

# AMBIENTAL

## ENVIRONMENTAL ASSESSMENT

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### Flood Risk Assessment 6595

139 High Street, Portishead, North  
Somerset, BS20 6PY

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## Document Issue Record




**Project:** Phase 1 Flood Risk Assessment

**Prepared for:** Jon Donaldson

**Reference:** 6595

**Site Location:** 139 High Street, Portishead, North Somerset, BS20 6PY

**Proposed Development:** It is understood that the development is for the change of use of the existing offices to a single house.

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## 1. Summary

- 1.1 Ambiental Environmental Assessment has been appointed by Jon Donaldson to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 139 High Street, Portishead, North Somerset, BS20 6PY.
- 1.2 The site is currently a commercial premise (offices). It is understood that the development is for the change of use of the existing offices to a single house.
- 1.3 All bedrooms will be confined to the first floor of the dwelling and the ground floor will be used for kitchen, dining and living room space.
- 1.4 With reference to the Environment Agency (EA) Flood Map for Planning, the proposed development is located within Flood Zone 3. The proposed development is considered “More Vulnerable” under the NPPF.
- 1.5 Product 4 data has been provided by the Environment Agency. The dataset includes fluvial and tidal flood data. With regards to the fluvial data, the EA have provided in-channel 1D flood levels, but have noted that the 2D element for this model did not reach the site. Furthermore, the site is on land above the in-channel flood levels up to the 1:1000 year event.
- 1.6 With regards to tidal flooding, the Product 4 dataset indicates that the site could remain unaffected in the 1:200 year present day event based on a defended (actual) scenario. No climate change flood levels were provided by the EA and as the site could remain unaffected in the 1:200 year present day event, calculations to estimate a 1:200 year +CC flood event could not be undertaken. As such, the potential impacts of climate change on tidal flood risk cannot be fully quantified. However, the development is situated in an area benefiting from flood defences according to the EA Flood Map for Planning, and the Shoreline Management Plan for these defences is Hold the Line (HTL) for the next 100 years, and thus the same standard of protection (1:200 year) may therefore be maintained for the lifetime of the development.
- 1.7 In a previous consultation response, the EA stated that:

*For the development to be safe we would require the finished floor level of the ground floor to be raised as high as reasonably practical, provision of flood resilience construction, and have an emergency and evacuation plan in the event of flooding.*
- 1.8 As the proposal is a change of use, it may not be possible to raise the ground floor Finished Floor Levels (FFLs). However, all bedrooms will be at the first floor and thus safe refuge could be sought at the first floor, if prior evacuation is not possible. Site owner(s) and occupants should sign up to the EA Flood Warning Service and should evacuate the site upon receipt of a Flood Warning. If flooding is sudden and prior evacuation is not possible, refuge could be sought at the first floor on site.
- 1.9 As the proposed development is for change of use, the existing footprint is not being extended. Therefore, flood risk elsewhere may not increase.
- 1.10 The proposed development is at low risk from fluvial and tidal flooding.
- 1.11 The proposed development is at low risk from surface water flooding, low risk from sewer flooding and low risk from groundwater flooding.
- 1.12 As such, and given that:
  - The proposed development is for change of use from the existing office to a single house.

- All bedrooms will be confined to the first floor and safe refuge could be sought at the first floor.
- The footprint of the dwelling is not being extended therefore flood risk elsewhere is minimal.

Following the guidelines contained within the NPPF, the proposed development could be considered suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

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

Development Description	Existing	Proposed
<b>Development Type:</b>	Commercial premises (B1 Office Space)	Two storey residential dwelling
<b>Number of Bedrooms:</b>	0	4 (All Bedrooms to be on the first floor)
<b>EA Vulnerability Classification:</b>	Less Vulnerable	More Vulnerable
<b>Ground Floor Level:</b>	Ground floor levels are approximately 6.93m AOD to 7.4m AOD across site.	N/A <sup>2</sup>
<b>Level of Sleeping Accommodation:</b>	N/A <sup>2</sup>	All bedrooms to be maintained to the first floor.
<b>Impermeable Surface Area:</b>	N/A <sup>2</sup>	Change of use – no increase to impermeable surface area.
<b>Surface Water Drainage:</b>	N/A <sub>2</sub>	The footprint of the building is not increasing, therefore the drainage measures currently in place should be sufficient. However, betterment is recommended by implementing small scale SuDs measures such as a water butt or rain garden.
<b>Site Size:</b>	Approximately 473m <sup>2</sup>	No change
Risk to Development	Summary	Comment
<b>EA Flood Zone:</b>	Flood Zone 3	
<b>Flood Source:</b>	Tidal/Fluvial	The site is approximately 1.5km south west of the Bristol channel and is approximately 0.6km east of EA main river - Portbury Ditch.
<b>1:100 Year Flood Level:</b>	4.90m AOD	
<b>1:100 Year Flood Level &amp; Climate Change (30%):</b>	5.01m AOD	Fluvial data provided upon request of product 4. The flood levels used are from Node CS1_2095 (in-channel). It is important to note that the EA have stated that the site is outside the 2D modelled fluvial flood extents for these events. Furthermore, the topographic levels across site are above the flood levels.
<b>1:1000 Year Flood Level:</b>	5.06m AOD	
<b>1:200 Year Flood Level:</b>	N/A <sup>2</sup>	Site outside 1:200 year defended flood extent
<b>Recorded Flood Events in Area:</b>	Yes	Closet recorded flood event took place approximately 212m south of the site, from poor drainage due to surface water flooding.
<b>Recorded Flood Events at Site:</b>	No	According to EA data no flood event has taken place on site.
<b>SFRA Available:</b>	Yes	North Somerset Level 1 (2020) and North Somerset Level 2 Clevedon, Nailsea, Portishead and Larger Villages (2009)
Management Measures	Summary	Comment
<b>Ground floor level above extreme flood levels:</b>	Yes	Site unaffected in modelled fluvial flood events. Site also unaffected in 1:200 year tidal defended event.
<b>Safe Access/Egress Route:</b>	Yes	See section 7.
<b>Flood Resilient Design:</b>	N/A	The footprint of the building is not increasing, the proposed development is change of use.
<b>Site Drainage Plan:</b>	N/A	Change of use, existing drainage infrastructure may be adequate. Betterment is recommended by implementing small scale SuDs measures such as a water butt or rain garden
<b>Flood Warning &amp; Evacuation Plan:</b>	Yes	See section 7 of report.
Offsite Impacts	Summary	Comment
<b>Displacement of floodwater:</b>	Negligible	Change of use with no increase in footprint
<b>Increase in surface run-off generation:</b>	N/A	Change of use, existing drainage infrastructure may be adequate. Betterment is recommended by implementing small scale SuDs measures such as a water butt or rain garden
<b>Impact on hydraulic performance of channels:</b>	N/A	

N/A<sup>1</sup> not required for this assessment; N/A<sup>2</sup> data not available.

## 2. Development Description and Site Area

### Proposed Development and Location

- 2.1 The proposed development is located at 139 High Street, Portishead, North Somerset, BS20 6PY (Figure 1).
- 2.2 The site is currently a commercial premise. It is understood that the development is for the change of use of the existing offices to a single house. The footprint of the current building is not being extended. All bedrooms will be confined to the first floor of the dwelling and the ground floor will be used for kitchen, dining and living room space.



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



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



## Vulnerability Classification

- 2.3 The EA Flood Map for Planning demonstrates that the proposed development lies within Flood Zone 3 with a high probability of greater than 1 in 100 (1%) of fluvial flooding and/ or 1 in 200 (0.5%) of tidal flooding in any year.
- 2.4 According to NPPF guidelines, the existing site is considered 'Less Vulnerable', but the proposed development is considered 'More Vulnerable.'

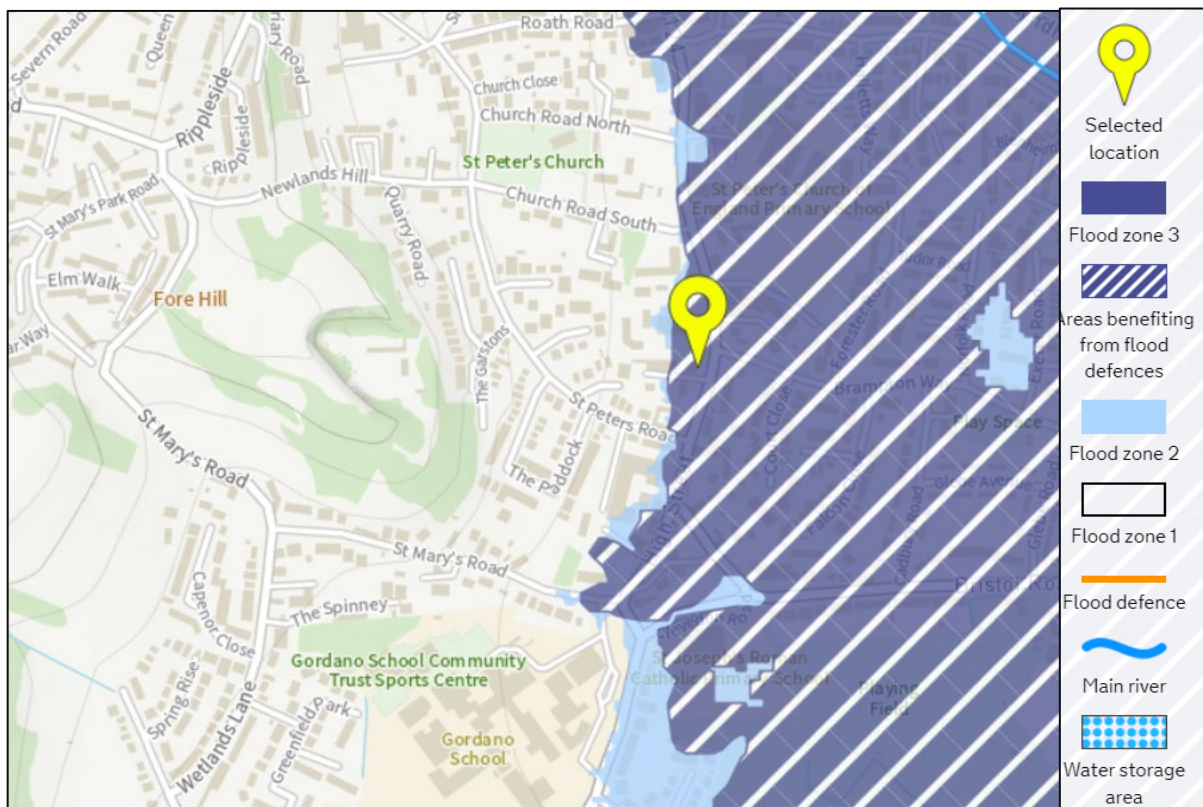


Figure 3 EA Flood Map for Planning

## Geology

- 2.5 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock geology underlying the site is Mercia Mudstone Group – Conglomerate. The site is located in a Secondary B aquifer zone. A secondary b aquifer is predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons, and weathering. These are generally the water-bearing parts of the former non-aquifers.
- 2.6 The British Geological Survey (BGS) Geology of Britain Viewer indicates that there are no superficial deposits underlying the site. The site is not located in a superficial aquifer designation zone.



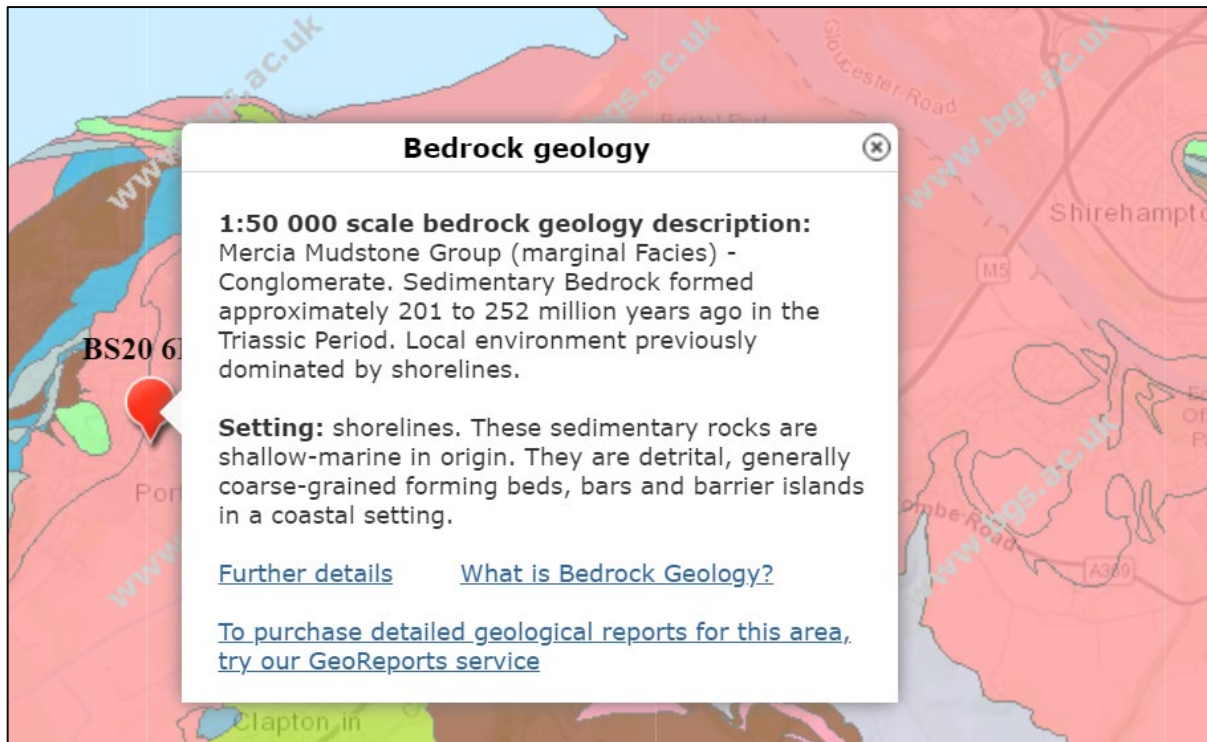


Figure 4 Bedrock Geology Map (Source British Geological Survey)

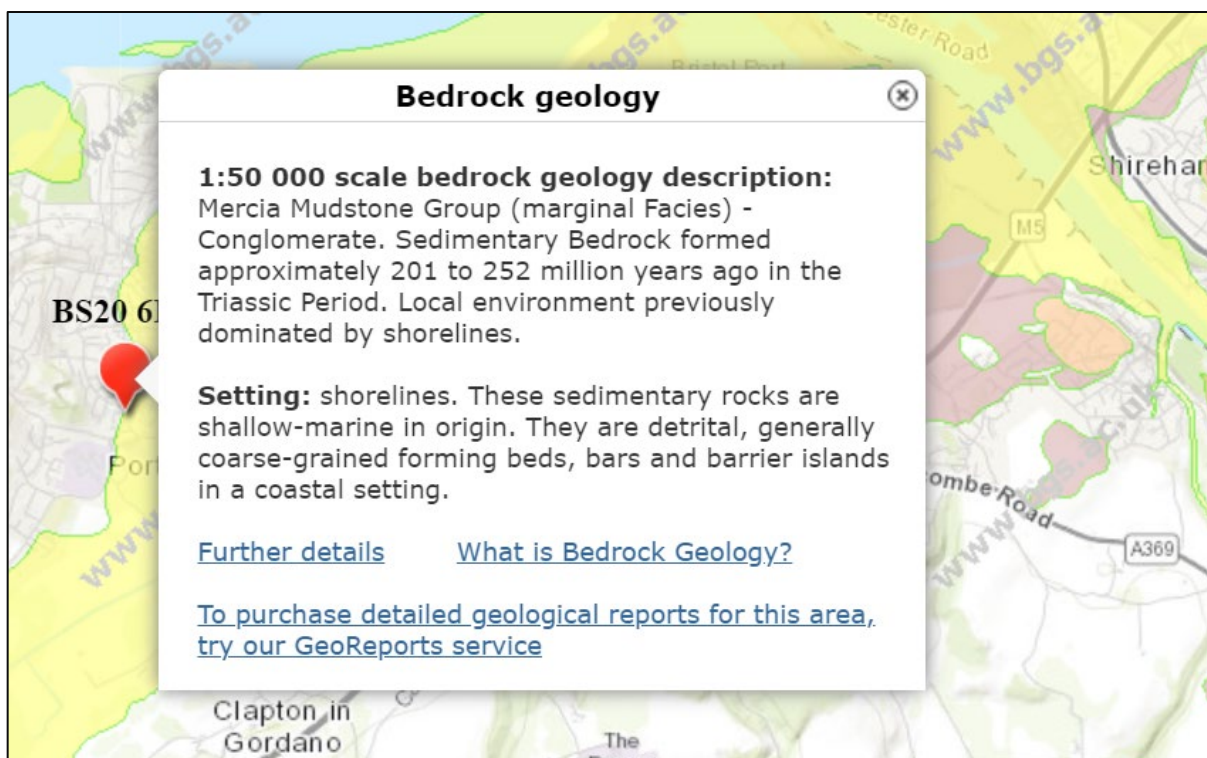


Figure 5 Superficial Geology Map (Source British Geological Survey)

### 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 Flood Risk and Coastal Change Planning Practice Guidance (PPG) *Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table* is reproduced below

Table 2 The Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table as specified by NPPF

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	✓	✗	✗	✗

Please note: ü means development is appropriate; û means the development should not be permitted.

- 3.3 Using the principles of the Sequential Test Using the principles of the Sequential Test outlined above, the proposed development is 'More Vulnerable'. The site is located within Flood Zone 3 (as defined by the EA) and would normally require an exception test. However, under guidelines the proposed plans are for **change of use**. An exception test is not required as the footprint of the existing building is not being increased.
- 3.4 The NPPF (paragraph 168) states
- Applications for some minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote<sup>1</sup>*
- 3.5 The proposed development is for change of use from B1 Office space to a residential dwelling. Therefore, a sequential or exception test is not required.

<sup>1</sup> This includes householder development, small non-residential extensions (with a footprint of less than 250m<sup>2</sup>) and changes of use; except for changes 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.

<sup>1</sup> A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use

## 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:

Table 3 Summary of flood sources

Source	Description
<b>Fluvial</b>	EA main river – Portbury Ditch is located 0.58km from site.
<b>Tidal</b>	Low Risk – Bristol channel is located 1.5km north-west.
<b>Surface</b>	Low Risk
<b>Groundwater</b>	Low Risk
<b>Sewer</b>	Low Risk

### Mechanisms and History of Flooding

- 4.2 The EA Flood Map for Planning demonstrates the site to be located within Flood Zone 3 (high risk of flooding). It is important to note that the EA Flood Map for Planning shows only the potential floodplain; the mitigating effects of any flood defences currently in place are not considered.

#### Fluvial

- 4.3 The site is approximately 1.5km south west of the Bristol channel and is 0.58km east of Portbury Ditch.
- 4.4 Data provided by the Environment Agency indicates that the site is located within Flood Zone 3.
- 4.5 The Environment Agency have provided a Product 4 dataset upon request for this report.
- 4.6 The Environment Agency noted that the fluvial 2D model data provided did not reach the site. However, the in-channel flood data has still been compared against the topography of the site.
- 4.7 The Node CS1 2905 has been used to look at the fluvial data as this node is closest to the site. A review of the EA data shows that:
- In a 1:20 year flood event, the flood level is 4.76m AOD.
  - In a 1:100-year flood event, the flood level is 4.90m AOD.
  - In a 1:1000-year flood event, the flood level is 5.06m AOD.
- 4.8 The topographic levels on site vary from 6.93m AOD and 7.4m AOD. In the incidence of a 1:20 year, 1:100 year and 1:1000-year fluvial flood event, the site topographic level is situated above the flood level.
- 4.9 With regards to the fluvial data, the site is on land above the in-channel flood levels up to the 1:1000 year event.
- 4.10 As such, the risk of flooding from fluvial sources could be considered **low**.

## Tidal

- 4.11 With regards to tidal flooding, the Product 4 dataset indicates that the site could remain unaffected in the 1:200 year present day event based on a defended (actual) scenario. No climate change flood levels were provided by the EA and as the site could remain unaffected in the 1:200 year present day event, calculations to estimate a 1:200 year +CC flood event could not be undertaken. As such, the potential impacts of climate change on tidal flood risk cannot be fully quantified.
- 4.12 However, the development is situated in an area benefiting from flood defences according to the EA Flood Map for Planning, and the Shoreline Management Plan for these defences is Hold the Line (HTL) for the next 100 years, and thus the same standard of protection (1:200 year) may therefore be maintained for the lifetime of the development.

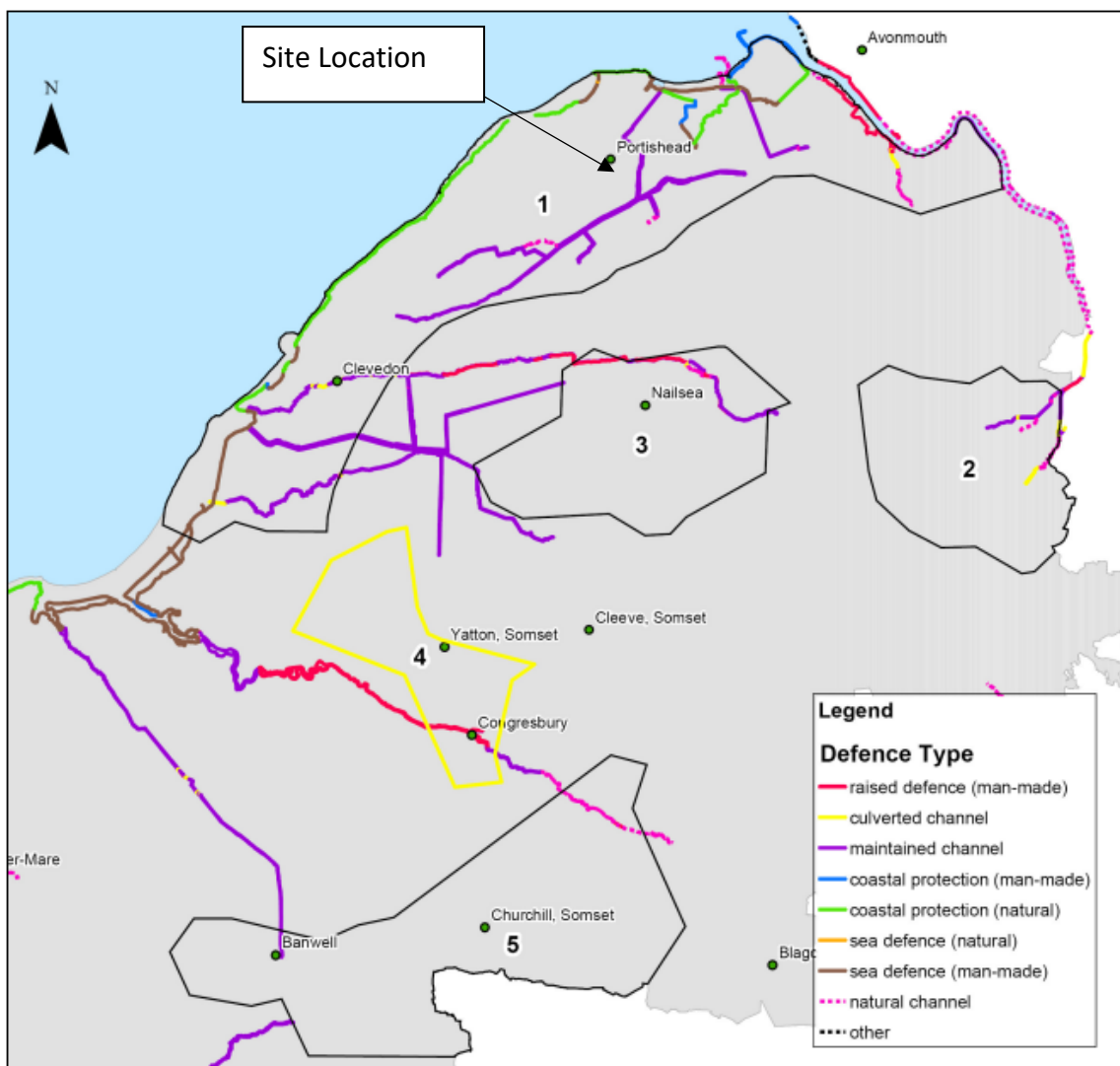


Figure 6 Channel Classification (Source North Somerset Level 2 SFRA)

- 4.13 The Level 2 North Somerset SFRA states that defences are present along significant sections of the coastline in this area allowing many areas to benefit from defences. These include the coastal region south of Clevedon extending landward to Area 4 and 5 and land south of Portishead between Upper Caswell Farm to Clapton in Gordano and Nortons Wood.

- 4.14 The Areas Benefitting from Defences (ABD) and the extent of protection offered by the defences can be seen in Figure 7, as the areas where flooding at the 1 in 200-year (0.5% AEP) return period no longer occurs, shown as the red extents and the Residual Risk Areas (RRA) of the FZ3 Extent shown in blue.

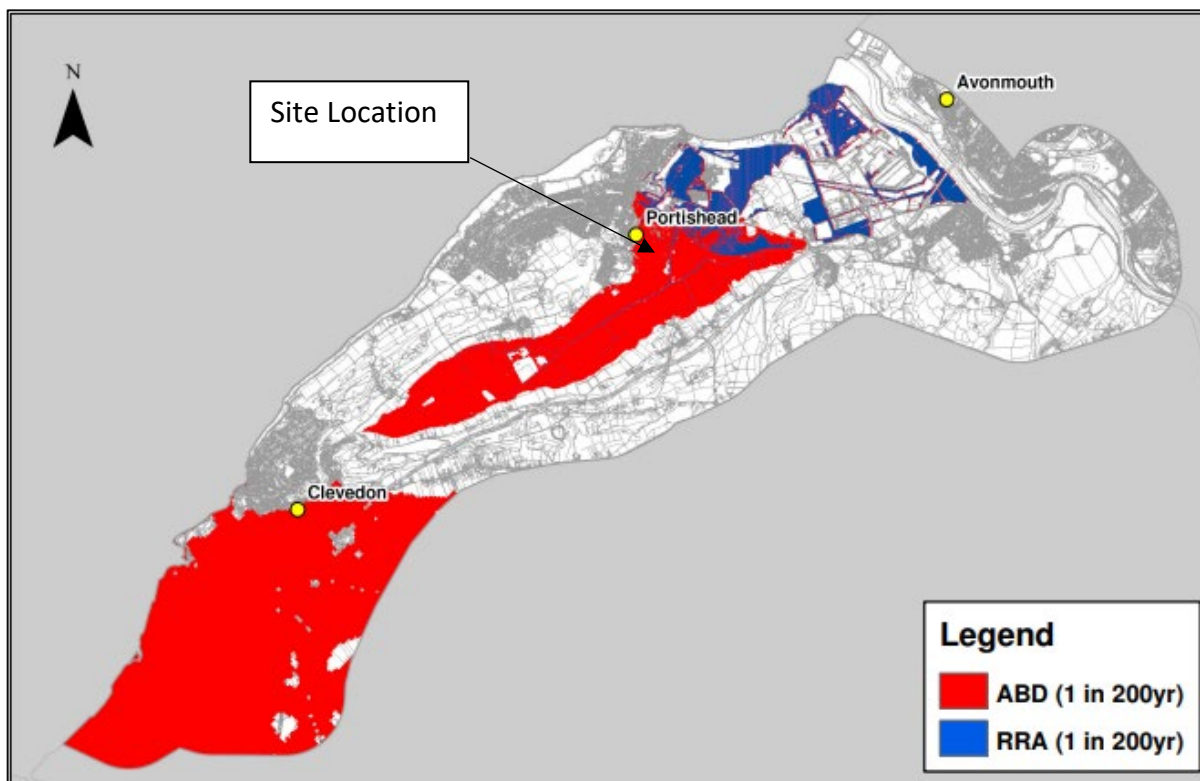


Figure 7 Areas benefiting from flood defences (Source North Somerset Level 2 SFRA)

- 4.15 Figure 7 shows that the site is situated in an area benefiting from Flood Defences.

- 4.16 In a previous consultation response, the EA stated that:

*For the development to be safe we would require the finished floor level of the ground floor to be raised as high as reasonably practical, provision of flood resilience construction, and have an emergency and evacuation plan in the event of flooding.*

- 4.17 As the proposal is a change of use, it may not be possible to raise the ground floor Finished Floor Levels (FFLs). However, all bedrooms will be at the first floor and thus safe refuge could be sought at the first floor, if prior evacuation is not possible. Site owner(s) and occupants should sign up to the EA Flood Warning Service and should evacuate the site upon receipt of a Flood Warning. If flooding is sudden and prior evacuation is not possible, refuge could be sought at the first floor on site
- 4.18 As the site is benefiting from flood defences it could be considered that the site is at relatively low risk from tidal flooding.

## Surface Water (Pluvial)

- 4.19 The Environment Agency Flood Risk from Surface Water web site shows the proposed development to be within an area of 'Medium' risk of flooding from surface water. Areas identified to be at 'Medium' risk have a 1% to 3.3% annual risk of flooding from this source (Figure 8).



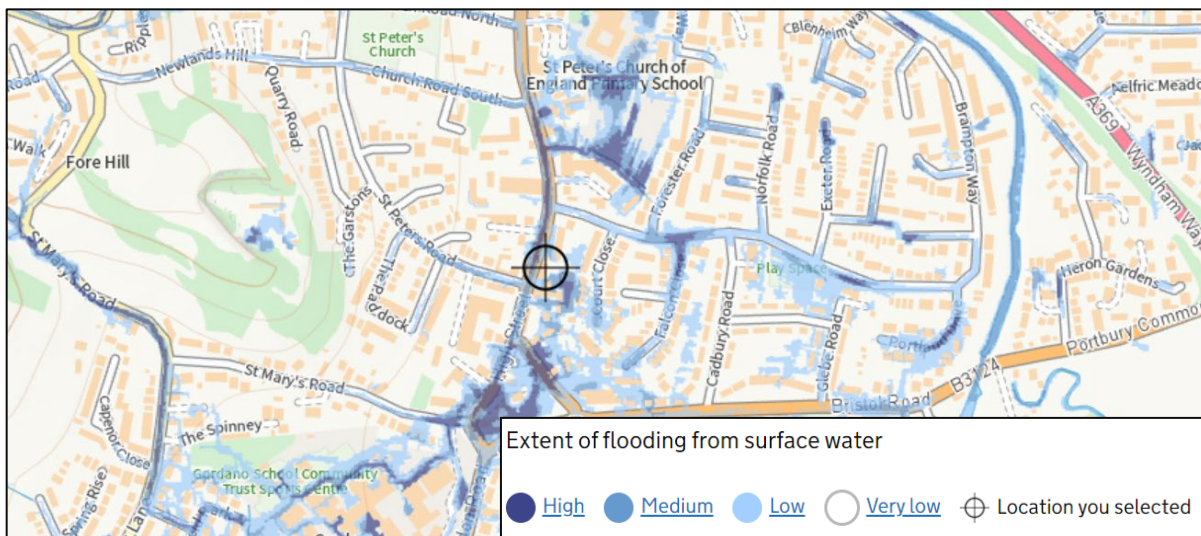


Figure 8 Surface Water Flood Risk Map (Source EA)

4.20 The EA Surface Water Flood Depth Map for the High-Risk Scenario indicates that the proposed development may experience flood depths of 150mm and below (Figure 9). The dwelling may not experience surface water flooding in this scenario. Surface water flooding may impact the south east corner of the garden. A High-Risk Scenario has a greater than 3.3% annual risk of occurring.



Figure 9 1:30 Surface Water Flood Risk Map (Source EA)

4.21 The EA Surface Water Flood Depth Map for the Medium Risk Scenario indicates that the proposed development may experience flood depths of 300mm in this event (Figure 10). The dwelling may not experience surface water flooding in this scenario. Surface water flooding may impact the south east corner of the garden. A Medium Risk Scenario has a 1% to 3.3% annual risk of occurring.



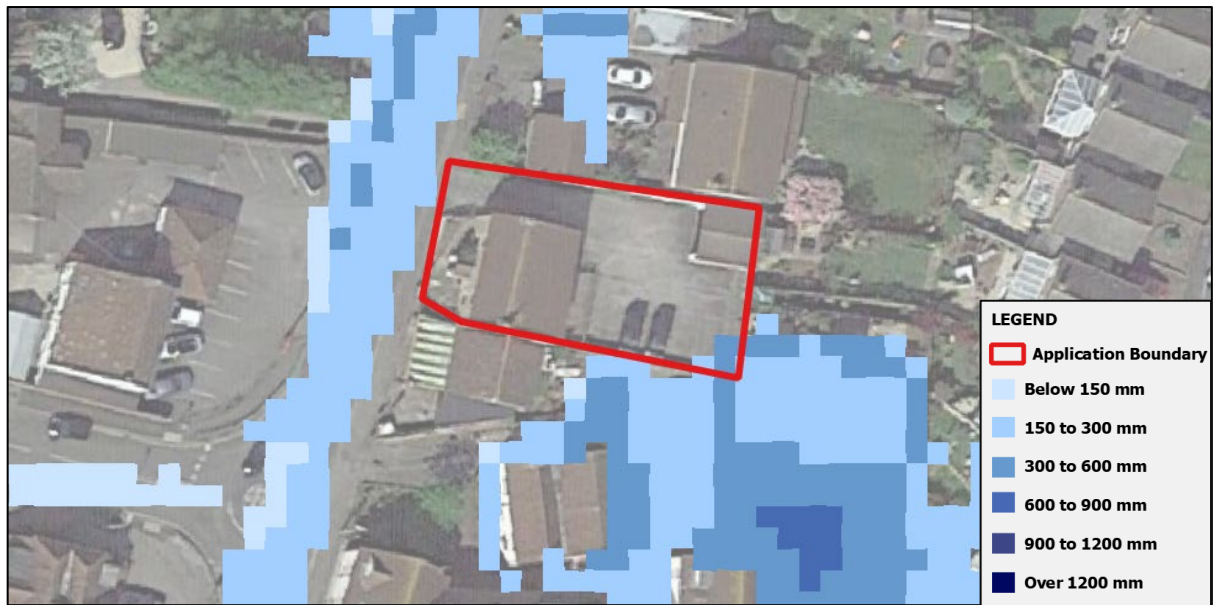


Figure 10 1:100 Surface Water Flood Risk Map (Source EA)

- 4.22 The EA Surface Water Flood Depth Map for the Low-Risk Scenario indicates that the proposed development may experience flood depths of 600mm in this event (Figure 11). The dwelling may not experience surface water in this scenario. Surface water flooding may impact the south east corner of the garden as well as the north boundary line. A Low-Risk Scenario has a 0.1% to 1% annual risk of occurring.



Figure 11 1:1000 Surface Water Flood Risk Map (Source EA)

## Groundwater

- 4.23 The site is not located in area that is susceptible to groundwater flooding (Figure 12), therefore the site could be considered to be at low risk of groundwater flooding.



Figure 12 Groundwater Susceptibility Map (British Geological Survey)

4.24 The site is not located in a source protection zone according to DEFRA Magic Map service.

## Sewer

4.25 Wessex water has provided information on the number of properties that have experienced sewer flooding in North Somerset. The data provided shows that the postcode in which the site is situated has experienced 2 internal sewer flooding events and 4 external sewer flooding events.

4.26 The total number of sewer incidents in the whole of north somerset is 265. The highest risk areas were BS40 (Wrington), BS24 (Bleadon, Hutton, Locking, Lympsham and Weston-super-Mare), BS22 (Kewstoke, Weston-super-Mare and Wick St Lawrence) and BS49 (Congresbury and Yatton).

4.27 The site appears to be in a low risk area for sewer flooding.

## Surface Water Drainage Strategy

4.28 As the development is for change of use, existing infrastructure could be deemed suitable to drain any surface runoff. However, betterment could be provided by implementing water butts or rain gardens.

## Records of Historical Flooding

4.29 The site is not located in an area that has been affected by historical flooding (Figure 13).

4.30 The closest recorded flood outline was recorded approximately 212m south of the site. The flooding was caused by poor drainage which led to surface water flooding in November 2012.



Figure 13 Historical Flood Map (Source EA)



## 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.

Table 4 Definition of the NPPF Flood Zones (Source EA)

Zone	Description
<b>1</b>	<b>Low Probability.</b> 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%).
<b>2</b>	<b>Medium Probability.</b> 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.
<b>3a</b>	<b>High Probability.</b> 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.
<b>3b</b>	<b>The Functional Floodplain.</b> 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).

### 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 The North Somerset SFRA states that climate change has the potential to significantly increase the impact of flooding within North Somerset due to the presence of low-lying land along the coastline, Somerset Levels and Moors.

### Fluvial

- 5.5 The proposed development is in Flood Zone 3. Thus, the Environment Agency's peak river flow allowances would normally need to be used to assess the potential risk of flooding in the future.
- 5.6 The EA have provided updated climate change allowances in accordance with peak management catchment areas. The site is located in the Avon Bristol and North Somerset Streams management catchment area. Following the central allowance, the site could experience a 26% increase in local river flow in the future
- 5.7 The EA have provided data for a 1:100 Year + CC (30%) flood event. In this event the flood level is predicted to be 5.01m AOD. This is used as a conservative estimate for the 26% climate change increase.
- 5.8 In the event of a 1:100 Year + CC (30%) flood event, the topographic levels across site (6.39m AOD to 7.4m AOD) are above the predicted flood level. Therefore, the ground level on the site will be positioned above the predicted climate change flood levels.

- 5.9 As such, the risk of flooding from fluvial sources with the potential impacts of climate change over the lifetime of the proposed development could be considered **low**.

## Tidal

- 5.10 Sea level allowances are predicted by river basin district for each epoch in mm for each year (based on a 1981 to 2000 baseline) – the total sea level rise for each epoch (Table 5).
- 5.11 The data displayed in Table 5 shows that South West is expected to see a cumulative sea level rise of 1.21m following the higher central allowance and a cumulative sea level rise of 1.62m following the upper end allowance.

Table 5 Sea Level Rise Allowances for the South West Region.

Area of England	Allowance	2000 to 2035 (mm)		2036 to 2065 (mm)		2066 to 2095 (mm)		2096 to 2125 (mm)		Cumulative rise 2000 to 2125 (m)
		/year	total	/year	total	/year	total	/year	total	
South West	Higher Central	5.8	203	8.8	264	11.7	351	13.1	393	1.21
	Upper End	7	245	11.4	342	16	480	18.4	552	1.62

- 5.12 No climate change flood levels were provided by the EA and as the site could remain unaffected in the 1:200 year present day event, calculations to estimate a 1:200 year +CC flood event could not be undertaken. As such, the potential impacts of climate change on tidal flood risk cannot be fully quantified.
- 5.13 In a previous consultation response, the EA stated that:
- For the development to be safe we would require the finished floor level of the ground floor to be raised as high as reasonably practical, provision of flood resilience construction, and have an emergency and evacuation plan in the event of flooding.*
- 5.14 As the proposal is a change of use, it may not be possible to raise the ground floor Finished Floor Levels (FFLs). However, all bedrooms will be at the first floor and thus safe refuge could be sought at the first floor, if prior evacuation is not possible. Site owner(s) and occupants should sign up to the EA Flood Warning Service and should evacuate the site upon receipt of a Flood Warning. If flooding is sudden and prior evacuation is not possible, refuge could be sought at the first floor on site

## 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 The EA Flood Map for planning indicates that the proposed site is located in an area that benefits from the presence of flood defences. However, no information has been provided by the EA at the time of writing on the residual risk of a defence breach. In the event of a defence breach, if prior evacuation is not possible, safe refuge could be sought at the first floor within the proposed dwelling.

### Reservoir Failure

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

### Drainage Exceedance

6.4 In the event of drainage exceedance/failure, overland flows will be dictated by external topography. Topographic levels within the redline application boundary show a gradual decline towards the centre of the garden. As such, overland flows could be expected to flow away from the dwelling to the garden.



## 7. Flood Risk Management Measures

### Flood Risks

- 7.1 It is understood that the development is for the change of use of the existing offices to a single house. The footprint of the dwelling is not being extended and is therefore not expected to increase flood risk elsewhere.
- 7.2 Analysis within this report has indicated that the risk of flooding from fluvial sources could be considered low. The risk of tidal flooding in the present day could also be considered low.
- 7.3 In a previous consultation response, the EA stated that:
- For the development to be safe we would require the finished floor level of the ground floor to be raised as high as reasonably practical, provision of flood resilience construction, and have an emergency and evacuation plan in the event of flooding.*
- 7.4 As the proposal is a change of use, it may not be possible to raise the ground floor Finished Floor Levels (FFLs). However, all bedrooms will be at the first floor and thus safe refuge could be sought at the first floor, if prior evacuation is not possible. Site owner(s) and occupants should sign up to the EA Flood Warning Service and should evacuate the site upon receipt of a Flood Warning. If flooding is sudden and prior evacuation is not possible, refuge could be sought at the first floor on site.
- 7.5 The following flood mitigation measures are recommended:
- All bedrooms should be confined to the first floor.
  - Site owners and users to regularly check the EA Flood Warning service for the site and to follow a flood evacuation plan
  - Temporary barriers for doors / windows / garages in the event of a flood warning.
  - Water butts and rain garden to manage surface run-off.

### Flood Warning Service

- 7.6 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](http://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.
- 7.7 The proposed development site is located within an EA Flood Warning Service Area. As such, it is recommended that site users sign up to this service.

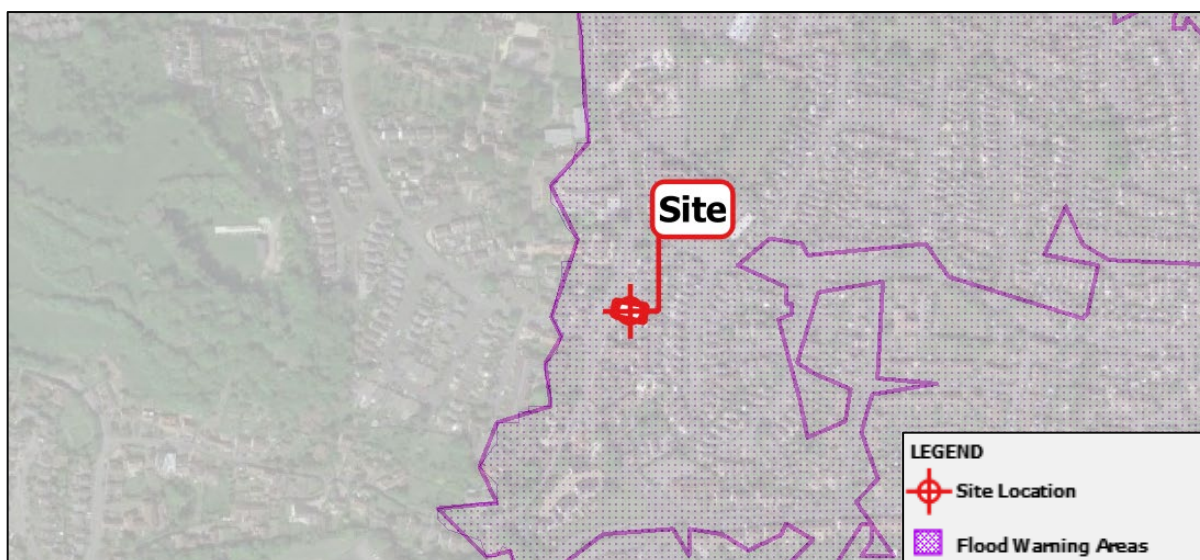


Figure 14 Flood Warning and Alert Area (Source EA)

- 7.8 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.
- 7.9 If flood waters along the proposed evacuation route have exceeded 25cm, site users are advised if possible, to seek refuge at the upper floors on site.

### What to do if you receive a Flood Alert

7.10 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

7.11 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

7.12 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

7.13 In the event of a fluvial or tidal flood, it is recommended that site occupants seek refuge in Flood Zone 1.

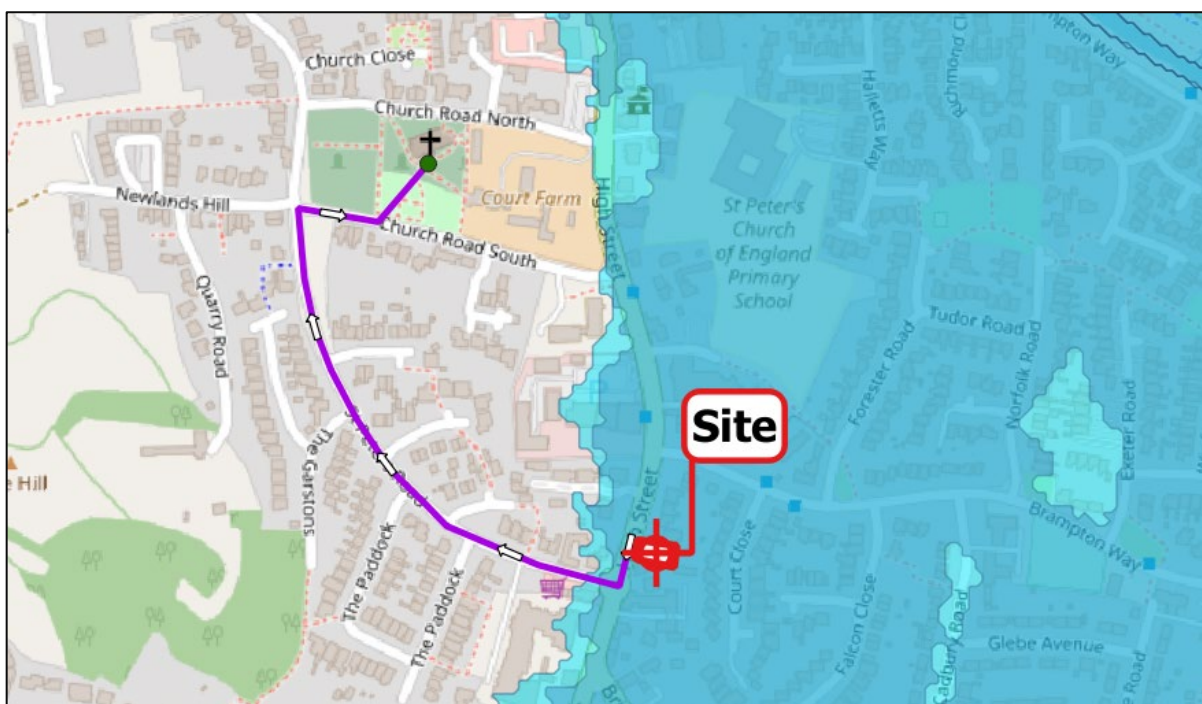


Figure 15 Flood Evacuation Route

- 7.14 Site occupants could seek safety in a church situated in Flood Zone 1. The church address is St Peter's Church, Church Rd South, Portishead, Bristol, BS20 6PS.
- 7.15 Site occupants could follow the evacuation route shown in Figure 15. It is recommended that site occupants turn left onto the high street and walk 30m down the road. They should then turn right and walk approximately 400m along St Peter's Road. Then they should turn right and walk approximately 60m along Church Road South. St Peter's Church is situated on the left-hand side.

## 8. Off Site Impacts

### Impact to Flood Risk Elsewhere

- 8.1 The planning application is for change of use. As such, there will be no increase in footprint and the proposal should not increase flood risk elsewhere via displacement of flood water.

### Generation of Runoff

- 8.2 As the development is for change of use, existing infrastructure could be deemed suitable to drain any surface runoff. However, betterment could be provided by implementing water butts or rain gardens.

## 9. Conclusion

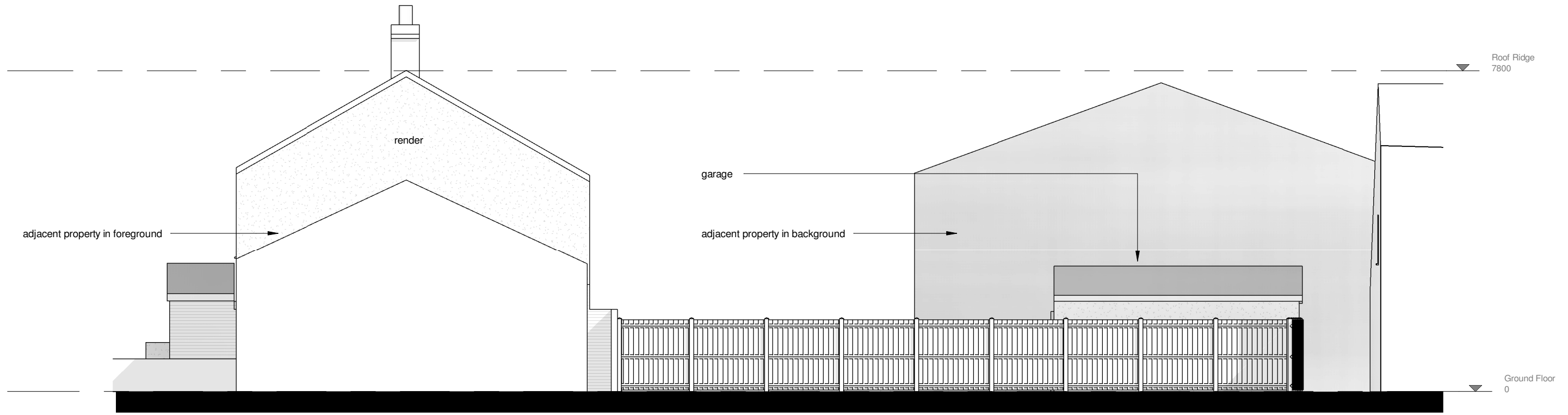
- 9.1 Ambient Environmental Assessment has been appointed by Jon Donaldson to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 139 High Street, Portishead, North Somerset, BS20 6PY.
- 9.2 The site is currently a commercial premise (offices). It is understood that the development is for the change of use of the existing offices to a single house.
- 9.3 All bedrooms will be confined to the first floor of the dwelling and the ground floor will be used for kitchen, dining and living room space.
- 9.4 With reference to the Environment Agency (EA) Flood Map for Planning, the proposed development is located within Flood Zone 3. The proposed development is considered “More Vulnerable” under the NPPF.
- 9.5 Product 4 data has been provided by the Environment Agency. The dataset includes fluvial and tidal flood data. With regards to the fluvial data, the EA have provided in-channel 1D flood levels, but have noted that the 2D element for this model did not reach the site. Furthermore, the site is on land above the in-channel flood levels up to the 1:1000 year event.
- 9.6 With regards to tidal flooding, the Product 4 dataset indicates that the site could remain unaffected in the 1:200 year present day event based on a defended (actual) scenario. No climate change flood levels were provided by the EA and as the site could remain unaffected in the 1:200 year present day event, calculations to estimate a 1:200 year +CC flood event could not be undertaken. As such, the potential impacts of climate change on tidal flood risk cannot be fully quantified. However, the development is situated in an area benefiting from flood defences according to the EA Flood Map for Planning, and the Shoreline Management Plan for these defences is Hold the Line (HTL) for the next 100 years, and thus the same standard of protection (1:200 year) may therefore be maintained for the lifetime of the development.
- 9.7 In a previous consultation response, the EA stated that:
- For the development to be safe we would require the finished floor level of the ground floor to be raised as high as reasonably practical, provision of flood resilience construction, and have an emergency and evacuation plan in the event of flooding.*
- 9.8 As the proposal is a change of use, it may not be possible to raise the ground floor Finished Floor Levels (FFLs). However, all bedrooms will be at the first floor and thus safe refuge could be sought at the first floor, if prior evacuation is not possible. Site owner(s) and occupants should sign up to the EA Flood Warning Service and should evacuate the site upon receipt of a Flood Warning. If flooding is sudden and prior evacuation is not possible, refuge could be sought at the first floor on site.
- 9.9 As the proposed development is for change of use, the existing footprint is not being extended. Therefore, flood risk elsewhere may not increase.
- 9.10 The proposed development is at low risk from tidal and fluvial flooding.
- 9.11 The proposed development is at low risk from surface water flooding, low risk from sewer flooding and low risk from groundwater flooding.
- 9.12 As such, and given that:
- The proposed development is for change of use from the existing office to a single house.



- All bedrooms will be confined to the first floor and safe refuge could be sought at the first floor.
- The footprint of the dwelling is not being extended therefore flood risk elsewhere is minimal.

Following the guidelines contained within the NPPF, the proposed development is considered to be suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

## Appendix I - Site Plans



Existing - South Elevation

1 : 100



Existing - West Elevation.

1 : 100

1	Issued for planning	SB	SW	03/06/21
rev	description	drawn	checked	date
revisions				

status: PLANNING

- Do not scale from the drawing.
- The Contractor is to check all site dimensions and levels before work commences.
- This drawing must be read with and checked against all structural and other specialist drawings, specifications and bills of quantities.
- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



TELEPHONE + 44 (0)7717 224 224  
 EMAIL sb00z@thehousebristol.co.uk  
 WEB thehousebristol.co.uk

client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
 Portishead  
 BS20 6PY

title: Existing - South & West Elevations

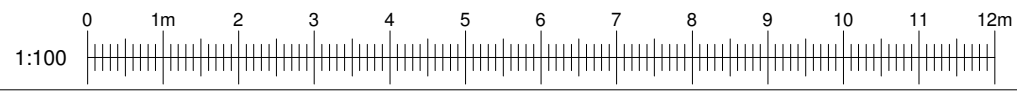
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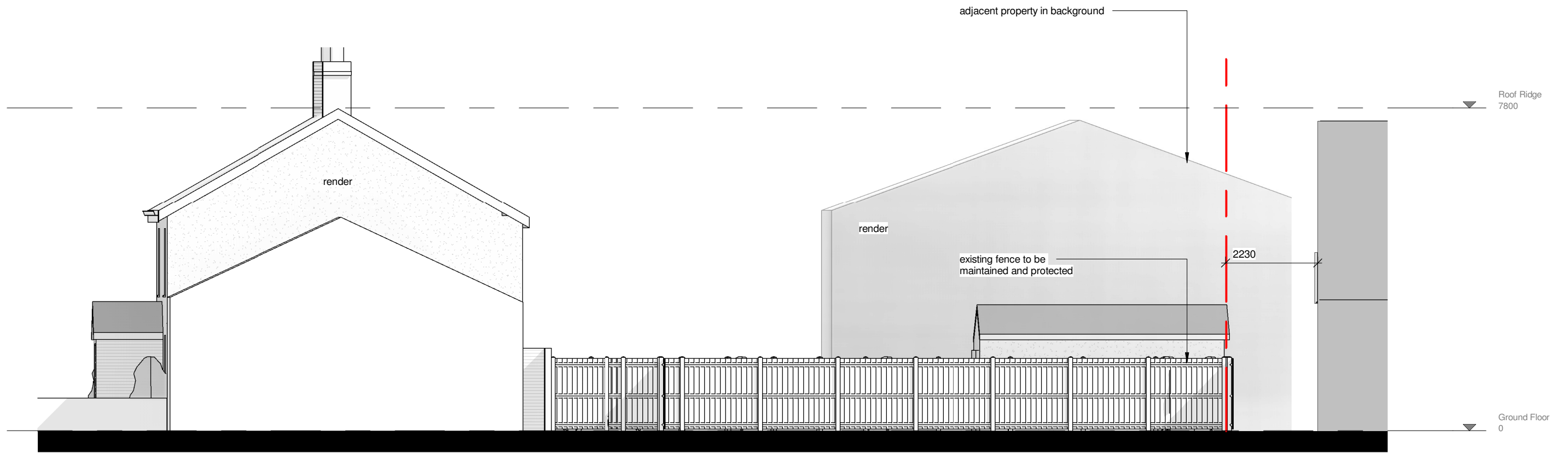
date: 03/06/21

drawn: SB

checked: SW

job no: L18-21 drawing no: (01)200 revision: P 1





Proposed - South Elevation  
1 : 100



Proposed - West Elevation  
1 : 100



rev	description	drawn	checked	date
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1	Issued for planning	SB	SW	03/06/21

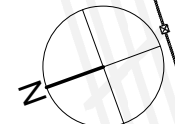
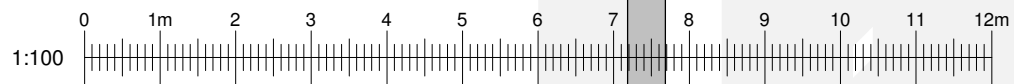
status: PLANNING

- Do not scale from the drawing.
- The Contractor is to check all site dimensions and levels before work commences.
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- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



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WEB thehousebristol.co.uk

client:	Mr J Donaldson & Mr J Walker		
project:	139 High Street Portishead BS20 6PY		
title:	Proposed - South & West Elevation		
scale:	1 : 100	@	A3
date:	03/06/21		
drawn:	SB		
checked:	SW		
job no:	drawing no:	revision:	
L18-21	(01)202	P 2	



1	Issued for planning	SB	SW	03/06/21
rev	description	drawn	checked	date
revisions				

status: PLANNING

- Do not scale from the drawing.
- The Contractor is to check all site dimensions and levels before work commences.
- This drawing must be read with and checked against all structural and other specialist drawings, specifications and bills of quantities.
- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



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 WEB thehousebristol.co.uk

client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
 Portishead  
 BS20 6PY

title: Existing - First Floor

scale: 1 : 100 @ A3

date: 03/06/21

drawn: SB

checked: SW

job no: L18-21 drawing no: (01)101 revision: P 1



1	Issued for planning	SB	SW	03/06/21
rev	description	drawn	checked	date
revisions				

status: PLANNING

- Do not scale from the drawing.
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- This drawing must be read with and checked against all structural and other specialist drawings, specifications and bills of quantities.
- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



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 WEB thehousebristol.co.uk

client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
 Portishead  
 BS20 6PY

title: Existing - Ground Floor

scale: 1 : 100 @ A3

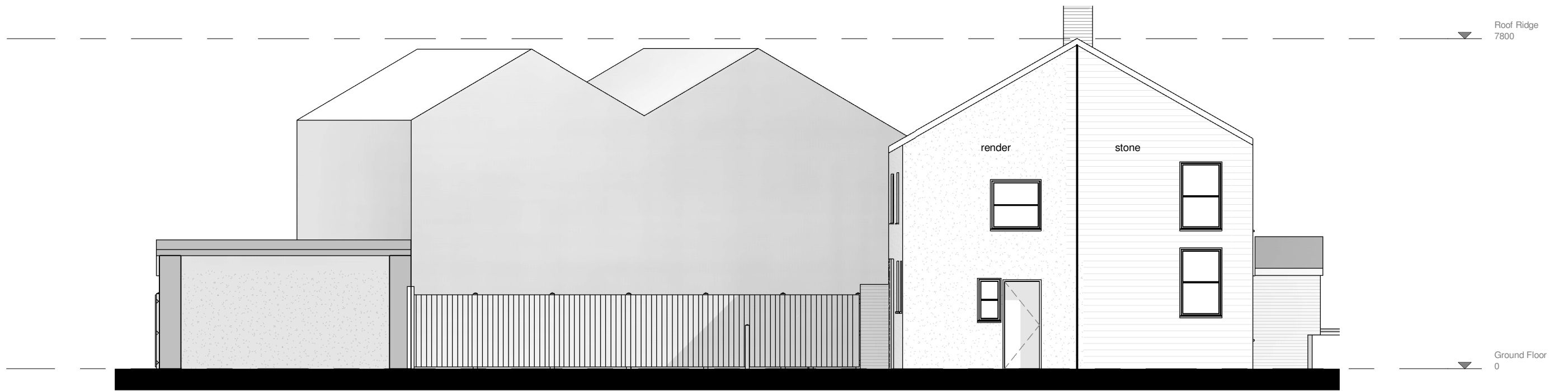
date: 03/06/21

drawn: SB

checked: SW

job no: L18-21 drawing no: (01)100 revision: P 1





Existing - North Elevation  
1 : 100



Existing - East Elevation.  
1 : 100

1	Issued for planning	SB	SW	03/06/21
rev	description	drawn	checked	date
revisions				

status: PLANNING

- Do not scale from the drawing.
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- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



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client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
Portishead  
BS20 6PY

title: Existing - North & East Elevation

scale: 1 : 100 @ A3

date: 03/06/21

drawn: SB

checked: SW

job no: drawing no: revision:

L18-21 (01)201 P 1





rev	description	drawn	checked	date
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1	Issued for planning	SB	SW	03/06/21

status: PLANNING

- Do not scale from the drawing.
- The Contractor is to check all site dimensions and levels before work commences.
- This drawing must be read with and checked against all structural and other specialist drawings, specifications and bills of quantities.
- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



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client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
 Portishead  
 BS20 6PY

title: Proposed - First Floor

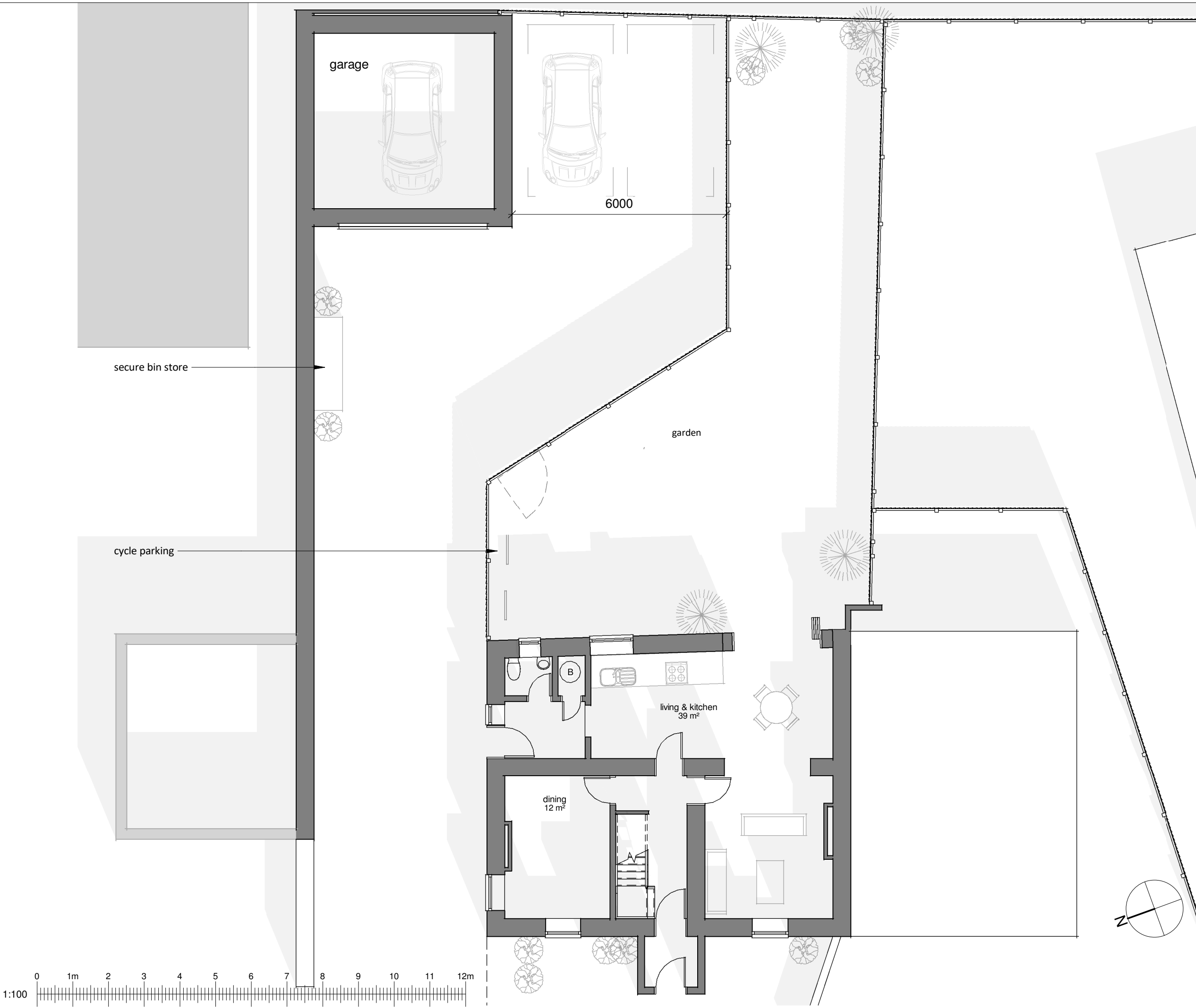
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date: 03/06/21

drawn: SB

checked: SW

job no: L18-21 drawing no: (01)103 revision: P 2



rev	description	drawn	checked	date
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1	Issued for planning	SB	SW	03/06/21

status: PLANNING

- Do not scale from the drawing.
- The Contractor is to check all site dimensions and levels before work commences.
- This drawing must be read with and checked against all structural and other specialist drawings, specifications and bills of quantities.
- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



TELEPHONE + 44 (0)7717 224 224  
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 WEB thehousebristol.co.uk

client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
 Portishead  
 BS20 6PY

title: Proposed - Ground Floor

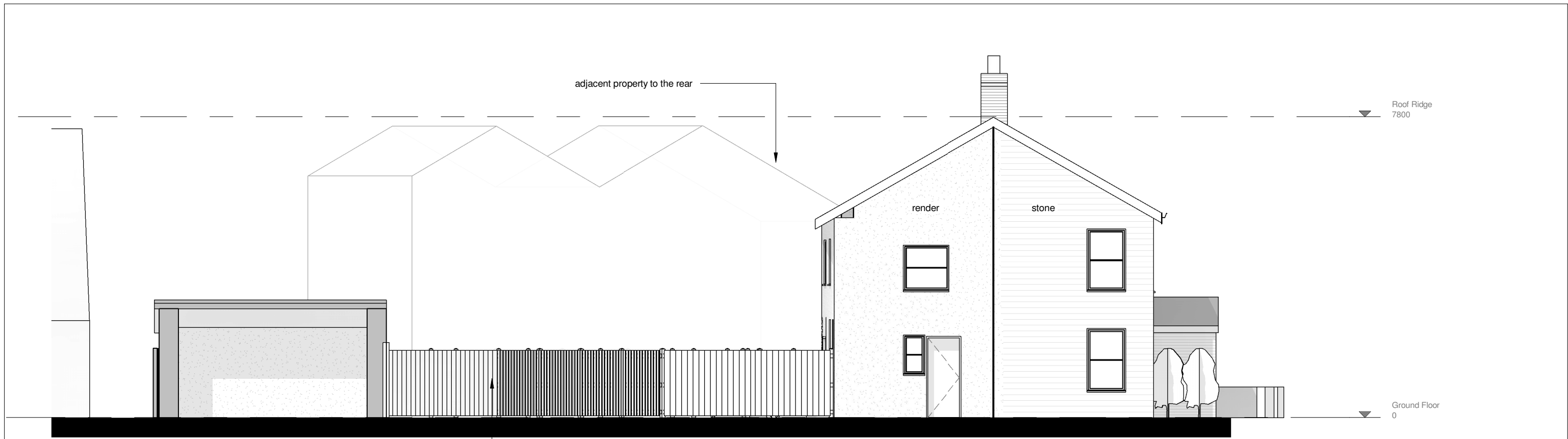
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date: 03/06/21

drawn: SB

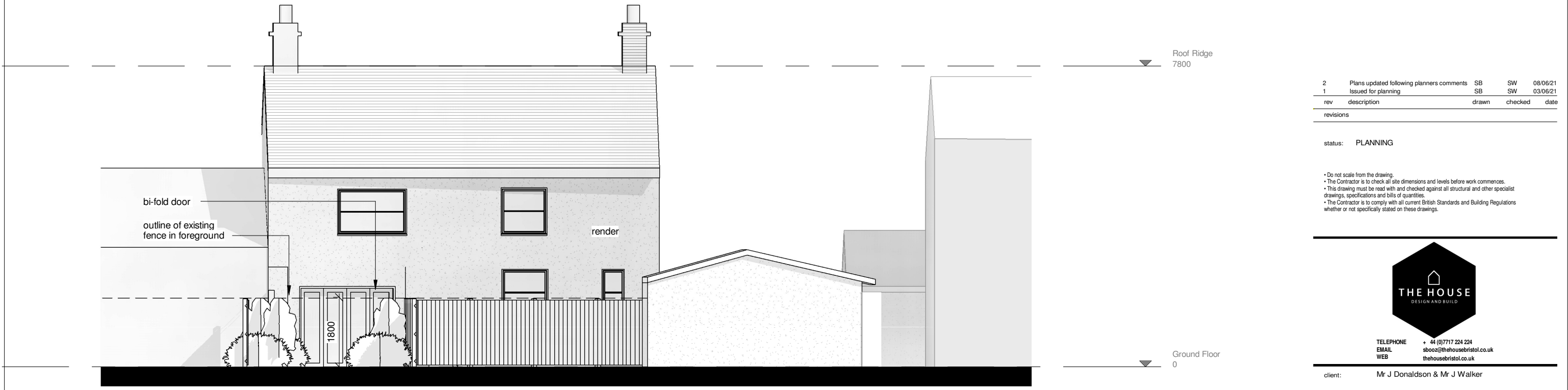
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job no: L18-21 drawing no: (01)102 revision: P 2



Proposed - North Elevation

1 : 100



Proposed - East Elevation

1 : 100

rev	description	drawn	checked	date
2	Plans updated following planners comments	SB	SW	08/06/21
1	Issued for planning	SB	SW	03/06/21

status: PLANNING

- Do not scale from the drawing.
- The Contractor is to check all site dimensions and levels before work commences.
- This drawing must be read with and checked against all structural and other specialist drawings, specifications and bills of quantities.
- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



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 WEB thehousebristol.co.uk

client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
 Portishead  
 BS20 6PY

title: Proposed - North & East Elevation

scale: 1 : 100 @ A3

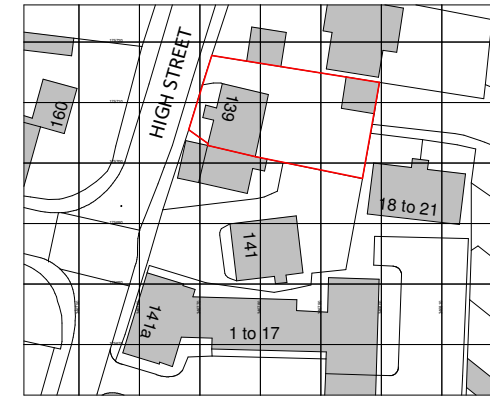
date: 03/06/21

drawn: SB

checked: SW

job no: L18-21 drawing no: (01)203 revision: P 2





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## Site Location Plan

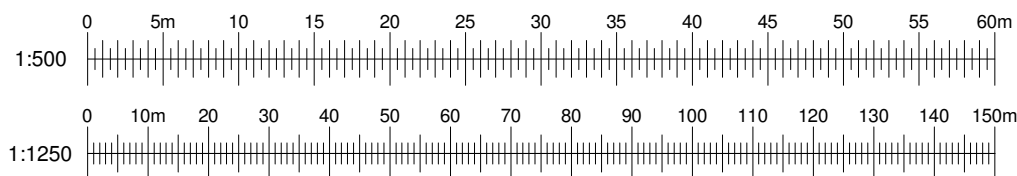
1 : 1250



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## Block Plan

1 : 500



rev	description	drawn	checked	date
2	Plans updated following planners comments	SB	SW	08/06/21
1	Issued for planning	SB	SW	03/06/21

status: PLANNING

- Do not scale from the drawing.
- The Contractor is to check all site dimensions and levels before work commences.
- This drawing must be read with and checked against all structural and other specialist drawings, specifications and bills of quantities.
- The Contractor is to comply with all current British Standards and Building Regulations whether or not specifically stated on these drawings.



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 WEB thehousebristol.co.uk

client: Mr J Donaldson & Mr J Walker

project: 139 High Street  
 Portishead  
 BS20 6PY

title: Site Location Plan & Block Plan

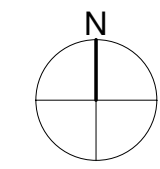
scale: As indicated @ A3

date: 03/06/21

drawn: SB

checked: SW

job no: L18-21 drawing no: (01)800 revision: P 2



## Appendix II - EA Data



Nick Drewett  
Ambiental  
nick.drewett@rhdhv.com

**Our ref:** 238513-WX  
**Your ref:** 15415  
**Date:** 09 November 2021

Dear Nick

Thank you for your enquiry which was received on 22 October 2021.

**Abstract**

Name	Product 4
Description	Detailed Flood Risk Assessment Map for <b>139 High Street, Portishead, Bristol, BS20 6PY</b>
Information Warnings	<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.</i>
Attribution	Contains Environment Agency information © Environment Agency and/or database rights.  Contains Ordnance Survey data © Crown copyright 2019 Ordnance Survey 100024198.

**Flood Map for Planning**

The Flood Map for Planning is now classed as Open Data. It can be downloaded free of charge under an open data licence from the following weblink:

<https://data.gov.uk/publisher/environment-agency>

If you search for the ‘flood map for planning’ in the search box the following datasets will be available for you select and download the data:

- Flood Map for Planning (Rivers and the Sea) – Flood Zones 2 and 3
- Flood Map for Planning (Rives and Sea) – Areas Benefiting from Defences
- Flood Map for Planning (Rivers and Sea) Flood Storage Areas
- Flood Map for Planning – Spatial Flood Defences (without Standard attributes)
- Recorded Flood Outlines

Customer & Engagement, Wessex  
Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS  
Phone: 02030 250 376  
Email: [wessexenquiries@environment-agency.gov.uk](mailto:wessexenquiries@environment-agency.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

- Historic Flood Map
- Risk of Flooding from Surface Water Extent for:
  - 3 percent annual chance
  - 1 percent annual chance
  - 0.1 percent annual chance

If you have requested this information to help inform a development proposal, then you should also note the detail in the attached advisory text on the use of Environment Agency Information and Further Guidance for FRAs.

### **Flooding history**

We no longer produce pdf copies of the Historic Flood Map. This information is available to search select, and download free of charge as part of the Government's 'open data' as

- Recorded Flood Outlines
- the Historic Flood Map

These are GIS layers and can be download from: <https://data.gov.uk/publisher/environment-agency>

### **Strategic Flood Risk Assessment (SFRA)**

#### **Planning**

If you have questions regarding the planning nature of your enquiry, or require advice on floor levels, please contact our Sustainable Places team on [NWX.SP@environment-agency.gov.uk](mailto:NWX.SP@environment-agency.gov.uk). Please be aware that we now charge for planning advice when consulted on pre-application enquiries. This new approach provides advice to developers in two ways. Firstly there is the provision of 'free' advice available to everyone where we give a preliminary opinion on a proposed development. This sets out the environmental constraints together with any issues this raises for us. Should you wish us to review in detail any of these issues then we can do this through a chargeable scheme aimed at recovering our costs.

#### **Flood Levels**

##### Fluvial flood levels and depths

The attached map contains a set of modelled fluvial flood level node locations/unique identifiers, taken from our Portbury Ditch and Drove Rhyne 2019 model. A sheet is also attached providing the associated flood levels, NGRs and further information for the river channel relating to each of these nodes. Please note that the labels annotated to the Node Location Map are unique node identifiers and not the associated flood levels.

Node type information:

- 1D\_fluvial
  - In channel nodes, no 2D element to the modelling
- 2D\_fluvial
  - In channel nodes, 2D data available from the modelling
- Interpolated sections
  - Calculated weighted averages of the river or conduit section properties upstream and downstream to produce a hybrid section according to the location of the interpolated section. They are used to ensure a smooth gradation or transition between cross sections to avoid sudden variations which can cause instability in a model. This may be where the distance between surveyed cross sections is large and there is a steep gradient to the channel or other distinct changes between the two sections.
- Replicate sections

Customer & Engagement, Wessex  
 Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS  
 Phone: 02030 250 376  
 Email: [wessexenquiries@environment-agency.gov.uk](mailto:wessexenquiries@environment-agency.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

VAT No: 662 4901 34

- Used to copy the preceding river or conduit section at a distance further along the reach and at a lower level. The Replicated Section is a quick method for adding a cross-section which has exactly the same dimensions as the cross-section immediately upstream.
- Reservoir
  - Modelled measurements outside the boundary of the river channel

Interpolated and Replicate sections are not surveyed sections, however they are based on surveyed section data and the results from them can be used as long as their limitations are understood.

Please be aware that this model did not include data for climate change allowances.

The 2D for this model did not reach the site.

### Coastal/tidal flood levels and depths

The tables below show the maximum modelled tidal flood levels and depths for defended (actual situation) and undefended (natural floodplain) scenarios taken from our 2012 Wessex North Coast Model. For the undefended scenarios the 0.5% (1 in 200 year return period) and 0.1% (1 in 1000 year return period) annual exceedance probability (AEP) is given. Only the 0.5% (1 in 200 year) AEP is available for the defended scenario.

#### Defended

AEP	Maximum depth (in metres)	Maximum level (mAOD)
0.5% (1 in 200)	0.00	0.00

#### Undefended

AEP	Maximum depth (in metres)	Maximum level (mAOD)
0.5% (1 in 200)	0.28	7.18
0.1% (1 in 1000)	0.60	7.50

Levels and depths have been extracted based upon the site boundary plan provided.

### **Flood Defences**

Please find enclosed details of Flood Defences within the vicinity of the site boundary. This information has been taken from our Asset Information Management System database(AIMS).

Please note that flood defences can increase water levels elsewhere eg through channels being restricted by defences, or because defences prevent flood water flowing back into the river channel.

If you intend undertaking a FRA for a planning application using climate change flood level information supplied in this letter, you should consider whether it is appropriate in light of a range of potential allowances for fluvial flood flow now advised in current planning guidance on 'Flood risk assessments: climate change allowances'. The relevant guidance is available at the following website address: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

**We have included a briefing note that refers to the 2018 Climate Change projections. Our Sustainable places team would be happy to discuss the issues around Climate Change and how this should be used.**

Customer & Engagement, Wessex  
 Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS  
 Phone: 02030 250 376  
 Email: [wessexenquiries@environment-agency.gov.uk](mailto:wessexenquiries@environment-agency.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

VAT No: 662 4901 34

## Somerset and the Sea

We attach a PDF copy of 'Somerset and the Sea'. This document contains the highest recorded historic tidal levels for Bridgwater, Weston-super-Mare and Avonmouth, which occurred during the tidal flood event of 13 December 1981.

## Environmental Permit for Flood Risk Activities

In addition to any other permission(s) that you may have already obtained e.g. planning permission, you may need an environmental permit for flood risk activities (formerly known as Flood Defence Consent prior to 06 April 2016) if you want to do work:

- in, under, over or near a main river (including where the river is in a culvert)
- on or near a flood defence on a main river
- in the flood plain of a main river
- on or near a sea defence

For further information and to check whether a permit is required please visit:

<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>.

For any further advice, please contact your local Environment Agency Office, at

[bridgwater.frap@environment-agency.gov.uk](mailto:bridgwater.frap@environment-agency.gov.uk).

## Further Information

We advise that you also contact the Flood Risk Department, [floodrisk@n-somerset.gov.uk](mailto:floodrisk@n-somerset.gov.uk) telephone 01934 888888 , at North Somerset Council, Town Hall, Walliscote Grove Road, Weston-super-Mare, BS23 1UJ as they may be able to provide further advice with respect to localised flooding and drainage issues.

Further details about the Environment Agency information supplied can be found on our website:

<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for FRAs:

<https://www.gov.uk/planning-applications-assessing-flood-risk>

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

We hope you find this information helpful and it is provided subject to the guidance below, which we strongly recommend you read.

Yours sincerely

*Corinne Moyse*

Customer & Engagement, Wessex  
Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS  
Telephone number: 02030 250 376  
Email: [wessexenquiries@environment-agency.gov.uk](mailto:wessexenquiries@environment-agency.gov.uk)

**Enc:** Use of Environment Agency Information for Flood Risk Assessments (below)  
UKCP18 Climate Change Briefing Note  
238513-WX Node Location Map  
238513-WX Node Data  
Somerset and the Sea  
238513-WX Defence Map    238513-WX Defence Data

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VAT No: **662 4901 34**



## **Use of Environment Agency Information for Flood Risk Assessments (FRAs)**

### **Important**

Use of Environment Agency data: 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 the use of Environment Agency information does not constitute such an assessment on its own.
2. As part of your data request, we have provided all of the modelled data we hold for your location. Please note that some of our modelled information may have been produced for purposes other than for flood zone generation. This may mean that some of the modelled data you have been provided with has a lower confidence level, and has not been used in producing our flood map, nor definitively reflects the predicted flood water level at the property/development site scale. To check the suitability of the use of this information in your FRA please contact your local Partnership & Strategic Overview (PSO) team.
3. 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. The information produced by the Local Planning Authority and the Lead Local Flood Authority (LLFA) may assist in assessing other sources of flood risk.
4. Where a planning application requires a FRA and this is not submitted or deficient, the Environment Agency may well raise an objection.
5. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your Local Planning Authority.

### **Pre-Planning Advice from the Environment Agency**

If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:

Pre-application Preliminary Opinion:

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

Pre-application Charged Service:

<https://www.gov.uk/government/publications/planning-advice-environment-agency-standard-terms-and-conditions>

Depending on the enquiry we may also provide advice on other issues related to our responsibilities, including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

### **Flood Risk Assessment (FRA) Guidance**

You should refer to the Planning Practice Guidance of the National Planning Policy Framework (NPPF) and the Environment Agency's Flood Risk Standing Advice for information about Flood Risk Assessment (FRA) for new development in the different Flood Zones. These documents can be accessed via:

National Planning Policy Framework Planning Practice Guidance:

<http://planningguidance.planningportal.gov.uk/>

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[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

VAT No: 662 4901 34

Environment Agency advice on FRAs:

<https://www.gov.uk/flood-risk-assessment-for-planning-applications#when-to-follow-standing-advice>

<https://www.gov.uk/government/publications/planning-applications-assessing-flood-risk>

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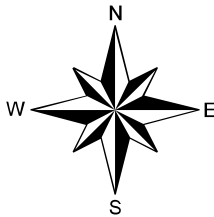
VAT No: **662 4901 34**



# Node location map centred on ST 46779 75707 - created 04/11/2021 [Ref: 238513-WX]



Scale: 1:7,000 at A3



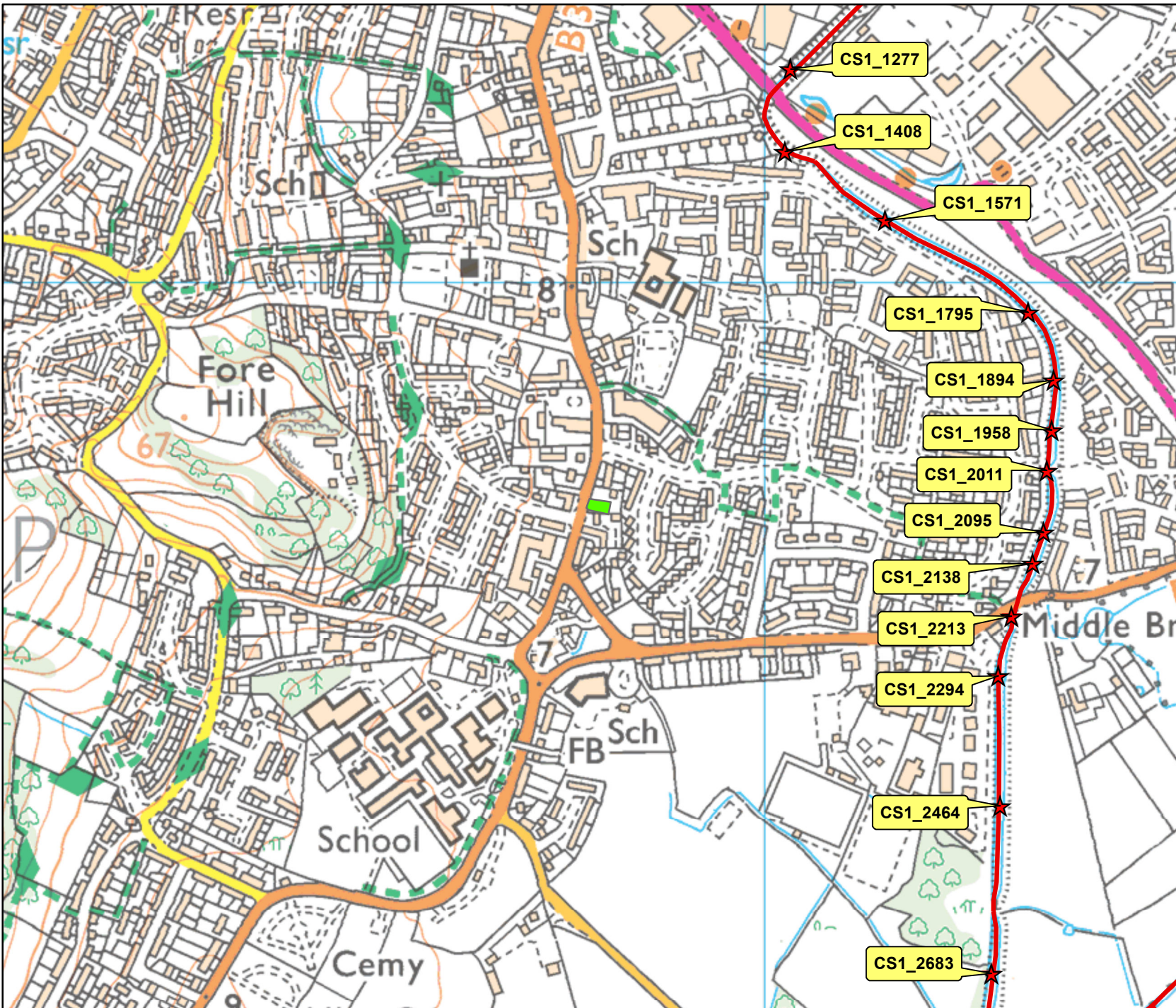
## Legend

### NODE\_TYPE

- ★ 1D\_RiverSection
- ★ 2D\_RiverSection
- ★ Interpolate
- ★ Replicate
- Reservoir
- 238513-WX\_site\_boundary
- Main Rivers

### Modelled Flood Level Nodes

A table that references the node locations/unique identifiers is also attached, giving associated flood levels, NGRs and further information for the river channel and model.





238513-WX - AIMS data

Product 4 - AIMS Information

238513-WX

Date:

03/11/2021

Map Ref	Asset ID	Asset Type	Asset Description	Approx length (m)	Right or left bank	Actual fluvial downstream crest level (mAOD)	Actual fluvial downstream crest level accuracy	Actual fluvial upstream crest level (mAOD)	Actual fluvial upstream crest level accuracy	Actual fluvial coastal crest level (mAOD)	Actual fluvial coastal crest level accuracy	NGR	Most recent inspection	Overall condition
1	1398	high_ground	Natural Bank	196.17	left	7.00	+/->75cm	6.81	+/->75cm	DNR	DNR	ST4743474995	12/03/2020	2
2	1399	high_ground	Wall At Lifting Weir	24.29	right	6.24	+/->75cm	5.35	+/->75cm	DNR	DNR	ST4732974974	12/03/2020	2
3	1400	high_ground	Earth Bank In Farmland	179.88	right	5.35	+/->75cm	6.24	+/->75cm	DNR	DNR	ST4739975006	12/03/2020	2
4	1401	high_ground	Natural Bank	149.90	left	6.74	+/->75cm	6.90	+/->75cm	DNR	DNR	ST4774975183	12/03/2020	2
5	1402	high_ground	Natural Bank	205.18	left	6.91	+/->75cm	8.00	+/->75cm	DNR	DNR	ST4778775263	12/03/2020	2
9	1406	high_ground	Natural channel with spoil banks from channel widening.	230.53	left	6.36	+/- 1 to 5cm	6.26	+/- 1 to 5cm	DNR	DNR	ST4723374934	24/07/2020	3
10	1434	high_ground	Natural Bank	25.65	left	6.10	+/->75cm	7.03	+/->75cm	DNR	DNR	ST4729474949	12/03/2020	2
12	1496	high_ground	Retaining Wall, Gabion, Part of Garden	58.23	left	6.86	+/->75cm	6.50	+/->75cm	DNR	DNR	ST4732075570	24/07/2020	3
13	1497	high_ground	Natural Bank	395.19	right	6.65	+/->75cm	6.18	+/->75cm	DNR	DNR	ST4732175209	24/07/2020	3
14	1532	high_ground	Natural bank with spoil banks from channel widening.	239.57	right	6.46	+/- 1 to 5cm	6.40	+/- 1 to 5cm	DNR	DNR	ST4723674887	24/07/2020	2
15	1533	high_ground	Bridge abutment	7.24	left	6.40	+/- 1 to 5cm	7.13	+/- 1 to 5cm	DNR	DNR	ST4710374834	01/03/2019	3
17	1568	high_ground	Natural Bank	1035.55	right	3.96	+/->75cm	DNR	DNR	DNR	DNR	ST4719976471	24/07/2020	3
18	1569	high_ground	Natural Bank	208.38	left	DNR	DNR	DNR	DNR	DNR	DNR	ST4715476404	24/07/2020	3
19	1570	high_ground	Natural Bank	208.31	right	DNR	DNR	DNR	DNR	DNR	DNR	ST4716476398	24/07/2020	3
20	1571	high_ground	Natural Bank	143.09	left	7.07	+/->75cm	6.00	+/->75cm	DNR	DNR	ST4701376181	24/07/2020	3
21	1572	high_ground	Natural Bank	124.51	right	6.20	+/->75cm	5.80	+/->75cm	DNR	DNR	ST4702776182	24/07/2020	3
22	1601	high_ground	Abutment Wall Of Farm Access	30.42	left	6.09	+/- 1 to 5cm	6.22	+/- 1 to 5cm	DNR	DNR	ST4752975016	04/09/2009	3
23	1626	high_ground	Natural Bank	322.25	right	5.91	+/->75cm	6.23	+/->75cm	DNR	DNR	ST4756574984	04/09/2009	2
28	1671	high_ground	Natural Bank	412.20	left	6.00	+/->75cm	6.31	+/->75cm	DNR	DNR	ST4759674890	04/09/2009	2
32	38837	high_ground	Wall associated with lifting weir	17.58	left	5.33	+/->75cm	5.33	+/->75cm	DNR	DNR	ST4732074961	12/03/2020	2
33	38838	high_ground	Natural Bank	180.78	left	6.81	+/->75cm	6.74	+/->75cm	DNR	DNR	ST4753175065	12/03/2020	2
34	38839	high_ground	Natural Bank	574.48	right	6.24	+/->75cm	5.30	+/->75cm	DNR	DNR	ST4770975178	12/03/2020	3
40	54426	high_ground	Natural channel with spoil banks from channel widening.	213.68	right	6.59	+/- 1 to 5cm	7.07	+/- 1 to 5cm	DNR	DNR	ST4731375034	24/07/2020	3
41	54743	high_ground	Natural channel	1083.67	left	7.20	+/->75cm	6.30	+/->75cm	DNR	DNR	ST4666574627	01/03/2019	3
42	58524	high_ground	Natural Bank	248.68	left	6.50	+/->75cm	6.00	+/->75cm	DNR	DNR	ST4728875168	24/07/2020	3

## 238513-WX - AIMS data

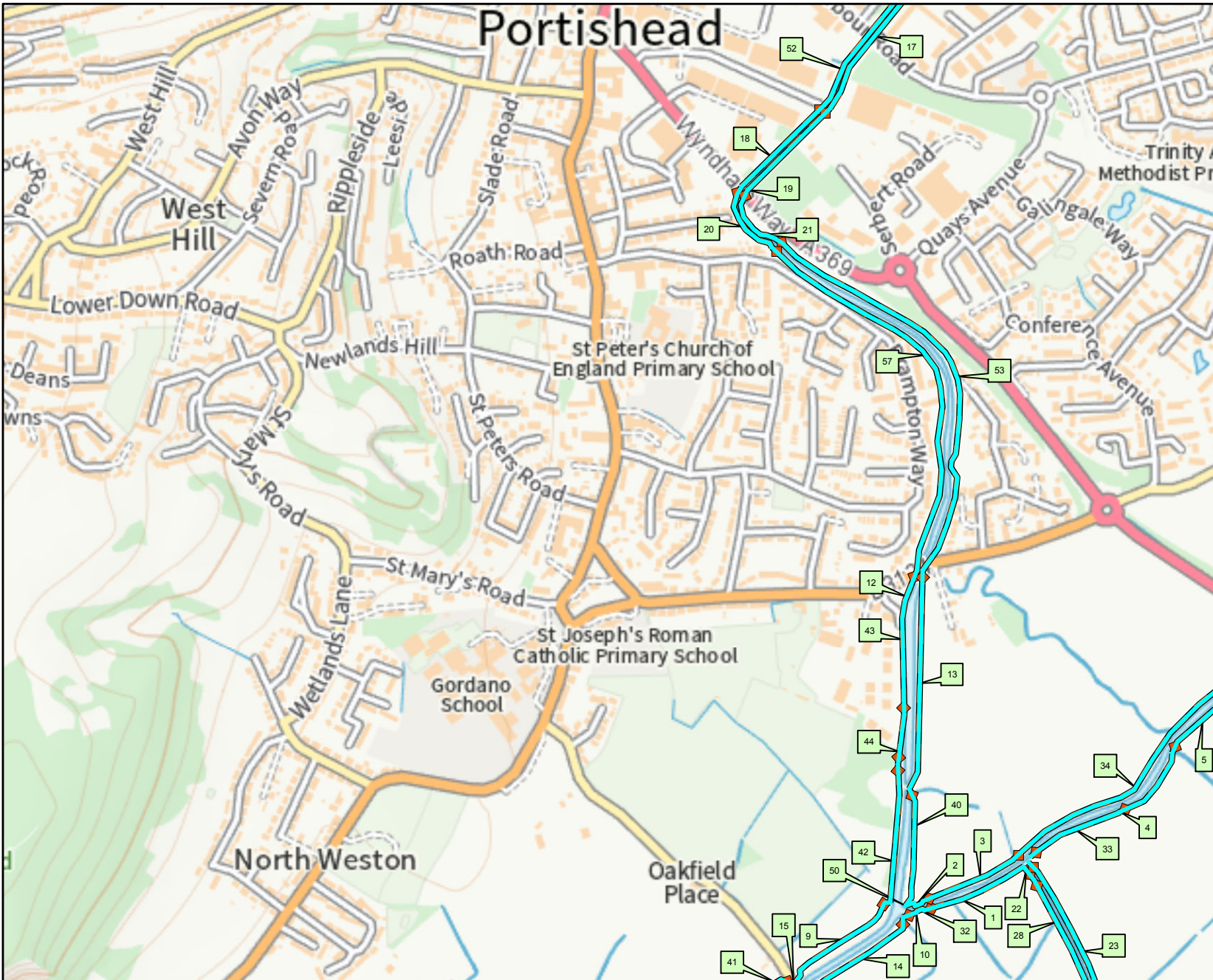
Map Ref	Asset ID	Asset Type	Asset Description	Approx length (m)	Right or left bank	Actual fluvial downstream crest level (mAOD)	Actual fluvial downstream crest level accuracy	Actual fluvial upstream crest level (mAOD)	Actual fluvial upstream crest level accuracy	Actual fluvial coastal crest level (mAOD)	Actual fluvial coastal crest level accuracy	NGR	Most recent inspection	Overall condition
43	65660	high_ground	Natural bank	204.33	left	DNR	DNR	DNR	DNR	DNR	DNR	ST472937548 5	24/07/2020	3
44	65661	high_ground	Gabion Wall	89.31	left	DNR	DNR	DNR	DNR	DNR	DNR	ST472857522 4	24/07/2020	3
50	89761	high_ground	Natural Bank	16.13	right	6.98	+/->75cm	6.24	+/->75cm	DNR	DNR	ST473007497 1	12/03/2020	2
52	117724	high_ground	Natural Bank	1036.42	left	DNR	DNR	DNR	DNR	DNR	DNR	ST475027686 0	24/07/2020	3
53	117725	high_ground	Natural Bank	783.69	right	5.80	+/->75cm	6.66	+/->75cm	DNR	DNR	ST473937591 2	24/07/2020	3
57	153833	high_ground	Natural Bank	740.22	left	6.00	+/->75cm	6.86	+/->75cm	DNR	DNR	ST473547593 0	24/07/2020	3

**Notes**

- \* Overall Condition has been taken from the most recent inspection
- \* Inspections are of a purely visual nature and do not necessarily reflect the true condition of the asset
- \* Condition 1 = very good, Condition 2 = good, Condition 3 = fair, Condition 4 = poor, Condition 5 = very poor
- DNR = data not recorded



Current Flood Defences centered on NGR ST 46776 75707, created 03/11/2021 Ref: 238513-WX



Scale: 1:10,000



**Legend**

**Defences**

- bridge\_abutment
- barrier\_beach
- cliff
- demountable
- embankment
- flood\_gate
- high\_ground
- promenade
- quay
- wall
- beach
- dunes

**Channels**

- open\_channel
- simple\_culvert

This data has been extracted from the Asset Information Management System (AIMS) which was created to draw various data sources into one database and has been populated with information of varying quality.

238513-WX selected nodes data extract

TITLE **Portbury Ditch and Drove Rhyne WEM Lot 1 2018**  
 MODEL DATE **01/03/2018**  
 SOFTWARE **FMP-TUFLOW**

SCENARIO **Baseline**

NODE	CS1_1277	CS1_1408	CS1_1571	CS1_1795	CS1_1894	CS1_1958	CS1_2011	CS1_2095	CS1_2138	CS1_2213	CS1_2294	CS1_2464	CS1_2683
<b>WATERCOURSE</b>	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs	Portbury Ditch and tribs
<b>2YR Level</b>	4.36	4.36	4.36	4.36	4.36	4.36	4.36	4.37	4.37	4.37	4.37	4.37	4.37
<b>2YR Flow</b>	3.65	3.55	3.44	3.26	3.19	3.15	3.13	3.10	3.07	3.05	3.02	2.93	2.83
<b>5YR Level</b>	4.58	4.58	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.60	4.60	4.60
<b>5YR Flow</b>	4.70	4.59	4.47	4.24	4.15	4.10	4.07	4.02	3.99	3.96	3.92	3.81	3.67
<b>10YR Level</b>	4.68	4.68	4.68	4.68	4.68	4.68	4.68	4.69	4.69	4.69	4.69	4.69	4.69
<b>10YR Flow</b>	5.10	4.97	4.81	4.55	4.47	4.41	4.37	4.32	4.29	4.26	4.21	4.09	3.93
<b>20YR Level</b>	4.75	4.75	4.75	4.75	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76
<b>20YR Flow</b>	5.43	5.29	5.12	4.83	4.73	4.67	4.63	4.58	4.54	4.51	4.46	4.34	4.17
<b>20YR 20%CC Level</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>20YR 20%CC Flow</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>25YR Level</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>25YR Flow</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>30YR Level</b>	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.80	4.80	4.80	4.80	4.80	4.80
<b>30YR Flow</b>	5.58	5.44	5.27	4.98	4.90	4.83	4.79	4.74	4.70	4.66	4.62	4.49	4.31
<b>50YR Level</b>	4.83	4.83	4.83	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84
<b>50YR Flow</b>	5.78	5.61	5.44	5.15	5.05	4.99	4.96	4.91	4.89	4.85	4.81	4.66	4.48
<b>75YR Level</b>	4.87	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88
<b>75YR Flow</b>	5.99	5.81	5.62	5.29	5.19	5.13	5.09	5.04	5.00	4.97	4.94	4.82	4.62
<b>100YR Level</b>	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.90	4.90	4.90	4.90	4.90	4.90
<b>100YR Flow</b>	6.06	5.88	5.69	5.34	5.24	5.18	5.14	5.09	5.05	5.03	4.99	4.86	4.67
<b>100YR 20%CC Level</b>	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.90	4.90	4.90	4.90	4.90	4.90
<b>100YR 20%CC Flow</b>	6.06	5.88	5.69	5.34	5.24	5.18	5.14	5.09	5.05	5.03	4.99	4.86	4.67
<b>100YR 30%CC Level</b>	5.00	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01
<b>100YR 30%CC Flow</b>	6.57	6.37	6.16	5.75	5.61	5.51	5.44	5.37	5.33	5.31	5.27	5.16	5.01
<b>100YR 40%CC Level</b>	5.06	5.06	5.06	5.07	5.07	5.07	5.07	5.07	5.07	5.07	5.07	5.07	5.07
<b>100YR 40%CC Flow</b>	6.83	6.61	6.37	5.94	5.81	5.71	5.65	5.55	5.49	5.44	5.41	5.30	5.14
<b>100YR 85%CC Level</b>	5.12	5.12	5.12	5.12	5.12	5.12	5.12	5.12	5.13	5.12	5.12	5.12	5.12
<b>100YR 85%CC Flow</b>	7.02	6.80	6.54	6.08	5.93	5.85	5.79	5.71	5.65	5.60	5.53	5.41	5.25
<b>200YR Level</b>	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95
<b>200YR Flow</b>	6.32	6.13	5.92	5.53	5.41	5.33	5.29	5.24	5.20	5.16	5.13	5.02	4.87
<b>200YR 20%CC Level</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>200YR 20%CC Flow</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>500YR Level</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>500YR Flow</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>1000YR Level</b>	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06
<b>1000YR Flow</b>	6.77	6.56	6.33	5.93	5.80	5.70	5.64	5.55	5.50	5.47	5.44	5.35	5.20
<b>1000YR 20%CC Level</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>1000YR 20%CC Flow</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD

238513-WX selected nodes data extract

<b>TIDE 200YR</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>TIDE 1000YR</b>	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
<b>Eastings</b>	347035	347028	347159	347346	347379	347377	347370	347366	347352	347324	347307	347309	347298
<b>Northings</b>	176280	176172	176082	175962	175873	175808	175755	175674	175633	175564	175486	175316	175097

**Level of confidence**

**Moderate**

The model was produced to assess our flood risk management assets and the results are fit for this purpose. We have MODERATE confidence in its input data, and subsequently its results. The reason that we have MODERATE confidence in the model and its results is because the model requires verification against a known flood event. You will need to contact our Partnership and Strategic Overview Team to discuss whether the flood levels from this model are suitable for your FRA or whether they require you to carry out further work to update the modelling.

**NMD**

No Modelled Data

**UNITS**

LEVELS: mAOD  
FLOW: cumecs



# Using 'Flood risk assessments: climate change allowances' following publication of new climate projections in UKCP18

## Who are these messages for?

These messages are for local planning authorities and developers preparing Strategic Flood Risk Assessments (SFRAs) and site specific flood risk assessments (FRAs).

## How to use these messages

These messages advise developers who need to prepare site specific flood risk assessments and all local planning authorities how to use '[Flood risk assessments: climate change allowances](#)' (published 2016) to account for the impact of climate change on flood risk now UKCP18 has been published.

## Main messages

- [UKCP18](#) was published on 26th November 2018.
- UKCP18 is the official source of information on how the climate of the UK may change over the rest of this century. The UKCP18 projections replace the UKCP09 projections.
- The allowances in '[Flood risk assessments: climate change allowances](#)' (published Feb 2016) are still the best national representation of how climate change is likely to affect flood risk for:
  - peak river flow
  - peak rainfall intensity
- Research that is due to be published in 2019 may result in changes to these allowances<sup>1</sup>. We will provide customers with more information regarding the need to update peak river flow and peak rainfall intensity allowances in due course.
- The climate change allowances for sea level rise in '[Flood risk assessments: climate change allowances](#)' will be updated and published as early as possible in 2019. Until then, it is reasonable to continue to use the sea level rise allowances in 'Flood risk assessments: climate change allowances' (published in 2016) for planning decision making, because the allowances that have been used to date represent the high end of the range of sea level rise projected by UKCP18.

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<sup>1</sup> High resolution mapping providing peak river flow allowances at 1km grid resolution due to be published Spring 2019. We do not expect the peak river flow allowances provided at a regional scale in 'Flood risk assessments: climate change allowances' to change as a result of this information, however, planners and developers may need to take account of this information where it shows a significant difference to the regional allowances. High resolution (daily and sub daily) rainfall projections is due to be published in the second half of 2019. These are used to understand the impact of climate change on peak rainfall. Following this, the peak rainfall allowances in 'Flood risk assessments: climate change allowances' may need to be updated, but this will not be until late 2019 at the earliest.

- However, in exceptional cases where developments are very sensitive to flood risk and have a lifetime of at least 100 years<sup>2</sup>, we recommend you assess the impact of both the current allowance in '[Flood risk assessments: climate change allowances](#)' and the 95th percentile of UKCP18 'RCP 8.5' scenario (high emissions scenario) **standard method** sea level rise projections of UKCP18, and plan according to this assessed risk. You will need to calculate sea level rise allowances beyond 2100 by extrapolating the UKCP18 dataset. The Environment Agency will check your extrapolation methodology and provide advice.
- UKCP18 provides sea level rise projections for 2100 – 2300. The update of '[Flood risk assessments: climate change allowances](#)' will include advice on using these projections. In the meantime, for development with a longer than 100 year lifetime e.g. large urban extensions, new settlements, major infrastructure, you should contact your local the Environment Agency office for advice on how to calculate such allowances.
- Where it is appropriate to use the sea level rise information in UKCP18 as described in this briefing note, planning decisions should do so from now onwards, in order to ensure planning decisions are in line with policies in the National Planning Policy Framework. However, where local plans or development proposals and associated flood risk assessments are well advanced, it will usually be acceptable make decisions based on the allowances and advice in '[Flood risk assessments: climate change allowances](#)' (published Feb 2016) in the following circumstances:
  - local plan has been submitted for examination (before or on the day UKCP18 is published); or
  - development proposals are well advanced or where a valid planning application has already been submitted to the local planning authority (before or on the day UKCP18 is published).
- When the climate change allowances are updated, the supporting guidance will be updated at the same time to address user feedback collated since Feb 2016.
- Once '[Flood risk assessments: climate change allowances](#)' has been updated, over time we will update our flood risk modelling to reflect the revised climate change projections. This modelling work is principally done to inform our flood risk management activities, but we will continue to share this work with planners (for SFRAs) and developers (for site-specific FRAs) when it becomes available. Where the modelling needed by planners and developers has not yet been undertaken, we may be able to work together to do this work more quickly and to share the costs. Where this is not possible, the onus will be on planners and developers to undertake the necessary work at their own cost. Contact your local Environment Agency office to find out when they plan to update their flood risk modelling and to discuss working together.

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<sup>2</sup> Such as infrastructure projects or developments that significantly change existing settlement patterns including urban extensions and new settlements

