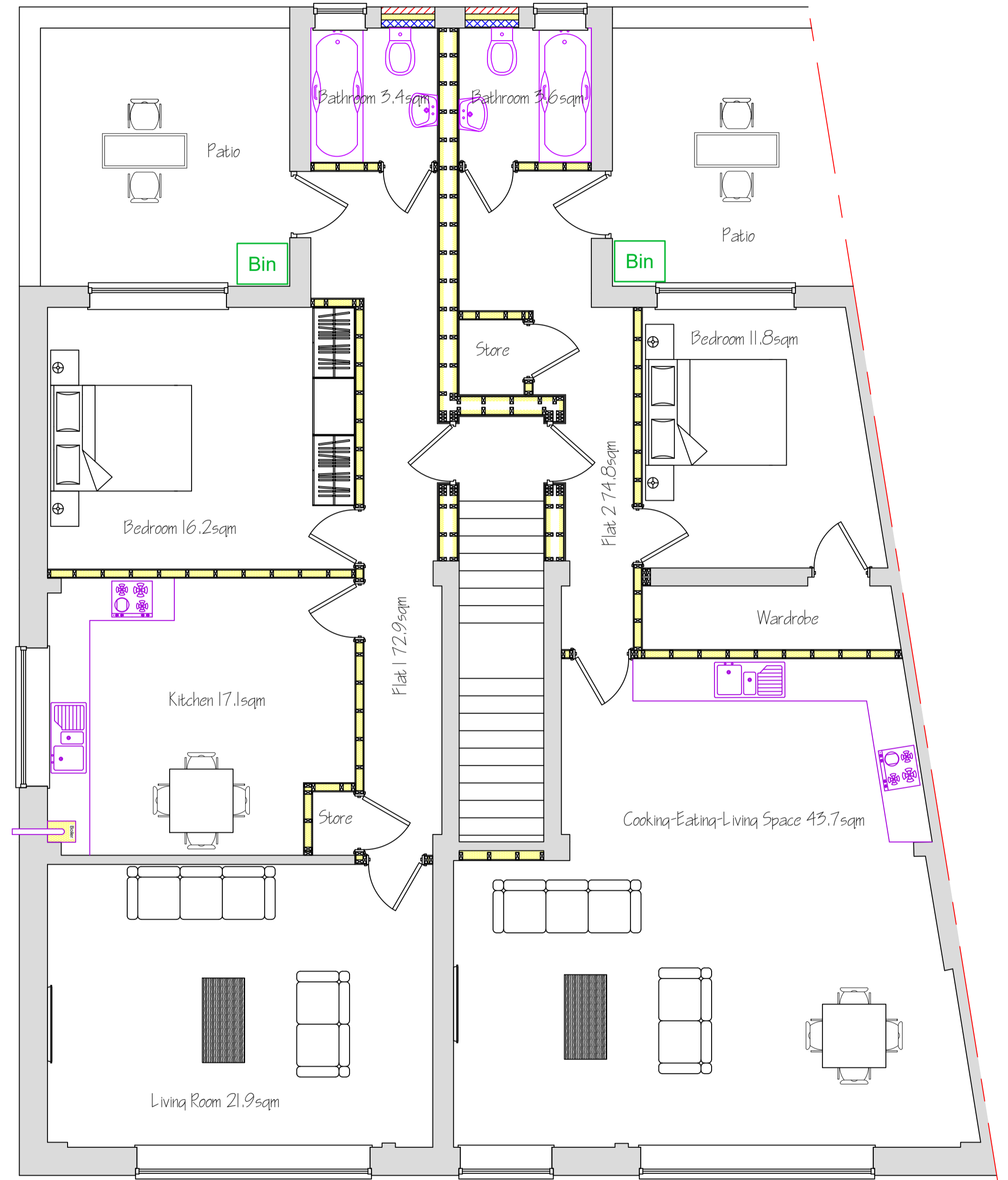
South Elevation



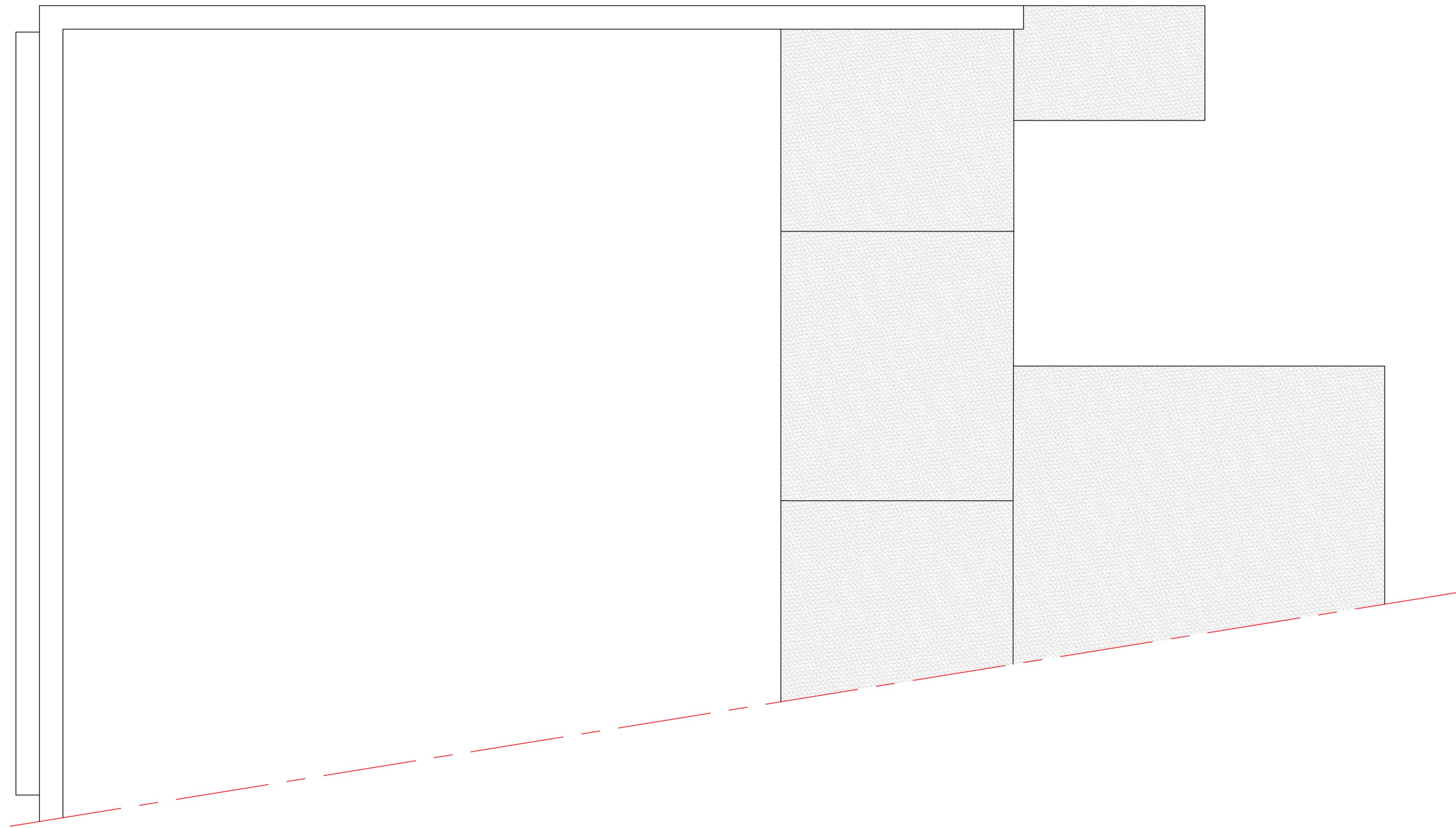
West Elevation

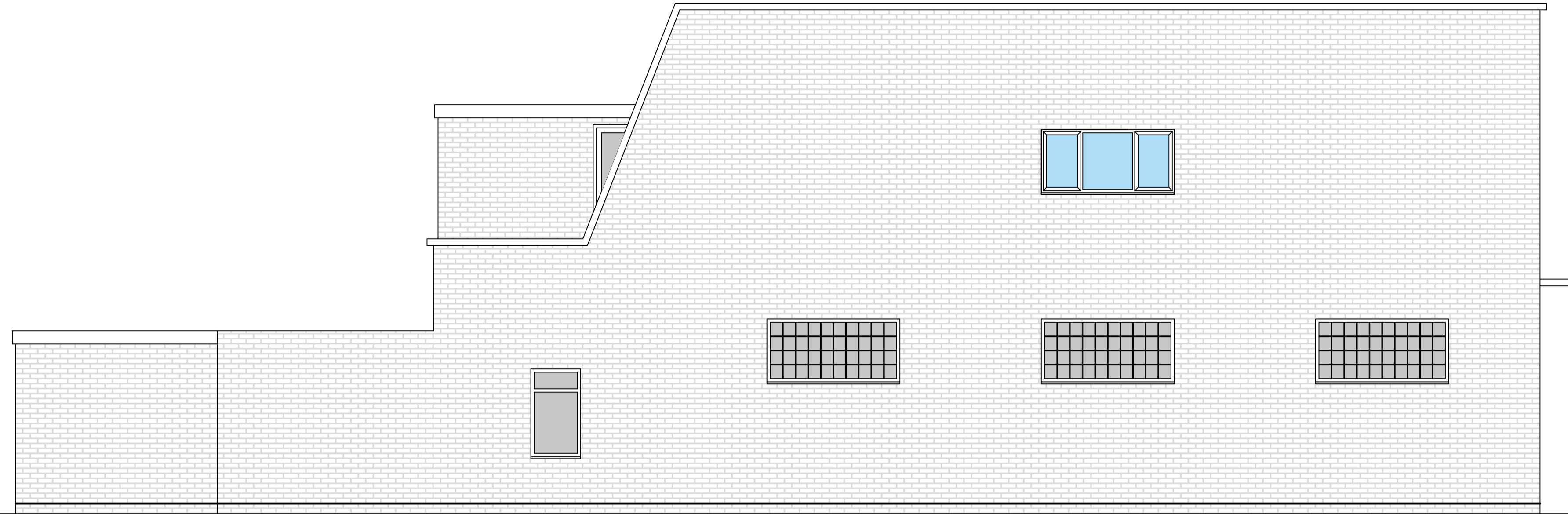


Ground Floor

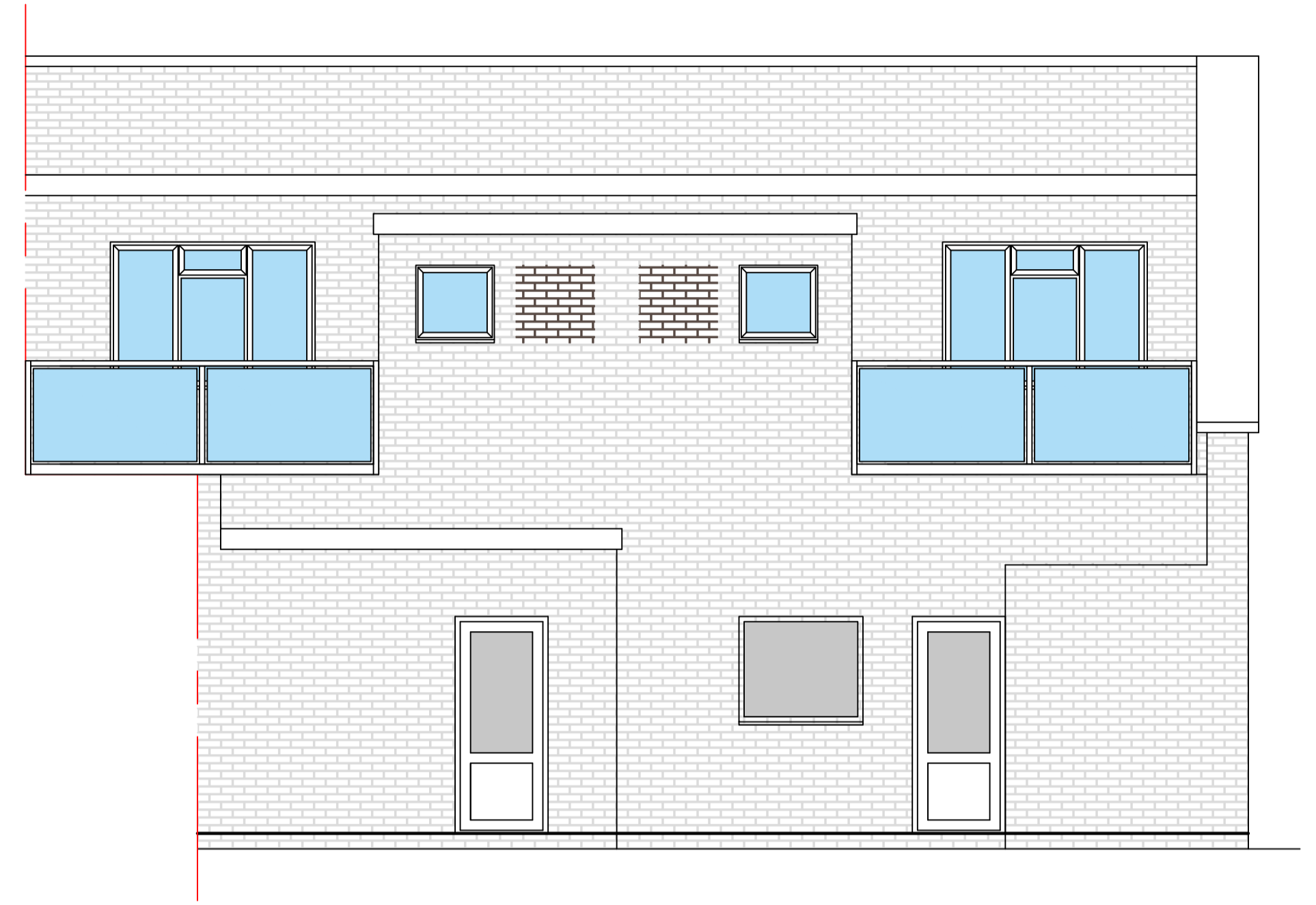


First Floor

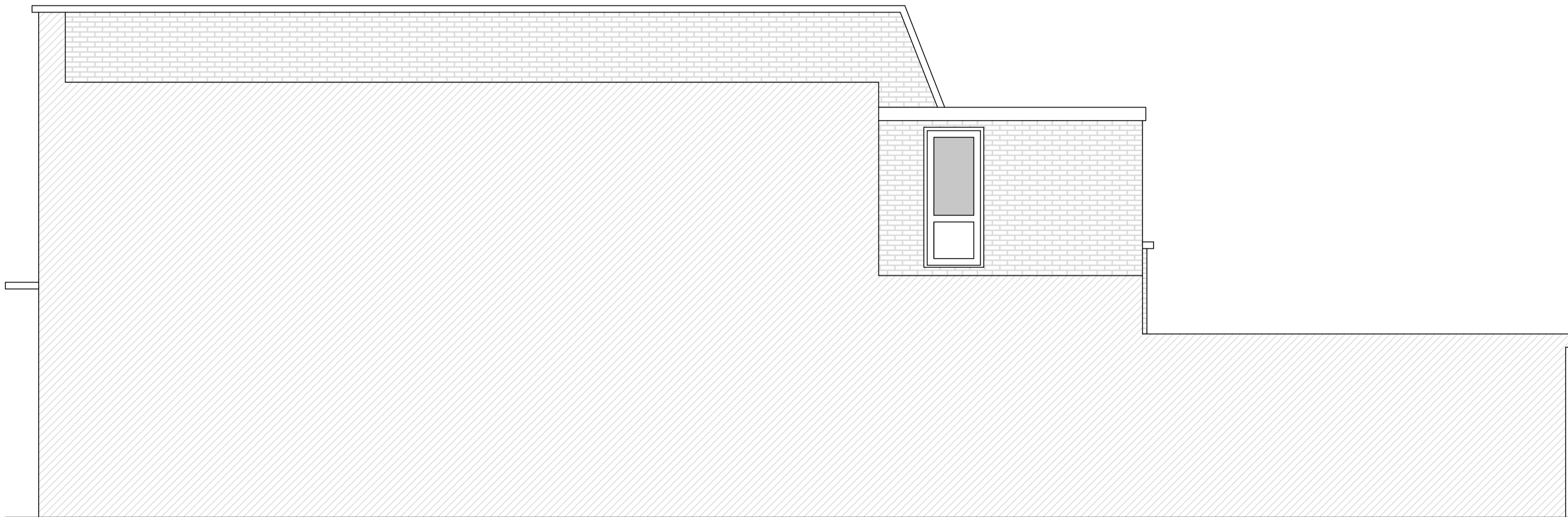




North Elevation



East Elevation



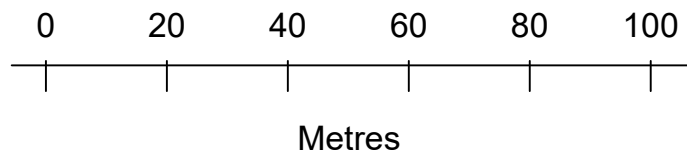
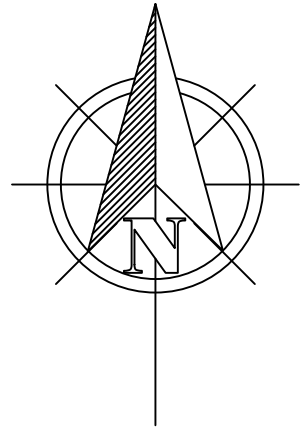
South Elevation



West Elevation

Only scale after checking scale bar. Verify all dimensions on site. Report all discrepancies to the designer. This drawing is copyright

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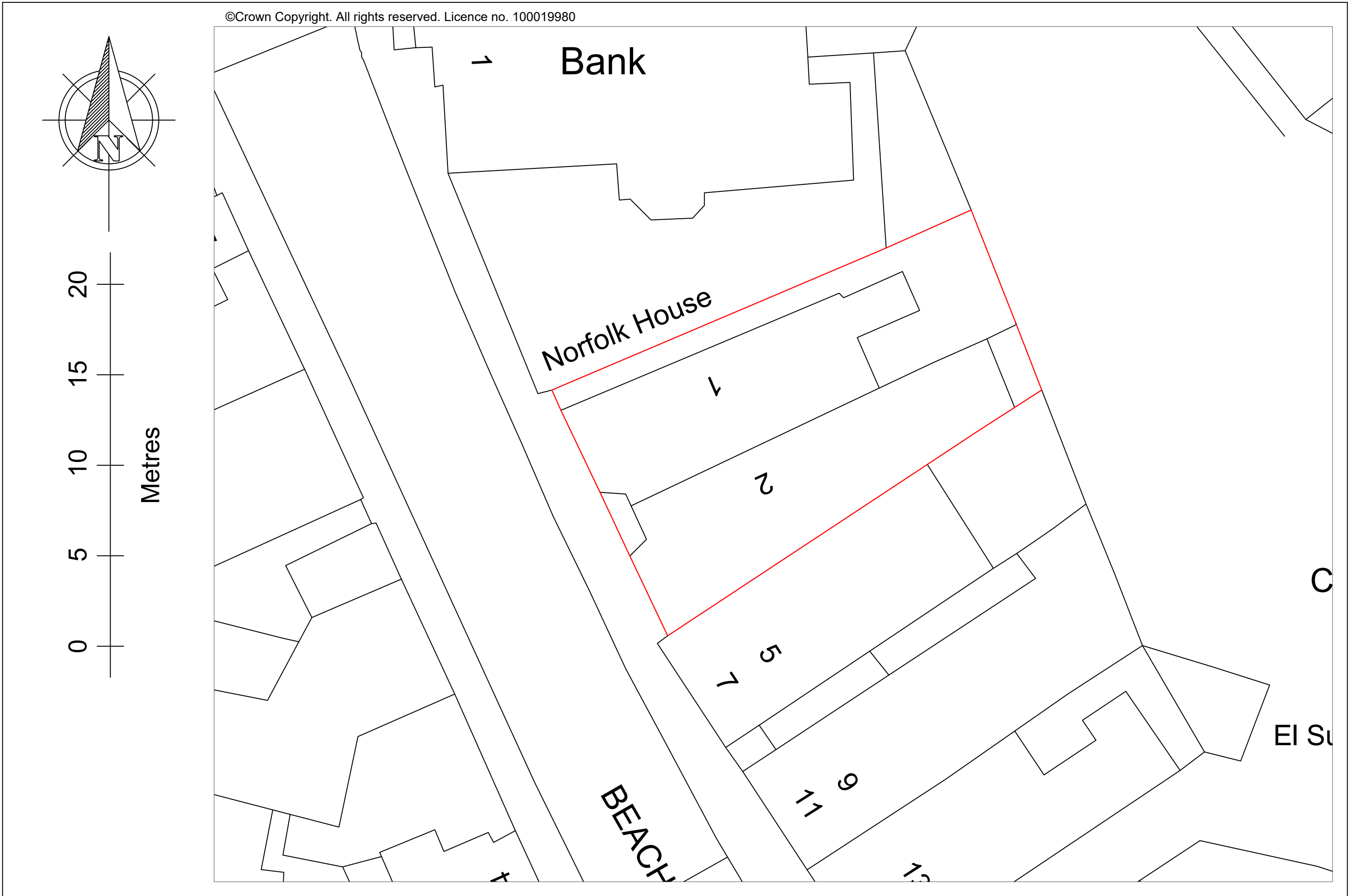
S-(13)01

Site Plans: Location Plan
(Scale 1:1250 @A3)

Date: July 2022 Drawing Number: 22046TR-PP-S-(13)01
Client: Kalmx International Ltd. Project: Conversion to Two Flats
Site Address: Norfolk House, 1-3 Beach Road, Littlehampton. BN17 5HZ
Drawn By: Des Harman


Building Drawings
124a North Road, Hythe, CT21 5DY
t: 01303 237762
m: 07711 200634
e: des@building-drawings.co.uk
w: www.building-drawings.co.uk

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S-(13)02

Site Plans: Block Plan
(Scale 1:200 @A3)

Date: July 2022 Drawing Number: 22046TR-PP-S-(13)02
Client: Kalmax International Ltd. Project: Conversion to Two Flats
Site Address: Norfolk House, 1-3 Beach Road, Littlehampton. BN17 5HZ
Drawn By: Des Harman


Building Drawings
124a North Road, Hythe, CT21 5DY
t: 01303 237762
m: 07711 200634
e: des@building-drawings.co.uk
w: www.building-drawings.co.uk



APPENDIX 2 – Environment Agency Data

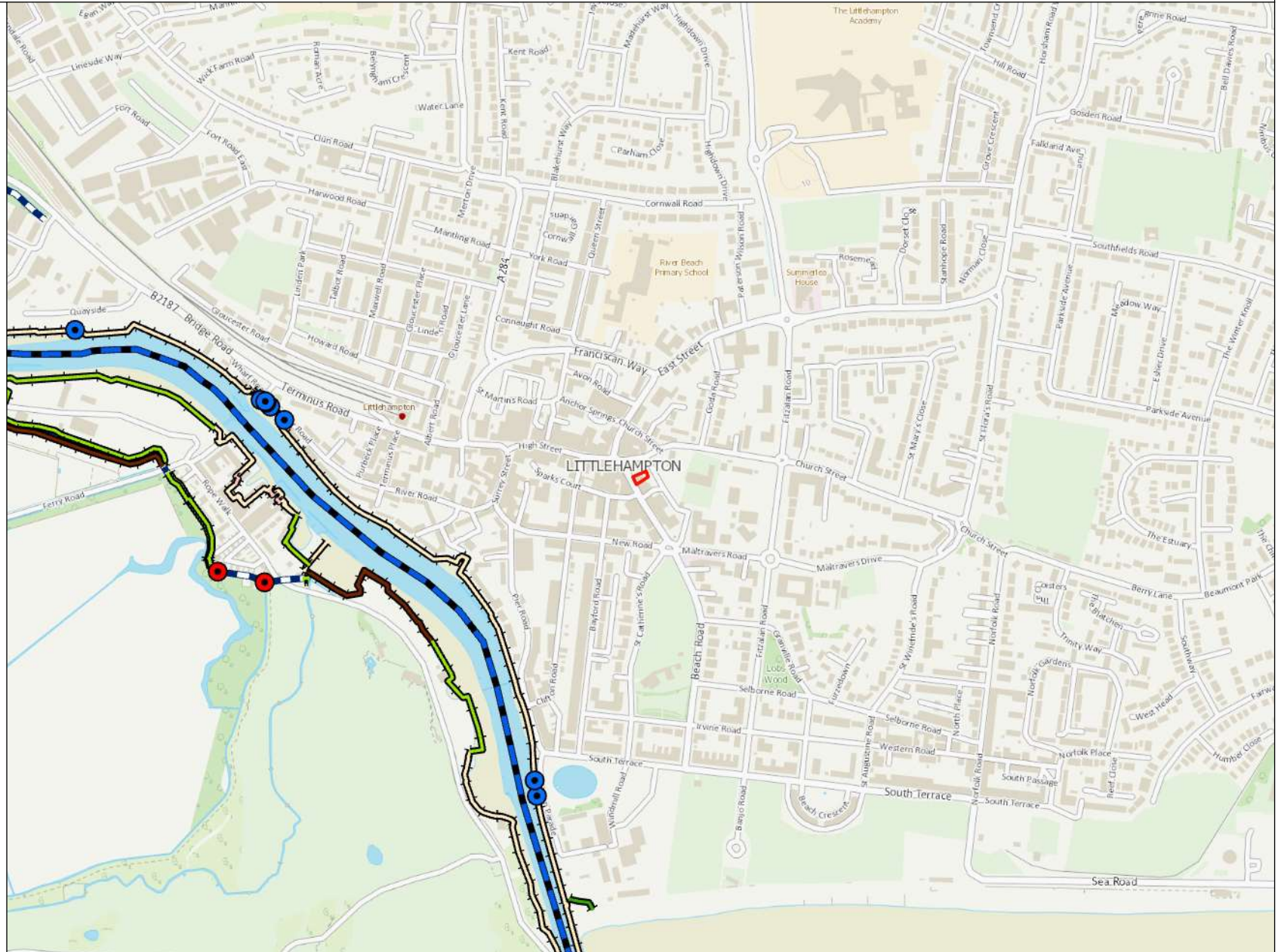
AIMS Flood Defences. Centred BN17 5HZ.



Legend

Please see page 2 for asset symbology

- Stilling Well
- Water Baffles
- Water Distribution Pipeline
- Well
- Stilling Well
- Water Baffles
- Water Distribution Pipeline
- Well



1 : 10,000



Point Structures

- Borehole
- Central Pier
- Control Gate
- Debris Screen
- Draw Off Tower
- Fish or Eel Barrier
- Fish Pass
- Inspection Chamber
- Outfall
- Ramp
- Security Screen
- Slipway
- Steps
- Stilling Basin
- Vortex Flow Control

Linear Structures

- Debris Boom
- In Channel Stoplogs
- Pier
- Weir
- Other type or not defined

Defences

- Embankment
- Wall
- Flood Gate
- Demountable Defence
- Bridge Abutment
- Engineered High Ground
- Natural High Ground
- Cliff
- Promenade
- Quay
- Beach
- Barrier Beach
- Dunes
- Spillway

Channels

- Open Channel
- Complex Culvert
- Simple Culvert

Instruments

- CCTV Camera System
- Flood Warning System
- Gauge Board
- Instrumentation
- Piezometer
- Rain Gauge
- Telemetry System
- Other type or not defined

Buildings and Compounds

- Control Building
- Gauging Station Building
- Pump House
- Storage Location
- Other type or not defined

Channel Crossings

- Bridge
- Utility Services Crossing
- Other type or not defined

Beach Structures

- Breakwater
- Groyne

Land

- Water Storage Area
- Other type or not defined

Point Aids to Navigation

- Beacon
- Buoy
- Dolphin
- Navigation Signage
- Other type or not defined

Linear Aids to Navigation

- Navigation Boom
- Other type or not defined

Ruth Evans
KRS Enviro

Our ref: SSD274989
Date: September 2025

Dear Ruth Evans,

Enquiry Regarding Product 4 for Flood Risk Assessment for Norfolk House, 1-2 Beach Road, Littlehampton, BN17 5HZ.

Thank you for your enquiry.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004. The information is attached.

The information on Flood Zones in the area relating to this address is as follows:

The site is in an area located within Flood Zones 1, 2 and 3 as shown on our Flood Map for Planning (Rivers and Sea).

Note - This information relates to the area that the above named property is in and is not specific to the property itself as it is influenced by factors such as the height of door steps, air bricks or the height of surrounding walls. We do not have access to this information and is not currently used in our flood modelling.

Flood Zone definitions can be found at www.gov.uk/guidance/flood-risk-and-coastal-change#Table-1-Flood-Zones

Flood Defences

There are no formal raised flood defences in the vicinity of the site. To the south-east of the site, along the course of the River Arun, there is a flood wall which is maintained by a private third party.

Model Information

The model used was the Arun Coastal Modelling, completed by JBA Consulting in 2012, with updated defended modelling completed in 2017.

Flood History

We hold no record of previous flooding events affecting this site.

Please note our records are not comprehensive and may not include all events. I recommend contacting the Lead Local Flood Authority, **West Sussex County Council** or the Local Authority, **Arun District Council** for a more comprehensive flood history check.

[FRA advisory text](#)

Name	Product 4
Description	Detailed Flood Risk Assessment Map for Norfolk House, 1-2 Beach Road, Littlehampton, BN17 5HZ.
Licence	Open Government Licence
Information Warnings	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.
Information Warning - OS background mapping	<i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.</i>
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2020 Ordnance Survey 100024198.

Data Available Online

Many of our flood datasets are available online:

- Flood Map For Planning ([Flood Zone 2](#), [Flood Zone 3](#), [Flood Storage Areas](#), [Flood Defences](#), [Areas Benefiting from Defences](#))
- [Risk of Flooding from Rivers and Sea](#)
- [Historic Flood Map](#)
- [Current Flood Warnings](#)

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely,

Amy O'Donnell

Partnership and Strategic Overview West Sussex, Solent and South Downs
Environment Agency | Guildbourne House, Chatsworth Road, Worthing, West
Sussex, BN11 1LD

Flood Map for Planning (Rivers and Sea). Centred BN17 5HZ.



1: 10,000

0 Metres 250



Flood Map for Planning (Rivers & Sea)

- Defences
- Flood Storage Areas
- Areas benefiting from flood defences
- Flood Zone 3
- Flood Zone 2

Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Use of Environment Agency Information for Flood Risk Assessments

Important

The Environment Agency are keen to work with partners to enable development which is resilient to flooding for its lifetime and provides wider benefits to communities. If you have requested this information to help inform a development proposal, then we recommend engaging with us as early as possible by using the pre-application form available from our website:

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

We recognise the value of early engagement in development planning decisions. This allows complex issues to be discussed, innovative solutions to be developed that both enables new development and protects existing communities. Such engagement can often avoid delays in the planning process following planning application submission, by reaching agreements up-front. We offer a charged pre-application advice service for applicants who wish to discuss a development proposal.

We can also provide a preliminary opinion for free which will identify environmental constraints related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

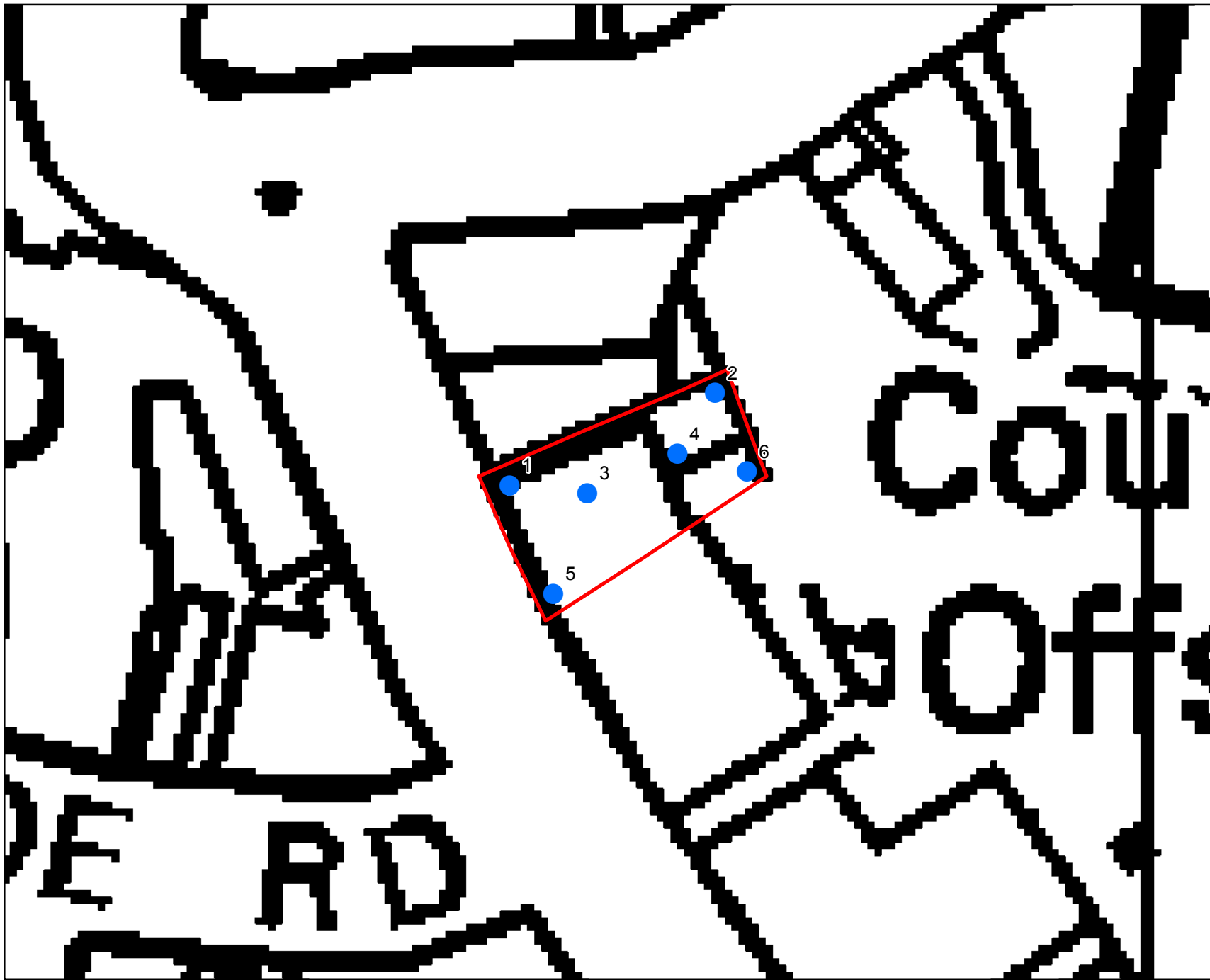
In preparing your planning application submission, you should refer to the Environment Agency's Flood Risk Standing Advice and the Planning Practice Guidance for information about what flood risk assessment is needed for new development in the different Flood Zones. This information can be accessed via:

<https://www.gov.uk/flood-risk-assessment-standing-advice>
<http://planningguidance.planningportal.gov.uk/>



You should also consult the Strategic Flood Risk Assessment or other relevant materials produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment (FRA) where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or surface water runoff. Information produced by the local planning authority referred to above may assist here.
3. Where a planning application requires an FRA and this is not submitted or is deficient, the Environment Agency may raise an objection.

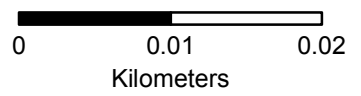


Legend

-  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





Product 4 Flood Risk Data Requested by: KRS Enviro

Site: Norfolk House, 1-2 Beach Road, Littlehampton, BN17 5HZ

Table 1: Water Levels: Tidal Undefended

Node Ref	NGR		Modelled Flood Levels in Metres AOD			
	Eastings	Northings	Undefended Annual Exceedance Probability			
			0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	502940	102071	3.74	4.35	4.94	4.05
2	502959	102080	3.74	4.35	4.94	4.05
3	502947	102070	3.74	4.35	4.94	4.05
4	502955	102074	3.74	4.35	4.94	4.05
5	502944	102061	3.74	4.35	4.94	4.05
6	502962	102072	3.74	4.35	4.94	4.05

Table 2: Water Levels: Tidal Defended

Node Ref	NGR		Modelled Flood Levels in Metres AOD			
	Eastings	Northings	Defended Annual Exceedance Probability			
			0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	502940	102071	-	-	3.71	-
2	502959	102080	-	-	3.79	-
3	502947	102070	-	-	3.71	-
4	502955	102074	-	-	3.65	-
5	502944	102061	-	-	3.74	-
6	502962	102072	-	-	3.79	-

Table 3: Water Depths: Tidal Undefended

Node Ref	NGR		Modelled Flood Depths in Metres			
	Eastings	Northings	Undefended Annual Exceedance Probability			
			0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	502940	102071	1.38	1.99	2.58	1.69
2	502959	102080	1.25	1.86	2.45	1.56
3	502947	102070	1.27	1.88	2.48	1.59
4	502955	102074	1.25	1.86	2.45	1.56

Office Address: Guildbourne House, Chatsworth Road, Worthing BN11 1LD.

www.gov.uk/government/organisations/environment-agency

5	502944	102061	1.38	1.99	2.58	1.69
6	502962	102072	1.14	1.75	2.34	1.45

Table 4: Water Depths: Tidal Defended

Node Ref	NGR		Modelled Flood Depths in Metres			
	Eastings	Northings	Defended Annual Exceedance Probability			
			0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	502940	102071	-	-	1.33	-
2	502959	102080	-	-	1.35	-
3	502947	102070	-	-	1.24	-
4	502955	102074	-	-	1.20	-
5	502944	102061	-	-	1.30	-
6	502962	102072	-	-	1.28	-

All levels taken from: Arun to Adur Coastal Modelling (2012) with updated defended modelling (2017)

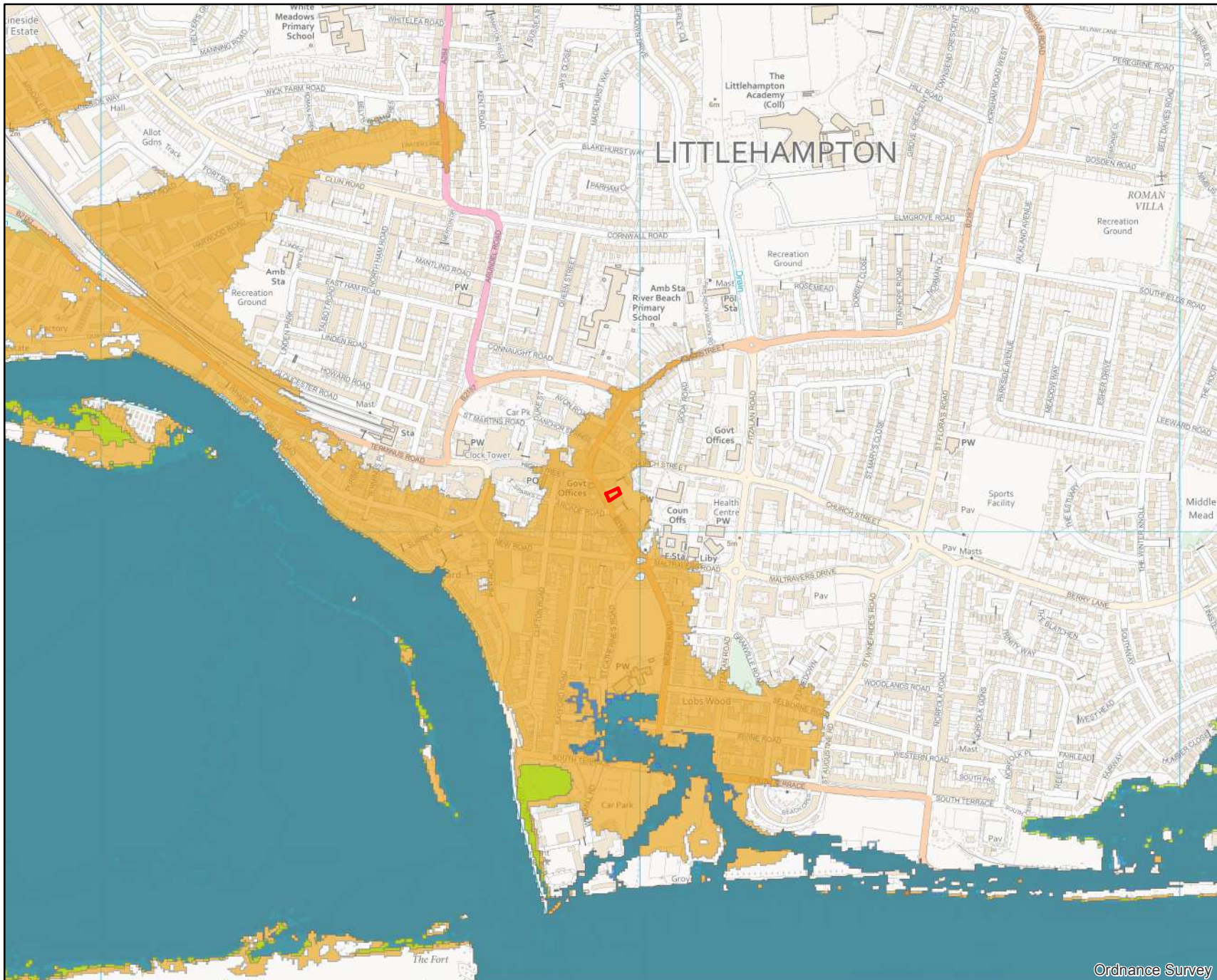
Produced on: 23/09/2022

*** The flood risk data provided is based on existing EA hydraulic models for existing 0.5% annual probability events with an allowance for climate change. Please note the climate change allowances provided are not up to date. These were updated on 17 December 2019.**

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.

Modelled Flood Outlines (Defended Tidal). Centred BN17 5HZ.

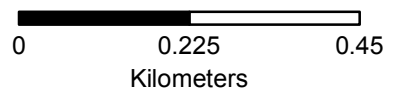


Legend

- Site Boundary
- 0.1% AEP Defended Tidal
- 0.5% AEP (2065) Defended Tidal
- 0.5% AEP (2115) Defended Tidal
- 0.5% AEP Defended Tidal

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

Scale: 1:10,000








Ordnance Survey

Modelled Flood Outlines (Undefended Tidal). Centred BN17 5HZ.

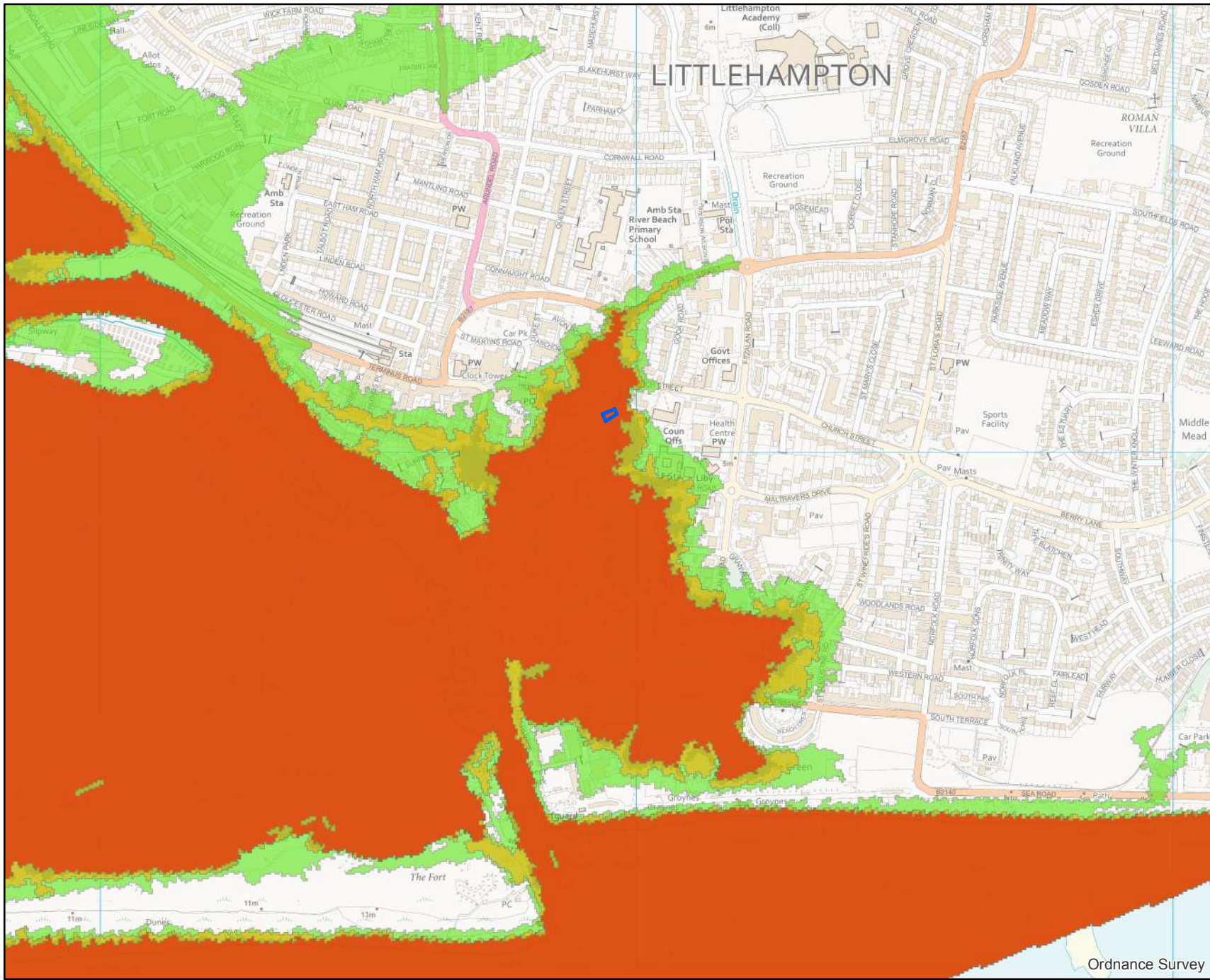
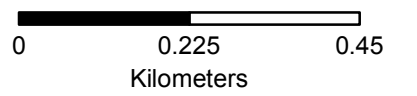


Legend

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


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

Scale: 1:10,000



Recorded Flood Outlines. Centred BN17 5HZ.

Legend

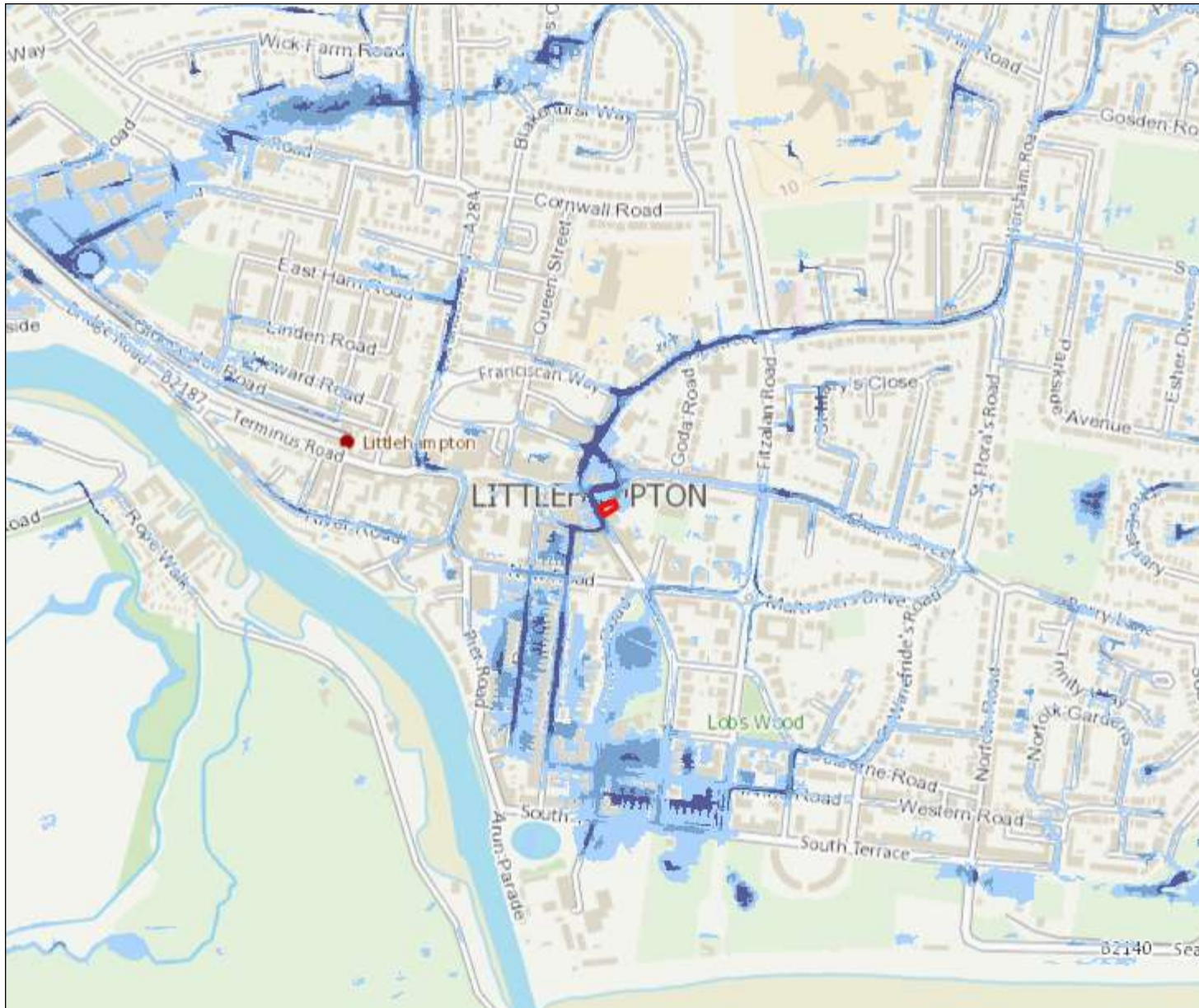
 All recorded flood outlines



1: 10,000



Risk of flooding from Surface Water. Centred BN17 5HZ.



1: 10,000

0 Metres 250



Likelihood of flooding from Surface Water

- High ($\geq 3.3\%$)
- Medium (3.3% - 1%)
- Low (1% - 0.1%)
- Very Low

Likelihood of flooding from Surface Water

- High:** Greater than or equal to 3.3% (1 in 30) chance in any given year
- Medium:** Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low:** Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
- Very Low:** Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on GOV.UK.

Solent & South Downs Area

Pre-application Advice Note

September 2019

This document sets out the environmental issues we will consider when providing our planning application consultation advice to Local Councils. It can be used by applicants, developers and consultants at the pre-planning stage.

Fluvial Flood Risk

Development must be safe and should not increase the risk of flooding.

You can view a site's flood zone on the Flood Map for Planning on our website: <https://flood-map-for-planning.service.gov.uk>

If your proposed development is located within flood zone 2 or 3 you should consult the Flood Risk and Coastal Change pages of the National Planning Policy Guidance (NPPG)

<http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/>

Here you can determine whether the flood risk vulnerability of your proposed development and the flood zone are compatible. You can also establish if there are flood risk sequential test and exception test requirements for your proposed development. In the first instance we recommend the developer/applicant liaises with the Local Planning Authority (LPA) to undertake the Sequential Test in accordance with the National Planning Policy Framework (NPPF).

If your proposed development is located within flood zone 2 or 3 and its vulnerability and flood zone are considered acceptable under the NPPG then a site specific Flood Risk Assessment (FRA) is required to support any subsequent planning application. This is required by paragraph 163 of the NPPF: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

Guidance on the content of a site specific FRA can be found in the NPPG and online: <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>

More detailed flood risk modelling data is available to help you produce a FRA please contact our Customers and Engagement team at SSDenquiries@environment-agency.gov.uk.

Climate Change Allowances

On 19 February 2016, we published new guidance for planners and developers on how to use climate change allowances in a site-specific FRA: <https://www.gov.uk/guidance/flood-risk-assessments-climatechange-allowances>

Groundwater Quality

Development must not cause pollution to the water environment.

Source Protection Zones

We have defined Source Protection Zones (SPZs) for 2000 groundwater sources such as wells, boreholes and springs used across the country for public drinking water supply. These zones are more sensitive to contamination from activities that might cause pollution in the area. The closer the activity, the greater the risk.



SPZ1s are the areas designated as most at risk from contamination and development activities and in these areas we may consider it inappropriate for development to discharge foul or surface water into the ground.

To see if your proposed development is located within a Source Protection Zone, please use our online map: <https://magic.defra.gov.uk/>

Contaminated Land

The NPPF takes a precautionary approach to land contamination. Before the principle of development can be determined, land contamination should be investigated to see whether it could preclude certain development due to environmental risk or cost of remediation. Where contamination is known or suspected, a desk study, site investigation, remediation and other works may be required to enable safe development.

Pollution

If the proposed development use has the potential to pollute ground or surface water receptors then an assessment to establish whether the risk of pollution is acceptable or can be mitigated will be required within any planning application.

Foul Drainage

When drawing up wastewater treatment proposals for any development, the first presumption is to provide a system of foul drainage discharging into a public sewer to be treated at a public sewage treatment works (those provided and operated by the water and sewerage companies). This should be done in consultation with the sewerage company of the area prior to the submission of a formal planning application.

If connection to a public sewage treatment plant is not feasible, a package sewage treatment plant may be considered. If you would like further advice please call 03708 506 506.

Cemeteries

The development of new cemeteries in areas where groundwater vulnerability is high should be avoided, except where the thickness and nature of the unsaturated zone, or the impermeable formations beneath the site, protect groundwater; or where the long-term risk is mitigated by appropriate engineering methods.

Main Rivers

Ecology

In accordance with the National Planning Policy Framework (NPPF), any development proposal should avoid significant harm to biodiversity and seek to protect and enhance it. Opportunities to incorporate biodiversity in and around the development will be encouraged.

Your scheme should be designed with a naturalised buffer zone of at least 8 metres from the main river to protect and enhance the conservation value of the watercourse and ensure access for flood defence maintenance.

This buffer zone should be managed for the benefit of biodiversity for example by the planting of locally appropriate, UK native species. The buffer zone should be undisturbed by development with no fencing, footpaths or other structures. This buffer zone will help provide more space for flood waters, provide improved habitat for local biodiversity and allows access for any maintenance requirements.

To identify any Main Rivers in proximity to your proposed development please see our Main Rivers Consultation Map: <http://apps.environment-agency.gov.uk/wiyby/151293.aspx>

customer service line

incident hotline

floodline

www.gov.uk/environment-agency

Culverting

The Environment Agency is likely to oppose culverting as it is damaging to the ecological integrity of the river channel and its corridor and acts as a barrier to the movement of wildlife, including fish and may also increase flood risk. If the proposal will impact an existing culvert the Environment Agency may oppose planning consent for development either over, or within 8 metres of an existing culvert. Wherever possible, existing culverts should be removed and the river channel and bankside habitat reinstated to restore the ecological continuity of the river channel and its corridor.

Water Framework Directive (WFD)

Any marine works below MHWS require an assessment of possible impacts on Water Framework Directive (WFD) . The assessment should include all elements of the works that fall within, or have the potential to affect, a WFD water body and any of the protected areas therein (including Bathing Waters and Shellfish Waters).

The WFD assessment should follow the 'Clearing the Waters for All' guidance available at <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

Where appropriate, a WFD Assessment should assess any potential impacts and demonstrate that the required enhancements will be delivered. In some cases the requirements of a WFD assessment can be incorporated into an Environmental Impact Assessment (EIA). Any development that has the potential to cause deterioration in classification under WFD or that precludes the recommended actions from being delivered in the future is likely to be considered unacceptable to us.

Permits & Consents

Environmental Permitting Regulations

To see if your proposed development requires an Environmental Permit under the Environmental Permitting Regulations please refer to our website: <https://www.gov.uk/guidance/check-if-you-need-an-environmental-permit>

From 6 April 2016 an Environmental Permit is required for any proposed works or structures, in, under, over or within 8 metres of the top of the bank of designated Main River, and within 16 metres of a tidal defence.

Ordinary Watercourse Consent

The prior written consent of the relevant Lead Local Flood Authority is required for the erection of any flow control structures, culverting or diversion of ordinary watercourses, including streams, land drains and ditches.

Marine Licence

A marine licence may be required for any activities at the mean high water spring tide up to the territorial limit. This also includes the waters of every estuary, river or channel where the tide flows at mean high water spring tide.

Any development must demonstrate how adverse impacts on migratory fish, bathing waters, shellfish waters, designated sites, protected and priority species and habitats will be avoided, minimised, mitigated and if necessary compensated for. Works within or affecting a Water Framework Directive (WFD) waterbody will need to demonstrate that compliance with WFD objectives will be achieved. 'Clearing the Waters for All' provides guidance on how the impacts on WFD should be addressed, and should be used when preparing an assessment, including the screening and scoping of activities. <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

Further pre-application options

The information provided above details generic information which may or may not be applicable to your development. We are able to provide more detailed and bespoke advice and answer technical questions for a charged fee of £100 per person per hour +VAT.

If you are interested in finding out more about this service, please email:



We can explain this service and provide you with a bespoke quote for further pre-application advice that you may require please see .gov - <https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

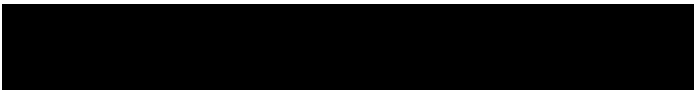
Please note

Please note that the view expressed in this letter by the Environment Agency is in response to the enquiry only and does not represent our final view in relation to any future planning application made in relation to this site.

We reserve the right to change our position in relation to any such application.

As part of this preliminary response we have not technically reviewed any documents. This opinion is based on the information submitted and current planning policy and guidance.

If you have any questions please contact the Solent & South Downs Sustainable Places team:



To make a request for data

Please submit your request for data to . You should get the information within 20 working days. We will tell you when to expect the information if we need more time.

There are many datasets available online at www.data.gov.uk including flood maps, historic landfill, waste exemptions, consented discharges to controlled waters, and much more.

