

Flood Risk Assessment (FRA)

New Maisonette and Alterations to 2 Croft Cottages

2 Croft Cottages, Pier Road, Littlehampton, BN17 5LS

Bishop & Cammell Properties Ltd.

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1.0 Generally

- 1.1 This Flood Risk Assessment (FRA) forms part of a Full Planning Application to Arun District Council for a proposed maisonette and alterations to the existing property at 2 Croft Cottages, Pier Road, Littlehampton, BN17 5LS.
- 1.2 This FRA is being undertaken in line with the Technical Guidance to the **National Planning Policy Framework** (Table 3). Table 3 states that a site specific FRA and the Exception Test is required as the proposed use class is 'More Vulnerable' within flood zone 3a.
- 1.3 No other purpose is anticipated or accepted. Copyright of this report remains with Critchley Architecture And Design Ltd.
- 1.4 Reference should be made to the planning submission drawings for details of the proposals, re:

19023 -	101	Location and Block Plan
	201	Survey Floor Plans
	301	Survey Elevations
	401C	Proposed Floor Plans
	502A	Proposed Elevations

2.0 Proposed Development

- 2.1 The proposals are for a two bedroom four person maisonette with parking at ground floor level. Alterations to No.2 Croft Cottages pertain only to parking and side windows and do not affect internal layout.
- 2.2 The subject site is at approximately 3m AOD.
- 2.3 As **Adoption Arun Local Plan 2011-2031** (July 2018) :

18.3 Flooding:

"18.3.1 All of Arun District is at some level of risk from flooding, with large areas within Zones 2 or 3 of the Environment Agency's Flood Map. Much of the coastline, including the towns of Bognor Regis and Littlehampton, is currently low lying and protected against erosion and tidal inundation by coastal defences. Parts of the coastal plain are at risk of flooding from watercourses or groundwater due to a high water table."

Policy W DM2: Flood risk

“Development in areas at risk from flooding, identified on the latest Environment Agency flood risk maps and the Council's Strategic Flood Risk Assessment (SFRA) , will only be permitted where all of the following criteria have been satisfied:

- a. The sequential test in accordance with the National Planning Policy Guidance has been met.*
- b. A site specific Flood Risk Assessment demonstrates that the development will be safe, including access and egress, without increasing flood risk elsewhere and reduce flood risk overall.*
- c. The sustainability benefits to the wider community are clearly identified.*
- d. The scheme identifies adaptation and mitigation measures.*
- e. Appropriate flood warning and evacuation plans are in place; and*
- f. New site drainage systems are designed to take account of events which exceed the normal design standard i.e. consideration of flood flow routing and utilising temporary storage areas.*

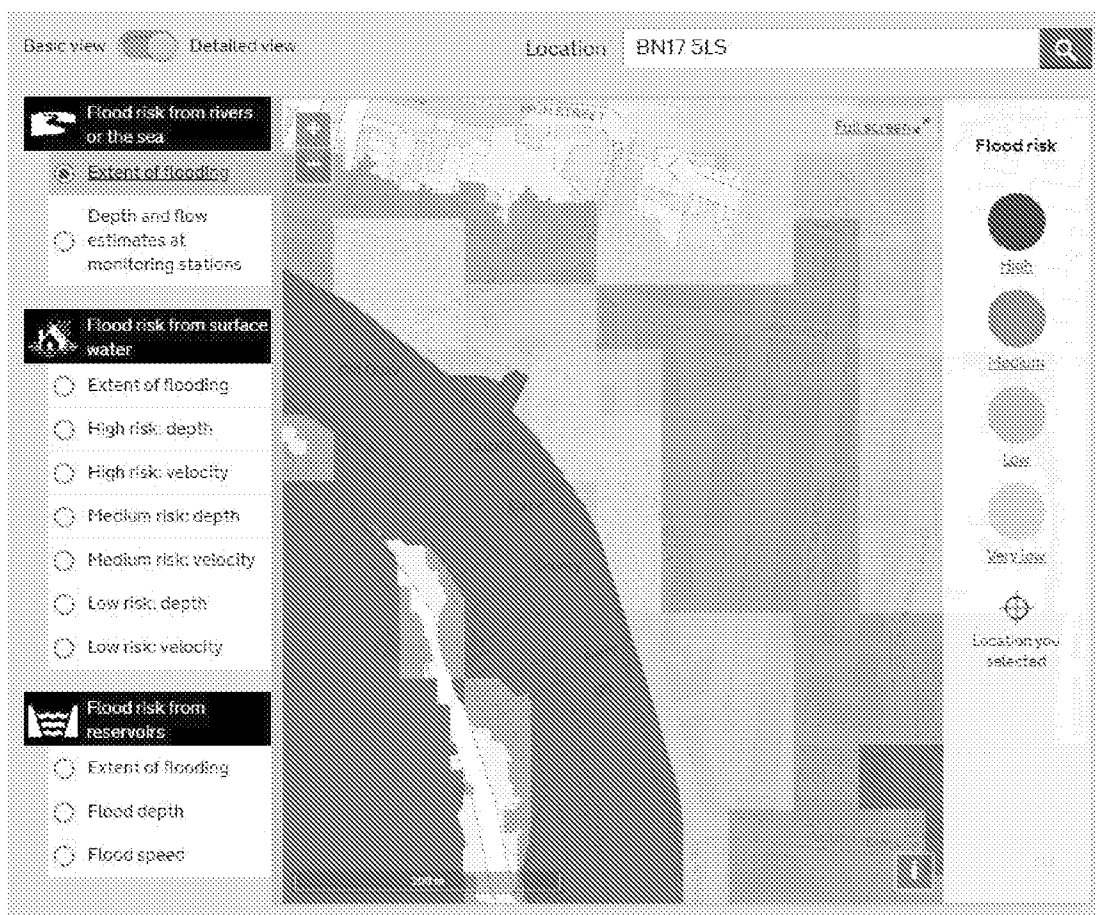
The reports prepared as part of the criteria above must take into account contingency allowances, taking climate change into account as set out in Flood Risk Assessments: climate change allowances section of the NPPG.

In locations where strategic flood defence or resilient and resistant construction measures are necessary within the site itself, proposals will be required to demonstrate how measures have been incorporated as an intrinsic part of the scheme in a manner which is compatible with the latest Strategic Flood Risk Assessment.

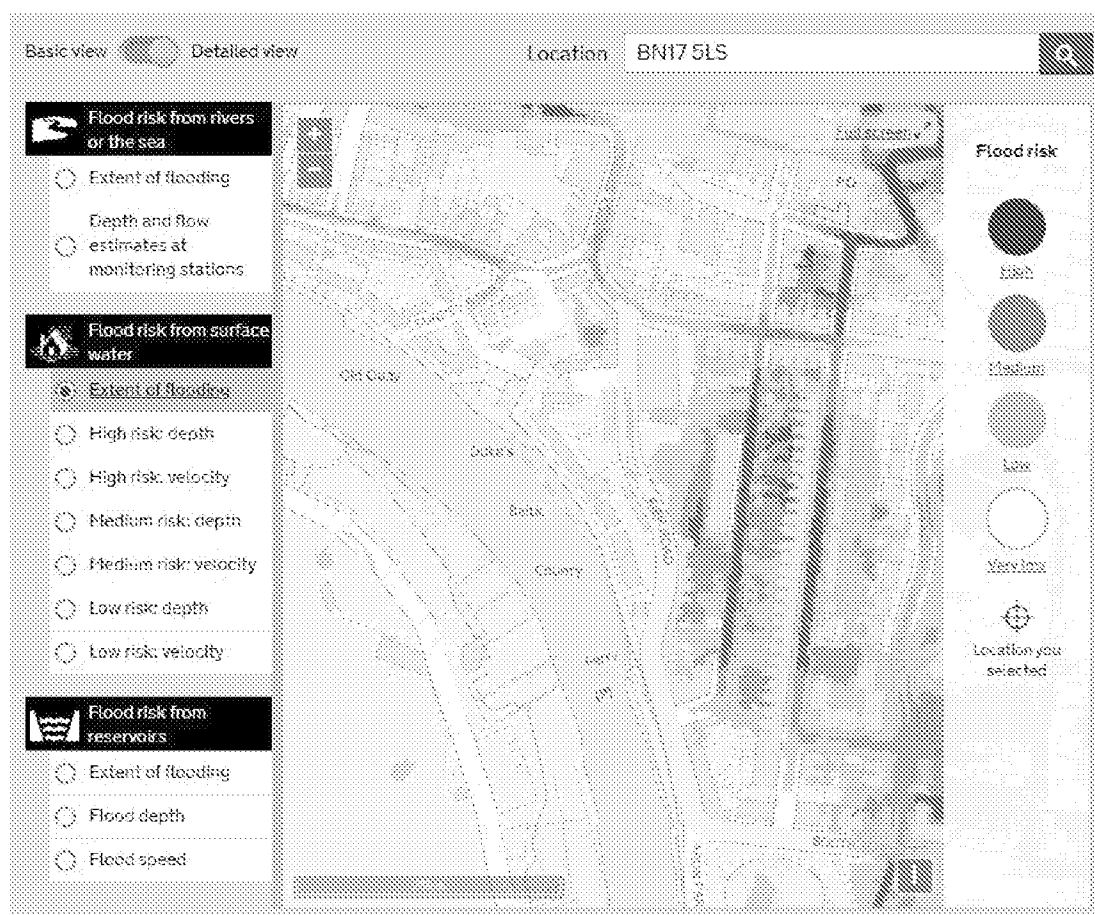
All development proposals must take account of relevant Surface Water Management Plans, Catchment Flood Management Plans and related Flood Defence Plans and strategies such as the Lower Tidal River Arun Strategy. The council may require financial contributions from development on sites where measures to address flood risk or to improve the environmental quality of watercourses have been identified by these Plans and Strategies.”

3.0 Existing and Future Site Specific Flood Risk

- 3.1 This FRA is being undertaken as the proposals are for a minor development with a ‘more vulnerable’ use within Flood Zone 3(a) ‘Land having a 1 in 200 of greater annual probability of sea flooding’.
- 3.2 The rear of the subject site, which is lower, is within a medium risk area of flooding from rivers or seas. This means that each year the area has between 1% and 3.3% risk chance of flooding. The front of the site and main point of access is within a low risk area.



- 3.3 The subject site is within very low risk area of flooding from surface water. This means that each year the area has less than 0.1% chance of flooding. A small section of the subject site is also within a low risk area of flooding from surface water. This means that each year a small section of the subject site has between 0.1% and 1% chance of flooding. In the event of an inundation, the maximum water depth would be below 300mm with a velocity of less than 0.25 m/s.
- 3.5 Much of the area surrounding the subject site is at risk of flooding due to the proximity of the River Arun and the sea. The Local Authority are actively addressing this issue and works to improve flood defences on the East Bank have already been carried out. There are works proposed to the West Bank as part of Littlehampton's ongoing regeneration project.



4.0 Summary of Site Specific Flood Risk

- 4.1 The subject site is at low/very low risk of flooding from rivers and seas and surface water, see below:

Flood Zone	Flood Zone 3(a)
Risk from Rivers and Seas	Low to Medium
Risk from Surface Water	Very Low to Low
Flood Depth	Less than 0.3m

- 4.2 Experimental studies have found that the safety threshold for small cars is 300mm and an emergency vehicle is 600mm:

"In order to determine the safety criteria of trafficability during flood events, flume experiments were conducted on prototype die-cast models of vehicles. Results recommended a safety threshold of fording depths of 0.3m for passenger cars (VW Golf) and 0.6m for emergency vehicles (such as ambulances)."

(School of Civil Engineering and Geosciences, Newcastle University, Newcastle upon Tyne, UK)

As the current flood depth is 0.3m, emergency access to/from the subject site will be available by car and emergency vehicle, both now and in the future.

5.0 Arun District Council Strategic Flood Risk Assessment

- 5.1 The site falls within the Littlehampton Economic Growth Area. Arun District Council have undertaken their own sequential test of this area, on the basis that:

“... a large driver in this area is the need to address recognised issues, including the significant flood risks, around the economy of the Harbour as well as ensuring the retention of the local businesses in close proximity to the main town. Due to the importance of the Harbour and commercial businesses around it to the overall sustainability of the District and especially to Littlehampton town, it has been felt that on this basis it should be taken forward to the exception test stage, to allow the flood risk of the area to be balanced against the overall sustainability framework established for the emerging Local Plan.”

Arun Local Plan (2011 – 2031) Sequential & Exception Tests 3.23

5.2 ARUN DISTRICT COUNCIL PPS25

Sequential and Exception Test for the Arun District Core Strategy

West Bank Littlehampton	Fluvial: 2, 3a and 3b Tidal: 2, 3a and 3b	Agricultural Land: grade 4	• Area within FZ2, 3a and 3b; • Small cluster of development on the bank of river; • Low level of housing need although for the wider area it is higher; • Good accessibility by walking and cycling to Littlehampton town centre; good access to facilities and employment; • Much of the area is within FZ3 with a risk of flooding; • It is an area of high landscape sensitivity.
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The subject site is on the East Bank, however it is within the same risk area.

- 5.3 *“In introducing the Sequential and Exception Tests, PPS25 does not intend to prevent all development on sites liable to flooding; accepting that some form of development may often have to take place there. Due to the obvious risks of developing on land liable to flooding, the intention is to minimise the risks to people and property.”*

6.0 Site Specific Exception Test

- 6.1 The purpose of the Exception Test is not to prevent development, but to ensure the risks have been properly assessed and that appropriate mitigation measures are provided.

- 6.2 PPS25 (Development and Flood Risk Practice Guidance) Section 4.48 states:

Planning applications that are submitted as windfall sites where the Sequential Test has already been applied satisfactorily will also be subject to the Exception Test in the circumstances set out in Table D.1 in PPS25. When applying the Exception Test for planning applications the developer is expected to demonstrate evidence that will allow the LPA to decide whether the application delivers wider sustainability benefits that outweigh the flood risk implications of developing a site.

- 6.3 As 1.2 above, The Exception Test is required as the proposals are for a ‘more vulnerable use’ within Zone 3a. As per table D.3 of PPS25 (Annex D):

Flood Risk Vulnerability classification (see Table D2)		Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone (see Table D.1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	X	Exception Test required	✓
	Zone 3b 'Functional Floodplain'	Exception Test required	✓	X	X	X

Key:

✓ Development is appropriate

X Development should not be permitted

6.4 PPS25, section D.9 states:

D9. For the Exception Test to be passed:

*a) it must be demonstrated that the development provides **wider sustainability benefits** to the community that outweigh flood risk, informed by a SFRA where one has been prepared.*

*b) the development should be on developable **previously-developed land** or, if it is not on previously developed land, that there are no reasonable alternative sites on developable previously-developed land; and*

*c) a FRA must demonstrate that the **development will be safe**, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.*

6.5 The Exception Test (as 6.4 above):

1	Do the development proposals make a positive contribution to sustainable communities and to sustainable development objectives?
Objective 1	To achieve successful and inclusive communities
Yes	The proposed dwelling will support an established community and will contribute towards providing an appropriate mix of housing for town living. The new development has good access to local facilities which can be access by foot, as well as local public transport. It is within the Littlehampton Economic Growth Area. The above reduces the need for journeys by car to/from the subject site.
Objective 2	To ensure the delivery of high quality housing
Yes	Promoting local distinctiveness by using details taken from existing buildings in the area, while designing to Minimum Space Standards and Lifetime Homes Criteria. The design of the proposed works should make a positive contribution to the community and visually enhance the character of the area. The aim is to create buildings that have a positive future. The site is currently a partially wasting asset, without benefit to the applicants or the community. The proposals will bring the site back into beneficial and active use. The design should make best use of the available site and building assets.

2	Are the development proposals on developable land or where there are no
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	reasonable alternatives on brownfield land?
Yes	Residential use is already established on the subject site. The site is brownfield developable land. The applicants already own 1 and 2 Croft Cottages and wish to realise the full potential of the site.

3	Has a flood risk assessment been produced that demonstrates that the development is safe; the residual risks of flooding to people and property (including the likely effects of climate change) are acceptable and can be satisfactorily managed?
Yes	The entire proposed development has been designed with potential flood risk in mind. All habitable areas are on the first or second floor, well above the reach of any potential inundation. It has been proven that the maximum flood depth will be low enough for vehicles to gain access to/from the subject site, both now and in the future. Section 8.0 covers Mitigation Measures in the low/very low risk of flooding from Rivers, Seas and Surface Water

- 6.6 The proposals fall within an area that has already met the sequential test carried out by Arun District Council.
- 6.7 The summary to the Exception Test above is that the **proposals pass the exception test** and the development site designed in such a way that it is safe both now, and in the future.

7.0 Surface Water Management

- 7.1 The proposed dwelling provides an opportunity for surface water to be increased elsewhere. To mitigate this, the following will be implemented:
- 7.2 Rainfall on to existing garden and porous paved areas will continue unchanged.
- 7.3 Run off from the new roof areas will be managed.
- 7.4 Run off from new roof areas will not be diverted into the public sewer system.
- 7.5 Roof run off will be discharged to a new open cell soakaway chamber to the east of No. 2 Croft Cottages, in the north-east corner of the site.

- 7.6 Following site percolation tests, in accordance with the Building Regulations (2015), Part H2 - 1.34 and Part 3 – Section 3, the soakaway chamber size can be calculated

8.0 Mitigation Measures

8.1 Take additional low level protection measures:

- Seal service entry connections.
- All service outlets within the building to be a minimum of 450mm above floor level.
- External doors to have slotted jamb provisions for flood boards.
- All drain and service access covers at ground level to have locking covers and frames.
- Passively support the maintenance and improvements of the city's coastal defences.
- Sign up to relevant flood warnings (Environment Agency, Floodline etc).
- Complete the 'Personal Flood Plan' as issued by the Environment Agency for in house management in case of inundation.