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ENVIRONMENTAL ASSESSMENT

Flood Risk Assessment 6110

63 Sandy Point Road,
Hayling Island,
Havant,
Hampshire,
PO11 9RR

Document Issue Record

Project: Phase 1 Flood Risk Assessment

Prepared for: Oliver West

Reference: 6110

Site Location: 63 Sandy Point Road, Hayling Island, Havant, Hampshire, PO11 9RR

Proposed Development: It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first-floor level/ loft space. It is understood that, as existing, bedrooms are located at the ground floor.

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1. Summary

- 1.1 Ambiental Environmental Assessment has been appointed by Oliver West to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 63 Sandy Point Road, Hayling Island, Havant, Hampshire, PO11 9RR.
- 1.2 It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first-floor level/ loft space. It is understood that, as existing, all bedrooms are located at the ground floor.
- 1.3 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary, and therefore the proposed development, is located wholly within Tidal Flood Zone 3 (high risk). The site and much of Hayling island benefits from flood defences that surround the perimeter of the coastline. Subsequently the site can be considered as located outside of the functional floodplain and within Flood Zone 3a.
- 1.4 The existing use of the site is for residential purposes and could be classified as 'More Vulnerable' under the NPPF vulnerability classification guidelines. The proposed development is for the demolition of the existing dwelling and, following this, to replace the building with a new residential dwelling. Subsequently there will be no change in vulnerability classification at the site post-development.
- 1.5 The EA Product 4 dataset provided by the EA (Appendix II) indicates that the 0.5% AEP (2015 epoch) tidal flood event is associated with a maximum flood level of 3.32mAOD. The present-day modelled 0.1% AEP (2015 epoch) tidal flood level is reported as 3.55mAOD. These are used to define Flood Zones 2 and 3 respectively. The data has been taken from the East Solent Coastal Model (2018).
- 1.6 To account for the impacts of climate change, Ambiental have conducted an analysis of the provided flood data using UKCP18 Sea Level Rise Allowances for the South East. This indicates that sea levels in the vicinity of the site will increase by approximately 1.12m over the lifetime of the proposed development (when considering the Higher Central allowance from 2015 to 2125). This would result in a design (0.5% AEP) flood level of 4.44mAOD in the 2125 epoch.
- 1.7 With reference to the EA Flood Map for Planning, the site benefits from flood defences as existing. Following an assessment of the Environment Agency's Asset Information Management System, these defences are identified as having a largely 1 in 200 year Standard of Protection (SoP). In places, however, the defences offer only a 1 in 100 year SoP.
- 1.8 Following the review of the North Solent Shoreline Management Plan (SMP) (2010), the short, medium and long term policies for Selsey Bill to Hurst Spit is to "Hold the Line". The SMP aims to determine sustainable policies for management of the shoreline and to set a framework for the future management of erosion and flood risks along the coastline. With reference to the framework, the local authority aims to maintain and/or upgrade the existing SoP of the flood defences over the lifetime of the development.
- 1.9 As part of the proposals for the replacement dwelling, sleeping accommodation will be set at first floor level/ loft space. It is recommended that this level is raised to no lower than 4.74mAOD, 300mm above the 0.5% AEP (2125 epoch) flood level of 4.44mAOD. As existing, sleeping accommodation is currently set at ground floor level within the existing bungalow. Betterment will subsequently be provided post-development, when compared to the existing situation.

- 1.10 The existing built footprint at the site has been measured to be approximately 53m². The proposed replacement dwelling is to have a footprint of approximately 126m². Subsequently, there will be an increase in built footprint of 73m².
- 1.11 The primary source of flooding at the site is of a tidal nature and subsequently there will likely be no impact to flood water displacement as a result of the proposed development.
- 1.12 Following the review of the EA's Risk of Flooding from Surface Water (RoFSW) dataset, the site and proposed development is identified as being unaffected for the 1 in 30 year, 1 in 100 year and 1 in 1,000 year rainfall events. As such, the risk of surface water flooding could be considered very low.
- 1.13 With reference to the Partnership for Urban South Hampshire (PUSH) Strategic Flood Risk Assessment (SFRA) (2016), the site is identified as being located within an area at 'moderate' groundwater flood risk.
- 1.14 Sewer incident records provided by Southern Water suggest that there have been 3 reported incidents of sewer flooding in the wider area. There is no evidence of flooding from this source at the site and therefore the risk of sewer flooding could be considered relatively low.
- 1.15 The proposed development is to result in an increase in built footprint and associated surface area post-development. Subsequently, there will likely be an increase in impermeable surface area at the site. It is recommended that Sustainable Drainage Systems (SuDS) are introduced on site to limit surface water runoff rates to as close to greenfield as practicable.
- 1.16 As such, the following mitigation measures are recommended:
- The development is for a replacement dwelling
 - Betterment will be provided compared to the existing with Finished Floor Levels (FFLs) of the proposed first floor level to be set no lower than 4.74mAOD (300mm above the design flood level of 4.44mAOD);
 - Betterment is to be provided compared to the existing dwelling, with all sleeping accommodation to be located at the first floor level;
 - The site owner and residents should sign up to the EA Flood Alert/Warning Service and have an evacuation plan.

Following the guidelines contained within the NPPF, the proposed development is considered to be suitable assuming appropriate mitigation can be maintained for the lifetime of the development.

Development Description	Existing	Proposed
Development Type:	Bungalow	Demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first floor level/ loft space.
Number of Bedrooms:	3	No change
EA Vulnerability Classification:	More Vulnerable	No change
Ground Floor Level:	2m LiDAR data indicate that ground levels range from 2.26mAOD to 2.70mAOD.	No change
Level of Sleeping Accommodation:	Ground floor	First floor
Impermeable Surface Area:	Approx. 95m ²	Increase to approx. 285m ²
Surface Water Drainage:	N/A ¹	It is recommended that the developer implements small scale SuDS methods at the site to limit surface water runoff discharge rates to as close to greenfield run-off rates as practicable.
Site Size:	Approx. 367m ²	No change
Risk to Development	Summary (front / rear)	Comment
EA Flood Zone:	3	Site benefits from the presence of defences as existing
Flood Source:	Tidal	English Channel / Solent
1:200 Year (2015 Epoch) Flood Level	3.32mAOD	Present-day (2015 epoch) modelled flood levels have been extracted from the 2018 East Solent Coastal Model.
1:1000 Year (2015 Epoch) Flood Level	3.55mAOD	
1:200 Year (2125 Epoch) Flood Level	4.44mAOD	Ambiental have determined the 2125 epoch flood levels by upscaling the 2015 epoch flood levels in accordance with UKCP18 sea level rise guidance.
1:1000 Year (2125 Epoch) Flood Level	4.67mAOD	
Recorded Flood Events in Area:	Yes	Neither the EA nor the PUSH SFRA have provided any evidence to suggest that the site has historically flooded. The EA have provided historic records of flooding that show flood extents from November 2005 and March 2008. These events occurred following the overtopping of defences and affected areas south of the site.
Recorded Flood Events at Site:	No	
SFRA Available:	Yes	Partnership for Urban South Hampshire (PUSH) SFRA (2016)
Management Measures	Summary	Comment
Ground floor level above extreme flood levels:	No	Site benefits from the presence of flood defences. The proposed replacement dwelling is to raise sleeping accommodation to first floor level, providing betterment over the existing bungalow.
Safe Access/Egress Route:	Yes	See Section 7 of the report
Flood Resilient Design:	Yes	See Section 7 of the report
Site Drainage Plan:	N/A ¹	It is recommended that the developer implements small scale SuDS methods at the site to limit surface water runoff discharge rates to as close to greenfield run-off rates as practicable.
Flood Warning & Evacuation Plan:	Yes	Site is located within EA Flood Alert and Flood Warning service areas.
Offsite Impacts	Summary	Comment
Displacement of floodwater:	None	Proposed development is for a replacement dwelling. Whilst there will be an increase in built footprint at the site post-development, the primary risk of flooding is from a tidal source.
Increase in surface run-off generation:	None	There will be an increase in impermeable surface area at the site post-development. Subsequently, it is recommended that small scale SuDS methods at the site to limit surface water runoff discharge rates to as close to greenfield run-off rates as practicable.
Impact on hydraulic performance of channels:	None	Does not affect channel

Table 1 Summary of flood risks, impacts and proposed flood mitigation measures.

N/A¹ not required for this assessment; N/A² data not available.

2. Development Description and Site Area

Proposed Development and Location

- 2.1 The proposed development is located at 63 Sandy Point Road, Hayling Island, Havant, Hampshire, PO11 9RR (Figures 1 and 2).
- 2.2 It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first floor level/ loft space. It is understood that, as existing, bedrooms are located at the ground floor.



Figure 1 Location Map, identifying the location of the proposed development (Source: OS)



Figure 2 Aerial Map, identifying the location of the proposed development (Source: Google)

Site Topography

- 2.3 Following a review of 2m resolution EA LiDAR data, ground levels at the site are shown to range from between 2.26mAOD and 2.70mAOD. Levels are generally shown to be flat within the immediate vicinity of the site.

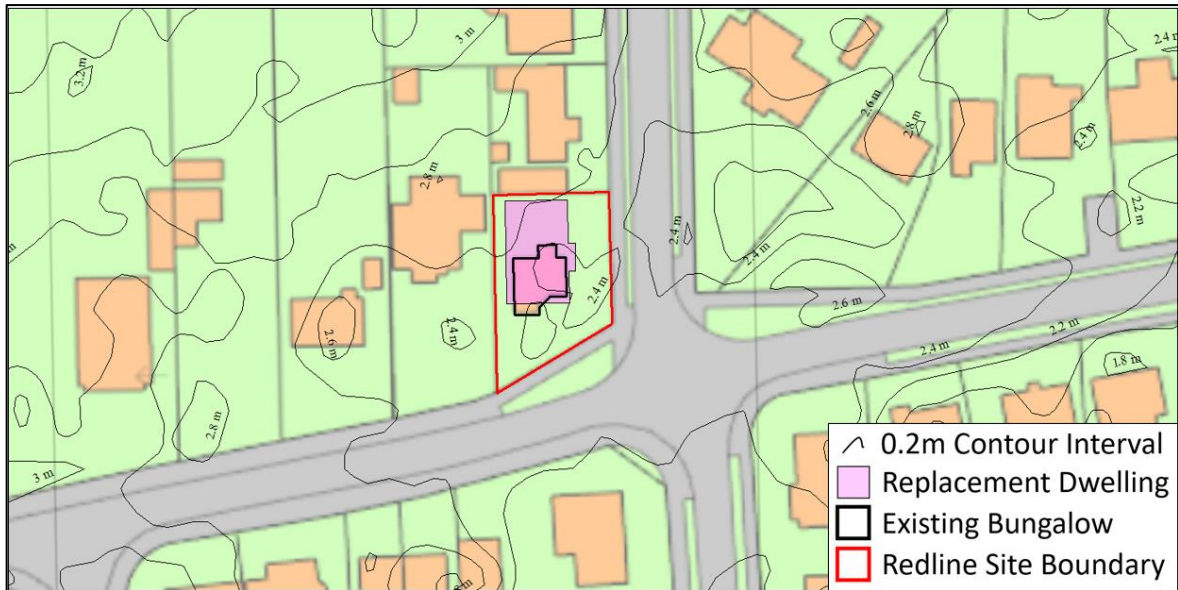


Figure 3 Topographic Levels at the Site Derived from 2m Lidar Data (0.2m Contour Intervals) (Source: EA)

Environment Agency Flood Map for Planning

2.4 The EA Flood Map for Planning demonstrates that the redline site boundary is located wholly in Flood Zone 3 (Figure 4). The Environment Agency's Flood Zones are defined as follows:

- Flood Zone 1 = Land at less than a 0.1% annual risk of river or sea flooding in any given year;
- Flood Zone 2 = Land at greater than a 0.1% annual risk, but less than a 1% annual risk of flooding from river sources in any year, and/or less than a 0.5% annual risk of flooding from seas in any given year;
- Flood Zone 3 = Land at greater than a 1% annual risk of flooding from river sources or greater than a 0.5% annual risk of flooding from seas in any given year.



Figure 4 EA Flood Map for Planning (Source: EA)

2.5 The site and much of Hayling island benefits from flood defences that surround the perimeter of the coastline. Subsequently the site can be considered as located outside of the functional floodplain and within Flood Zone 3a.

Vulnerability Classification

- 2.6 The existing use of the site is for residential purposes and could be classified as 'More Vulnerable' under the NPPF vulnerability classification guidelines.
- 2.7 The proposed development is for the demolition of the existing dwelling and, following this, to replace the building with a new residential dwelling. Subsequently there will be no change in vulnerability classification at the site post-development.

Geology

- 2.8 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is of the Portsmouth Sand Member and Whitecliff Sand Member (undifferentiated) (Figure 5).

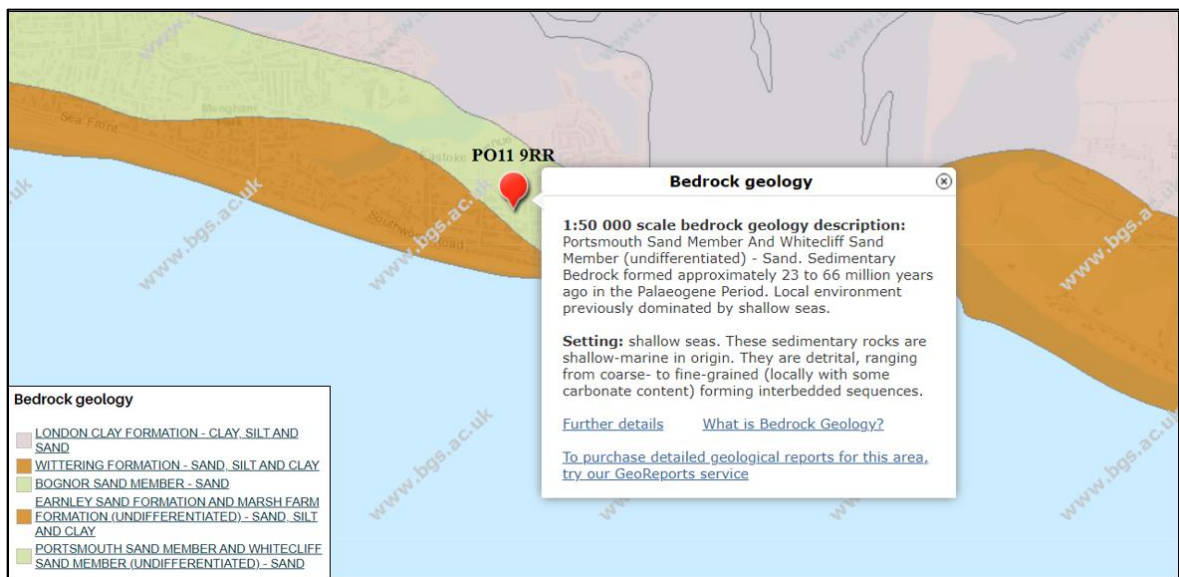


Figure 5 Underlying Bedrock Geology (Source BGS)

- 2.9 The BGS Geology of Britain Viewer indicates that there are superficial deposits underlying the site. These are River Terrace Deposits that are comprised of sand, silt and clay (Figure 6).

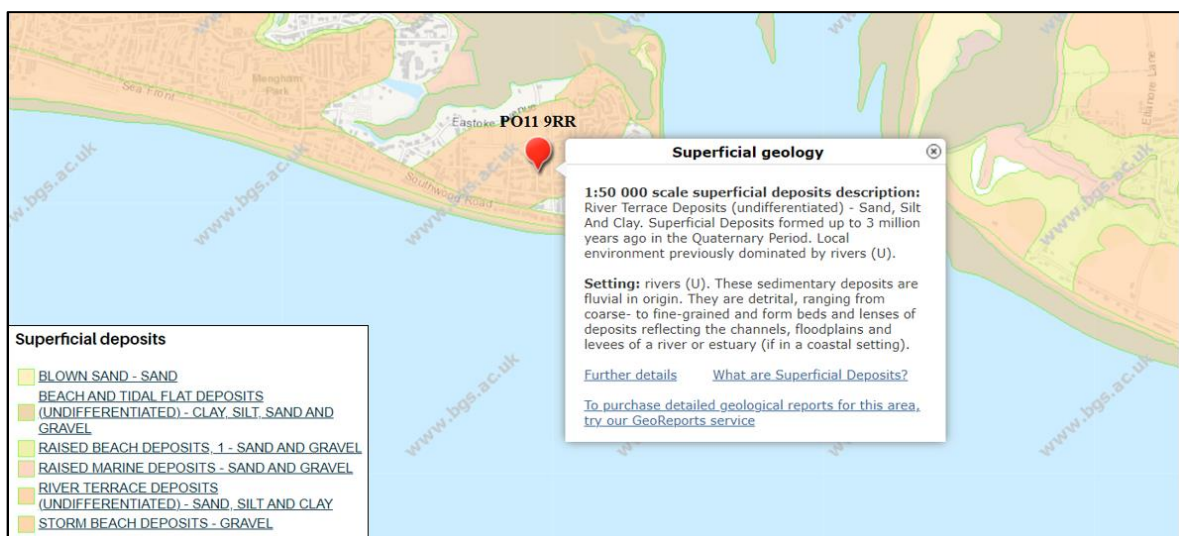


Figure 6 Underlying Superficial Deposits (Source BGS)

- 2.10 Soil information from the Soilscales website indicates that the soils are loamy soils with naturally high groundwater. Soils that are defined as being 'naturally wet' are typically associated with low-lying areas that have drained the surrounding landscape (Figure 7).

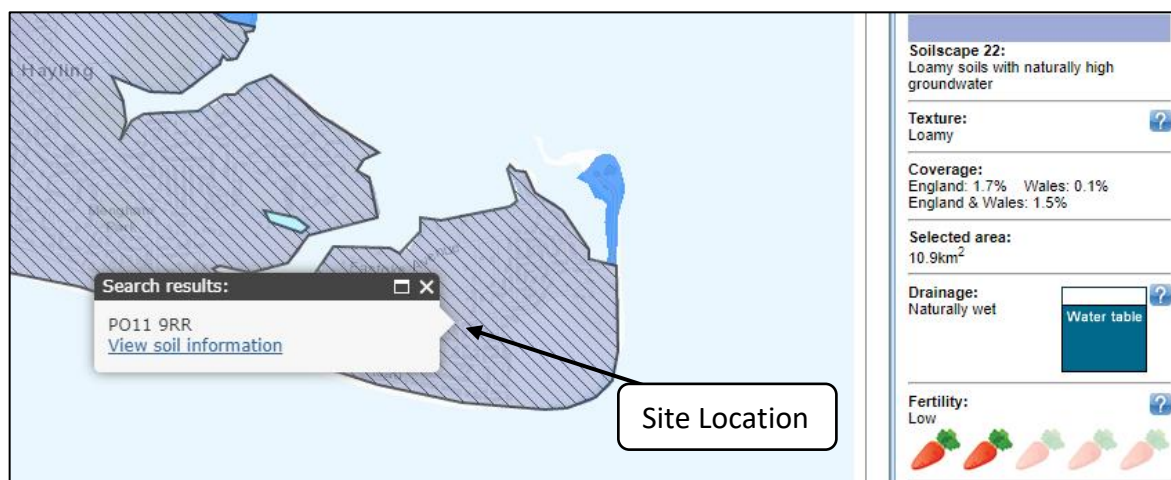


Figure 7 Underlying Soil Groups at the Site (Source: Soilscales)

3. Sequential Test/Exception Test

- 3.1 Under the NPPF, all new planning applications should undergo a *Sequential Test*. This test should be implemented by local planning authorities with a view to locating particularly vulnerable new developments (e.g. residential, hospitals, mobile homes etc.) outside of the floodplain.
- 3.2 The NPPF *Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table* is reproduced below;

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Zone 3b <i>Functional Floodplain</i>	Exception Test Required	✓	✗	✗	✗

Table 2 The Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table as specified by NPPF.
 Please note: ✓ means development is appropriate; ✗ means the development should not be permitted.

- 3.3 Using the principles of the Sequential Test outlined above, the proposed development is 'More Vulnerable'. The site is located within Flood Zone 3a (as defined by the EA) and therefore, under the NPPF, would be required to pass the Exception Test.
- 3.1 For the Exception Test to be passed, the proposed development must meet both parts of the following criteria:
- it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh the flood risk; and,
 - a Flood Risk Assessment demonstrates that the development will be safe, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

(Source: the NPPF)

- 3.2 The existing use of the site is for a single residential dwelling. Post-development, the use of the site will remain for a single residential dwelling. It could subsequently be considered irrational for the proposed development to require a Sequential Test.
- 3.3 This notion is shared by the Environment Agency's Thames region. Whilst we appreciate that this Position Statement has been issued by their Thames branch, the logic and rationale behind the statement remains true across the country, such as at this location. This EA document states that:

"We understand that finding an alternative site for a replacement dwelling is not often a realistic option and we would therefore take a pragmatic approach, ensuring the application of the Sequential Test".

- 3.4 As part of the proposals for the replacement dwelling, bedrooms will be raised to first floor level/ loft space. Sleeping accommodation is currently set at ground floor level within the existing bungalow. Post-development, this will therefore provide betterment and the option for internal safe refuge to be provided at an upper floor level.
- 3.5 The proposed development is located wholly within Flood Zone 3a. Subsequently, this FRA has been produced to demonstrate that the proposed development can be achieved sustainably with no increase of flood risk on site or elsewhere.

4. Site Flood Hazards

Sources of Flooding

- 4.1 The proposed development is located within Flood Zone 3 (high risk of flooding) and is considered to be 'More Vulnerable' according to NPPF guidelines. Table 3 summarises the potential sources of flooding to the site:

Source	Description
Tidal	English Channel
Surface	The site is located at very low risk of surface water flooding
Groundwater	Limited potential for groundwater flooding to occur
Sewer	In area

Table 3 Summary of flood sources.

Tidal

- 4.2 It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first-floor level/ loft space. It is understood that, as existing, bedrooms are located at the ground floor.
- 4.3 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary, and therefore the proposed development, is located wholly within Flood Zone 3 (high risk).
- 4.4 The site and much of Hayling island benefits from flood defences that surround the perimeter of the coastline. Subsequently the site can be considered as located outside of the functional floodplain and within Flood Zone 3a.
- 4.5 The EA Product 4 dataset provided by the EA (Appendix II) indicates that the 0.5% AEP (2015 epoch) tidal flood event is associated with a maximum flood level of 3.32mAOD. The present-day modelled 0.1% AEP (2015 epoch) tidal flood level is reported as 3.55mAOD. These are used to define Flood Zones 2 and 3 respectively. The data has been taken from the East Solent Coastal Model (2018). All provided modelled flood levels are displayed in Table 4.

Year	Tide Level (mAOD*)	
	0.5% annual exceedance probability/1 in 200 Year (Flood Zone 3)	0.1% annual exceedance probability/1 in 1000 Year (Flood Zone 2)
2015	3.32	3.55
2070	3.70	3.86
2115	4.13	4.32

Table 4 Maximum Modelled Flood Levels as per EA Product 4.

- 4.6 With reference to the EA Flood Map for Planning, the site benefits from flood defences as existing. Following an assessment of the Environment Agency's Asset Information Management System, these

defences are identified as having a largely 1 in 200 year Standard of Protection (SoP). In places, however, the defences offer only a 1 in 100 year SoP.

- 4.7 The defences in the immediate area are identified as having a minimum effective crest level of 3.61mAOD and hence the site is shown to be located in an area that benefits from defences.
- 4.8 Following the review of the North Solent Shoreline Management Plan (SMP) (2010), the short, medium and long term policies for Selsey Bill to Hurst Spit is to “Hold the Line”. The SMP aims to determine sustainable policies for management of the shoreline and to set a framework for the future management of erosion and flood risks along the coastline. With reference to the framework, the local authority aims to maintain and/or upgrade the existing SoP of the flood defences over the lifetime of the development.
- 4.9 EA guidance states that for ‘More Vulnerable’ developments located within Flood Zone 3, the Higher Central and Upper End climate change allowances should be considered for the lifetime of the development. It should be noted, that as the proposed development is for a replacement residential dwelling, the lifetime of the development could be considered to be 100 years.
- 4.10 To account for the impacts of climate change, Ambiental have conducted an analysis of the provided flood data using UKCP18 Sea Level Rise Allowances for the South East. This indicates that sea levels in the vicinity of the site will increase by approximately 1.12m over the lifetime of the proposed development (when considering the Higher Central allowance from 2015 to 2125). This would result in a design (0.5% AEP) flood level of 4.44mAOD in the 2125 epoch. The 0.1% AEP (2125 epoch) flood level is estimated to be 4.67mAOD.
- 4.11 Following a review of 2m resolution EA LiDAR data, ground levels at the site are shown to range from between 2.26mAOD and 2.70mAOD.
- 4.12 The site could therefore be subject to depths of up to 2.18m by 2125 for a 1 in 200 year event, if the defences were not to be upgraded or maintained (in contrast to the SMP) or if they were to fail. This is discussed further in Section 6 with regards to defence breach.
- 4.13 As part of the proposals for the replacement dwelling, sleeping accommodation will be set at first floor level/ loft space. It is recommended that this level is raised to no lower than 4.74mAOD, 300mm above the 0.5% AEP (2125 epoch) flood level of 4.44mAOD. As existing, sleeping accommodation is currently set at ground floor level within the existing bungalow. Betterment will subsequently be provided post-development, when compared to the existing situation.
- 4.14 Neither the EA nor the SFRA hold any records which indicate that the proposed development site has been subject to tidal flooding in the past.
- 4.15 As such, the risk to the proposed development from tidal flooding could be considered to be **moderate to high**.

Surface Water (Pluvial)

- 4.16 The Environment Agency Flood Risk from Surface Water website shows the proposed development to be within an area of 'Very Low' risk of flooding from surface water (Figure 8). Areas identified to be at 'Very Low' risk have less than a 0.1% annual risk of flooding from this source.
- 4.17 Ambiental have assessed the EA Risk of Surface Water (RoSW) flood depths and extents for the 1 in 1,000 year rainfall event in greater detail (Figure 9). This is considered to be representative of the Low risk scenario from the EA Surface Water Risk website. Depths of up to 300mm are predicted to occur along

Sandy Point Road immediately adjacent to the site. The site, and therefore the proposed replacement dwelling, remain unaffected during this event.

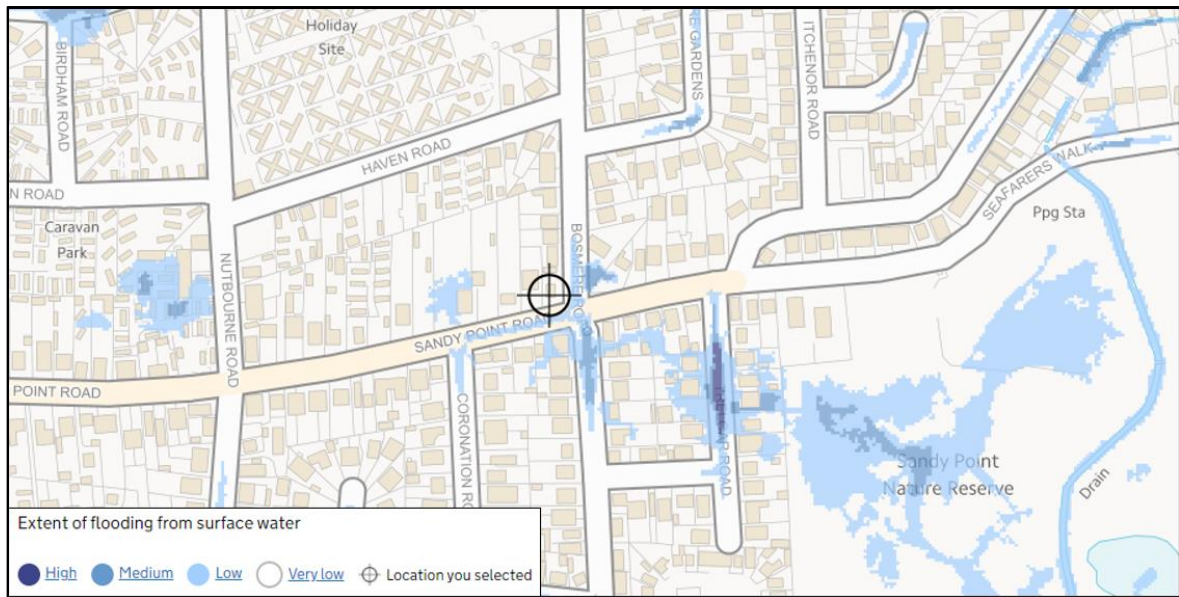


Figure 8 EA Surface Water Flood Risk Map (Source: EA)



Figure 9 EA Surface Water Low Risk Scenario (Source: EA)

- 4.18 Neither the PUSH SFRA (2016) nor the Environment Agency have provided any evidence to suggest that the site has historically flooded from this source.
- 4.19 Subsequently, the risk of surface water flooding to the site and the proposed development could be considered as **very low**.

Groundwater

- 4.20 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is of the Portsmouth Sand Member and Whitecliff Sand Member (undifferentiated). The Magic Maps online resource tool recognises a 'Secondary A' aquifer beneath the surface that is likely to be attributed to this bedrock (Figure 10). These are permeable layers that are capable of supporting water supplies at a local rather than strategic scale, and in some cases form an important source of base flows to rivers.

- 4.21 The BGS Geology of Britain Viewer indicates that there are superficial deposits underlying the site. These are River Terrace Deposits that are comprised of sand, silt and clay. The Magic Maps online resource tool also recognises these deposits as a 'Secondary A' aquifer (Figure 11).

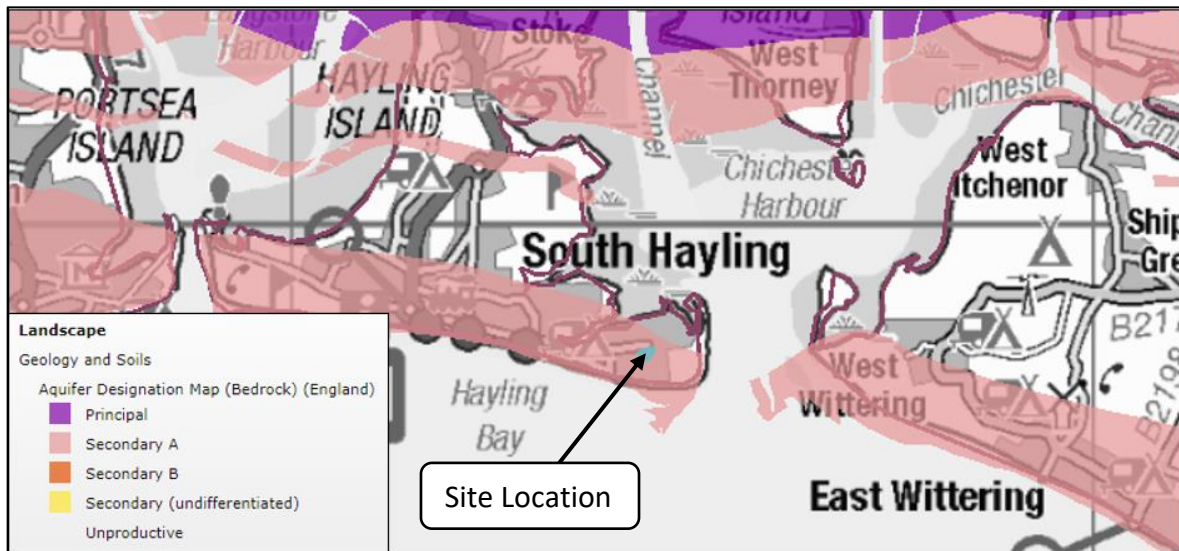


Figure 10 Underlying Bedrock Aquifers. (Source: DEFRA Magic Maps)

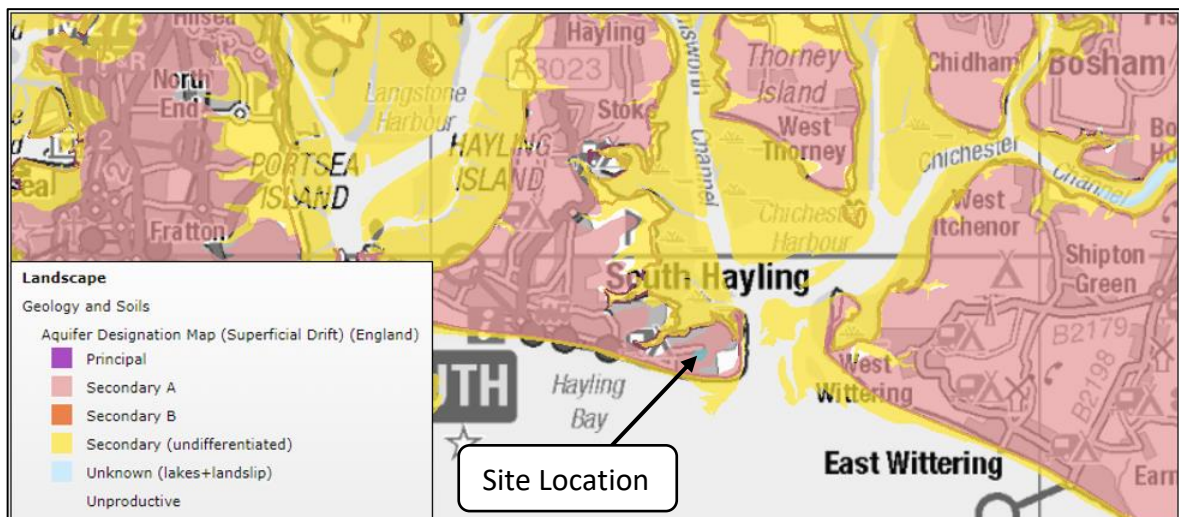


Figure 11 Underlying Superficial Deposits Aquifers. (Source: DEFRA Magic Maps)

- 4.22 Soil information from the Soilsapes website indicates that the soils are loamy soils with naturally high groundwater. Soils that are defined as being 'naturally wet' are typically associated with low-lying areas that have drained the surrounding landscape.
- 4.23 The Magic Map tool also shows the site to be located outside of all EA groundwater source protection zones.
- 4.24 The PUSH SFRA Update (2016) Groundwater Flooding Map indicates that the proposed development is located in an area which has 'moderate bedrock permeability' and no historic records of groundwater flooding (Figure 12).
- 4.25 The BGS Susceptibility to Groundwater Flooding Map (Figure 13) shows the proposed development to be located within an area where there is "limited potential for groundwater flooding to occur".
- 4.26 As such, the risk of groundwater flooding could be considered **relatively low**.

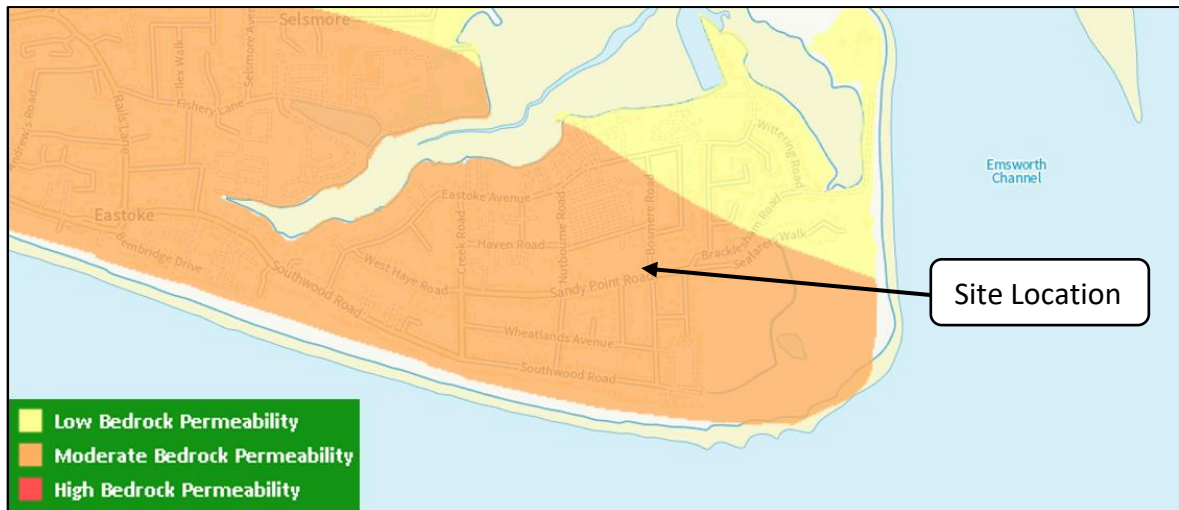


Figure 12 Bedrock Permeability Map. (Source: PUSH SFRA 2016)

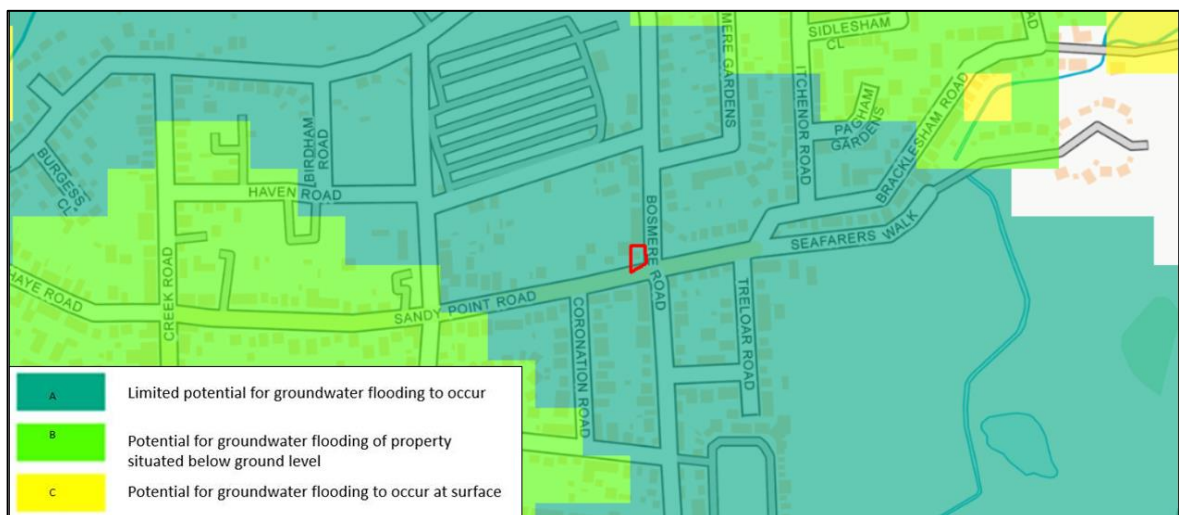


Figure 13 Susceptibility to Groundwater Flooding Map. (Source: BGS)

Sewer

4.27 The PUSH SFRA Update (2016) Southern Water Observed Flooding Map indicates that the proposed development site is located approximately 150 metres northwest from the nearest recorded incident of historic sewer flooding (Figure 14).

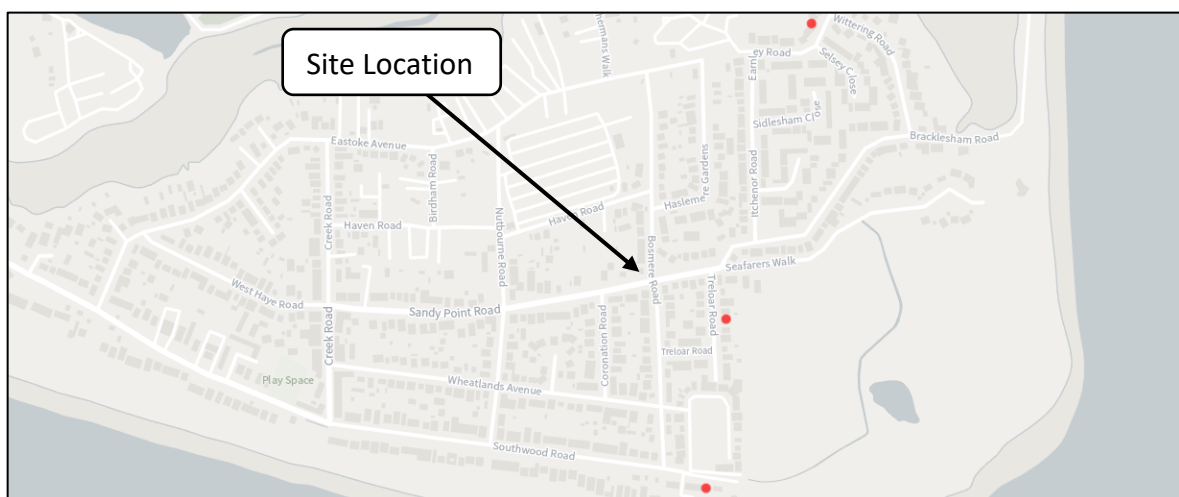


Figure 14 Southern Water Sewer Asset Record. (Source: PUSH SFRA 2016)

- 4.28 There is no evidence to suggest that the site specifically has historically flooded from this source and subsequently the risk of flooding from sewer sources could be considered **relatively low**.
- 4.29 Given the risk in the wider area, it is recommended that non-return valves are fitted to any new sewer connections.

Surface Water Drainage Strategy

- 4.30 It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first floor level/ loft space. It is understood that, as existing, bedrooms are located at the ground floor.
- 4.31 The existing built footprint at the site has been measured to be approximately 53m². The proposed replacement dwelling is to have a footprint of approximately 126m². Subsequently, there will be an increase in built footprint of 73m².
- 4.32 There will also be an increase in associated hardstanding area post-development. The existing and proposed impermeable surface area at the site is quantified and presented in Table 5 below.

	Built Footprint	Additional Impermeable Area	Total Impermeable Area	Remaining Permeable Area
Existing	53m ²	42m ²	95m ²	272m ²
Proposed	126m ²	159m ²	285m ²	82m ²

Table 5 Measured Existing and Proposed Areas for Surface Water Drainage Calculations

- 4.33 The proposed development will result in an increase in built footprint and impermeable surface area post-development.. It is recommended that Sustainable Drainage Systems (SuDS) are introduced on site to limit surface water runoff rates to as close to greenfield as practicable.
- 4.34 Initial runoff calculations indicate that the site area of approximately 0.037 hectare is associated with a Q_{BAR} of 0.1 l/s.
- 4.35 It is generally considered that flow restrictions of less than 1 l/s can increase the risk of blockage within a system. As such, 1 l/s is usually considered an acceptable restricted flow rate.
- 4.36 Ambiental have undertaken initial surface water storage calculations for the site to evidence a potential storage requirement when limiting runoff from the site to as close to greenfield as practical (1 l/s).
- 4.37 These calculations indicate a potential storage requirement of 10m³ is to be required for the 1:100 year +CC (40%) event when limiting runoff from the site to 1 l/s. These calculations can be found in Appendix III of this report.
- 4.38 It is subsequently recommended that small-scale SuDS measures (such as a water butt) are introduced on site to manage surface water runoff to an appropriate rate.

Records of Historical Flooding

- 4.39 Neither the EA nor the PUSH SFRA hold any records which indicate that the proposed development site has been subject to tidal flooding, surface water or groundwater flooding in the past.

- 4.40 The PUSH SFRA Update (2016) Southern Water Observed Flooding Map indicates that the proposed development site is located approximately 150 metres northwest from the nearest recorded incident of historic sewer flooding.

5. Probability of Flooding

Flood Zones

- 5.1 According to the EA Flood Map for Planning, the site is located within Flood Zone 3 (high risk of flooding).
- 5.2 The EA Flood Map for Planning has been produced in part using a relatively coarse, national scale flood modelling strategy, and in part by detailed modelling. It is important to note that only the potential floodplain is modelled; **the mitigating effects of any flood defences currently in place are not considered.** For reference, the definition of the NPPF flood risk zones is included below.

Zone	Description
1	Low Probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).
2	Medium Probability. This zone comprises land assessed as having 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.
3a	High Probability. This zone comprises land assessed as having 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.
3b	The Functional Floodplain. This zone comprises land where water has to flow or be stored in times of flood. SFRA's should identify this Flood 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 EA, including water conveyance routes).

Table 6 Definition of the NPPF Flood Zones. (Source: EA)

Climate Change on Site

- 5.3 Climate change is likely to increase the flow in rivers, raise sea levels and increase storm intensity.
- 5.4 EA guidance states that for 'More Vulnerable' developments located within Flood Zone 3, the Higher Central and Upper End climate change allowances should be considered for the lifetime of the development. It should be noted, that as the proposed development is for a replacement residential dwelling, the lifetime of the development could be considered to be 100 years.
- 5.5 Ambiental have been provided with a 2015 epoch, 1 in 200 year flood level of 3.32mAOD.
- 5.6 Analysing the EA Sea Level Rise Allowances (Table 7) for the South East shows that the sea levels in the vicinity of the site will increase by approximately 1.12m over the lifetime of the proposed development (when considering the Higher Central allowance from 2015 to 2125). This would result in a design (1 in 200 year) flood level of 4.44mAOD in the 2125 epoch.
- 5.7 Accordingly, it is recommended that the first floor level of the replacement dwelling should be set a minimum of 300mm above the 2125 design flood level. Therefore, the minimum design first floor level, where sleeping accommodation is proposed to be situated, is 4.74mAOD (4.44mAOD + 0.3m = 4.74mAOD).
- 5.8 Analysis of the Upper End allowance was also conducted, which showed an increase of flood levels at the site by approximately 1.50m over the lifetime of the proposed development. However, as the proposed

development is for a replacement dwelling that offers betterment, the Higher Central allowance has been considered to be suitable to be utilised for design.

Area of England	Allowance	2000 to 2035 (mm/year)	2036 to 2065 (mm/year)	2066 to 2095 (mm/year)	2096 to 2125 (mm/year)	Cumulative rise 2000 to 2125 / metres (m)
Anglian	Higher Central	5.8 (203mm)	8.7 (261mm)	11.6 (348mm)	13 (390mm)	1.2
	Upper End	7 (245mm)	11.3 (339mm)	15.8 (474mm)	18.1 (543mm)	1.6
South East / Thames	Higher Central	5.7 (200mm)	8.7 (261mm)	11.6 (348mm)	13.1 (393mm)	1.2
	Upper End	6.9 (242mm)	11.3 (339mm)	15.8 (474mm)	18.2 (546mm)	1.6
South West / Severn	Higher Central	5.8 (203mm)	8.8 (264mm)	11.7 (351mm)	13.1 (393mm)	1.21
	Upper End	7 (245mm)	11.4 (342mm)	16 (480mm)	18.4 (552mm)	1.62
Northumbria / Solway Tweed East	Higher Central	4.6 (161mm)	7.5 (225mm)	10.1 (303mm)	11.2 (336mm)	1.03
	Upper End	5.8 (203mm)	10 (300mm)	14.3 (429mm)	16.5 (495mm)	1.43
Humber	Higher Central	5.5 (193mm)	8.4 (252mm)	11.1 (333mm)	12.4 (372mm)	1.15
	Upper End	6.7 (235mm)	11 (330mm)	15.3 (459mm)	17.6 (528mm)	1.55
North West / Dee / Solway Tweed West	Higher Central	4.5 (158mm)	7.3 (219mm)	10 (300mm)	11.2 (336mm)	1.01
	Upper End	5.7 (200mm)	9.9 (297mm)	14.2 (426mm)	16.3 (489mm)	1.41

Table 7: Sea Level Allowance for each epoch in millimetres (mm) per year with Cumulative Sea Level Rise for each epoch in brackets (Source: EA)

5.9 The EA have stated that climate change would increase the peak rainfall intensity allowance in small and urban catchments. The EA climate change allowances for peak rainfall intensity are shown in Table 8 below. As such the proposed development would be at more risk of surface water flooding in the future.

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper End	10%	20%	40%
Central	5%	10%	20%

Table 8: Peak Rainfall Intensity Allowance in Small and Urban Catchments (use 1961 to 1990 baseline) (Source: EA)

6. Residual Risks

Identification of Residual Risks

6.1 Residual risks are those remaining after applying the sequential approach to the location of development and taking mitigating actions. Examples of residual flood risk include:

- the failure of flood management infrastructure such as a breach of a raised flood defence, blockage of a surface water conveyance system, overtopping of an upstream storage area, or failure of a pumped drainage system;
- failure of a reservoir, or;
- a severe flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event which the drainage system cannot cope with.

Defence Breach

6.2 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary, and therefore the proposed development, is located wholly within Tidal Flood Zone 3 (high risk). The site and much of Hayling island benefits from flood defences that surround the perimeter of the coastline.

6.3 Following the review of the North Solent Shoreline Management Plan (SMP) (2010), the short, medium and long term policies for Selsey Bill to Hurst Spit is to “Hold the Line”. The SMP aims to determine sustainable policies for management of the shoreline and to set a framework for the future management of erosion and flood risks along the coastline. With reference to the framework, the local authority aims to maintain and/or upgrade the existing SoP of the flood defences over the lifetime of the development.

6.4 Given that the site benefits from the presence of flood defences, there is the residual risk of flooding should the defences fail. No breach modelling has been undertaken or provided by the EA.

6.5 Following a review of 2m resolution EA LiDAR data, ground levels at the site are shown to range from between 2.26mAOD and 2.70mAOD. The site could therefore be subject to depths of up to 2.18m by 2125 for a 1 in 200 year event, if the defences were to fail.

6.6 The PUSH SFRA (2016) features flood hazard mapping for the undefended Flood Zone 3 event as per Figure 15. The site is shown to be in an area that is at High Risk.

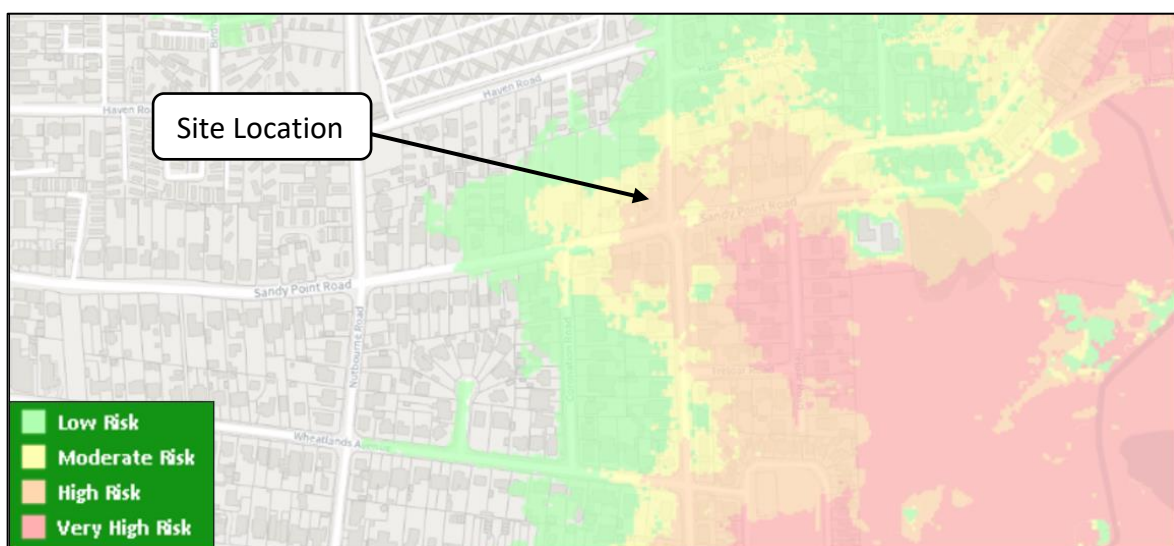


Figure 15 Flood Hazard Mapping for Undefended Flood Zone 3 Event (Source: PUSH SFRA 2016)

- 6.7 As part of the proposals for the replacement dwelling, sleeping accommodation will be set at first floor level/ loft space. It is recommended that this level is raised to no lower than 4.74mAOD, 300mm above the 0.5% AEP (2125 epoch) flood level of 4.44mAOD. As existing, sleeping accommodation is currently set at ground floor level within the existing bungalow. Betterment will subsequently be provided post-development, when compared to the existing situation.

Reservoir Failure

- 6.8 The EA Risk of Flooding from Reservoir Map demonstrates that the site is outside flood extents in the event of reservoir flooding.

Drainage Exceedance

- 6.9 In the event of drainage exceedance, overland flows will be dictated by external topography. Topographic levels in the wider area fall from west to east along Sandy Point Road. It is recommended that first floor level is to be set no lower than 4.74mAOD (a minimum of 300mm above the 2125 epoch 0.5% AEP design flood level of 4.44mAOD). If possible, it is also recommended that the ground floor level is built on a 150mm slab to offer mitigation to drainage exceedance events.

7. Flood Risk Management Measures

Flood Risks

- 7.1 It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first floor level/ loft space. It is understood that, as existing, bedrooms are located at the ground floor.
- 7.2 As is highlighted within Section 4 of this report, the proposed development could be considered to be at a moderate to high risk of flooding from tidal sources, given that the site benefits from flood defences as existing. Following the review of the North Solent Shoreline Management Plan (SMP) (2010), the short, medium and long term policies for Selsey Bill to Hurst Spit is to “Hold the Line”.
- 7.3 Furthermore, the site has been assessed to be at very low risk of surface water flooding, given it remains unaffected during all modelled events (including the 1 in 1,000 year rainfall event).
- 7.4 Section 4 also summarises that the site is at relatively low risk of flooding from groundwater and sewer sources.
- 7.5 As such, the following mitigation measures are recommended:
- Finished First Floor Levels are to be set no lower than the 4.74mAOD (300mm above the 2125 epoch 0.5% AEP flood level of 4.44mAOD);
 - Non-return valves are to be fitted to new drain and sewer outlets;
 - Site owners and residents are to sign up to the EA Flood Warning and Flood Alert Services and have an evacuation plan in place.

Flood Alert and Flood Warning Service

- 7.6 The site is located within the EA Flood Alert and Flood Warning service areas (Figure 16). As such, it is recommended that site users sign up to these services.

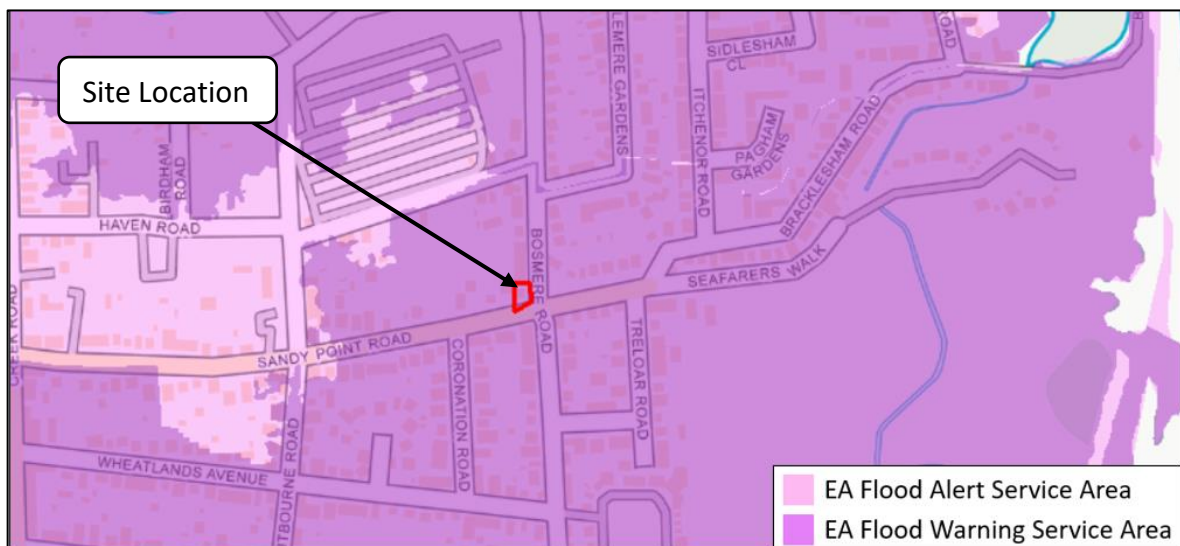


Figure 16 EA Flood Alert and Flood Warning Service Areas. (Source: EA)

- 7.7 The EA operates a 24-hour telephone service on 0345 988 1188 that provides frequently updated flood warnings and associated floodplain information. Further information can be found on www.environment-

agency.gov.uk/floodline. Floodline Warnings Direct is a free service operated by the EA that provides flood warnings direct to occupants by telephone, mobile phone, fax or pager.

What to do if you receive a Flood Alert

7.8 A flood alert means you need to prepare: flooding is possible. You should:

- check your flood risk - <https://flood-warning-information.service.gov.uk/long-term-flood-risk>
- sign up for flood warnings - <https://www.gov.uk/sign-up-for-flood-warnings>
- keep up to date with the latest situation - call Floodline on 0345 988 1188 or follow @EnvAgency and #floodaware on Twitter for the latest flood updates
- have a bag ready with vital items like insurance documents and medications in case you need to leave your home
- check you know how to turn off your gas, electricity and water mains supplies
- plan how you'll move family and pets to safety



What to do if you receive a Flood Warning

7.9 A flood warning means you need to act: flooding is expected. You should do all the actions for a flood alert but also:

- move vehicles to higher ground if it's safe to do so
- move family and pets to safety
- move important items upstairs or to a safe place in your property, starting with cherished items and valuables, then furniture and furnishings
- turn off gas, electricity and water supplies if it's safe to do so; never touch an electrical switch if you're standing in water
- if you have property protection products such as flood barriers, or air brick covers, use them now
- keep track of the latest situation - <https://flood-warning-information.service.gov.uk/warnings>



What to do if you receive a Severe Flood Warning

7.10 A severe flood warning means there is danger to life: you must act now:

- call 999 if you're in immediate danger
- follow advice from the emergency services and evacuate if you're told to do so
- make sure you have an emergency kit including a torch, spare batteries, mobile phone and charger, warm clothes, important numbers like your home insurance, water, food, first aid kit and any medicines and baby care items you may need
- alert neighbours and offer help if it's safe to do so
- avoid driving or walking through flood water: just 30cm (1 foot) of fast flowing water could move your car and even shallow moving water can knock you off your feet



- keep your family and pets away from floodwater – it may contain heavy debris, sharp objects, open manhole covers, sewage and chemicals
- wash your hands if you've been in contact with flood water which may contain toxic substances

Flood Evacuation Plan

7.11 Upon receipt of a Flood Warning, site users are advised to evacuate the site to a designated place of safe refuge within Flood Zone 1. It is recommended that residents exit the site onto Sandy Point Road and head westwards for approximately 815m until reaching Eastoke Avenue. Here, residents should turn left and head southwards for approximately 130m. Upon reaching Southwood Road, site users should follow the road westwards for approximately 620m. Residents are to then head northwards along Rails Lane for approximately 640m. Rails Lane then becomes Selsmore Road. Site users are to continue on Selsmore Road heading west for a further 600m until reaching Sea Grove Avenue. Residents are to head north a further 40m. South Hayling United Reformed Church is located on the opposite (northern) side of the crossroad. This could offer another place of safe refuge in Flood Zone 1.

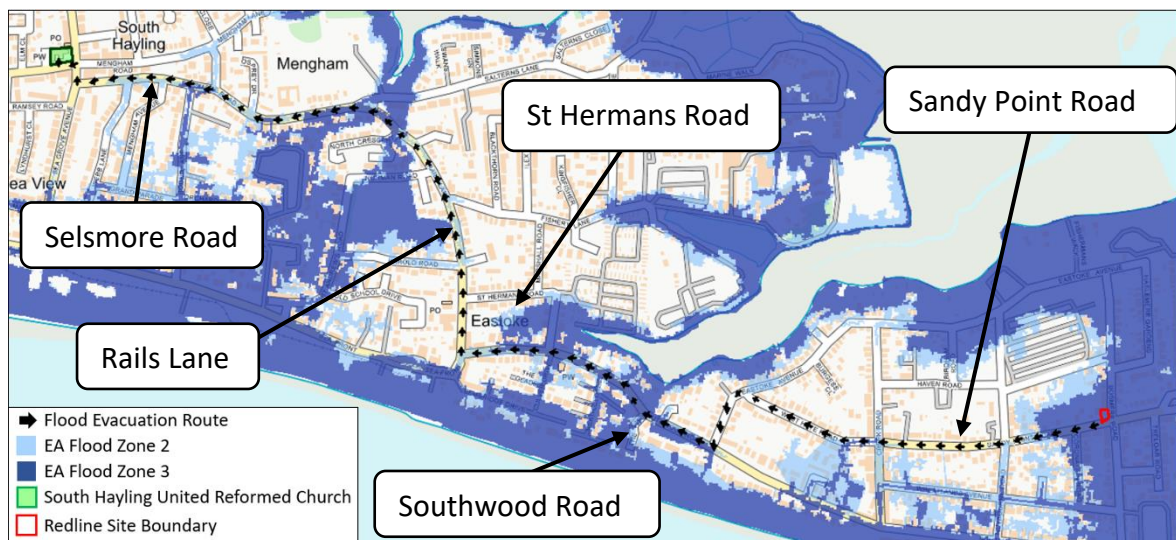


Figure 16 Flood Evacuation Plan. (Source: EA)

- 7.12 With reference to the PUSH SFRA (2016) Flood Hazard Mapping for the Undefended Flood Zone 3 event, the greatest risk to life along the evacuation route is immediately at the site ('High' Hazard Rating), as residents head west, they are in a 'Very Low' Hazard Rating after approximately 100m. There is a small area of Southwood Road that is shown to be at 'Low' Hazard Rating. Otherwise, the entire evacuation route is in a 'Very Low' Hazard region. The Flood Evacuation Route has been overlaid on the hazard mapping in Figure 17.
- 7.13 If flood waters along the proposed evacuation route have exceed 25cm, site users are advised if possible, to seek refuge at the upper floors on site.



Figure 17 Flood Evacuation Plan Overlaid onto Flood Hazard Map for Undefended Flood Zone 3 Event. (Source: PUSH SFRA 2016)

8. Off Site Impacts

Impact to Flood Risk Elsewhere

- 8.1 The site is located in Flood Zone 3, (tidal flood risk). Under normal operating conditions, the site benefits from the presence of tidal flood defences within the wider area.
- 8.2 As such, there will likely be negligible change in floodwater displacement in the vicinity of the site as a result of the proposed development.

Generation of Runoff

- 8.3 It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first floor level/ loft space. It is understood that, as existing, bedrooms are located at the ground floor.
- 8.4 The existing built footprint at the site has been measured to be approximately 53m². The proposed replacement dwelling is to have a footprint of approximately 126m². Subsequently, there will be an increase in built footprint of 73m².
- 8.5 There will also be an increase in associated hardstanding area post-development. The existing and proposed impermeable surface area at the site is quantified and presented in Table 5.
- 8.6 The proposed development is to result in an increase in built footprint and associated surface area post-development. Subsequently, there will likely be an increase in impermeable surface area at the site. It is recommended that Sustainable Drainage Systems (SuDS) are introduced on site to limit surface water runoff rates to as close to greenfield as practicable.
- 8.7 Initial runoff calculations indicate that the site area of approximately 0.037 hectare is associated with a Q_{BAR} of 0.1 l/s.
- 8.8 It is generally considered that flow restrictions of less than 1 l/s can increase the risk of blockage within a system. As such, 1 l/s is usually considered an acceptable restricted flow rate.
- 8.9 Ambiental have undertaken initial surface water storage calculations for the site to evidence a potential storage requirement when limiting runoff from the site to as close to greenfield as practical (1 l/s).
- 8.10 These calculations indicate a potential storage requirement of 10m³ is to be required for the 1:100 year +CC (40%) event when limiting runoff from the site to 1 l/s. These calculations can be found in Appendix III of this report.
- 8.11 It is subsequently recommended that small-scale SuDS measures (such as a water butt) are introduced on site to manage surface water runoff to an appropriate rate.

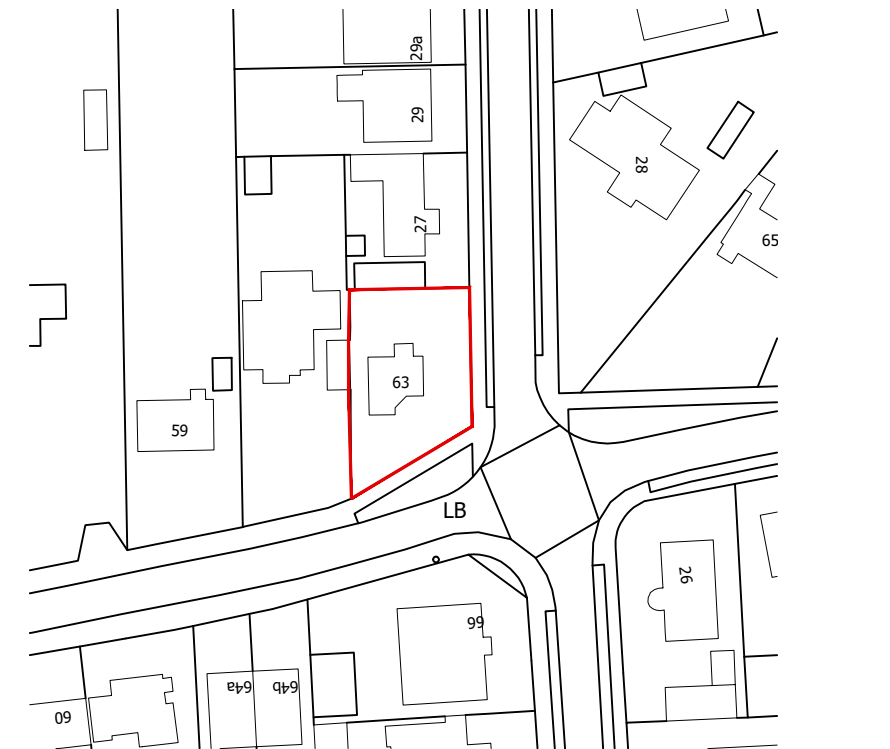
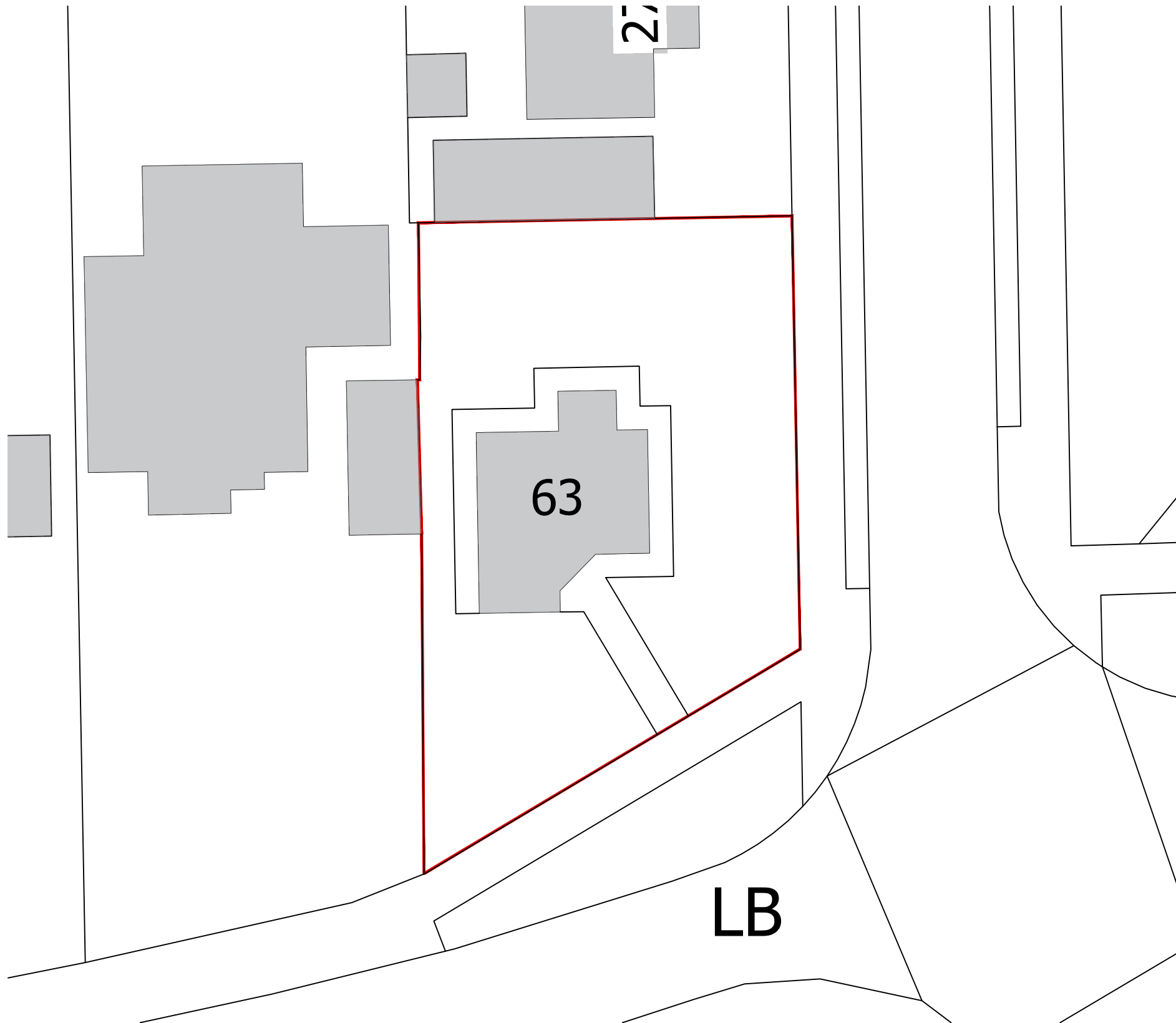
9. Conclusion

- 9.1 Ambiental Environmental Assessment has been appointed by Oliver West to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 63 Sandy Point Road, Hayling Island, Havant, Hampshire, PO11 9RR.
- 9.2 It is understood that the development is for the demolition of the existing bungalow and, following this, the construction of a replacement chalet bungalow with bedrooms at the first floor level/ loft space. It is understood that, as existing, bedrooms are located at the ground floor.
- 9.3 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary, and therefore the proposed development, is located wholly within Tidal Flood Zone 3 (high risk). The site and much of Hayling island benefits from flood defences that surround the perimeter of the coastline. Subsequently the site can be considered as located outside of the functional floodplain and within Flood Zone 3a.
- 9.4 The existing use of the site is for residential purposes and could be classified as 'More Vulnerable' under the NPPF vulnerability classification guidelines. The proposed development is for the demolition of the existing dwelling and, following this, to replace the building with a new residential dwelling. Subsequently there will be no change in vulnerability classification at the site post-development.
- 9.5 The EA Product 4 dataset provided by the EA (Appendix II) indicates that the 0.5% AEP (2015 epoch) tidal flood event is associated with a maximum flood level of 3.32mAOD. The present-day modelled 0.1% AEP (2015 epoch) tidal flood level is reported as 3.55mAOD. These are used to define Flood Zones 2 and 3 respectively. The data has been taken from the East Solent Coastal Model (2018).
- 9.6 To account for the impacts of climate change, Ambiental have conducted an analysis of the provided flood data using UKCP18 Sea Level Rise Allowances for the South East. This indicates that sea levels in the vicinity of the site will increase by approximately 1.12m over the lifetime of the proposed development (when considering the Higher Central allowance from 2015 to 2125). This would result in a design (0.5% AEP) flood level of 4.44mAOD in the 2125 epoch.
- 9.7 With reference to the EA Flood Map for Planning, the site benefits from flood defences as existing. Following an assessment of the Environment Agency's Asset Information Management System, these defences are identified as having largely a 1 in 200 year Standard of Protection (SoP). In places, however, the defences offer only a 1 in 100 year SoP.
- 9.8 Following the review of the North Solent Shoreline Management Plan (SMP) (2010), the short, medium and long term policies for Selsey Bill to Hurst Spit is to "Hold the Line". The SMP aims to determine sustainable policies for management of the shoreline and to set a framework for the future management of erosion and flood risks along the coastline. With reference to the framework, the local authority aims to maintain and/or upgrade the existing SoP of the flood defences over the lifetime of the development.
- 9.9 As part of the proposals for the replacement dwelling, sleeping accommodation will be set at first floor level/ loft space. It is recommended that this level is raised to no lower than 4.74mAOD, 300mm above the 0.5% AEP (2125 epoch) flood level of 4.44mAOD. As existing, sleeping accommodation is currently set at ground floor level within the existing bungalow. Betterment will subsequently be provided post-development, when compared to the existing situation.

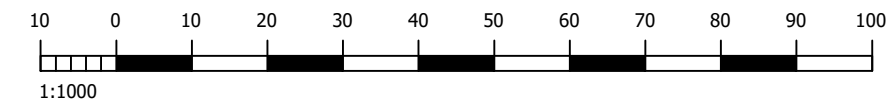
- 9.10 The existing built footprint at the site has been measured to be approximately 53m². The proposed replacement dwelling is to have a footprint of approximately 126m². Subsequently, there will be an increase in built footprint of 73m².
- 9.11 The primary source of flooding at the site is of a tidal nature and subsequently there will likely be no impact to flood water displacement as a result of the proposed development.
- 9.12 Following the review of the EA's Risk of Flooding from Surface Water (RoFSW) dataset, the site and proposed development is identified as being unaffected for the 1 in 30 year, 1 in 100 year and 1 in 1,000 year rainfall events. As such, the risk of surface water flooding could be considered very low.
- 9.13 With reference to the Partnership for Urban South Hampshire (PUSH) Strategic Flood Risk Assessment (SFRA) (2016), the site is identified as being located within an area at 'moderate' groundwater flood risk.
- 9.14 Sewer incident records provided by Southern Water suggest that there have been 3 reported incidents of sewer flooding in the wider area. There is no evidence of flooding from this source at the site and therefore the risk of sewer flooding could be considered relatively low.
- 9.15 The proposed development is to result in an increase in built footprint and associated surface area post-development. Subsequently, there will likely be an increase in impermeable surface area at the site. It is recommended that Sustainable Drainage Systems (SuDS) are introduced on site to limit surface water runoff rates to as close to greenfield as practicable.
- 9.16 As such, the following mitigation measures are recommended:
- Finished Floor Levels (FFLs) of the proposed first floor level are to be set no lower than 4.74mAOD (300mm above the design flood level of 4.44mAOD);
 - The site owner and residents should sign up to the EA Flood Alert/Warning Service and have an evacuation plan.

Following the guidelines contained within the NPPF, the proposed development is considered to be suitable assuming appropriate mitigation can be maintained for the lifetime of the development.

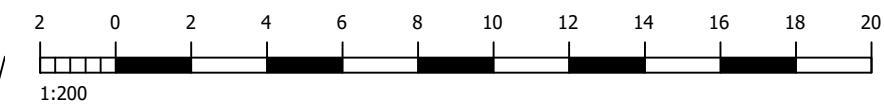
Appendix I - Site Plans



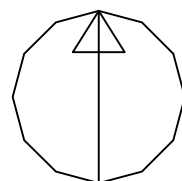
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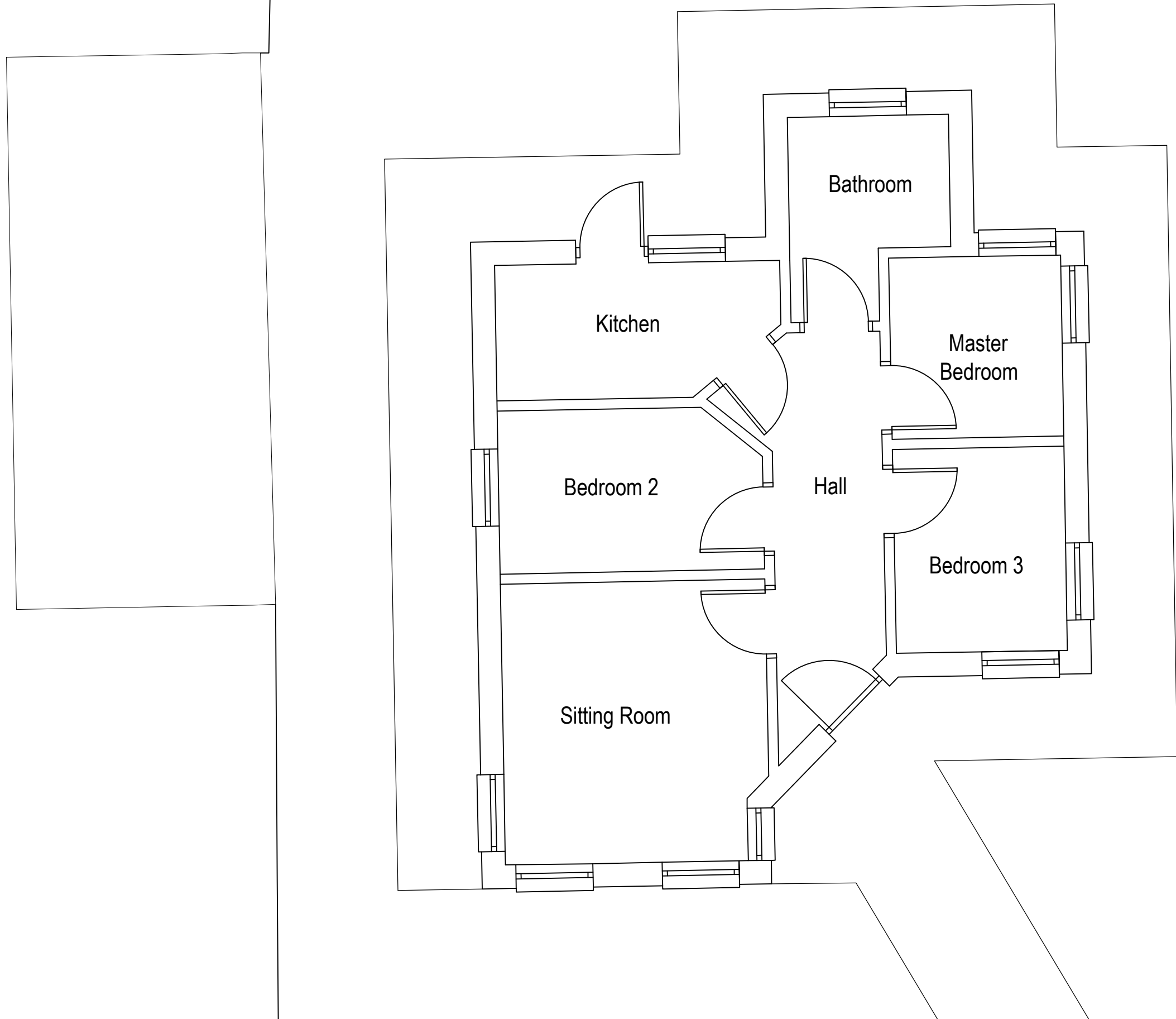
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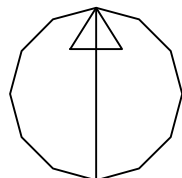
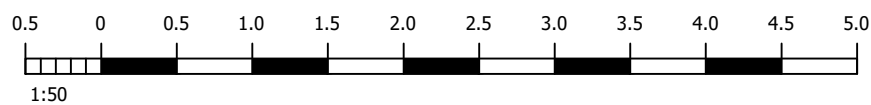
OS Map from ukmapcentre.com
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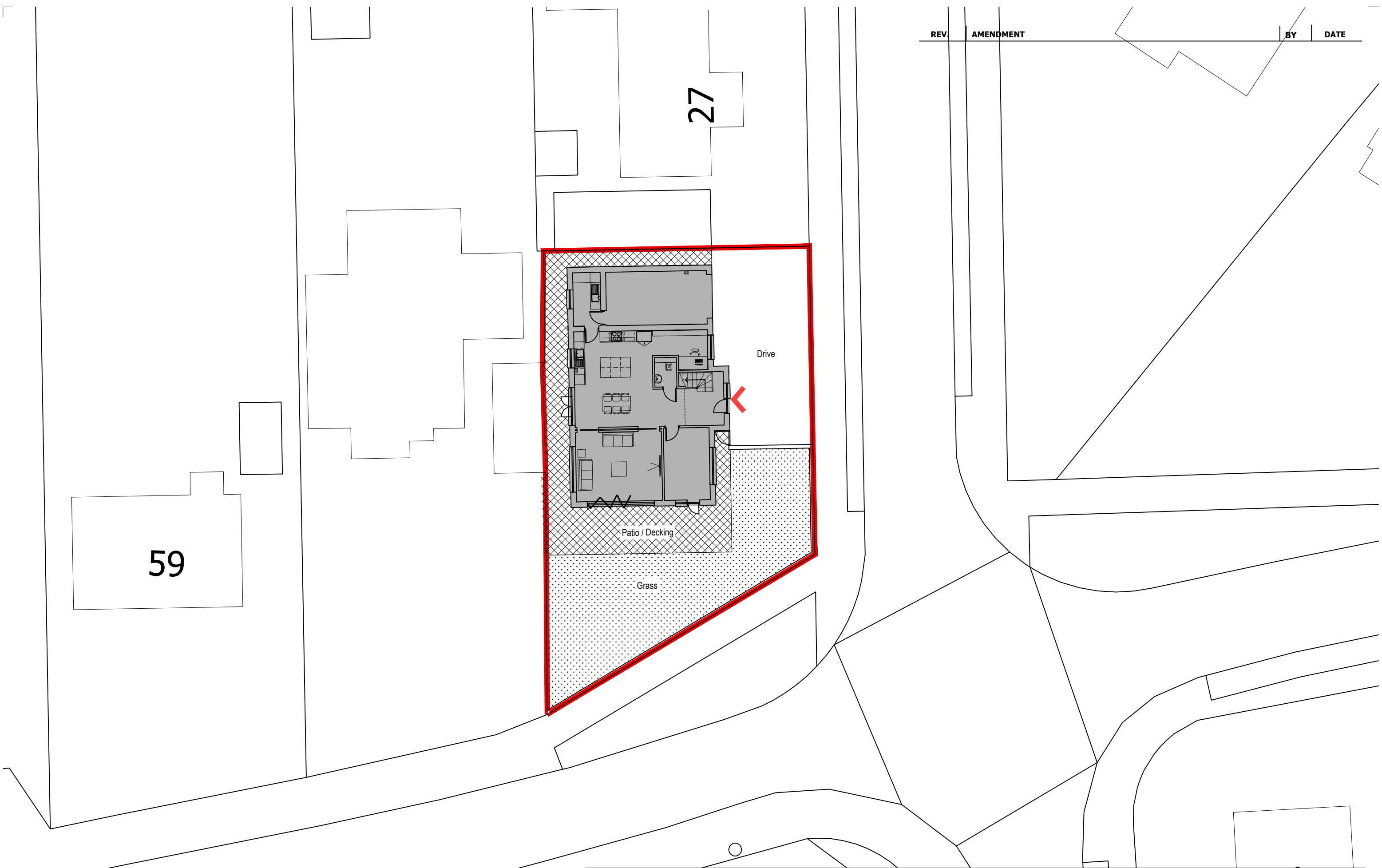
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Drawing	LOCATION + BLOCK PLAN	Job No	EA 04	Dwg No	PL-01
				Revision	.



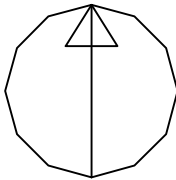
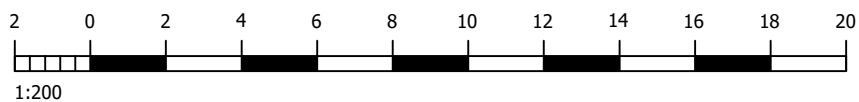
Note:
All of the existing building is to be demolished
before any new construction begins



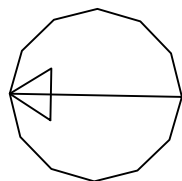
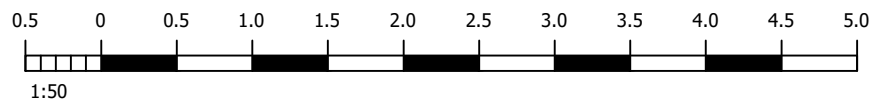
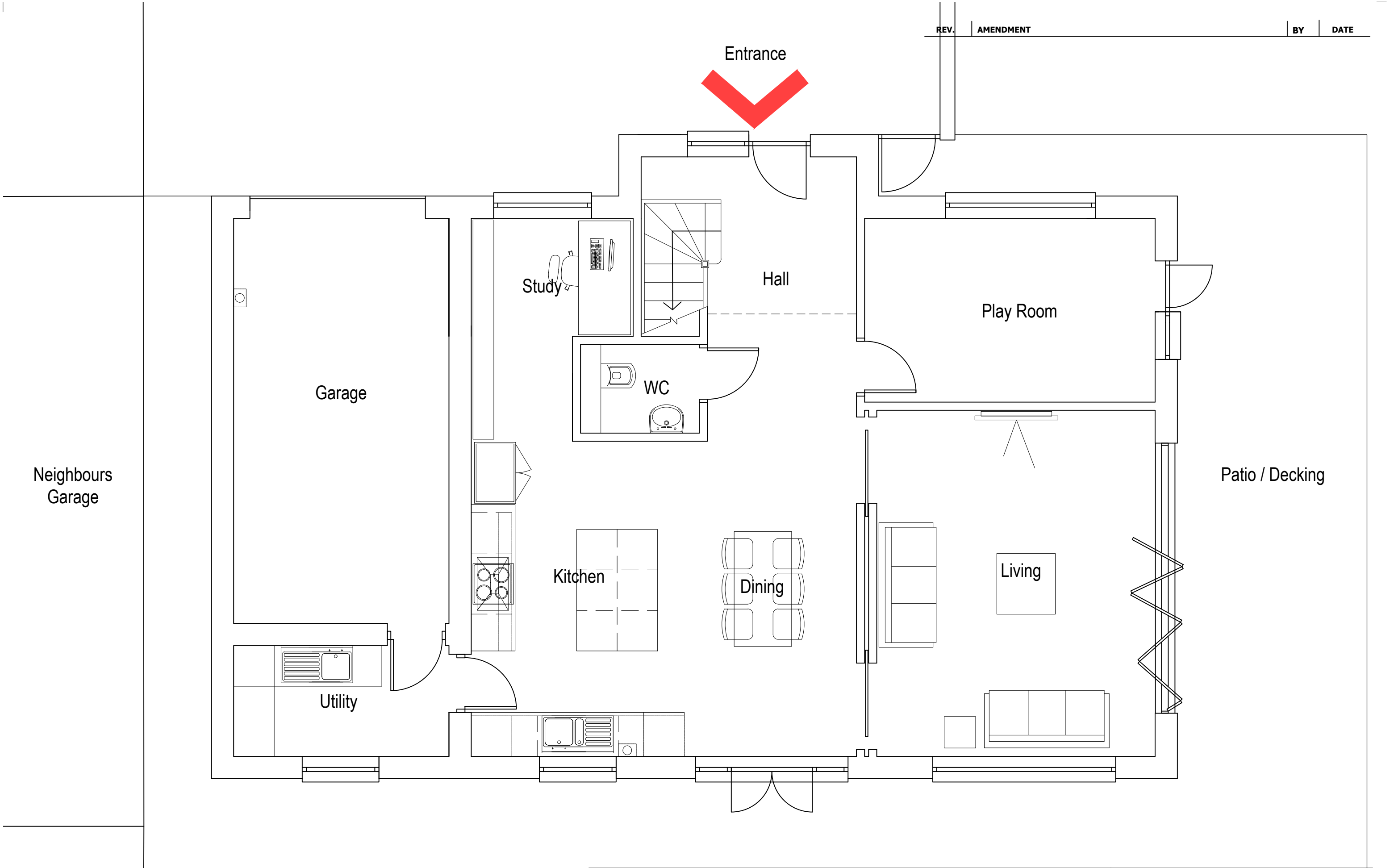
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				Revision	.



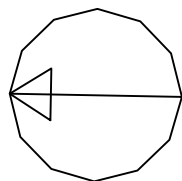
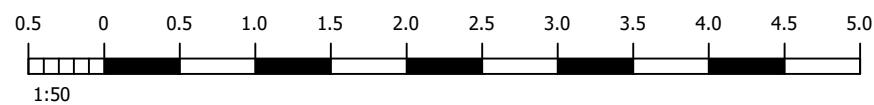
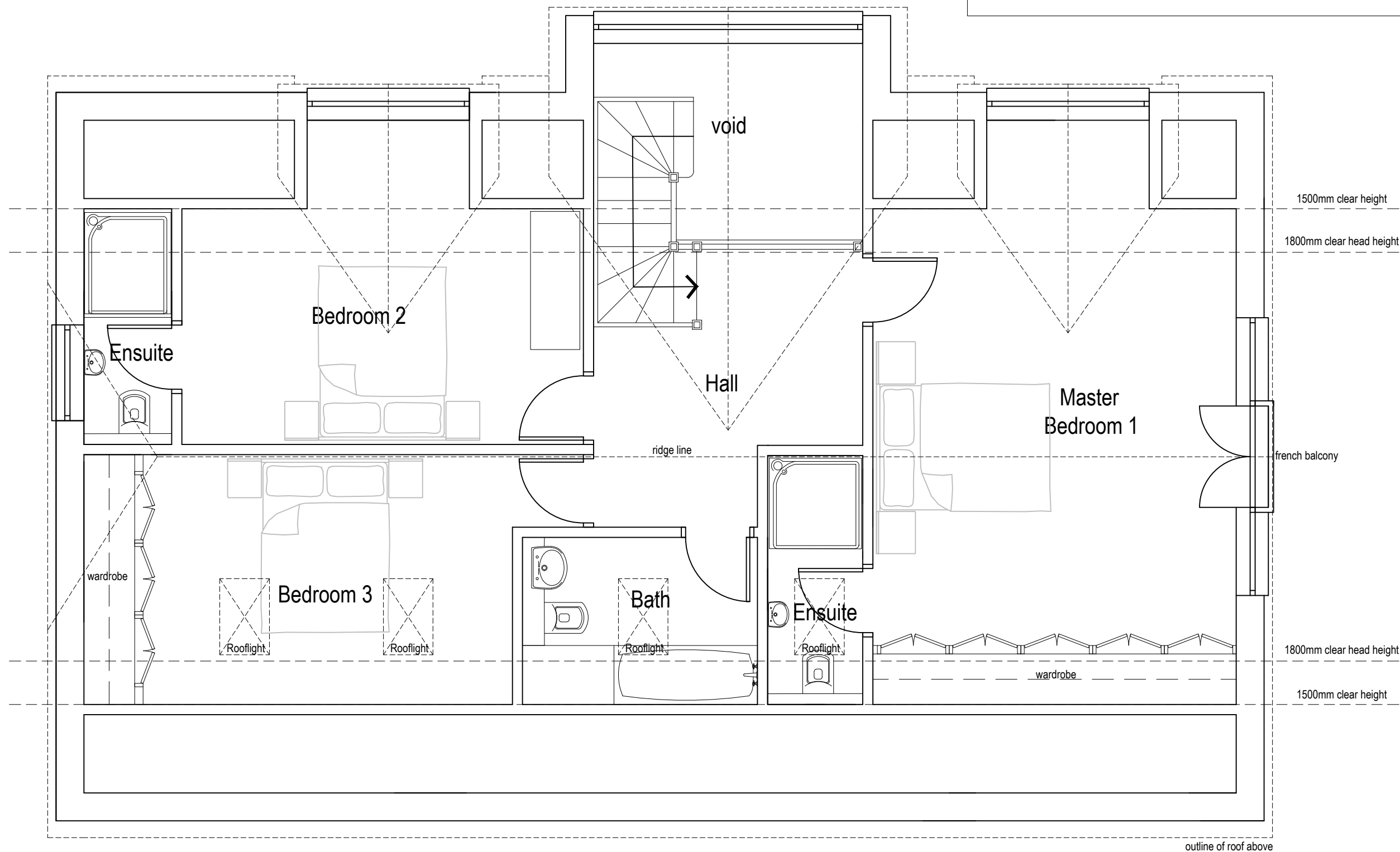
REV	AMENDMENT	BY	DATE



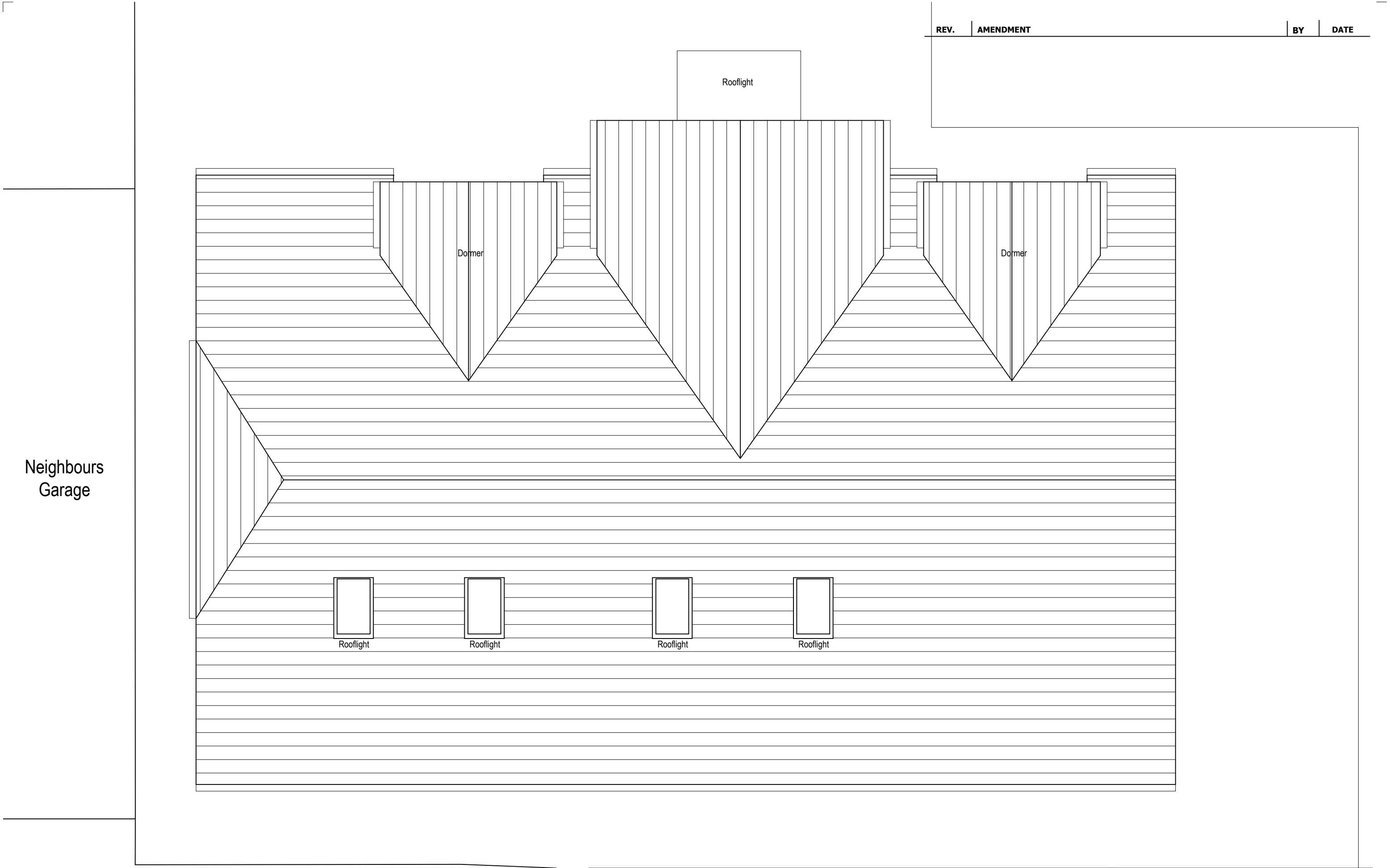
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						Revision	.



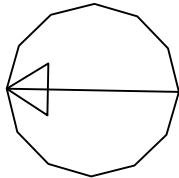
Project	63 SANDY POINT ROAD HAYLING ISLAND	Date	DEC 20	Drawn by	ACE
		Scales	1:50@A3	Status	PLANNING
Drawing	PROPOSED GROUND FLOOR PLAN	Job No	EA 04	Dwg No	PL-06
				Revision	.



Project	63 SANDY POINT ROAD HAYLING ISLAND	Date	DEC 20	Drawn by	ACE
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Drawing	PROPOSED FIRST FLOOR PLAN	Job No	EA 04	Dwg No	PL-07
				Revision	.



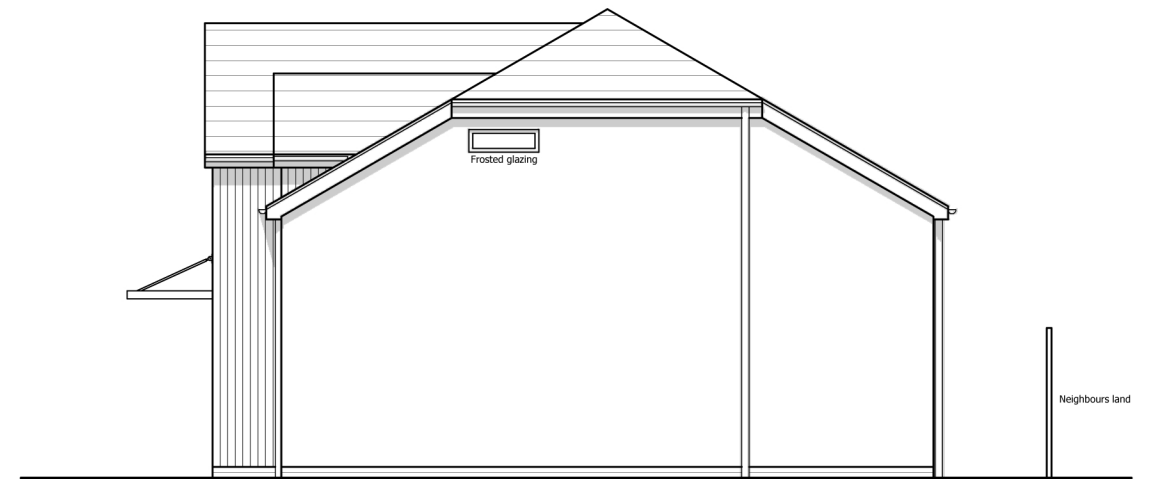
REV.	AMENDMENT	BY	DATE
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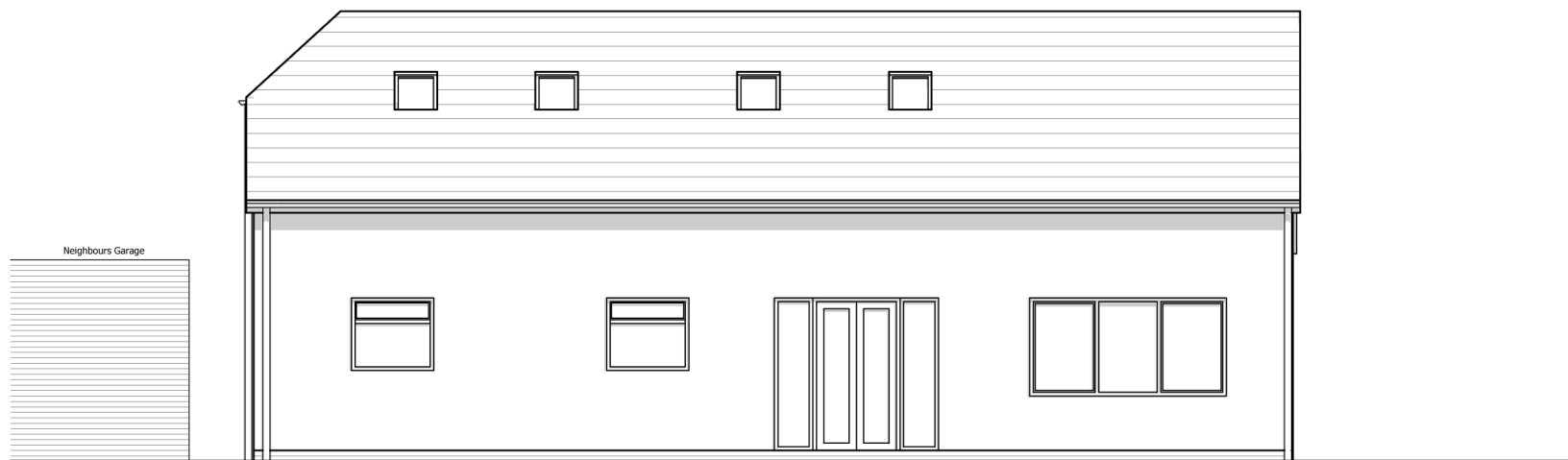
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				Revision	.



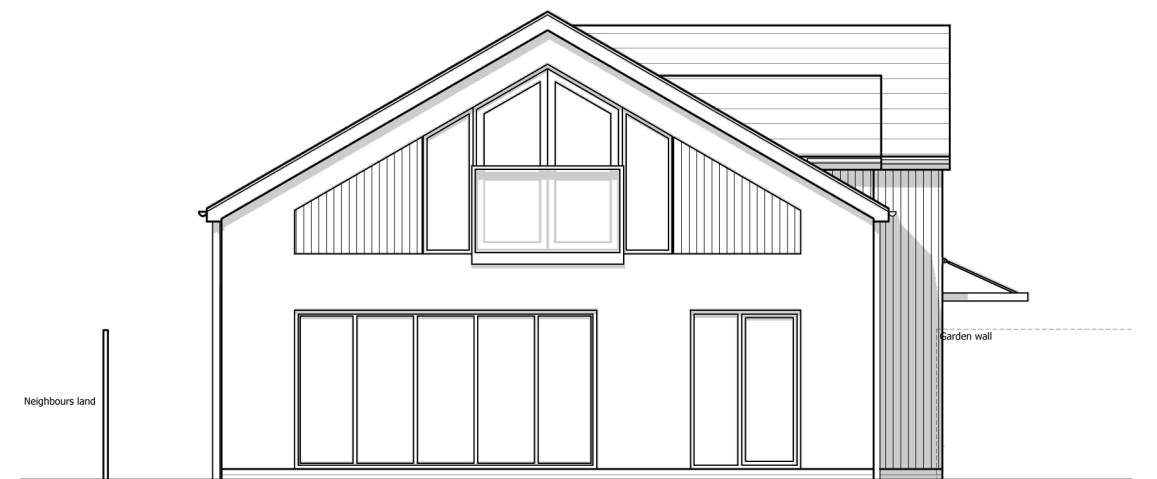
EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION



Project	63 SANDY POINT ROAD HAYLING ISLAND	Date	DEC 20	Drawn by	ACE
		Scales	1:100@A3	Status	PLANNING
Drawing	PROPOSED ELEVATIONS	Job No	EA 04	Dwg No	PL-09
				Revision	.

Appendix II - EA Data

From: [Partnership and Strategic Overview team, HIOW](#)
To: [ambiental consultancy](#)
Cc: [SSD Enquiries](#)
Subject: Flood Risk Information (Product 4) for Sandy Point Road - Ref: SSD/207302
Date: 07 April 2021 10:06:42
Attachments: [Defences Map.pdf](#)
[Flood Map for Planning \(Rivers and Sea\).pdf](#)
[Historic Flood Map.pdf](#)
[Risk of Flooding from Surface Water.pdf](#)
[Open Government Licence.pdf](#)
[Use of EA Information for FRAs.pdf](#)

Dear Lydia,

Enquiry regarding Product 4 for site at 63 Sandy Point Road, Hayling Island, PO11 9RR.

Thank you for your enquiry which was received on 16 February 2021.

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

The site may be affected by an extreme flood. According to our published flood map, which provides a general estimate of the likelihood of flooding across England & Wales, the property is shown to be within Flood Zone 3 - an area which may have a 0.5% chance of flooding annually (1 in 200), **ignoring** the presence and effect of any flood defences.

The Environment Agency is aware of flooding to this area, see attached map. Please note our records are not comprehensive and may not include all events. I recommend contacting the Lead Local Flooding Authority, Hampshire County Council or the Local Authority, Havant Borough Council for a more comprehensive flood history check.

Defences – See attached map.

Tidal flood levels for the 0.5% (1:200) and the 0.1% (1:1000) annual exceedance probabilities relevant to your site are provided in the table below. These levels have been taken from the East Solent Coastal Model which was produced in 2018 by JBA Consulting.

Year	Tide Level (mAOD*)	
	0.5% annual exceedance probability/1 in 200 Year (Flood Zone 3)	0.1% annual exceedance probability/1 in 1000 Year (Flood Zone 2)
2015	3.32	3.55
2070	3.70	3.86
2115	4.13	4.32

* Levels in metres above Ordnance Datum Newlyn.

- 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.

[FRA advisory text](#)

Name	Product 4
Description	Basic / Detailed Flood Risk Assessment Map for 63 Sandy Point Road, Hayling Island, PO11 9RR.
Licence	Open Government Licence
Information Warnings	The majority of our models will not have the new climate change allowances. +20% is not suitable for the majority of planning purposes and the new allowances to use should be checked here: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
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 2017 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](#)

Does Your Proposal Have Environmental Issues or Opportunities? Speak To Us Early!

If you are planning a new project or development, we want to work with you to make the process as smooth as possible. Early engagement can improve subsequent planning applications to you and your clients' benefit and deliver environmental outcomes. For a cost recovery fee of £100 per hour plus VAT we will provide you with a project manager who will coordinate all meetings and reviews in order to give you detailed specialist advice with guaranteed delivery dates. More information can be found on our website [here](#).

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,

Aimee Etheridge
Partnership and Strategic Overview team, Hampshire and Isle of Wight
Environment Agency

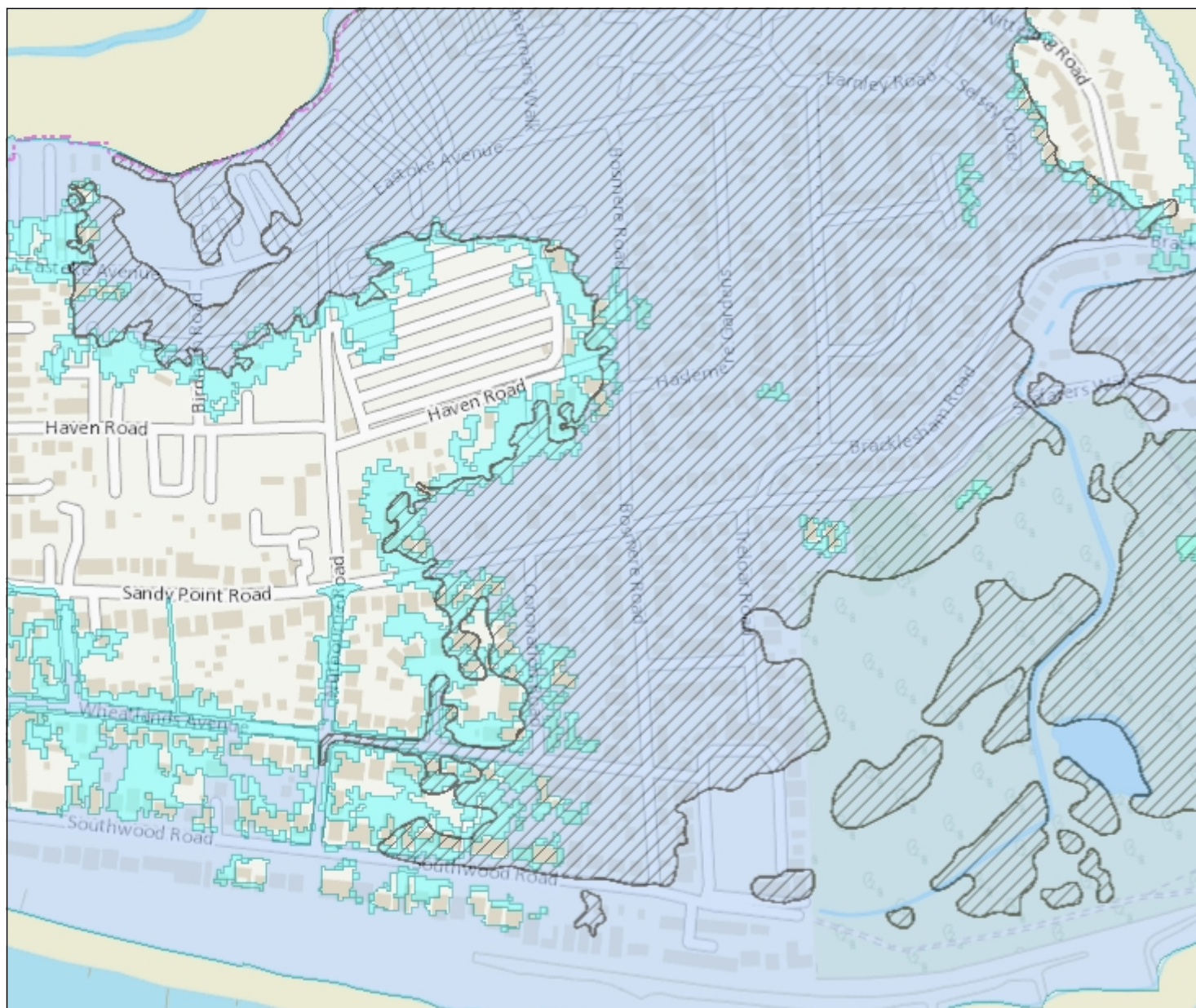
Direct dial 020 8474 5815

Email psohiow@environment-agency.gov.uk

-

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Flood Map for Planning (Rivers and Sea) Centred on Sandy Point Road - Created 7 April 2021



1: 5,000

0 Metres 125



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.



Mengham Salterns

Selsmore

Emsworth Channel



Historic flood map

Location (easting/northing)
474457/98408

Scale
1:10,000

Created
6 Apr 2021



Selected location

Date of flood event



March, 2008



November, 2005



December, 1981

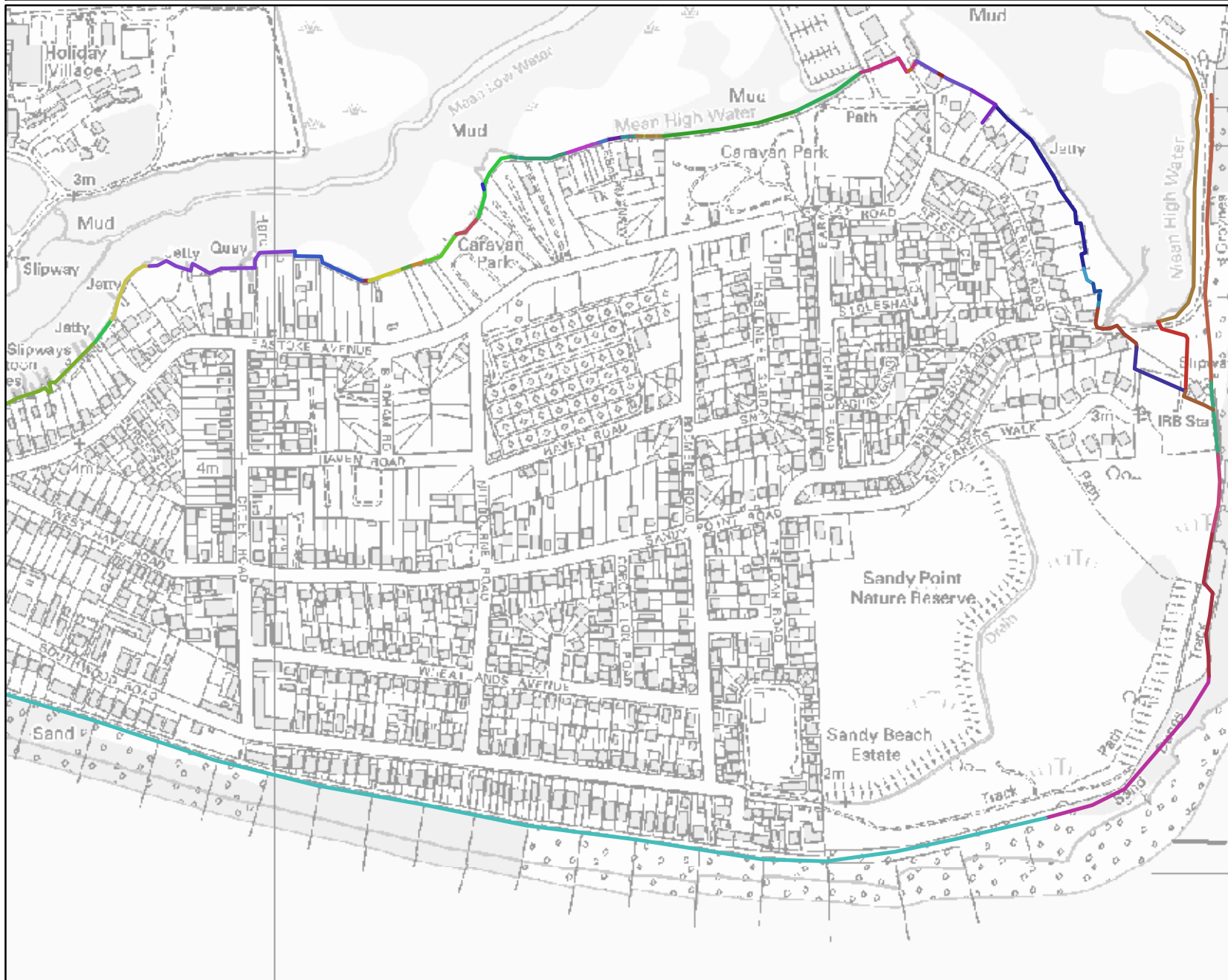


0 100 200 300 400 500
metres

Historic flood event data

Flood event code	Name	Start date	End date	Source of flood	Cause of flood	Affects location
07135R054FEO_10/03/2008_017	10/03/2008 Southwood Road	10 March 2008	10 March 2008	sea	other	No
07FEO_03/11/2005_001	3 November 2005 Hayling Island	3 November 2005	3 November 2005	sea	overtopping of defences	No
071EAS902FEO_14/12/1981_003	14/12/1981_Coast_Mengham, Hayling Island	14 December 1981	14 December 1981	other	unknown	No

Defences Centred on Sandy Point Road - Created 7 April 2021

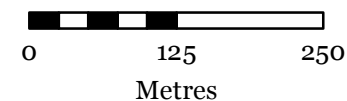


Legend

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44202		184349	
44203		184350	
44206		184351	
44207		184538	
97418		184539	
97750		184540	
147332		184541	
147333		184542	
147334		184543	
147335		184544	
147336		184545	
147337		184546	
147338		185639	
147339		185640	
180202		185641	
180203		186411	
180386		186412	
180387		186413	
180388		430935	
		97746	
		97747	
		97748	
		174818	
		180204	
		332751	
		470251	
		470252	
		470257	
		470258	
		470259	
		470260	
		470270	
		470271	
		470278	

1:6,431 *

*when printed at A4.



Asset Id	Asset Sub-type	Length (m)	Asset Maintainer	Actual Condition	Design SoP	Last Inspection Date
44202	flood_gate	1.98	environment_agency	Good		02/12/2020
44203	flood_gate	2.12	environment_agency	Good		02/12/2020
44206	flood_gate	4.36	environment_agency	Good		08/12/2020
44207	flood_gate	3.72	environment_agency	Good		08/12/2020
97418	flood_gate	4.92	environment_agency	Good		08/12/2020
97750	wall	89.57	environment_agency	Fair	1:200	02/12/2020
147332	flood_gate	4.1	environment_agency	Good		08/12/2020
147333	flood_gate	5.4	environment_agency	Good		08/12/2020
147334	flood_gate	2.25	environment_agency	Fair		02/12/2020
147335	flood_gate	5.86	environment_agency	Good		08/12/2020
147336	flood_gate	5.55	environment_agency	Good		08/12/2020
147337	flood_gate	4.71	environment_agency	Fair		08/12/2020
147338	flood_gate	4.01	environment_agency	Good		08/12/2020
147339	flood_gate	2.8	environment_agency	Good		02/12/2020
180202	embankment	21.82	environment_agency	Good	1:100	28/09/2020
180203	wall	16.18	environment_agency	Good	1:100	28/09/2020
180386	wall	80.8	environment_agency	Good	1:100	28/09/2020
180387	embankment	88.2	environment_agency	Fair	1:100	28/09/2020
180388	wall	43.59	environment_agency	Fair	1:100	28/09/2020
184349	wall	18.61	environment_agency	Fair	1:200	02/12/2020
184350	wall	48.7	environment_agency	Fair	1:200	02/12/2020
184351	wall	33.09	environment_agency	Fair	1:200	02/12/2020
184538	wall	84.48	environment_agency	Fair	1:200	02/12/2020
184539	wall	55.49	environment_agency	Fair	1:200	08/12/2020
184540	wall	35.35	environment_agency	Fair	1:200	08/12/2020
184541	wall	11.06	environment_agency	Fair	1:200	08/12/2020
184542	wall	15.3	environment_agency	Fair	1:200	08/12/2020
184543	wall	11.43	environment_agency	Fair	1:200	08/12/2020
184544	wall	20.26	environment_agency	Fair	1:200	08/12/2020
184545	wall	154.55	environment_agency	Fair	1:200	08/12/2020
184546	wall	86.33	environment_agency	Fair	1:100	08/12/2020
185639	wall	73.44	environment_agency	Fair	1:200	08/12/2020
185640	wall	65.61	environment_agency	Fair	1:200	08/12/2020
185641	embankment	57.96	environment_agency	Fair	1:200	08/12/2020
186411	wall	7.1	environment_agency	Good	1:200	02/12/2020
186412	wall	37.63	environment_agency	Good	1:200	02/12/2020
186413	wall	9.26	environment_agency	Fair	1:200	02/12/2020
430935	flood_gate	6.2	environment_agency	Fair		02/12/2020
97746	wall	31.59	private	Fair	1:25	08/12/2020
97747	wall	80.57	private	Fair	1:25	08/12/2020
97748	embankment	194.04	private	Fair	1:25	02/12/2020
174818	wall	174.28	private	Fair	1:25	08/12/2020
180204	wall	20.35	private	Good	1:100	28/09/2020
332751	flood_gate	5	private	Good		28/09/2020
470251	embankment	1905.26	unknown			
470252	embankment	259.48	unknown			
470257	beach	171.48	unknown			
470258	embankment	88.45	unknown			
470259	embankment	82.87	unknown			
470260	beach	329.88	unknown			
470270	embankment	380.07	unknown			
470271	embankment	101.64	unknown			
470278	high_ground	229.51	unknown			

Appendix III - Calculations

Calculated by:	Max Brambani
Site name:	63 Sandy Point Road
Site location:	PO11 9RR

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	50.78047° N
Longitude:	0.94517° W
Reference:	1479956461
Date:	Apr 13 2021 17:33

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	1
-----------------------	---

Methodology

Q _{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	3	3
HOST class:	N/A	N/A
SPR/SPRHOST:	0.37	0.37

Hydrological characteristics

	Default	Edited
SAAR (mm):	679	679
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):	2.77	2.77
1 in 1 year (l/s):	2.36	2.36
1 in 30 years (l/s):	6.38	6.38
1 in 100 year (l/s):	8.84	8.84
1 in 200 years (l/s):	10.37	10.37

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.



Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:

Site name:

Site location:

Site Details

Latitude:

Longitude:

Reference:

Date:

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site characteristics

Total site area (ha):

Significant public open space (ha):

Area positively drained (ha):

Impermeable area (ha):

Percentage of drained area that is impermeable (%):

Impervious area drained via infiltration (ha):

Return period for infiltration system design (year):

Impervious area drained to rainwater harvesting (ha):

Return period for rainwater harvesting system (year):

Compliance factor for rainwater harvesting system (%):

Net site area for storage volume design (ha):

Net impermeable area for storage volume design (ha):

Pervious area contribution to runoff (%):

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Methodology

esti

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
SOIL type:	3	3
SPR:	0.37	0.37

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	55
Rainfall 100 yrs 12 hrs:	--	80.01
FEH / FSR conversion factor:	1.27	1.27
SAAR (mm):	679	679
M5-60 Rainfall Depth (mm):	17	17
'r' Ratio M5-60/M5-2 day:	0.4	0.4
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 10 year:	1.62	1.62
Growth curve factor 30 year:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Q_{BAR} for total site area (l/s):	0.1	0.1
Q_{BAR} for net site area (l/s):	0.08	0.08

Design criteria

Climate change allowance factor:

Urban creep allowance factor:

Volume control approach:

Interception rainfall depth (mm):

Minimum flow rate (l/s):

Site discharge rates

	Default	Edited
1 in 1 year (l/s):	1	1
1 in 30 years (l/s):	1	1
1 in 100 year (l/s):	1	1

Estimated storage volumes

	Default	Edited
Attenuation storage 1/100 years (m^3):	10	10
Long term storage 1/100 years (m^3):	0	0
Total storage 1/100 years (m^3):	10	10

This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.