Broads Flood Risk Supplementary Planning Document

~~Draft for consultation September 2019~~

Adopted March 2020

~~**Consultation runs from**~~

~~**31 January 2020**~~

~~**to**~~

~~**4pm on 4 March 2020.**~~

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Contents

1. Introduction

1.1 The purpose of this SPD is to

a) increase awareness of the nature of flood risk in the Broads area;
b) give advice to developers and others about the Authority's approach to the issue of development and flood risk, and;
c) stress the need to maintain a high standard of design in new waterside development.

1.2 Flooding can cause damage to property and infrastructure. Coastal flooding can be particularly damaging. The threat of flooding can also cause fear and distress to people and in some cases, flooding can lead to injury[1] and even loss of life. Inappropriate flooding can also harm the important habitats and species who rely on the Broads. This can have long term consequences for site maintenance and achieving conservation objectives. On the other hand, flooding is also a natural process within a floodplain. In some circumstances it can benefit wildlife.

1.3 The Broads Authority is the Local Planning Authority within the Broads area and this Supplementary Planning Document (SPD) applies only to land within the Authority's executive boundary. The Authority takes advice from the Environment Agency (EA) and Lead Local Flood Authorities (LLFA) on flood related issues concerning development. The EA is responsible for flood defence and has permissive powers to carry out work to construct and improve flood defences.

1.4 The NPPF 2019 defines supplementary planning documents as '*documents which add further detail to the policies in the development plan. They can be used to provide further guidance for development on specific sites, or on particular issues, such as design. Supplementary planning documents are capable of being a material consideration in planning decisions but are not part of the development plan.'*

1.5 The Authority considers that this SPD will help applicants consider the issue of flooding in an appropriate way. The SPD should be read alongside policy SP2 and DM5 of the Local Plan for the Broads (adopted 2019). The SPD is a material consideration in determining planning applications. The advice and guidance herein will not add unnecessary financial burden to development.

1.6 This SPD replaces the 2017 Flood Risk SPD. The 2017 SPD was updated because the policy on which the 2017 SPD was based (DP29 of the Development Management DPD) has been superseded and replaced by SP2 and DM5 of the Local Plan for the Broads. The 2017 SPD was also amended with some other changes that perhaps make things clearer or reflect changes to guidance/practice.

[1] [1] There is a residual risk from all water, especially if it is moving (a flood, at certain velocity and above 4-6cm in depth) which would sweep people and things before it.

2. ~~About this consultation~~Consultation and SEA Screening

2.1 ~~This SPD replaces the 2017 SPD. This update to the 2017 SPD is required because the policy on which the 2017 SPD was based (DP29 of the Development Management DPD) has been superseded and replaced by SP2 and DM5 of the Local Plan for the Broads. We have also taken this opportunity to make some other changes that perhaps make things clearer or reflect changes to guidance/practice~~.

~~2.2~~ We consulted on the first draft of this document back in September 2019. A second round of consultation was held in January/February/March 2020. All comments were read and responded to and some resulted in amendments to the SPD.

2.2 Details of the consultations, with comments received and the Authoritiy's responses can be found at xxx.

~~2.3 This version is the draft for consultation. Please tell us your thoughts and suggest any changes you think would make the SPD better and set out your reasons. This consultation runs from . We will then read to each of the comments received with our responses. We may make changes if we agree with you. If we do not make changes we will set out why. The final SPD will be adopted at a future meeting of Full Authority. Please email us your comments: planningpolicy@broads-authority.gov.uk.~~

~~2.4~~2.3 ~~This consultation document and consultation process have been developed to adhere~~adhered to the Broads Authority's Statement of Community Involvement[2].

~~2.5 Information provided by you in response to this consultation, including personal data, may be published or disclosed in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 2018 (DPA), and the Environmental Information Regulations 2004). Please see Appendix G for the Privacy Notice.~~

~~2.6 **Are you satisfied that this consultation has followed the Consultation Principles**? If not, or you have any other observations about how we can improve the process, please contact us at planningpolicy@broads-authority.gov.uk.~~

~~2.7~~2.4 Historic England, Natural England and the Environment Agency were asked for their opinions relating to the need for a Strategic Environment Assessment. Historic England replied saying 'we would advise that it is not necessary to undertake a Strategic Environmental Assessment of this particular SPD'. The Environment Agency said 'we are satisfied that in itself the SPD will not have additional significant environment effects further than those assessed as part of the Local Plan. The SPD outlines the approach to take in order to comply with the Local Plan. Therefore our view would be that the Flood Risk SPD does not require a specific SEA to be undertaken'. Natural England said 'that there are unlikely to be significant environmental effects from the

[2] Our current SCI is here: http://www.broads-authority.gov.uk/__data/assets/pdf_file/0006/576609/Final-Adopted-Statement-of-Community-Involvement-November-2014.pdf

proposed plan on sensitive sites that Natural England has a statutory duty to protect'. The SEA Screening is at Appendix H.

3. Local Plan policies SP2 and DM5.

3.1 The Flood Risk SPD is in conformity with the Local Plan for the Broads (adopted 2019) and the National Planning Policy Framework (NPPF) (2019). It expands on Local Plan policy SP2 and DM5 and DM6:

Policy SP2: Strategic flood risk policy

All new development:

a) Will be located to minimise flood risk, mitigating any residual risk through design and management measures, and ensuring that flood risk to other areas is not materially increased; and

b) Will incorporate appropriate surface water drainage mitigation measures, and will implement sustainable drainage (SuDS) principles, to minimise its own risk of flooding and to not materially increase the flood risk to other areas.

Particular care will be required in relation to habitats designated as being of international, national, regional and local importance in the area and beyond which are water sensitive.

Development proposals which would have an adverse impact on flood risk management will be refused.

Policy DM5: Development and flood risk

Development within the Environment Agency's flood risk zones will be acceptable only when:

i) It is compatible with national policy and when the sequential test and the exception test, where applicable, have been satisfied;

ii) A site specific Flood Risk Assessment, where required, demonstrates an acceptable flood risk and/or suitable flood protection mitigation measures are incorporated into the proposals, where necessary, which can be satisfactorily implemented; and

iii) It would not affect the ability for future flood alleviation projects to be undertaken.

The Site Specific Flood Risk Assessment will need to meet the requirements of the NPPG and demonstrate or assess:

a) That the development is safe for its lifetime, taking into account the vulnerability of its users and climate change;

b) Whether the proposed development will make a significant contribution to achieving the objectives of the Local Plan;

c) Whether the development involves the redevelopment of previously developed land or buildings and would result in environmental improvements over the current condition of the site;

d) Whether appropriate measures to ensure resilience to potential flooding have been incorporated into the development;

e) Whether appropriate measures to reduce the risk of flooding (on and offsite), including sustainable drainage systems, have been incorporated;

f) Where the proposal involves the replacement of an existing building, whether the replacement building is located and/or designed without increasing flood risk and, where possible, to reduce the risks and effects of flooding;

g) Whether an acceptable flood risk and/or suitable flood protection mitigation measures are incorporated into the proposals, where necessary, which can be satisfactorily implemented;
h) Whether the risk of flooding is not increased elsewhere and, wherever possible, is reduced;
i) That the integrity of existing coastal and river defences are not undermined;
j) That the development does not reduce the potential of land used for current or future flood management;
k) Compatibility with the appropriate Catchment Flood Management Plan or Shoreline Management Plan;
l) Use of development to reduce the risk of flooding through location, layout and design and incorporate sustainable drainage systems to minimise surface water run-off and avoid pollution (see DM6);
m) That sites at little or no risk of flooding are developed in preference to areas at higher risk;
n) There is safe access and egress from the site;
o) There are management and maintenance plans for flood protection/mitigation measures, including arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime;
p) That the development would not negatively impact on water quality of surface water and ground water; and
q) There is a Flood Response Plan (FRP).

The relocation of existing development to an undeveloped site with a lower probability of flooding will be permitted where:

r) The vacated site would be reinstated as naturally functioning flood plain;
s) The benefits of flood risk reduction outweigh the benefits of leaving the proposed new site undeveloped; and
t) The development of the proposed new site is appropriate when considered against the other policies of the Local Plan.

In the case of the replacement of an existing residential property in flood zone 3a, the replacement dwelling must be on a like-for-like basis, with no increase in the number of bedrooms, on the same sized footprint[3] and wherever possible being relocated in a less vulnerable part of the site.

Any required additional or enhanced flood defences should not conflict with the purposes and special qualities of the Broads.

Policy DM6: Surface water run-off

All development proposals will need to incorporate measures to attenuate surface water run-off in a manner appropriate to the Broads. This will need to reflect the characteristics of the site in accordance with a drainage hierarchy for rainwater so that, in order of priority, they:

a) Continue natural discharge processes;
b) Store water for later use;
c) Adopt shallow infiltration techniques in areas of suitable porosity;
d) Store water in open water features for gradual release to a watercourse;

[3] The "footprint" is the aggregate ground floor area of the existing on-site buildings, including outbuildings which affect the functionality of the floodplain but excluding temporary buildings, open spaces with direct external access between wings of a building, and areas of hard standing.

e) Store water in sealed water features for gradual release to a watercourse;
f) Discharge direct to a watercourse;
g) Discharge direct to a surface water drain (highways, Anglian Water or other body or within private ownership);
h) Discharge direct to deep infiltration or borehole soakaways; or
i) Discharge direct to a combined sewer

The surface water runoff rate that will occur as a consequence of the development is required to be no more than the existing pre-development greenfield runoff rate. Brownfield sites should aim to reduce runoff as close to greenfield rates as possible. The discharge rate for brownfield sites should be no more than the rate prior to any new development. Applicants are encouraged to seek betterment in surface water runoff as part of their proposals for brownfield sites. The runoff rate should be agreed with the Local Planning Authority, in conjunction with the Lead Local Flood Authority and where relevant sewerage undertaker.

Sustainable Drainage Systems (SuDS) shall be used unless, following adequate assessment, soil conditions and/or engineering feasibility dictate otherwise.

Proposals to address surface water must be considered at an early stage of the scheme design process. The following criteria need to be addressed when designing measures to address surface water:

i) Use a risk assessment on treatment stages to reflect the type of proposed development and how surface water run-off and drainage will affect the receptor. A 1.2m clearance between the base of infiltration SuDS and the peak seasonal groundwater levels is required;
ii) Take the current drainage arrangements of the area into account (including groundwater levels);
iii) Take natural site drainage and topography into account;
iv) Effectively manage water including maintenance of and, where possible improvement to water quality; and
v) Provide amenity for local residents whilst ensuring a safe environment.

Where SuDS via ground infiltration is feasible, to ensure that SuDS discharge water from the development at the same or lesser rate as prior to construction, developers must undertake groundwater monitoring within the winter period and winter percolation testing in accordance with the current procedure[4].

Minor developments that increase the footprint of an impermeable surface are required, where appropriate, to incorporate mitigation measures to reduce surface water runoff, manage surface water flood risk to the development itself and to others, maximise the use of permeable materials to increase infiltration capacity, incorporate on-site water storage, and make use of green roofs and green walls wherever reasonably practicable and appropriate, in accordance with design policies.

Within the critical drainage catchments as identified by the Lead Local Flood Authority, and in other areas where the best available evidence indicates that a serious and exceptional risk of

[4] Currently BRE Digest 365: www.brebookshop.com/details.jsp?id=327592

surface water flooding exists, all development proposals involving new buildings, extensions and additional areas of hard surfacing shall ensure that adequate and appropriate consideration has been given to mitigating surface water
flood risk.

Schemes that involve SuDS will be required to provide details of the management regime to ensure effective operation of the type of SuDS delivered in perpetuity.

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4. Sources of flood risk

4.1 Fluvial

4.1.1 Fluvial flood risk is flooding from rivers because of a river overflowing or its banks being breached. It should be noted that climate change is likely to result in increased river flows (between 25% and 65% increase) (see https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances).

4.2 Surface water runoff (pluvial flooding)

4.2.1 This is rainwater (including snow and other precipitation) which (a) is on the surface of the ground (whether or not it is moving), and (b) has not entered a watercourse, drainage system or public sewer. (The Flood and Water Management Act 2010 (FWMA) definition)

4.2.2 Intense rainfall, often not lasting a long time, that is unable to soak into the ground or enter drainage systems, can run quickly off land and result in local flooding. Surface water flooding problems are linked to issues of poor drainage, or drainage blockage by debris, and sewer flooding. Instances of intense rainfall may increase as a result of climate change.

4.2.3 There are several stakeholders identified by the FWMA who have a role in managing surface runoff flooding, these are; Lead Local Flood Authorities, Local Planning Authorities, Water Utilities Companies, Highways Authorities, Riparian Owners.

4.3 Tidal

4.3.1 Tidal flooding is caused by extreme tide levels beyond ground and/or defence levels. Tidal flooding often also occurs by waves overtopping or breaching defences (artificial or natural like dunes).

4.3.2 Tidal flood risk is assessed based on Extreme Still Water Sea Levels (ESWSL), plus an allowance for the interaction of wind and waves. An ESWSL is the level the sea is expected to reach during a storm event for a particular magnitude of flood event as a result of the combination of astronomical tides and meteorological surges. The scale of these events is referred to as 'still' water with additional allowances for the effect of waves, wind and swell. The astronomical tide levels are mainly generated by the gravitational effects of the sun and the moon. Surge events are the result of meteorological conditions where low atmospheric pressure causes the sea level to be increased to a higher level than during more average or high atmospheric pressure conditions. The wave heights and swells are influenced by the strength, direction and persistence of the wind and the profile of the nearshore.

4.4 Groundwater

4.4.1 This is water below the surface of the ground and in direct contact with the ground or subsoil. It is worth noting that this definition does not include water in buried pipes or other containers. (The Flood and Water Management Act 2010 (FWMA) definition).

4.4.2 The UK Groundwater Forum describes groundwater flooding because of water rising from the underlying strata or from water flowing from abnormal springs.

4.4.3 In comparison to fluvial flooding, current understanding of the risks posed by groundwater flooding is limited and mapping of flood risk from groundwater sources is in its infancy.

4.4.4 Flooding from groundwater is classed as a Local Flood Risk and as such is the responsibility of the Lead Local Flood Authority which is Suffolk/Norfolk County Council. Under the Flood and Water Management Act (2010), LLFAs have powers to carry out risk management functions relating to groundwater flood risk.

4.4.5 Groundwater flooding is most likely in low-lying areas with permeable strata (aquifers) underneath and more likely to appear after periods of sustained rainfall. Groundwater flooding tends to occur sporadically in both location and time, and tends to last longer than fluvial, pluvial or sewer flooding. Groundwater flooding can also interact with other flood sources, worsening the risk of pluvial, fluvial or sewer flooding by reducing rainfall infiltration or discharge to sewers.

4.4.6 Groundwater flooding risk increases where long reaches of watercourse are culverted and higher groundwater levels are not able to naturally pass into watercourses. It should be noted that although an area may be designated as susceptible to groundwater flooding, this does not mean that groundwater flooding will definitely be a problem within these areas; rather it indicates potential risk.

4.4.7 The future risk from this source is less certain than other sources as climate change predictions indicate that, although sea levels will rise (thus possibly raising groundwater levels), overall summer rainfall will decrease, with a long-term effect of lowering the groundwater levels. However, long periods of wet weather, such as those experienced in the autumn and winter of 2000/01 are predicted to increase. These are the type of weather patterns that can cause ground water flooding to occur.

4.5 Foul Sewerage Flooding

4.5.1 Sewer flooding can occur during periods of extreme weather when intense rainfall overloads the sewer system capacity (surface water, foul or combined), and/or when sewers cannot discharge properly to watercourses due to high water levels. Sewer flooding can also happen because of blockages[5], collapses or equipment failure in the sewerage system. Infiltration or entry of soil or groundwater into the sewer system via faults in the fabric of the sewerage system, is another cause of sewer flooding. Infiltration is often related to shallow groundwater, and may cause high flows for prolonged periods of time.

4.5.2 Even where sewers are built to current standards, they are likely to be overwhelmed by larger events of the magnitude often considered when looking at river or surface water flooding. Existing sewers can also become overloaded as new development adds to the discharge to their catchment, or due to incremental increases in roofed and paved surfaces

[5] Anglian Water actively works with their customers as part of their Keep it Clear Campaign to reduce the number of blockages which occur from cooking fat, wipes and other items which should not be disposed in drains.

at the individual property scale (urban creep). Sewer flooding is therefore a problem that could occur in many locations.

4.5.3 The applicant will need to consider the available capacity of existing sewers to receive additional foul flows into the public sewerage network rather than historic issues which are the responsibility of Anglian Water and other risk management authorities (where relevant).

4.5.4 Applicants should also assess the risk of foul sewerage flooding. Anglian Water Services are the sewerage undertaker and can provide relevant information to applicants to inform preparation of Flood Risk Assessments. See section 7.9 for the submission requirements for applicants when preparing a foul drainage strategy proportionate to the scale of the proposed development. Anglian Water offer pre-planning service for identifying feasible drainage solutions for major development proposals. (https://www.anglianwater.co.uk/developers/development-services/pre-planning-services)

4.6 Coastal

4.6.1 If the coast is eroding, then the potential effect is that tidal flood and erosion defences near to the sea will be lost and flood risk may increase. To maintain an appropriate standard of safety from flooding works may be needed to slow down or stop the rate of coastal erosion and so maintain the integrity of the coastal defences. The (2010) North Norfolk Shoreline Management Plan (SMP) SMP 6 Kelling to Lowestoft describe the high-level strategy and coastal policies.

4.7 Reservoirs

4.7.1 Reservoir flooding is very different from other forms of flooding. It may happen with little or no warning and evacuation will need to happen immediately. The likelihood of such flooding is difficult to estimate, but it is less likely than flooding from rivers or surface water. It may not be possible to seek refuge upstairs from floodwater as buildings could be unsafe or unstable because of the force of water from the reservoir breach or failure.

4.7.2 Flooding from reservoirs with an impounded volume greater than 25,000 cubic metres are governed by the Reservoir Act 1975 and are listed on a register held by the Environment Agency. The level and standard of inspection and maintenance required under the Act means that the risk of flooding from reservoirs is relatively low. Recent changes to legislation under the Flood and Water Management Act require the Environment agency to designate the risk of flooding from these reservoirs. The Environment agency is currently progressing a 'Risk Designation' process so that the risk is formally determined.

4.8 Ordinary Watercourses

4.8.1 Ordinary Watercourses are defined as; every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows and which does not form part of a main river. These watercourses, although not shown at risk on the Environment Agency flood map for planning, can be a source of fluvial flooding. The Environment Agency flood map for planning can only model and show risk of flooding on

catchments greater than 3km^2. Appropriate site-specific risk assessments still need to consider ordinary watercourses as a source of flood risk.

4.8.2 In terms of local flood risk management, these watercourses are still largely influenced by the Land Drainage Act 1991. This Act identifies three key stakeholders in the management of ordinary watercourses, these are; Internal Drainage Boards, Local District Authorities and Riparian Owners.

4.8.3 In the County of Norfolk for example there are approximately 7,178 km of mapped ordinary watercourses included in the Environment Agency's Detailed River Network dataset. This is probably a conservative figure as many ordinary watercourses in Norfolk remain unmapped.

4.8.4 Maps of the Broads (2006) Internal Drainage District and the Norfolk Rivers Internal Drainage District are available here and here. These maps show which watercourses are designated as Adopted Watercourses by each Board. The adoption of a watercourse is an acknowledgement by the Board that the watercourse is of arterial importance to the Internal Drainage District and as such will normally receive maintenance from the IDB. This maintenance is not necessarily carried out on an annual basis but on a recurrence deemed necessary to meet water level management requirements. The designations are made under permissive powers (meaning there is no obligation for IDBs to fulfil any formal maintenance requirement and there is no change in the ownership or liability associated with the watercourse

4.9 New climate change allowances

4.9.1 New climate change allowances were published in December 2019 (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances), these will result in increases in flood level of between 1.2m and 1.6m compared to present day flood levels.

5. Understanding Flood Risk

5.1 What is flood risk?

5.1.1 According to the National Planning Practice Guidance (NPPG), "flood risk" is a combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources~~.~~ . Development should also have regard to the climate change flood extents (from all sources of flooding) and these are mapped in the Strategic Flood Risk Assessment (see 5.5).

5.2 What are flood risk zones?

5.2.1 Flood Zones 1, 2 and 3 outline areas at low risk, medium risk and high risk respectively from both tidal and fluvial flooding. Flood Zones do not consider the effects of flood defences, so are a worst-case assessment of flood risk. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea)[6] and on the SFRA maps[7] and defined in the table below (taken from the NPPG). As mentioned previously, the impact of climate change needs to be considered (see 5.1.1)

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 (0.1%) annual probability of river or sea flooding. All land outside Zones 2 and 3
Zone 2 Medium Probability	Land having between a 1 in 100 (1%) and 1 in 1,000 (0.1%) annual probability of river flooding; or Land having between a 1 in 200 (0.5%) and 1 in 1,000 (0.1%) annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 (1%) or greater annual probability of river flooding; or Land having a 1 in 200 (0.5%) or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency.

5.3 EA flood risk

5.3.1 The Environment Agency (EA) flood risk maps (river and sea) show the current probability or likelihood of flooding without defences in place. They therefore show a 'worst case' scenario. However, the EA maps do not include climate change predictions of rising sea levels, increase in peak river flow, or increased peak rainfall intensity. Also, the EA flood risk maps just show areas identified as Flood Zone 3 and do not set out zones 3a and 3b. So, the EA maps are not sufficient to use to consider the impact of flooding to an individual property. Site-specific flood risk assessments (FRA) are required to consider the impacts of all sources of flooding on an individual property. These should also include climate change considerations (and the SFRAs demonstrate the climate change flood extents).

[6] See the flood maps here: http://apps.environment-agency.gov.uk/wiyby/37837.aspx
[7] SFRAs in place relevant to the Broads: http://www.broads-authority.gov.uk/planning/planning-policies/sfra/sfra

5.3.2 Whilst most of the Broads Authority area is covered by the river and coastal flood map, those areas outside of it (e.g. Flood Zone 1) should also look at the Risk of Surface Water Flood Map on the EA website. This shows surface water flooding but also shows a proxy risk for fluvial flooding experienced from an ordinary watercourse until a specific FRA is undertaken (i.e. where the EA fluvial modelling could not extend as the catchments were too small to include (those smaller than 3km^2)).

5.4 Marine Management Organisation and flood risk

5.4.1 Coastal, and tidal flooding is covered across multiple policies within the East Marine Inshore and Off Shore Plans[8] such as SOC1, CC1 and Objectives 6 and 9. Other references include Paragraph 249 – Coastal change management.

5.5 Strategic Flood Risk Assessment

5.5.1 A Strategic Flood Risk Assessment is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future. They consider the ~~impacts of~~ climate change flood extents, and assess the impact that land use changes and development in the area will have on flood risk. They are used to inform Local Plans and act as a starting point or basis for considering flood risk on a particular site. SFRAs are high-level strategic documents and, as such, do not go into detail on an individual site-specific basis.

5.5.2 The Broads Authority Executive Area is covered by four Strategic Flood Risk Assessments (SFRA)[9]:

- Greater Norwich SFRA (2017)
- Great Yarmouth SFRA (2017)
- North Norfolk SFRA (2017)
- ~~Waveney~~ East Suffolk SFRA (2018)

5.5.3 Many of the SFRA's did flood modelling to reflect up to date climate change allowances such as surface water extent with 40% climate change included. They also brought together the many flood model outputs that have been competed around Norfolk and the Waveney area or East Suffolk. In Norfolk, climate change allowances have been agreed with the Environment Agency and LLFA in the SFRA and with all the Norfolk authorities.

5.5.4 Not all of the Broads Authority Executive Area has been modelled for flood risk. For some areas the actual extent of flood zone 3b and 3a is not known. As such, a precautionary approach has been adopted. In areas of no modelling, it is presumed that the entire area is flood zone 3 (in ~~Waveney)~~East Suffolk) or indicative flood zone 3b (in Norfolk). If a proposed development is shown to be in Flood Zone 3, further investigation should be undertaken as part of a detailed site specific Flood Risk Assessment to define and confirm the extent of Flood Zone 3b. This may require detailed hydraulic modelling. ~~so a site-specific flood risk assessment is required to assess actual flood risk to the site.~~ To cover this, a joint position

[8] https://www.gov.uk/government/publications/east-inshore-and-east-offshore-marine-plans
[9] Go here to see the SFRAs: https://www.broads-authority.gov.uk/planning/planning-policies/sfra/sfra

statement has been produced between the Broads Authority and the Environment Agency[10]. The Joint Position Statement indicates that modelling on the Broadland Flood Alleviation Project Area (much of the area without modelling) will be completed by the end of 2021.

5.5.5 More information on SFRAs can be found in Appendix C of the Local Plan or you can go here to see the SFRAs yourself: https://www.broads-authority.gov.uk/planning/planning-policies/sfra/sfra

5.5.6 As time goes by and further modelling is done, the EA maps will be updated and the SFRA will become outdated. As DM5 explains in the reasoned justification, site specific FRAs will find out the precise nature of flood risk on site, so they will consider both the SFRA and Flood Map for Planning. Even in the future when they don't correspond anymore, the SFRA will still be useful as it is likely that areas of flood zone 3b will not be drastically different.

5.6 Nature of flood risk in the Broads

5.6.1 Approximately 82.5% of the Broads Authority Executive Area is covered by flood zone 3 (3, 3a & 3b). This equates to 25,472 hectares. The Broads Authority boundary is tightly drawn around the edge of the floodplain. The extent and nature of flood risk, with significant areas of 'functional floodplain', mean that flood risk is a major constraint on development in the Broads.

5.6.2 The flood risk in the Broads is mainly from both fluvial and tidal sources. The whole character and development in the Broads over many hundreds of years has been closely associated with the water environment and flood risk. Much of the Broads area is defended by flood defence embankments, which are maintained by the Environment Agency to reduce flooding. The flood defences, where they exist, only reduce the risk of flooding and will never eliminate it; this has been the case historically within the Broads.

5.6.3 Working, living and visiting the Broads have been, and will continue to be, activities that have co-existed with the risk of flooding. However, any new development (which includes change of use, etc) must be in line with government policy and minimise flood risk. In the Broads area, this means identifying the risks from flooding and ensuring that they are at as low a level as possible compatible with the wetland and water-based environment.

5.6.4 The Broads is not subject to open sea conditions (relating to tidal range and wave action) but much of the Broads are tidally influenced. Paragraph 163, footnote 50 of the NPPF refers to 'other sources of flooding' being assessed (surface water, sewer, reservoir, groundwater, tidal, fluvial). Any flood risk assessment should therefore consider all sources of flooding but it is acknowledged that the main focus will be tidal and fluvial flood risk.

5.6.5 The flood probability mapping carried out within the SFRA does not signify the degree of hazard likely to be experienced in the Broads Authority area, especially in the more upstream catchment areas and those areas not at risk of breaching of coastal defences,

[10] Go here for the Joint Position Statement: http://www.broads-authority.gov.uk/__data/assets/pdf_file/0011/958286/SFRA-Position-Statement-June-2018.pdf

because it does not quantify depth or water velocity. Hazard, or "danger to people", is a function of depth and velocity. Hazard is very site specific and could vary greatly over a relatively small area due to the presence of drains, dykes, quay-headings, flood banks, etc. Hazards can be hidden by turbid floodwaters and a site-specific Flood Risk Assessment will need to measure this.

5.6.6 Setting aside the above, hazard and risk does tend to be predictable on the Broads and this has implications for how these are managed.

5.6.7 Fluvial flooding associated with upstream areas of individual catchments within the Broads is not normally "flashy" and the hazard from these floods, apart from unusual meteorological conditions, is not severe. Consideration of flood risk at a particular location should also take account of climate change as highlighted in section 5.3 and 5.4.

5.6.8 The typical Broads river has a permeable catchment[11], is groundwater dominated[12], and is a slow responding watercourse with a slow increase and decrease of flow in response to rainfall. Although tidal surges can develop rapidly within 6-12 hours because of the movements of weather systems in the North Sea, the Environment Agency Flood Warning System covers the whole of the Broads area which could provide early warning (for fluvial and tidal flooding). Signing up to this service is voluntary or it may be a requirement of planning permission.

5.6.9 Existing flood defences in the Broads area offer a low standard of protection (typically up to a 1 in 7-year standard) so they may be overtopped during a flood event. However some defences are higher, with a 0.5% (1 in 200) standard or greater.~~Existing flood defences in the Broads area offer a low standard of protection (typically up to a 1 in 7-year standard), so they may be overtopped during a flood event.~~ The nature of flooding in the Broads is such that flood water is likely to have a slow velocity, may be shallow in depth and may be low hazard (depending on topography), unless it is in ~~an area~~or beside a breach in defences where the flow ~~could~~ will be greater and the risk would subsequently be higher.

5.6.10 Some people living and working within the Broads are historically familiar with the water environment and are unlikely to be surprised or alarmed by the possibility of floods or rising water levels or may be more prepared. That being said, others may not have had any experience of flooding. Measures will need to be in place to ensure effective communication with visitors - an issue which is already addressed on many sites locally. The measures to take before, during and after a flood should be detailed within a Flood Response Plan for each development site.

5.6.11 Any development encroaching within any of the plotted Flood Zones may increase flood risk to adjacent areas. The effect on flood risk of several small encroachments is cumulative. If

[11] A river catchment is the area of land whose water drains into that river. A permeable catchment lies on porous rock, such as chalk or sandstone.

[12] Where groundwater accounts for much of the inflow and outflow of the watercourse.

342 the requirements of the NPPF and NPPG are met in full, then additional development should
343 not increase flood risk elsewhere.

344 5.6.12 The following provides information about specific areas of the Broads and the type of flood
345 risk that is particularly relevant to them. This information is taken from the various Strategic
346 Flood Risk Assessments.

	Sources of flood risk						
	Tidal	**Surface water**	**Fluvial**	**Groundwater**	**Foul sewer**	**Coastal**	**Reservoirs**
Greater Norwich	• Fluvial and tidal interactions influence flooding in the river network. • Along parts of the River Yare (downstream of Norwich) and across the Broads tidal levels are higher than fluvial levels in some places. • Combined river and tidal flooding is known to sometimes affect settlements including Wroxham and Brundall whilst high tide levels combined with a storm surge can affect the Broads. • Additional impacts of tidal influence include rivers not being able to flow freely at high tide (called tide-locking). This would affect settlements such as Norwich and Wroxham. This can affect any locations up to the tidal limit of the rivers in the Greater Norwich area.	• No settlements in the Broads part of Greater Norwich identified as history of surface water flooding or being at the most risk.	• Fluvial flood risk is primarily associated with the River Yare, River Bure and River Waveney watercourses and their tributaries. • Urban settlements are at risk from fluvial flooding from the River Yare, River Bure and River Waveney catchments (as well as other sources of flooding). • The greatest fluvial flood risk area is from the River Wensum in Norwich (part of the River Yare catchment). • Additional risk from the River Bure. • Fluvial flooding can be exacerbated in the upper reaches of the catchment, due to mill structures restricting the flow (i.e. in Horstead). • Often the combination of watercourses and the interaction of two or more sources of out of bank flow across the floodplain can have profound implications for the extent of the risk (i.e. the River Wensum and the River Yare within Norwich).	• Within Norwich city there are areas containing cavities in the underlying chalk strata. Water infiltration in the past has led to the collapse of these cavities resulting in subsidence. • There are several locations within South Norfolk identified as being at risk of groundwater flooding but these are not in the Broads. • Within the Broadland area it is believed pumping from the IDB maintain the water table at a relatively lower level reducing the risk of groundwater flooding. • Much of the Broads Authority administrative area is shown to have a low susceptibility to groundwater flooding, i.e. within the <25% category. Areas with increased susceptibility tend to be found along the valleys of watercourses including the Rivers Waveney, Yare and Bure. However, for significant parts of the Broads Authority administrative area, there is no data shown in the AStGWf dataset.	• The 2007 Greater Norwich Water Cycle Study identified that sewerage treatment works ranged from having no spare capacity to considerable capacity • The sewerage system within the city centre of the Norwich is at capacity and recommended upgrading the system. • The majority of Norwich city is served by sewers with a 1 in 30-year design standard. Some smaller parts of the city have drains with a design below 1 in 5-years. • A Section 19 Flood Investigation Report was created after heavy rainfall exceeded the capacity of the drainage systems and caused surface water flooding that resulted in approximately 80 properties being flooded in the Norwich Urban Area. A lack of coordination between stakeholders to maintain and clean the drainage system was identified as a key cause. • Additional Section 19 Flood Investigation Reports found that flooding primarily due to the exceedance of drainage capacity had taken place at Station Road in Ditchingham. This indicates that some of flooding in South Norfolk is caused or exacerbated by sewer flooding. • The DG5 register* indicates a total of 264 recorded flood incidents in Greater Norwich.	• N/A.	• Several reservoirs are located within the Greater Norwich area. However, there are also reservoirs outside of the area whose inundation mapping is shown to affect the Greater Norwich area

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	Sources of flood risk						
	Tidal	**Surface water**	**Fluvial**	**Groundwater**	**Foul sewer**	**Coastal**	**Reservoirs**
Great Yarmouth	• Tidal flooding is the most significant flood risk in the borough. There is acute risk of tidal flooding in Great Yarmouth and across the Broads within the study area; the prior has defences to protect up to the 0.5% annual probability tidal flood (although not all defences may be up to this standard). • Great Yarmouth is bound to the east by the North Sea and is entirely located within the tidally influenced area of the Broadlands River catchment. • The Rivers Yare, Bure and Waveney are subject to significant tidal influences at the downstream ends of their catchments. Tidal influences are powerful enough to reverse the flow of the rivers and hold back water within the surrounding drainage system. This 'tide-locking' effect raises levels further up the catchments and in adjoining tributaries increasing the flood risk over a broad area. • A combination of a storm surge caused by a low-pressure system within the North Sea coinciding with the arrival of high tide could result in a high risk of tidal / coastal flooding. • The tidal flood risk is managed by an extensive network of flood asset infrastructure. However, there remains residual risk in the event of a breach or overtopping scenario. The consequences of a breach/failure of an asset could be significant and result in widespread inundation of adjacent lowlying land and property, as well as the potential for significant risk to life.	• Several settlements are at risk of flooding. • These include Martham, Winterton-on-Sea, Caister-on-Sea, Great Yarmouth, Hemsby, Ormesby-St-Margaret, Hopton-on-Sea, Gorleston, Bradwell and Belton. • More detailed investigation revealed eight Critical Drainage Areas (CDAs) where the risk of surface water flooding was most acute. Great Yarmouth CDA include Bradwell, Claydon, Southtown and Cobham, Gorleston, South Yarmouth, Northgate and North Yarmouth. • Other CDAs in the study area are Caister on-Sea and Hemsby. • A Section 19 Flood Investigation Report was prepared in 2015 following extensive flooding in the summer of 2014 that affected 59 properties. The flooding affected properties across eight catchments with the worst affected being Hemsby (28 properties) and Ormesby St. Margaret (17 properties). The flooding affected a wide area.	• Primarily associated with the Rivers Yare, Bure and Waveney and their tributaries. • Due to the low-lying nature, fluvial as well as tidal flooding represents a significant risk.Tidal water levels along downstream reaches are strongly influenced by tide levels (climate change will significantly influence the predicted flood levels as a consequence of changes to mean sea level). • Most of the rivers are embanked and are higher than the adjacent land. This represents a residual risk in the event of a breach or overtopping due to fluvial, tidal or combined flood events. • Breach / failure events are difficult to predict but the effects are likely to be severe with rapid inundation of land behind the embankments and a severe risk to life to be expected. • Flooding may not be from one watercourse alone. Often the combination of watercourses and the interaction of two or more sources of out of bank flow across the floodplain can have profound implications for the extent of the risk (i.e. the Rivers Bure Yare within Great Yarmouth).	• Groundwater emergence is more susceptible in areas to the north and south of the town. • Areas to the north and south of the town centre, as well as those close to the coast where the tidal influence on groundwater is greatest, are considered among the most susceptible in the study area. • Underlying groundwater levels in the Great Yarmouth area are very high. However, the water table is likely to be kept artificially low through the extensive use of pump infrastructure. As a result, pumping failures could have a potential effect on the water table.	• Surface water and sewer flooding within Great Yarmouth and Gorleston was frequently caused by the inadequate capacity of the existing sewage system, or by sewers unable to drain freely into rivers. • There is an additional risk of foul sewer flooding as a resulting from misconnections between the surface water drainage and foul sewer. • Historically the sewer network within the urban area of Great Yarmouth had been susceptible to flooding, although efforts were made by Anglian Water, and completed in 2009, to reduce this risk. • Further reports of flooding had been made for both the Hemsby and Ormesby areas where sewage had reportedly escaped from the foul system. • The DG5 register* indicates a total of 144 recorded flood incidents in the Great Yarmouth borough	• Coastal erosion is a prominent process along much of the Great Yarmouth coastline directly threatening some settlements and posing an additional threat to coastal defences. • Should these defences be compromised there could be the additional risk of inundation to properties behind in areas susceptible to coastal flooding. • Coastal flooding can also often occur by wave overtopping of defences. • Coastal flood risk is expected to be attributable to storm surge tides combined with large waves. This may result in flooding of the beaches and undefended areas or cause overtopping of defences within the town of Great Yarmouth, as well as affecting the coastal zones to the north and south of the town.	• Three reservoirs are located within the Great Yarmouth borough however, there is also one reservoir outside of the area whose inundation mapping is shown to affect the district.

	Sources of flood risk						
	Tidal	**Surface water**	**Fluvial**	**Groundwater**	**Foul sewer**	**Coastal**	**Reservoirs**
North Norfolk	• Tidal flooding is the most significant hazard in the district as **North Norfolk** is bounded to the north and east by the North Sea and many of its watercourses are tidally influenced. • The Broads river network located to the east of the district in particular is dominated by tidal influence. As such, flooding within the Broads area is typically slow and relatively predictable due to the predominant tidal influence. • Tidal flooding due to combination of high tidal levels and a storm surge is also a recognised issue throughout the Broads area.	• SFRA does not identify settlements in the Broads part of North Norfolk as having a history of surface water flooding or being at the most risk in the district. • Hoveton Parish Council, in response to the second consultation on the SPD, stated that there are foul water flooding issues in Hoveton and Wroxham alongside the River Bure, from water running down and across Norwich Road in both these settlements and also in areas of Hoveton which experience serious surface water flooding at times of significant rainfall.	• Fluvial flooding in North Norfolk district is predominantly a combination of fluvial and tidal flooding particularly in the Broads river system that lies to the east and south of the district. • Although North Norfolk is a largely rural district there are a sizable number of towns and villages where these watercourses have the potential to get out of bank and cause flooding to property. • Fluvial flooding can be exacerbated in the upper reaches of the Broadlands catchment, due to mill structures restricting the flow (i.e. in Fakenham). • Another complicating factor could be the failure or the overwhelming of pumping stations that may result in localised flooding.	• No concerns specific to North Norfolk.	• The DG5 register indicates a total of 109 recorded flood incidents in the North Norfolk district. • Of relevance to the North Norfolk area is the Joint Position Statement relating to Horning Knackers Wood Water Recycling Centre[13]. To summarise, due to capacity issues, development that increases foul drainage output is not likely to be permitted. • At the time of writing, there are early discussions between the Environment Agency, North Norfolk District Council and the Broads Authority about particular issues of discharge and flooding from the river into the sewage drainage systems. • Hoveton Parish Council, in response to the second consultation on the SPD, stated that the existing sewers have become overloaded and sewer flooding is now a problem in parts of Hoveton. • Anglian Water is currently preparing a position statement relating to Hoverton catchment. It is intended to set out the current position relating to this catchment including historic issues within the network and the implications for new development.	• Coastal erosion is a prominent process along much of the North Norfolk coast directly threatening some settlements and posing an additional threat to coastal defences.	• 15 reservoirs are located within the North Norfolk area however; there are also five reservoirs outside of the area whose inundation mapping is shown to affect the district.

[13]Knackers Wood Water Recycling Centre, Horning, Joint Position Statement https://www.broads-authority.gov.uk/__data/assets/pdf_file/0006/1152357/20170124-Joint-Position-Statement-inc-LAs-Horning-v4-2017-signed.pdf

	Sources of flood risk						
	Tidal	**Surface water**	**Fluvial**	**Groundwater**	**Foul sewer**	**Coastal**	**Reservoirs**
Waveney/East Suffolk	• The eastern boundary of ~~(the former)~~ Waveney District~~s~~ (now East Suffolk) is formed by the land-sea interface. • Daily tidal fluctuation, occurring when the freshwater from the rivers is met by the incoming tide from the North Sea and Surge tides, which occur due to climatic conditions creating bands of low pressure in the Atlantic and North Sea. This causes a surge of water to move across the Atlantic, travelling southwards into the North Sea and becoming compressed as it travels towards and through the narrow English Channel, between Great Britain and mainland Europe. This causes a rapid rise in sea levels, which can be exacerbated by strong northerly winds. • Along the coastline there are several Main River estuaries and therefore the tidal conditions interact with fluvial mechanisms, caused by prolonged rainfall within the upper reaches of the river catchments. • Tidal flooding constitutes the main form of flood risk along this boundary, which comprises an exposed but defended coastline.	• The area is mainly underlain by the Lowestoft Formation, which is found in the majority of inland non-riverine areas which is mainly chalky, pebbly, sandy clay (till), with variable permeability. • Impermeable areas will encourage surface water runoff, potentially exacerbating surface water flood risk, whilst areas which are permeable will reduce the risk of surface water flooding by facilitating faster drainage of rainfall. • As such, new development, and associated hard standing areas, can increase volumes of runoff. Ultimately this may lead to exceedance of the available pipe network capacity, resulting in surface water flooding.	• The **River Waveney** has a relatively shallow gradient of 1:2100 creating a low carrying capacity and a limited ability to erode and alter its course during a flood event. Areas surrounding the river are low-lying and flat, meaning when its banks are overtopped it spreads into an extensive floodplain. This subsequently drains slowly due to the low gradient and may be marshy in areas. • There are a multitude of sluices found along the non-tidal reaches of the river to regulate levels during low flow conditions, to assist in land drainage and to supply a limited amount of flood storage to the system. • Flooding in July 2015 demonstrated the high risk associated with **Kirkley Stream,** which flows north to join the Inner Harbour at Lowestoft. Subsequent hydraulic modelling has identified several locations along the watercourse as at risk of river and surface water flooding. The stream survey shows that there is very little fall along its length, only a 1.4 m drop in height over a distance of 1,500 m; a restriction in flow anywhere along the stream will quickly lead to rising water as the channel is essentially flat.	• Primary mechanisms for elevated groundwater are associated with ○ Short period of above average rainfall in permeable superficial deposits ○ Permeable superficial deposits in hydraulic continuity with high river water levels; ○ Interruption of groundwater flow paths; and ○ Cessation of groundwater abstraction causing groundwater rebound. • The vast majority of the study area has a designation of “Limited potential for groundwater flooding to occur”, except in some concentrated areas surrounding the watercourses where the designation given is “Potential for groundwater flooding to occur at surface”. This is due to the permeable superficial alluvium being in hydraulic continuity with high water levels (river or tidal).	• Sewer outfalls linked to the harbour may become tide-locked during high tide; this has previously resulted in flooding of low-lying areas within Lowestoft (notably Station Square, Beven Street, Tonning Street and Norwich Road) north of the harbour. • South of the harbour also experiences similar levels of flood risk as the area is dependent on storm water overflows into the harbour and Anglian Water’s harbour pumping station which discharges towards Ness point.	• As many of the major settlements are located along the coast, there have been multiple flood alleviation schemes undertaken to protect these areas. • Coastline is exposed but defended. • It is expected that sea level will rise which will increase the rate of coastal erosion	• Throughout the district there are around 24 waterbodies with Potential Reservoir Flood Risk

***** Anglian Water hold a DG5 register this database records incidents of flooding relating to public foul, combined or surface water sewers and identifies which properties suffered flooding. It is important to recognise the DG5 register does not contain information about properties and areas at risk of sewer flooding caused by operational issues such as blockages. Also, the register represents a snap shot in time and will get outdated with properties being added to the register following rainfall events, whilst risk will be reduced in some locations by capital investment to increase the capacity of the network. As such the sewer flooding flood risk register is not a comprehensive ‘at risk register’.

5.7 The Broads Flood Risk Alleviation Project and Broadland Futures Initiative

5.6.1The Broadland Flood Alleviation Project (BFAP) is a long-term project to provide a range of flood defence improvements, maintenance and emergency response services within the tidal areas of the Rivers Yare, Bure, Waveney and their tributaries.

5.6.2 The main aim of project work was to strengthen existing flood defences and restore them to a height that existed in 1995 (a level defined by the Environment Agency) and make additional allowances for sea level rise and future settlement of the flood banks.

5.6.3 This aim has largely been achieved, through a phased programme of improvement works comprising:

- Strengthening the existing flood banks, restoring them to agreed levels where excessive settlement has occurred
- Replacing existing erosion protection that is in a poor condition using more environmentally acceptable methods wherever possible
- Providing new protection where erosion is currently threatening the integrity of the flood defences
- Carrying out works at undefended communities

5.6.4 The Broadland Futures Initiative (BFI)[14] is a partnership for future flood risk management in the Broadland area. The main goal is to agree a framework for future flood risk management that better copes with our changing climate and rising sea level. The focus will be on what happens from the mid-2020s onwards. Planning is needed now to secure support and make well-informed decisions.

5.6.5 The Initiative has been set up by organisations responsible for managing coastal and inland flood risk. The Environment Agency have the lead responsibility and will be working with Natural England, County Councils, Internal Drainage Boards, Broads Authority and National Farmers Union. The Broads Authority will support the Initiative Project Team and governance arrangements.

5.6.6 The BFI will also work in partnership with local communities and other stakeholders to identify the way forward. This will be a democratic process, with local politicians making the core decisions to agree a framework for future flood risk management that better copes with our changing climate.

5.8 Functional Flood Plain

5.7.1 The NPPG[15] describes the Functional Flood Plain as '*where water has to flow or be stored in times of flood*' and goes on to say:

> *A functional floodplain is a very important planning tool in making space for flood waters when flooding occurs. Generally, development should be directed away from these areas using the Environment Agency's catchment flood management plans, shoreline management plans and local flood risk management strategies produced by lead local flood authorities.*

5.7.2 The flood probability mapping indicates in some areas that the functional floodplain extends to the boundary of the Broads Authority area. The SFRAs identify Functional Floodplain and it covers a

[14] Broadland Futures Initiative: https://www.broads-authority.gov.uk/looking-after/climate-change/broadland-futures-initiative
[15] Functional floodplain: https://www.gov.uk/guidance/flood-risk-and-coastal-change#Strategic-Flood-Risk-Assessment-section

significant part of the Broads Authority area. FRAs will need to take this into account. See section 5.4 for more detail.

5.9 The Coast

5.8.1 The Broads Authority has a small stretch of coast in the Executive Area (Winterton/Horsey area). The Kelling to Lowestoft Ness Shoreline Management Plan unit 6.13[16] covers Eccles to Winterton Beach Road. Coastal erosion is a sensitive issue and the detail of the approach for this area is included in the Management Plan. As a summary for this document, the general approach to coastal erosion along this stretch for the present day and medium term is to hold the line up to 2055. ~~This is dependent on the option continuing to be technically and economically deliverable and over time other options may be investigated such as possible managed realignment, or a retired line of defence further inland.~~ In relation to the present day, the Plan says:

> *'Due to the considerable assets at risk and the uncertainty of how the coastline could evolve, the policy option from the present day is to continue to hold the line of the existing defence. This policy option is likely to involve maintenance of existing seawalls and reef structures, replacing groynes as necessary and continuing to re-nourish beaches with dredged sand. This policy option will provide an appropriate standard of protection to all assets behind the present defence line, and, with the recharge, a beach will be maintained as well as a supply of sediment to downdrift areas.'*

[16] Go to page 100: https://www.great-yarmouth.gov.uk/CHttpHandler.ashx?id=1239&p=0

6. Making and assessing a planning application

6.1 Site-Specific Flood Risk Assessment (FRA).

6.1.1 Proposals for developments in areas at risk of flooding are subject to set requirements and must be accompanied by an appropriate Site-Specific Flood Risk Assessment (FRA). The basic requirements of the FRA are set out in the NPPG. There is more on FRAs later in this section.

6.2 Where to get advice

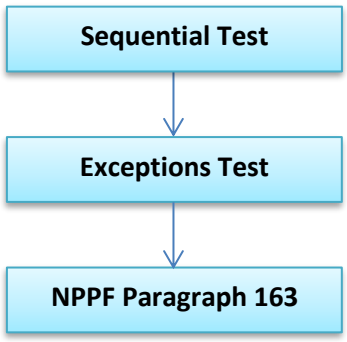
6.2.1 The Broads Authority encourages applicants to seek pre-application advice on their proposals and officers can provide advice on which proposals will require an FRA. The Environment Agency[17] can provide some of the necessary data for an FRA and offer a pre-application advice service[18]. The Environment Agency offer one free preliminary opinion to developers which outlines the nature of the information required to accompany an application. Further detailed advice, which may include a technical review of documents prior to submission, is available from the Environment Agency as part of a charged service. All requests for data are provided free of charge.

6.2.2 It will also be appropriate to consult neighbouring Local Planning Authorities if scheme proposals are on or near to the border.

6.3 Considering flood risk

6.3.1 Developers should carefully assess the full range of issues associated with all sources of flood risk when producing development proposals, including climate change flood extents. Failure to consider these issues is likely to lead to delay or to refusal of planning permission. Developers must demonstrate that development minimises flood risk both on and off site, will ensure the safety of the occupants and will still be of a scale and design appropriate to its Broads setting. Flood risk mitigation, resilience and resistance measures should be considered at an early stage and integrated into a high-quality design which satisfies the objectives of other planning policies.

~~6.3.2 The Broads Authority, when determining a planning application, will need to be aware that if a building is subject to more than 600mm of external flood water, it may not be safe. We may refuse the application if this has not been considered adequately in the FRA.~~



6.4 Sequential and exceptions tests - general

6.4.1 The NPPG sets out a Sequential Test[19] to development and all sources of flood risk that is done by the planning authority to direct development away from flood risk areas. It also sets out an Exception Test[20] for development located in zones of higher flood risk. This provides a method to manage all sources of flood risk, while still allowing necessary development to occur, subject to appropriate risk reduction and

[17] You can email enquiries_eastanglia@environment-agency.gov.uk
[18] The pre application enquiry form can be found here: https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion
[19] Sequential test: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/the-sequential-risk-based-approach-to-the-location-of-development/
[20] Exceptions Test: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/the-exception-test/

mitigation measures. The steps taken to assess an application for development in flood zones 3a and 3b are in this simple flow chart.

6.4.2 The NPPF sets out clearly that the sequential test and exception test should be applied to all sources of flooding and prioritise acceptable land uses. There is a distinction between proposed development in flood risk zones 1, 2 and 3a and proposed development in flood risk zone 3b. In the case of the former, the NPPG is very clear on circumstances in which the Sequential and Exception tests must be applied. In terms of proposed development in Flood Zone 3b the NPPG sets out (in the table below, copied from the NPPG) which types of development are water compatible and may therefore be acceptable[21] [22].

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

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

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere

Although the sequential test must be applied, due to the limited availability of sites in Flood Zone 1, the main objective, as applied to the Broads, is likely to be to reduce flood risk to new development through the application of the sequential approach and to maximise opportunities to build in resilience both at the site and buildings level through design. The improvement of safety and management of risk, including response to risk, must be addressed at the design stage.

[21] Flood Zone and flood risk tables: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-2-flood-risk-vulnerability-classification/

[22] For more detail, go here: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-3-flood-risk-vulnerability-and-flood-zone-compatibility/

Any development being promoted in Flood Zone 1 should also consider flood risk from other sources (not just river and sea flooding). This means that the updated surface water flood map on the Environment Agency's flood map and assessed through the 2017 and 2018 SFRAs, should also be checked to apply the sequential approach and sequential test when making decisions. The 1:1000 year surface water map can be seen as equivalent probability to Flood zone 2 (river and sea map) or flood zone 3 accounting for an allowance of climate change, and the 1:100 year surface water map can be seen as equivalent to Flood Zone 3 (river and sea flood map) without climate change. This is only practical to apply to significant flow paths shown on the surface water flood map and not to small areas of ponding.

6.5 Sequential Test – specific requirements

6.5.1 The sequential test is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The Sequential Test will be carried out by the Broads Authority on relevant applications located in Flood Zones 2 and 3 in accordance with the NPPF (except for minor development or changes of use – excluding a change of use involving camping and caravans), drawing on information provided by the developer. Sites must be reasonably available (see page 6.5.5 for more on this) to be considered as part of the Sequential Test. The Environment Agency advises that the Sequential Test should be undertaken in isolation and judged on flood risk issues only. The results of the test should then be compared to other non-flood risk matters - a site may therefore pass the Sequential Test but still be considered inappropriate for other reasons, such as being contrary to the Local Plan.

6.5.2 The Authority will aim to minimise flood risk by directing development away from areas of high risk. However, this does not override other Local Plan policies which may indicate the unsuitability of land in Flood Zones 1 or 2 for other reasons.

6.5.3 The NPPG says:

> *The aim is to steer new development to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.*

6.5.4 The following sections elaborate on how various elements of the Sequential Test should be addressed. In applying the sequential test, the Authority will use the following:

6.5.5 A site is considered to be **reasonably available** if all of the following apply:

- The site is available to be developed (including considering site ownership or whether the owners of sites have any intention of them being developed); and
- The site is within the agreed area of search; and

- The site is of comparable size in that it can accommodate the requirements of the proposed development; and
- The site is not safeguarded in the relevant Local Plan (including Minerals and Waste) or Neighbourhood Plan for another use; and
- It does not conflict with any other policies in the Local Plan.

6.5.6 A site is not considered to be reasonably available if they fail to meet all of the above requirements or already have planning permission for a development that is likely to be implemented.

6.5.7 The **area of search** should be guided by the requirement for the proposed development in a particular area and should be discussed with the Broads Authority at the pre-application stage.

6.5.8 The Authority considers the following areas of search to be reasonable:

- The rest of the particular district within the Broads Authority Executive Area
- Within the entire Parish (including the part that may be out of the Broads)
- Other settlements/parishes that are nearby (that may be out of the district)
- Or a wider/another area as appropriate and subject to agreement with the Broads Authority

6.5.9 It is acknowledged that the area of search could be outside of the Broads Authority Executive Area and would require discussions with other Local Planning Authorities (and proposals would therefore need to comply with relevant planning policies of the relevant Local Planning Authorities). However, sites that are at less risk of flooding could be in the part of the settlement that is not in the Broads.

6.5.10 The Authority acknowledges that some schemes are site specific, such as the regeneration of a particular brownfield site or extension of a building, so it is impractical to change the location.

6.5.11 In all cases the developer must justify with evidence to the Broads Authority what area of search has been used when making the application.

6.5.12 If there are found to be other reasonably available sites at a lower risk of flooding, then the development has **failed the Sequential Test** and this could lead to refusal of planning permission. Failing to pass the Sequential Test is sufficient grounds for refusal, as it would make the proposal contrary to the NPPF and Local Plan policies.

6.5.13 If, however there are no other reasonably available sites, then the development has **passed the Sequential Test**. The Exception Test may also need to be undertaken at this point (if required).

6.6 Exception Test – specific requirements

6.6.1 The NPPF says:

> *158. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood*

risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

159. If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance.

6.6.2 The requirements of the Exception Test are set out in the NPPG. Table 3[23] of the NPPG sets out when the Exception Test needs to be carried out. The Broads Authority has considered these tests and has clarified how they will be interpreted locally in the context of the landscape character and spatial vision. Again, the developer must provide the evidence to enable the Exception Test to be applied by the Authority.

6.6.3 The following conditions must be met for the Authority to be sure that a proposal is appropriate, in flood risk terms, if an Exception Test is required.

6.6.4 The NPPF at paragraph 160 says that for the Exception Test to be passed *'it should be demonstrated that: a) the development would provide wider sustainability benefits to the community that outweigh the flood risk'*. To assess this, the Authority will use the most **up to date Local Plan Sustainability Appraisal Objectives**. The current objectives are set out at Appendix C.

6.6.5 The NPPF at paragraph 160 goes on to say that for the Exception Test to be passed '*b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.* The Broads Authority will presume **100 years for residential** development as per the National Planning Policy Guidance. The Authority requires **developers to set out the anticipated lifetime of non-residential development and justify this**.

6.6.6 In addition to these conditions, the following will also be applied as part of the Exception Test:

a) The development must not compromise future flood alleviation or flood defence schemes;
b) The Flood Risk Assessment must demonstrate how resilience to flooding has been incorporated through a design which does not detract from the character of the locality;
c) The site-specific Flood Risk Assessment must demonstrate how the development will be compatible with the nature of flooding in the Broads, considering climate change and sea level rise over the planned life of the development (see section 6.5 on Climate Smart Thinking); and,
d) in the case of the replacement of a residential property, a residential development must be on a like-for-like basis, with no increase in the number of bedrooms, on the same sized footprint[24], potentially being relocated in a less vulnerable part of the site.

[23] For more detail, go here: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-3-flood-risk-vulnerability-and-flood-zone-compatibility/

[24] The "footprint" is the aggregate ground floor area of the existing on-site buildings, including outbuildings which affect the functionality of the floodplain but excluding temporary buildings, open spaces with direct external access between wings of a building, and areas of hardstanding.

6.7 The nature of the land and the specific functionality of the floodplain

6.7.1 The approach in any particular case will depend on the nature of the land and the specific functionality of the floodplain, considering the presence of built structures and site infrastructure. The following principles will apply to development in flood zone 3.

6.7.2 In the case of a **'greenfield' site** which has not been the subject of any previous development, the site could function as an unconstrained, open floodplain, subject to the presence of any 'defences'. It may provide areas for water storage in times of flood and may have other value associated with this, for example as wet woodland.

6.7.3 Sites categorised as "**brownfield sites which have been previously developed**" will often cover sites larger than a single plot and may have been in use for a variety of uses, often employment based. These will often be characterised by areas of built development, including buildings and hardstandings, with undeveloped areas which might include vegetated margins or open areas. Parts of the site may function as functional floodplain and parts will not. The functionality of any part will depend on the way in which the water would behave in times of flood. If flood waters which inundate the site in a 1:20 (5%) annual probability event can pass under or through a building or sit on land this will be defined as functional floodplain. Where an existing building or structure acts as a barrier to flood water then its functionality is compromised and it will not be classified as Flood Zone 3b and can be described as Flood Zone 3a.

6.7.4 When considering development proposals for brownfield sites which have been previously developed, the objective is to locate development in a sequentially appropriate manner on the site and to reduce risk through design. An initial site appraisal should identify the different flood risk zones on the site (where applicable) and differentiate between areas of Flood Zone 3a and Flood Zone 3b, as described above.

6.7.5 The objective when looking at development proposals on previously developed brownfield sites is to seek opportunities to restore the functionality of the floodplain. This must, however, be balanced against the need to maintain the land uses and development which support the economic and social viability of the Broads communities. So, the over- riding principle in respect of development is that it should not increase risk above the existing level.

6.7.6 Development should be located in a sequentially appropriate manner (which considers areas of lower flood risk first as discussed in the following section) across any flood risk zones, in accordance with the NPPG. Where there is existing development within Flood Zone 3a or 3b, opportunities to improve flood risk should follow the following hierarchy:

i) relocate development to Flood Zone 1 (subject to other sources of flooding as discussed previously)
ii) relocate development to a lower flood risk zone
iii) ensure there is no net increase in the development area within Flood Zone 3a.

606 6.7.7 Land uses or development which is of a higher level of vulnerability, as defined in the NPPG,
607 than existing or previous uses on the site will only be permitted if it complies with table 3[25] of the
608 NPPG and all the other policy requirements (such as safety and not increasing flood risk elsewhere).

609 6.7.8 Sites categorised as "**brownfield sites which are currently developed**" will often cover
610 individual sites where replacement development is proposed. These will often be smaller plots and
611 are owner occupied with limited (if any) opportunity for relocating development to an area of lesser
612 flood risk, either on-site or elsewhere.

613 6.7.9 When considering proposals for replacement development, an initial appraisal should identify
614 whether the development is in Flood Zone 3a or Flood Zone 3b.

615 6.7.10 If the site is in Flood Zone 3b, new water compatible development and essential
616 infrastructure that has been subject to the Exception Test (as defined in the NPPG) will be permitted
617 or a like-for-like replacement of an existing use. As detailed above, existing built development on site
618 may prevent parts of the site from functioning as Flood Zone 3b, meaning it will be considered as
619 Flood Zone 3a. In those cases, it may be acceptable to locate development appropriate to Flood
620 Zone 3a within the extent of the previously developed footprint. This will be subject to the usual
621 considerations in terms of safety of the development.

622 6.7.11 If the site is in Flood Zone 3a, new development for water compatible uses, less vulnerable
623 uses or more vulnerable subject to the Exception Test (as defined in the NPPG) will be permitted or a
624 like-for-like replacement of an existing use. In all cases the safety of the proposed development
625 would need to be considered.

626 6.7.12 The objective when looking at development proposals on brownfield sites which are currently
627 developed is to ensure that development does not increase flood risk to the site or the building or
628 elsewhere above the existing level. Opportunities to reduce flood risk should also be considered.

629 6.7.13 The Authority may permit the relocation of existing development out of Flood Zone 3b to an
630 undeveloped site with a lower probability of flooding where the vacated site is reinstated as
631 naturally functioning floodplain, and where the benefits to flood risk outweigh the benefits of
632 leaving the new site undeveloped. Such proposals will be considered against adopted planning
633 policies.

634 ### 6.8 Existing footprint of development in Flood Zone 3b and Permitted Development (PD)

635 6.8.1 Firstly, it is worth noting that the following only applies to development within Flood Risk Zone
636 3B where 'more vulnerable' development is not considered appropriate, according to the NPPG.

[25] Table 3 is copied previously in this SPD or can be found here:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/575184/Table_3_-_Flood_risk_vulnerability_and_flood_zone__compatibility_.pdf

6.8.2 For a replacement dwelling in Flood Zone 3B the existing footprint is currently defined in the footnote to policy DM5[26]. This does not make any reference to permitted development rights, only to existing buildings. The 'like for like' requirement of the policy is still valid as that is the starting point for the application – that the base position for any replacement dwelling in flood zone 3b is like for like. The Authority and Environment Agency consider that a scheme for a replacement dwelling may only include what is permitted through PD rights Class A enlargement, improvement or other alteration of a dwelling house[27] as a pragmatic approach. The inclusion of these PD rights in the calculation of footprint is considered a reasonable approach to take, as it would avoid the need for applicants to first construct a rear extension only to include it in the calculations for a replacement dwelling. It is important to note however that there may be other considerations that might be relevant to decision making other than flood risk; for example landscape character impacts.

6.8.3 If an application for a replacement dwelling is approved, the PD rights for extensions/outbuildings will be removed by the Authority in order to restrict further development within the functional floodplain. Householder PD rights would also be removed when permitting householder extensions within Flood Zone 3B, for the same reason; to restrict the further development within the functional floodplain.

6.9 Environment Agency's standing advice

6.9.1 You need to follow the Environment Agency's standing advice[28] if you're carrying out a flood risk assessment for a development classed as:

- a minor extension (household extensions or non-domestic extensions less than 250 square metres) in flood zone 2 or 3
- 'more vulnerable' in flood zone 2 (except for landfill or waste facility sites, caravan or camping sites)
- 'less vulnerable' in flood zone 2 (except for agriculture and forestry, waste treatment, and water and sewage treatment)
- 'water compatible' in flood zone 2

6.9.2 This includes developments involving a change of use into one of these vulnerable categories or into the water compatible category.

6.10 Information for Flood Risk Assessments

6.10.1 Guidance on when an FRA is required and on preparing an FRA, including how to obtain flood risk data, is available from the Environment Agency[29]. The NPPG[30] sets what is required in an FRA with a useful checklist.

6.10.2 The flood maps on the Environment Agency website[31] and the SFRA[32] show the flood zones and other sources of flood risk, highlighting when an FRA is required for flood risk from a main river or the sea. Further more detailed information will be required to consider the specific risk to the site

[26] Footnote 22 says the "footprint" is the aggregate ground floor area of the existing on site buildings, including outbuildings which affect the functionality of the floodplain but excluding temporary buildings, open spaces with direct external access between wings of a building, and areas of hard standing.
[27] SCHEDULE 2 Permitted development rights, PART 1 Development within the curtilage of a dwellinghouse, Class A – enlargement, improvement or other alteration of a dwellinghouse http://www.legislation.gov.uk/uksi/2015/596/made
[28] https://www.gov.uk/guidance/flood-risk-assessment-standing-advice
[29] Flood risk assessment for planning applications https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications
[30] Site-specific flood risk assessment: Checklist http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/site-specific-flood-risk-assessment-checklist/
[31] EA flood maps http://apps.environment-agency.gov.uk/wiyby/37837.aspx
[32] SFRAs http://www.broads-authority.gov.uk/planning/planning-policies/sfra/sfra

and how it should be managed. Other documents should be consulted to assess risk of flooding from other sources and historical accounts such as Strategic Flood Risk Assessments, Surface Water Management Plans[33] or local studies. Any site-specific FRA needs to also include an assessment of historical flooding.

6.10.3 A comprehensive and accurate site appraisal will be essential as part of an FRA to identify constraints and potential areas for development on a site within the floodplain[1]. The appraisal as part of a Flood Risk Assessment should identify:

i) Flood risk zones 1 – 3 within the site with reference to the SFRA/EA Flood Zone maps. -The FRA should show the accurate location of the flood zones on the site based on a comparison of EA flood levels and GPS site survey;
ii) The boundaries between areas of Flood Zone 3a and the Flood Zone 3b;
iii) The boundaries within mapped areas of Flood Zone 3b where water has to flow or be stored and land areas where buildings and other infrastructure restrict this functionality. The following will need to be considered in identifying these boundaries:
    - Extent of buildings on site and their footprints
    - Extent of hardstandings on site and their coverage
    - Permeability of the buildings and hardstandings on site, including the contribution of voids
    - Extent of open areas and drainage infrastructure on site and their capacity
    - Flow pathways and patterns within and off-site

6.10.4 Climate change is an important consideration in producing FRAs. An allowance for climate change must be included as part of any submitted flood risk assessment. The SFRAs[34] show how climate change could affect an area. Guidance on the allowances to use can be found by using the following hyperlink https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances[35]. Environment Agency has prepared a locally specific factsheet on climate change allowances. This can be requested via enquiries_eastanglia@environment-agency.gov.uk.

6.10.5 Where redevelopment is appropriate in Flood Zones 3a and 3b, according to the principles of the Planning Practice Guidance (NPPG), it should seek to demonstrate an improvement in flood risk management (considering climate change over the development lifetime). For example, a building may be redesigned to be more flood resistant or have habitable areas raised and so at less risk. The frequency of flooding to the surrounding land may become greater and more hazardous with time, therefore offsetting any improvement to the design of the building and challenging the overall sustainability of the location for the given land use. These issues will need to be addressed in the site-specific Flood Risk Assessment (FRA). Some landowners may decide that risk management is too onerous and seek to relocate.

6.10.6 It is important to note that the Environment Agency need new more vulnerable development to not flood in the actual risk 1% (1 in 100) fluvial or 0.5% (1 in 200) tidal annual probability climate change flood event.through the provision of defences, raised land or raised floor levels. The Environment Agency also require refuge above the 0.1% (1 in 1000) climate change annual probability extreme flood for more vulnerable development.

6.10.7 The management of residual risk is another area that has to be addressed. There is no definition of what is deemed to be 'safe', but there is information from various sources that can

[33] Surface Water Management Plans https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/flood-and-water-management-policies/surface-water-management-plans and http://www.greensuffolk.org/flooding/surface-water-management-plans/

[34] SFRA http://www.broads-authority.gov.uk/planning/planning-policies/sfra/sfra

[35] New climate change allowances were published in December 2019 on gov.uk, these will result in increases in flood level of between 1.2m and 1.6m compared to present day flood levels.

provide a guide to what is acceptable in respect of flood depths and velocities. It will be the Authority's role to determine what is considered safe in terms of access routes during flood events and whether unsafe access can be adequately managed through the submission of a Flood Response Plan. The Authority will also consider if proposed less vulnerable development at actual or residual risk of flooding, or more vulnerable development at residual risk of flooding would be ~~consider if proposed less vulnerable developments at risk of flooding that would be~~ safe and sustainable and whether flood resilient measures and flood response plans are sufficient to mitigate risk. A key document in this respect is the Defra/EA Research Report FD2320, 'Flood Risk Assessment Guidance for New Development'[36]. Advice on the flood resistance and resilience of buildings can be found at section ~~5~~ 7 of this SPD and advice on Flood Response Plans can be found in Appendix D.~~.~~

6.10.8 Provision of this information (as set out in 6.10.3) will allow an accurate calculation to be made of the extent and location of Flood Zone 3a and Flood Zone 3b within the site. The objective of the appraisal is to identify the location and extent of the site that would be appropriate for development, so that the Broads Authority can ensure that it does not increase flood risk either off site or to the development. Understanding how a site is affected at times of flooding can identify opportunities to allow a development to go ahead, reduce flood risk and identify mechanisms to improve flood storage capacity through layout and design. The appraisal will demonstrate where this is required.

6.10.9 For certain application types the Environment Agency has prepared Flood Risk Standing Advice[37]. Considerable additional information for developers and landowners is available. Developers should refer to these sources of information so they are fully informed of the requirements at the time of their application.

6.10.10 For minor development[38], a Local Flood Risk Tick Sheet has been produced. This will assist applicants in producing a flood risk assessment for minor developments. It is in conformity with the NPPG FRA guidance and is designed to be user friendly for the applicant yet provide the information the BA needs to determine applications. See Appendix F.

6.11 Without increasing flood risk elsewhere

6.11.1 The NPPF at paragraph 163 says '*when determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere…".*

6.11.2 One of the key objectives of a Flood Risk Assessment is to establish if a proposal will increase flood risk elsewhere. This may happen where development causes flows to be diverted, or where development takes up additional space within the floodplain causing floodplain storage capacity to be reduced.

6.11.3 A Flood Risk Assessment should consider whether this will happen and propose mitigation measures which should be provided up to the design flood event (1% fluvial/0.5% tidal) including climate change for the lifetime of the development. These may include for example the provision of compensatory floodplain storage~~, although this can be difficult to achieve in the Broads area~~. Compensatory floodplain storage is the lowering of higher land levels to provide additional flood storage at the same level as the flood storage is removed. Therefore, this is difficult to achieve in the

[36] Defra/EA Research Report FD2320 http://sciencesearch.defra.gov.uk/Document.aspx?Document=FD2320_3364_TRP.pdf
[37] Standing advice https://www.gov.uk/guidance/flood-risk-assessment-standing-advice
[38] Please note that this is minor development in relation to flood risk rather than other definitions of minor development: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/what-is-meant-by-minor-development-in-relation-to-flood-risk/

Broads as the floodplain is very flat with little higher land available to lower. One of the only options in the Broads is the raising of buildings on stilts to provide voids underneath and not remove flood storage. Such measures would need to be designed to ensure that water is always stored under the building and can empty after a flood. This would require intermittent boarding, no storage under the building and regular maintenance.

6.11.4 Sustainable drainage (SuDS) proposals should also be included within an assessment where a development would increase the impermeable area that would increase the surface water runoff from the site. This will ensure that flood risk is not increased elsewhere. For Brownfield sites, proposals should be put forward to limit the surface water discharge as close to greenfield runoff rates.

6.12 Flood response plan template.

6.12.1 A site-specific Flood Response Plan will always be required for development in flood zone 3. The client/developer responsibilities for health and safety and facilities management may also require a site-specific flood response plan. These are important considerations on commercial sites and are potential requirements for compliance with the Construction (Design and Management) Regulations 2015[39].

6.12.2 They can form one means of managing residual risk where a development is found to be acceptable in flood risk terms and is a valuable document for owners and occupiers of all property at risk of flooding to have in place. The Authority has produced guidance and a suggested structure for these plans. The guidance and structure can be found at Appendix D.

[39] Construction (Design and Management) Regulations 2015 http://www.hse.gov.uk/pUbns/priced/l153.pdf

7. Reducing Flood Risk to Development

7.1 Section introduction

7.1.1 Developers must demonstrate that development both appropriately manages flood risk and will still be of a scale and design appropriate to its Broads setting. The Authority will not permit development where the accommodation of measures to reduce flood risk leads to other, unacceptable, consequences. These may include an intrusive scale of building or land raising[40] which is inappropriate in the landscape or built environment.

7.1.2 Developers should also note that, in accordance with advice in the NPPG, any necessary flood defence works required because of the development form part of that development and should be funded by the developer.

7.1.3 It should be noted that all aspects of the development need to comply with policies of the Local Plan (adopted 2019) as well as adopted Neighbourhood Plans and that conformity with policies SP2 and DM5 does not override applicability of other policies (of the Broads Authority and other relevant Local Planning Authority).

7.1.4 The Authority will continue to give considerable weight to the advice of the Environment Agency with regard to the appropriateness of development and necessary flood alleviation measures.

7.1.5 The following sections discuss ways of potentially reducing flood risk to development. Historic England was keen to emphasise the waterlogged archaeology in the area and that changes to the flow of water could affect preservation.

7.2 Raising Floor Levels

7.2.1 This involves setting the building floor level above an appropriate flood level. This approach provides a partial solution by giving protection to people and accommodation, provided that the flood level does not exceed the floor level provided.

7.2.2 A development could be designed to allow the site to flood beneath a raised building. This method does not protect the building curtilage or access roads from flooding. In addition, flooding may prevent the effective operation of local drainage and sewage systems, with potential adverse environmental and amenity consequences.

7.2.3 It is also difficult to apply new floor levels to building conversions.

7.2.4 The appropriate minimum floor levels to manage flood risk will be determined through the site-specific Flood Risk Assessment. The use of raised floor levels has significant implications for development. Firstly, it can lead to a raising of the ridge level and overall height of the building. Secondly, it affects the relationship between the floor level and the surrounding site and therefore the means of access into the building, including access for all (whereby access ramps for example might need to be longer and higher when compared to not raising the floor). These aspects need

[40] See policy DM17 of the Local Plan for the Broads.

careful consideration by the architect at an early stage to ensure that the resulting development will be acceptable in terms of its design in relation to its surroundings and that it complies with legal and policy requirements with regard to access for all.

7.3 Raising Plot Levels

7.3.1 Developers may seek to reduce the risk of flooding by raising the level of the land, either in isolation or in combination with a minimum floor level. This approach is unlikely to be a viable option in the Broads. The Authority and the Environment Agency have a preference against raising land levels, because:

(i) It can serve to divert flood water onto neighbouring plots, particularly in areas primarily affected by fluvial flooding.

(ii) Land in the Broads area is often wet and of poor load bearing capacity. Raising land by adding soil or other material may lead to the site sinking over a period of time.

(iii) It affects the relationship of the site to surrounding plots, and to access roads. On waterside sites, the relationship to the river or broad is changed, often leading to the need for higher piling and quay heading, affecting the visual quality of the water's edge.

(iv) It can be damaging to ecology, geomorphology, trees and other vegetation on the site.

(v) It can change the character of the landscape. Land raising can increase the height and prominence of new buildings.

(vi) It may be difficult to ensure that any replacement of lost flood storage capacity behaves in the same manner.

7.3.2 Furthermore, there is a policy in the new Local Plan for the Broads (policy DM17) which relates to land raising and is of relevance.

7.3.3 Compensatory floodplain storage may be required as a mitigation measure, but this can be difficult to achieve on small plots and the impact off-site would always need to be assessed.

7.4 Bunds or Flood Walls

7.4.1 In some exceptional cases it may be appropriate to consider the use of earth bunds or flood walls to reduce the risk of flooding of development or to protect existing development. This approach is less likely to be applicable to small-scale developments.

7.4.2 While acceptable in some locations, bunds or flood walls are likely to be damaging to the character of the landscape or built environment in others.

7.4.3 As with land raising, bunds can divert flood water onto neighbouring land, particularly in areas primarily affected by fluvial flooding. The provision of alternative flood storage capacity in the drainage compartment will be a requirement in the use of this technique. Careful consideration will be needed to ensure that the engineering requirements for bunds or flood walls are met and that, as far as possible, they are designed to be sympathetic to the local character. In addition, it will be important to ensure that a bund or flood wall does not prejudice the operational requirements of the site, for example at a boatyard or other employment site. This requirement may not apply to the use of bunds to create a temporary storage area or to provide pollution prevention but the potential to increase flood risk elsewhere may need to be considered.

7.4.4 An Environmental Permit may be required under the Environmental Permitting (England and Wales) Regulations 2010. Check the information at https://www.gov.uk/topic/environmental-management/environmental-permits for advice.

7.5 Floating/Amphibious Structures

7.5.1 Another option to explore is a fixed but floating solution to development for commercial uses or replacement residential properties. Development might be located on land or in a mooring cut within a currently developed plot giving connectivity with the landscape, retaining the feeling of intimacy on the waterway and the sense of space between developments experienced throughout the Broads system.

7.5.2 For such development to be acceptable, it must also not increase flood risk elsewhere; reduce flood risk overall wherever possible; and be safe for its lifetime taking into account climate change. Solutions would have to address design issues, including height and the visual impact of floats, as well as consideration of safe access and egress at times of flood and infrastructure requirements. Impact on navigation is also an important consideration.

7.5.3 The appropriateness of such development must be considered based upon its Flood Risk Vulnerability Classification from Table 2 of the Flood Risk and Coastal Change Planning Practice Guidance (discussed previously in this document).

7.5.4 Such development would also need to consider Water Framework Directive impacts through an assessment of direct effects on river morphology.

7.6 Resilience and Resistance

7.6.1 Flood-resilient buildings are designed and constructed to reduce the impact of flood water entering the building (through air bricks, through walls or through toilets or plug holes). As a result, no permanent damage is caused, structural integrity is maintained and drying and cleaning is easier. Flood-resistant construction can prevent entry of water or minimise the amount that may enter a building where there is short duration flooding outside with water depths of 0.6 metres or less. ~~6.3.2~~ The Broads Authority, when determining a planning application, will need to be aware that if a building is subject to more than 600mm of external flood water, it may not be safe. We may refuse the application if this has not been considered adequately in the FRA.

7.6.2 Consideration should be given at the design stage to the potential effects of flooding on the electrical, foul drainage and other key aspects of the development.

7.6.3 Developers may also put forward innovative approaches towards reducing the risks or effects of flooding. The Broads Authority will consider such proposals which:

- Build in resilience and allow sites to flood, for example in commercial non- residential buildings and voids around or under replacement chalets or extensions to buildings for example.
- Utilise floating walkways as a safe means of escape.

- Use soft river edge protection measures which absorb water, reduce erosion from wake and encourage plant growth[41].
- Provide compensatory flood storage capacity or washlands (which are areas provided to be deliberately flooded).

7.6.4 Further information can be found in the following documents:

- Improving the Flood Performance of New Buildings: Flood Resilient Construction (CLG 2007)[42]
- Six Steps to Property Level Flood Protection - Guidance for property owners[43]
- Flood Protection and your property. A guide to protecting your home (Property Care Association, 2014)[44]
- Homeowner's guide to flood resilience – A living document (Know Your Flood Risk)[45]
- The Property Flood Resilience Action Plan - DEFRA[46]

7.7 Sustainable Drainage Systems (SUDS)

7.71 Policy DM6 of the Local Plan for the Broads refers to Surface Water Run Off. There is much detailed information there. This section is more of a summary.

7.72 Surface water drainage systems developed in line with the ideals of sustainable development are collectively referred to as Sustainable Drainage Systems (SuDS). Approaches to manage surface water that consider water quantity (flooding), water quality (pollution), amenity and biodiversity issues are collectively referred to as Sustainable drainage. The idea of SuDS is to copy, as closely as possible, the natural drainage from a site before development. Including the use of shallow surface structures to copy the pre-development scenario and manage water close to where it falls. SuDS can be designed to slow water down (attenuate) before it enters streams, rivers and other watercourses, they provide areas to store water in natural contours and can be used to allow water to soak (infiltrate) into the ground, evaporate from surface water or transpire from vegetation (known as evapotranspiration). It is important to include sufficient treatment steps as part of the design of SuDS to ensure water quality is protected. There is also potential for schemes to include water reuse such as through rainwater and stormwater harvesting as options than can help to alleviate surface water flood risk. These are systems that are designed to both store water for reuse and attenuate flows and would also reduce potable (clean) water use.

7.7.2 All major development is expected to include Sustainable Drainage (SuDS) to manage surface water runoff, unless it is demonstrated to be in appropriate (as per NPPF paragraph 165). Also see Policy DM6 of the Local Plan for the Broads.

[41] See Design Guides: https://www.broads-authority.gov.uk/planning/planning-permission/design-guides
[42] Flood Resilient Construction: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf
[43] https://www.bre.co.uk/filelibrary/pdf/projects/flooding/Property_owners_booklet_v2_web_(2).pdf . The guidance has been endorsed by the National Flood Forum, the Association of British Insurers, Defra, the Environment Agency, the Flood Protection Association, and the Local Government Association and was produced through the EUFP7 funded SMARTeST Project (further details: www.floodresilience.eu).
[44] A guide to protecting your home http://www.property-care.org/wp-content/uploads/2015/03/FPG-Leaflet-A5-Folded-to-A3-Draft-3-FINAL-WEB.pdf
[45] Homeowners Guide to Flood resilience http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForHomeowners.pdf
[46] THE PROPERTY FLOOD RESILIENCE ACTION PLAN https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551615/flood-resilience-bonfield-action-plan-2016.pdf

Applicants should follow SuDS hierarchy by fully considering alternatives before surface water discharge to public sewer. AWS would only accept a surface water connection if evidence were to be provided. AWS would welcome early liaison if applicants wish to pursue this option.

7.7.3 Where any SuDS are proposed it is important to demonstrate that the SuDS hierarchy has been followed both in terms of:

- surface water disposal location, prioritised in the following order: disposal of water to shallow infiltration, to a watercourse, to a surface water sewer, combined sewer / deep infiltration generally greater than 2m below ground level (deep infiltration systems can pose a risk to groundwater quality and are not usually supported. Deep infiltration is unlikely to work in the Broads Authority area due to high groundwater levels. [47]); and
- the SuDS components used within the management train (source, site and regional control).

7.7.4 At least one feasible proposal for the disposal of surface water drainage should be demonstrated and, in many cases, supported by the inclusion of appropriate information. Evidence is required to be provided to the Broads Authority and sewerage undertaker in relevant situations to demonstrate that it is not possible to discharge surface water via infiltration or to a watercourse in accordance with CIRIA SuDS Manual (2015) and Part H of Building Regulations. It is recognised that many areas in the Broads Authority area may not be suitable for infiltration SuDS due to the location in low lying areas very close to main rivers or due to high ground water levels. The Environment Agency are also generally not supportive of infiltration SuDS because at such a shallow depth to groundwater, it is essentially discharging any contaminants straight down to groundwater without treatment. However, other SuDS disposal options are likely to be available and there are many SuDS components which can attenuate and treat water quality without relying on infiltration. Careful consideration would be needed to ensure that any development would not remove flood water storage in areas of fluvial flood risk (e.g. Flood Zone 3) and that the SuDS scheme would work in an area at risk of fluvial / tidal flooding. There may also be constraints to surface water discharges relating to high water levels in a receiving watercourse especially those which are tidal.

7.7.5 There are various sources of technical information that can be used when addressing surface water and designing SuDS:

- NPPG[48]
- Non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems[49]
- SuDS manual produced by CIRIA[50]. More generally CIRIA are developing new best practice guidance for integrated water management (including the use of SuDS). For information, go here: https://www.ciria.org/Research/Projects_underway2/Delivering_successful_integrated_water_mangement_through_the_planning__ystem.aspx.
- With regards to adopting SuDS, Anglian Water's current standards for SuDs adoption are available to view at the following address: http://www.anglianwater.co.uk/developers/suds.aspx

[47] There is guidance from Norfolk and Suffolk County Councils as the LLFAs for the area. At the time of writing, the guidance was under review.

[48] Why are sustainable drainage systems important? http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/reducing-the-causes-and-impacts-of-flooding/why-are-sustainable-drainage-systems-important/

[49] Non-statutory technical standards for sustainable drainage systems https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

[50] In delivering SuDS there is a requirement to meet the framework set out by the Government's 'non statutory technical standards' and the revised SuDS Manual complements these but goes further to support the cost-effective delivery of multiple benefits. https://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx

7.8 Addressing groundwater flood risk

7.8.1 Groundwater flooding has a unique flooding mechanism. It may emerge from below ground level and for this reason many conventional flood defence and mitigation methods are not suitable. Flood risk may be reduced through building design by ensuring that floor levels are raised sufficiently above the water table. Site design would also need to preserve any flow routes followed by the groundwater overland and make sure flood risk is not increased downstream.

7.8.2 Proposed basement areas are likely to be particularly susceptible to groundwater flooding in certain areas. This may be mitigated through waterproof construction; however, consideration should be given to the potential impact on subterranean flow or water tables. When redeveloping existing buildings, it may be acceptable to install pumps in basements as a resilience measure. However, for new development this is unlikely to be considered an acceptable solution. Site specific ground investigation is also likely to be required in locations where below ground development is proposed or there is known groundwater flood risk.

7.9 Addressing foul water/sewer flooding

7.9.1 Anglian Water wish to emphasise that it shouldn't be assumed there is capacity within the public sewerage network for additional surface water flows. Anglian Water's Surface Water Drainage Policy is available to view here: https://www.anglianwater.co.uk/siteassets/developer/surface-water-drainage-policy.pdf.

7.9.2 Also, of relevance is policy DM2 of the Local Plan for the Broads.

7.9.3 Anglian Water wish to emphasise the submission requirements for applicants when proposing a foul connection to the public sewerage network. The foul drainage strategy should include the following information:

- Development size
- Proposed discharge rate and method (gravity or pumped connection)
- Discharge location identifying specific manhole
- Feasible mitigation strategy in agreement with Anglian Water (if required).

7.10 Addressing reservoir flood risk

7.10.1 The risk of a reservoir failure is a residual risk. Whilst a residual risk, developers should consider reservoir flooding during the planning stage.

7.10.2 Developers should contact the reservoir owner to obtain information which may include:

- reservoir characteristics: type, dam height at outlet, area/volume, overflow location;
- operation: discharge rates / maximum discharge;
- discharge during emergency drawdown; and
- inspection / maintenance regime.

7.10.3 Developers should apply the sequential approach to locating development within the site. The following questions should be considered:

- can risk be avoided through substituting less vulnerable uses or by amending the site lay-out?
- can it be demonstrated that less vulnerable uses for the site have been considered and reasonably discounted? and
- can layout be varied to reduce the number of people or flood risk vulnerability or building units be in higher risk parts of the site?

7.10.4 Developers should consult with relevant authorities regarding emergency plans in case of reservoir breach. In addition to the risk of inundation those considering development in areas affected by breach events should also assess the potential hydraulic forces imposed by the rapid flood event and check that the proposed infrastructure fabric can withstand the loads imposed on the structures by a breach event.

8. Other Important Considerations

8.1 Planning permission does not guarantee insurance cover

8.1.1 Future insurance cover (in terms of adequate value and at a reasonable cost) for development in flood zones should be an important consideration for the applicant/developer of the scheme. If a scheme was to get planning permission, there is no guarantee that it will successfully get adequate insurance cover at a reasonable cost to the owner or occupier. The Broads Authority strongly recommends that prior to application and delivery on site an insurance provider is contacted and the likelihood of a development getting insured for an adequate value at an acceptable cost is investigated. You may wish to contact Flood RE[51] who is 'helping to provide affordable and available home insurance'.

8.2 Check Building Regulation requirements

8.2.1 A development proposal could seek to address flood risk through its design and seem acceptable from a planning point of view, but there could be issues with meeting the requirements of Building Regulations. The Broads Authority strongly recommends that any design measures to mitigate against or manage flood risk and make a development resilient or resistant to flood risk is discussed with a Building Regulations professional prior to application and delivery on site.

8.3 Ensure you have the necessary consents

8.3.1 Under the Environmental Permitting (England and Wales) Regulations 2010, an **environmental permit** may be required for works in, under, over or within 8m of a main river or flood defence; or within 16m of a tidally influenced main river or associated flood defence. In the Broads, main rivers are usually tidally influenced so the wider distance will most likely apply.

8.3.2 'Flood Risk Activities' may require the Environment Agency to issue a **bespoke permit**, or may be covered by a **standard rules permit** which includes a set of fixed rules. Activities identified as lower risk may be excluded from the need for a permit or may need to be registered as an exempt activity and comply with certain rules.

8.3.3 Further information on Flood Risk Activity permits is available from:
https://www.gov.uk/guidance/flood-risk-activities-environmental-permits

8.3.4 To apply or seek further advice, contact the Environment Agency by email:
floodriskactivity@environment-agency.gov.uk or by telephone: 03708 506 506.

8.3.5 **Land drainage consent**[52] may also be required for any culverts or works affecting the flow of an ordinary watercourse (non-main river). This consent would be required from the appropriate Internal Drainage Board (IDB) or where not in an IDB area Norfolk/Suffolk County Council as LLFA. It should be noted that the Broads Authority tries to avoid the use of culverts and the Environment Agency are generally opposed to them as well[53]. Consent for such works will not normally be granted

[51] Flood Re is helping to provide affordable and available home insurance. http://www.floodre.co.uk/
[52] Under section 23 of the Land Drainage Act 1991
[53] The Environment Agency say: *We are generally opposed to the culverting of watercourses because of the adverse ecological, flood risk, human safety and aesthetic impacts. We consider each application to culvert a watercourse on its own merits and in accordance with our risk-based approach to permitting. We will only approve a culvert is there is no reasonably practicable alternative, or if we think the*

in watercourses due to the adverse impacts on ecology and the potential for an increase in flood risk, except when used as part of water control structures within drainage systems on marshes or fen sites and occasionally for access for equipment over marsh drainage dykes. Culverts are generally pipes through which the watercourse is channelled and can potentially restrict the flow. If the use of a culvert cannot be avoided then their size should be designed so they are appropriately designed for both low and high flows, are the biggest culvert that can be accommodated within the watercourse to maintain existing capacity and so have capacity for high flow conditions (and this specification might be a matter for the IDB, LLFA or Environment Agency to consider) ~~If the use of a culvert cannot be avoided then their size should be designed so they are appropriately designed for both low and high have capacity for high flow conditions (and this specification might be a matter for the IDB, LLFA or Environment Agency to consider).~~ It should be noted that these approvals are separate from the planning process.

Other consents that may be required from the IDB include:

- If a surface water (or treated foul water) discharge is proposed to a watercourse within an Internal Drainage District (IDD) (either directly or indirectly), then the proposed development will require a Land Drainage Consent in line with the Board's byelaws (specifically byelaw 3). Any consent granted will likely be conditional, pending the payment a surface water development contribution fee, calculated in line with the Board's charging policy.
- If there is a Board Adopted watercourse within/adjacent to the site boundary and should works be proposed within 9 metres of the watercourse, consent would be required to relax Byelaw 10 (no works within 9 metres of the edge of drainage or flood risk management infrastructure).

8.4 Flood Warnings – only for tidal and fluvial flooding

8.4.1 It is emphasised that the application of measures referred to in this document is not a guarantee against flooding. While the risk of flooding can be reduced, a residual risk will always remain.

8.4.2 Individual dwellings and whole sites can be registered with the Environment Agency's flood warning service 'Floodline Warnings Direct '. The Floodline Warnings Direct (FWD) service provides information concerning the current and future flooding danger. If flooding in your area is anticipated, the Environment Agency will issue a flood warning by phone, text or email.

8.4.3 The Environment Agency endeavour to give 10 to 12 hours' notice of Tidal Flooding through the Flood Warning Service to the coast, estuaries and Broads. This may vary depending on the conditions on the day, timing of the tide in question and your particular location in the Broads (due to the time the tide takes to travel up the Broadland rivers). The notice given for potential fluvial flooding problems will be no less than 2 hours and will usually be a lot more. Further information can be obtained via: https://flood-warning-information.service.gov.uk.

8.4.4 It is not possible for the EA to warn for a 'Breach' of defences. This should be considered a part of the Flood Response Plan. There is no flood warnings for any watercourse outside of those

detrimental effects would be so minor that a costlier alternative would not be justified. In all cases where it is appropriate to do so, applicants must provide adequate mitigation measures, accept sole ownership and responsibility for future maintenance. We will actively pursue the restoration of culverted watercourses to open channels.

formally covered by Flood Warning Service, only generalised flood alerts are available to indicate weather conditions that might lead to surface water flooding, flooding on other watercourse or from groundwater. These are not specific to an area or severity of flooding expected.

8.5 Consider a 'Climate Smart' Approach

8.5.1 To consider how to ensure your development is suitably proofed against a changing climate you may wish to take a Climate-Smart Approach. The Approach takes you through a series of simple steps to consider how a difference in the climate might impact on the way you live or work and what options you could develop to help build resilience or adapt to a changing regime. These are summarised in this diagram and more detail is given in Appendix E.

Figure 1 Climate-smart planning cycle

8.5.2 The uncertainty about the impacts of climate change should not be a reason to avoid preparing for it. However, we need climate adaptation responses that are robust, informed and flexible. To help develop adaptation planning in the Broads we are suggesting using a 'climate-smart' approach.

8.5.3 The long-term aim of climate-smart planning is to sustain the environment and the multiple benefits it provides for people. Adaptive actions should also seek to reduce greenhouse gas emissions and improve evidence and understanding of climate change processes and impacts.

8.5.4 We can test whether our plans will help us adapt to changes in weather, climate change and sea level rise by:

- Focusing on future possibilities rather than trying to retain the past
- Being flexible enough to cope with climate uncertainties
- Avoiding adaptation actions that actually makes (other) things worse – sometimes known as 'maladaptation'

8.5.5 Climate-smart planning can be done at an individual site level or a larger area level. It should help identify adaptive options within the proposed development or identify when there needs to be changes to the proposed goals because climate (flood) risks means the original intentions become unachievable – perhaps due to cost or technical issues. Climate-smart planning is therefore a repeating cycle.

8.5.6 An increased risk of flooding (from a rising sea level and more extreme rainfall events) is probably the greatest changing risk but consideration of all extreme events, periods of increased temperature and more cloud free days could all have impacts. Warmer weather and less days of frost could be opportunities that might help a development and could be easily adapted to. A simple

1109 table of likely risks and some initial thinking about adaptation options can be found in the Full and
1110 Summary Broads Climate Adaptation Plans[54].

[54] Climate Change Adaptation Report http://www.broads-authority.gov.uk/__data/assets/pdf_file/0005/709160/Climate-Adaptation-Plan-Report.pdf

9. Links to useful websites

Finding out about flood risk

The EA website shows flood risk in the area:
https://flood-map-for-planning.service.gov.uk/

Long term flood risk assessment for locations in England can be found here:
https://flood-warning-information.service.gov.uk./long-term-flood-risk

Government Guidance

Government Guidance can be found here:
http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/

Flood Risk Assessment

Flood risk assessment for planning applications. Find out when you need to do a flood risk assessment as part of your planning application, how to do one and how it's processed.
https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications

Framework and Guidance for Assessing and Managing Flood Risk for New Development – Full Documentation and Tools. EA
http://sciencesearch.defra.gov.uk/Document.aspx?Document=FD2320_3364_TRP.pdf

Surface Water Management Plans

Some areas of Norfolk and Suffolk have their own Surface Water Management Plans. Go here to have a look:
https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/flood-and-water-management-policies/surface-water-management-plans and
http://www.greensuffolk.org/flooding/surface-water-management-plans/

Preparing for flooding

https://www.gov.uk/prepare-for-flooding

Protecting property

SIX STEPS TO PROPERTY LEVEL FLOOD PROTECTION. Guidance for property owners.
https://www.bre.co.uk/filelibrary/pdf/projects/flooding/Property_owners_booklet_v2_web_(2).pdf

Homeowners Guide to Flood resilience - A Living Document
http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForHomeowners.pdf

THE PROPERTY FLOOD RESILIENCE ACTION PLAN. An action plan to enable better uptake of resilience measures for properties at high flood risk.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551615/flood-resilience-bonfield-action-plan-2016.pdf

Flood Advice for Businesses.

http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForBusinesses.pdf

Would your business stay afloat? A guide to preparing your business for flooding.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/410606/LIT_5284.pdf

Flooding minimising the risk. Flood plan guidance for communities and groups. Practical advice to help you create a flood plan.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/292939/LIT_5286_b9ff43.pdf

Combined resistance and resilience measures.
http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForResilience.pdf

Blue Pages. This is a directory of property flood products and services put together to advise and inform you of what's available to help reduce the risk of flooding to your home or business.
http://www.bluepages.org.uk/

After a flood

Flood Recovery Guide.
http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodRecoveryGuide_Interactive.pdf

SuDS

Non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

SuDS manual produced by CIRIA .
https://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx
With regards to adopting SuDS, Anglian Water's current standards for SuDs adoption are available to view at the following address: http://www.anglianwater.co.uk/developers/suds.aspx

Permits

Further information on Flood Risk Activity permits is available from: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits

Flood Warnings

Flood warnings currently issued for England and Wales:
https://flood-warning-information.service.gov.uk.

Sign up for flood warnings (England and Wales)
https://www.gov.uk/sign-up-for-flood-warnings

Norfolk Resilience Forum

http://www.norfolkprepared.gov.uk/local-risks/plans/

Norfolk County Council (NCC)

Lead Local Flood Authority (LLFA) Statutory Consultee for Planning: Guidance Document
https://www.norfolk.gov.uk/-/media/norfolk/downloads/rubbish-recycling-planning/flood-and-water-management/guidance-on-norfolk-county-councils-lead-local-flood-authority-role-as-statutory-consultee-to-planning.pdf

10.Summary and Conclusions

The purpose of this SPD is to increase awareness of the nature of flood risk in the Broads area, give advice to developers and others about the Authority's approach to the issue of development and flood risk, and stress the need to maintain a high standard of design in new waterside development.

This SPD replaces the 2017 SPD

The SPD seeks to clarify and expand on Policies SP2 and DM5 of the Local Plan for the Broads. It sets out a local approach to some national guidance. Furthermore, there are templates and checklists relating to small scale Flood Risk Assessments and Flood Response Plans.

Appendix A: Glossary and Abbreviations

Catchment

The area contributing surface water flow to a point on a drainage or river system. It can be divided into sub-catchments.

Climate Change

Climate refers to the weather over a period of time (at least a decade and probably nearer 30 years) and takes account of natural variability. Climate change refers to the current more rapid change of conditions that is being driven by increased greenhouse gas emission primarily from fossil fuels altering the gas levels in the atmosphere. This in turn alters the main weather processes and creates conditions that are unlike normal patterns.

Environment Agency

Are a UK non-departmental public body of DEFRA with the principle aim of protecting and enhancing the environment to contribute towards the objective of achieving sustainable development. The Agency has principle responsibility for river, tidal and coastal flooding.

Exception Test

If, following application of the Sequential Test (see below), it is not possible for proposed development to be located in zones of lower probability of flooding, the Exception Test should be applied. For the Exception Test to be passed:

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

Flood Resilience

Measures that minimise water ingress and promote fast drying and easy cleaning, to prevent any permanent damage.

Flood Resistance

Measures to prevent flood water entering a building or damaging its fabric. This has the same meaning as flood proof.

Flood Risk

The level of flood risk is the product of the frequency or likelihood of the flood events and their consequences (such as loss, damage, harm, distress and disruption).

Flood Zone

Flood Zones show the probability of flooding, ignoring the presence of existing defences

Zone 1: Low Probability of flooding

Land having a less than 1 in 1,000 (0.1%) annual probability of river or sea flooding.

Zone 2: Medium Probability of flooding

Land having between a 1 in 100 (1%) and 1 in 1,000 (0.1%) annual probability of river flooding; or
Land having between a 1 in 200 (0.5%) and 1 in 1,000 (0.1%) annual probability of sea/tidal flooding.

Zone 3a: High Probability

Land having a 1 in 100 (1%) or greater annual probability of river flooding; or
Land having a 1 in 200 (0.5%) or greater annual probability of sea/tidal flooding.

Zone 3b: The Functional Floodplain

This zone comprises land where water has to flow or be stored in times of flood, during a flood event with an annual probability of 1 in 20 (5%) or greater.

Floodplain

Land adjacent to a watercourse that is subject to repeated flooding under natural conditions.

Flood Risk Assessment (FRA)

An assessment of the risk of flooding, particularly in relation to residential, commercial and industrial land use. FRAs are required to be completed according to the NPPF alongside planning applications in areas that are known to be at risk of flooding.

Fluvial flooding

Flooding from a watercourse (brooks, streams, rivers and lakes etc) that occurs when the water features cannot cope with the amount of water draining into them, from the land. When rainfall is heavy and / or prolonged, a large amount of run-off reaches the rivers and eventually causes them to overtop their banks.

Functional Floodplain

Land where water has to flow or be stored in times of flood.

Lead Local Flood Authority (LLFA)

Established through the Flood and Water Management Act as the body responsible for managing local flood risk from surface runoff, ordinary watercourses and groundwater.

Main River

Main rivers are usually larger rivers and streams. In England, the Environment Agency decides which watercourses are main rivers. It consults with other risk management authorities and the public before making these decisions. The main river map is then updated to reflect these changes.

Minor Development - flood risk

- minor non-residential extensions: industrial/commercial/leisure etc. extensions with a footprint less than 250 square metres.
- alterations: development that does not increase the size of buildings eg alterations to external appearance.
- householder development: For example; sheds, garages, games rooms etc. within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling e.g. subdivision of houses into flats.

Material Consideration

A legal term describing a matter or subject which is relevant (material) for a local authority to consider when using its powers under planning law in dealing with a planning application.

Ordinary Watercourse

An 'ordinary watercourse' is a watercourse that is not part of a main river and includes rivers, streams, ditches, drains, cuts, culverts, dikes, sluices, sewers (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows.

Pluvial Flooding

Flooding that result from rainfall generated overland flow before the runoff enters any watercourse or sewer. It is usually associated with high intensity rainfall events. Also referred to as surface water flooding.

Residual Flood Risk[55]

The remaining flood risk after risk reduction measures have been considered. Or the risk following the failure of defence/flood protection measures.

River Morphology

The shape of the river channel, including the form of the bed and banks.

Run-off

Water flow over the ground surface to the drainage system. This occurs if the ground is impermeable, is saturated or if rainfall is particularly intense.

Section 106 (Town and Country Planning Act 1990)

A section within the Town and Country Planning Act 1990 that allows a planning obligation to a local planning authority to be legally binding.

Sequential Test

The NPPF advocates that planners use a sequential test when considering land allocations for development to avoid flood risk where possible. The Sequential Test aims to steer development to Flood Zone 1, which is an area at low risk of flooding. Where it is not possible to locate development in such locations sites in Flood Zone 2 will be considered. Only where it is not possible to locate development within Flood Zones 1 and 2 will development in Flood Zone 3 be considered.

SUDS (Sustainable Drainage Systems)

A sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques. Surface water management - The management of runoff in stages as it drains from a site.

Watercourse

A term including all rivers, streams ditches drains cuts culverts dykes sluices and passages through which water flows.

Water Framework Directive

The Water Framework Directive (WFD) is legislation to protect and improve water resources. It requires an integrated approach to the management of water; including rivers, streams, lakes, estuaries and coastal waters, as well as surface water and groundwater.

[55] http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/developers-to-demonstrate-that-development-will-be-safe-to-satisfy-the-second-part-of-the-exception-test/what-is-residual-risk/

Appendix B: The Broads Planning Policy Context

National Planning Policy

The National Planning Policy Framework sets out government's planning policies for England and how these are expected to be applied. In relation to flood risk, paragraph 155 generally summarises the approach taken to flood risk:

> 155. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

The National Planning Practice Guidance is an on-line resource that elaborates and gives more detail of policies in the NPPF. For example, the NPPG has vulnerability classification tables as well as information on what a Strategic Flood Risk Assessment should address.

The NPPF and NPPG have replaced PPS25 in relation to the Government's planning policy on flood risk and flooding.

The NPPG pages on flood risk and coastal change can be found here:
http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/

The NPPF can be found here:
https://www.gov.uk/government/publications/national-planning-policy-framework--2

Neighbourhood Plans

At the time of writing, Acle, Brundall, Salhouse, Strumpshaw and Wroxham Neighbourhood Plans have been adopted. The Neighbourhood Plans do not include an additional policy on flood risk, but where flood risk has the potential to be a consideration on a particular site, the policy emphasises this and directs towards Broads Authority and national flood risk policy.

The New Broads Local Plan

The Core Strategy, Development Management DPD and Sites Specific Local Plan have been replaced in their entirety by the Local Plan for the Broads which was adopted May 2019. The flood risk policies of the new Local Plan are included at chapter 3.

Appendix C: Sustainable Appraisal Objectives and Decision-Making Criteria

The NPPF at paragraph 160 says that for the Exception Test to be passed *'it should be demonstrated that: a) the development would provide wider sustainability benefits to the community that outweigh the flood risk'*. To assess this, the Authority will use the most up to date Local Plan Sustainability Appraisal Objectives. Currently, these are the Sustainability Objectives used to assess the new Local Plan for the Broads and are listed below with decision making criteria.

SA Objective	**Decision making criteria/prompting questions.** Positive impact: + or ++ Not appropriate: N/A Neutral: 0 Negative impact: - or - - Uncertain/depends on implementation: ?

ENV1: To reduce the adverse effects of traffic (on roads and water).	• How does the policy/allocation affect:
	  ○ Walking, cycling, public transport?
	  ○ Air quality?
	  ○ Amenity?
	  ○ Single occupancy car use?
	  ○ Use of waterways?
	  ○ Access to special qualities of the Broads by sustainable transport modes?
	  ○ The net impact of transport infrastructure such as road signage, lighting, conspicuous structures and parking?
	• What is the resulting impact of traffic on
	  ○ Heritage?
	  ○ Landscape?
	  ○ People?
	  ○ Water?
	• Is the allocation within walking distance[56] of key services[57]?
	• Will routes be
	  ○ functional and accessible for all?
	  ○ safe and attractive public spaces?
	• Does it consider the needs of the most vulnerable users first: pedestrians, then cyclists, then public transport users, specialist vehicles like ambulances and finally other motor vehicles?

ENV2: To improve **w**ater quality and use water efficiently.	• How does the policy/allocation affect
	  ○ Water quality?
	  ○ Water quantity?
	  ○ Surface water run off? Does it reduce run-off rates? Does it increase water absorption / management?
	  ○ Wastewater?
	  ○ Drainage?
	  ○ Pathways for pollutants?

ENV3: To protect and enhance biodiversity and geodiversity.	• How does the policy/allocation affect:
	  ○ The ability to retain and maintain soil carbon?
	  ○ Geological interests?
	  ○ The potential for managed accessible geological feature exposures?
	  ○ County Wildlife Sites?
	  ○ Local and National Nature Reserves?
	  ○ Ramsar Sites?
	  ○ SPAs, SACs?
	  ○ SSSIs?
	  ○ BAP Priority Species and habitats?
	  ○ Habitat connectivity and Ecological Networks?

[56] Manual For Streets says this is 10 minutes/800m

[57] Using the Greater Norwich Joint Core Strategy definition for Key Services: primary school; secondary school; convenience shop; village hall; primary health care; library; public transport

SA Objective	Decision making criteria/prompting questions. Positive impact: + or ++ Not appropriate: N/A Neutral: 0 Negative impact: - or - - Uncertain/depends on implementation: ?
	○ Trees and hedgerows? ○ Waterbodies? ○ Green Infrastructure?
ENV4: To conserve and enhance the quality and local distinctiveness of landscapes and towns/villages.	• How does the policy/allocation affect: ○ The setting of the Broads? ○ The perception of the Broads? ○ The Landscape Character? ○ The special qualities of the Broads[58]? ○ Landscape features? ○ Peat? ○ Conservation Areas? ○ Designated and undesignated heritage assets? ○ The quality and local distinctiveness of the Broads towns/villages/buildings? ○ Open Space? ○ Green Infrastructure? ○ Harmful incremental change?
ENV5: To adapt to and mitigate against the impacts of climate change.	• How does the policy/allocation affect: ○ Emissions of greenhouse gases? ○ Single occupancy car use? ○ HGV/delivery movements? ○ Public transport? ○ Cycling/walking? ○ Boat emissions? ○ The ability of communities to adapt? ○ The ability of habitats and species to adapt? ○ Peat? ○ Energy use? ○ Open Space? ○ Green Infrastructure?
ENV6: To avoid, reduce and manage flood risk.	• Is flood risk avoided? • Is flood risk managed/mitigated? • How does the policy/allocation affect flooding: ○ On site? ○ In the vicinity? ○ Elsewhere? • Is the allocation in the area of highest risk of flooding? • Is the allocation appropriate to the flood risk on site? • Does the policy consider different sources of flooding[59]? • What is the impact of climate change on flood risk? • Can flood risk be reduced? • How vulnerable is the proposed land use[60]? • Does it reduce run-off rates? • Does it increase water absorption / management?
ENV7: To manage resources sustainably through the effective use of	• Is the allocation on: ○ Brownfield Land? ○ Greenfield Land? • Does the allocation use land effectively?

[58] Taken from the Climate Change Adaptation Plan: Open water in lakes and rivers, Breydon Water (estuary), Fens / reed beds, Grazing marshes and ditches, Wet woodlands, Historic buildings, especially mills, Boating and the riverside economy, Farmland (including rights of way), Open landscapes, big skies and tranquillity and The coast.

[59] Including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

[60] http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-2-flood-risk-vulnerability-classification/

SA Objective	Decision making criteria/prompting questions. Positive impact: + or ++ Not appropriate: N/A Neutral: 0 Negative impact: - or - - Uncertain/depends on implementation: ?
land, energy and materials.	• Does the policy/allocation affect energy efficiency? • Are there any safeguarded mineral sites? • Will it prevent the sterilisation of known or suspected mineral resources by development? • Does the policy consider origin of resource/where resource derived from?
ENV8: To minimise the production and impacts of waste through reducing what is wasted, re-using and recycling what is left.	• Does the policy help reduce waste, reuse waste or recycle/compost?
ENV9: To conserve and where appropriate enhance the cultural heritage and archaeological importance of the area.	• Does the policy/allocation affect: ○ The quality and local distinctiveness of the Broads towns/villages/buildings? ○ Designated and undesignated heritage assets? ○ Conservation Areas? ○ Archaeology? ○ Local culture and traditions? ○ The wider cultural heritage of the broads? ○ The history, traditions, customs and the spaces and places these rely upon or relate to?
ENV10: To achieve the highest quality of design that is innovative, imaginable, and sustainable and reflects local distinctiveness.	• Does the policy/allocation ○ Appreciate what is special about the site? ○ Relate to the site's setting in the landscape/townscape? ○ Appreciate the rich cultural heritage of the area? • Are these issues considered? ○ local character (including landscape setting) ○ safe, connected and efficient streets ○ a network of greenspaces (including parks) and public places ○ crime prevention ○ security and lighting measures ○ access and inclusion ○ efficient use of natural resources ○ cohesive & vibrant neighbourhoods ○ layout – the way in which buildings and spaces relate to each other ○ form – the shape of buildings ○ scale – the size of buildings ○ detailing – the important smaller elements of building and spaces ○ materials – what a building is made from ○ sensitive design of road infrastructure? (E.g. reduced signage road markings, use of local materials and alternative traffic calming methods).
ENV11: To improve air quality and minimise noise, vibration and light pollution.	• Does the policy/allocation affect: ○ Air quality? ○ Noise production? ○ Vibration? ○ Light pollution/dark skies? • How does the policy/allocation relate to Air Quality Management Areas? • Would the allocation make additional noise or be sensitive to the prevailing acoustic environment? • Does an existing lighting installation make the proposed location for a development unsuitable? • Have cumulative impacts of development/change been considered? • Does the policy/allocation affect the tranquillity of the Broads?

SA Objective	Decision making criteria/prompting questions. Positive impact: + or ++ Not appropriate: N/A Neutral: 0 Negative impact: - or - - Uncertain/depends on implementation: ?

ENV12: To increase the proportion of energy generated through renewable/low carbon processes without unacceptable adverse impacts to/on the Broads landscape	• Does the policy/allocation affect
	  ○ Renewable/low carbon energy generation?
	  ○ Renewable/low carbon energy transmission?
	  ○ The setting of the Broads?
	  ○ The perception of the Broads?
	  ○ The Landscape Character?
	  ○ The special qualities of the Broads?
	• Have Cumulative impacts of renewable/low carbon energy generation been considered?

ENV13: To reduce vulnerability to coastal change.	• Does the policy/allocation affect risk to people or property? • Does the policy affect opportunities for future coastal management? • Does the policy/allocation restrict choice for managing the coast in the future? • Does the policy/allocation consider the effect of or potential for damage (e.g. to a structure)?

SCO1: To improve the health of the population and promote a healthy lifestyle.	• Does the policy/allocation:
	  ○ Affect health?
	  ○ Affect wellbeing?
	  ○ Promote active lifestyles?
	  ○ Promote active travel?
	• Does the policy/allocation include:
	  ○ Publicly accessible open space?
	  ○ Sports facilities?
	  ○ Health infrastructure?
	• Does the policy enable active use of water space?

SOC2: To reduce poverty, inequality and social exclusion.	• Does the policy/allocation affect any of these domains?
	  ○ Income
	  ○ Employment
	  ○ Health and Disability
	  ○ Education, Skills and Training
	  ○ Barriers to Housing and Services
	  ○ Crime
	  ○ Living Environment
	• Does the policy/allocation affect inclusive communities?
	• Does it affect community cohesion?
	• Does it affect quality of life?
	• Does the policy avoid potential for inequality or serve to positively address existing identified inequalities through its implementation?

SOC3: To improve education and skills including those related to local traditional industries.	• Is the allocation/policy for an education/skills establishment? • Does the policy/allocation enable improved understanding of the special qualities, pressures and management of the Broads to all? • Does it relate to Traditional Broads industries? • Will it facilitate improved access to vocational training, education and skills for all, including young people? • Will it facilitate opportunity for delivery and uptake of traditional skills training which may benefit wider Broads purposes?

SOC4: To enable suitable stock of housing meeting local needs including affordability.	• Does the policy/allocation affect:
	  ○ Housing?
	  ○ Affordable Housing?
	  ○ Gypsy and Traveller accommodation?
	  ○ Residential moorings/boats used as residences?

SA Objective	Decision making criteria/prompting questions. Positive impact: + or ++ Not appropriate: N/A Neutral: 0 Negative impact: - or - - Uncertain/depends on implementation: ?

SOC5: To maximise opportunities for new/ additional employment	• Does the policy/allocation affect:
	  ○ Employment land uses?
	  ○ Numbers of jobs?
	  ○ Tourism?
	  ○ Does it relate to Traditional Broads industries?

SOC6a: To improve the quality, range and accessibility of community services and facilities.	• Is the allocation/policy for a key service? • Will the policy/allocation affect public transport, walking and cycling? • Does the policy/allocation relate to Local Green Space? • Will routes be functional and accessible for all? • Will routes be safe and attractive public spaces? • Does it consider the needs of the most vulnerable users first: pedestrians, then cyclists, then public transport users, specialist vehicles like ambulances and finally other motor vehicles?
SOC6b: To ensure new development is sustainability located with good access by means other than a private car to a range of community services and facilities.	• Is the allocation/policy within walking distance (800m) from Key Services (primary school; secondary school; convenience shop; village hall; primary health care; library; public transport)? • Is the allocation within a settlement boundary? • Will it support the retention of key facilities and services ensuring that local needs are met locally wherever possible or alternative sustainable access is provided? • Will the policy/allocation affect public transport, walking and cycling? • Will routes be functional and accessible for all? • Will routes be safe and attractive public spaces? • Does it consider the needs of the most vulnerable users first: pedestrians, then cyclists, then public transport users, specialist vehicles like ambulances and finally other motor vehicles?

SOC7: To build community identity, improve social welfare and reduce crime and anti-social activity.	• Does the policy/allocation relate to:
	  ○ Designing out crime?
	  ○ Designing in community safety?
	  ○ An inclusive environment?
	  ○ Robust structure and identity?
	  ○ Interaction with other uses positively?
	  ○ Avoiding opportunities for conflict?

ECO1: To support a flourishing and sustainable economy	• Will it provide the spaces and infrastructure to support self-employment opportunities and business start-up? • Will it support existing business viability and local employment growth?

ECO2: To ensure the economy actively contributes to social and environmental well-being.	• How does the policy/allocation affect 'Social Capital'?
	  ○ Skills development
	  ○ Community cohesion
	  ○ Amenity
	  ○ Job provision
	  ○ Quality of life
	• How does it affect 'Low Carbon'?
	  ○ Innovation
	  ○ Resource efficiency
	• How does it affect 'Natural Capital'?
	  ○ Landscape
	  ○ Biodiversity

ECO3: To improve economic performance in rural areas.	• Does it contribute to a thriving rural community? • Does it contribute to a prosperous rural community?
ECO4: To offer opportunities for	• Does the policy/allocation affect: ○ Sustainable tourism.

SA Objective	Decision making criteria/prompting questions. Positive impact: + or ++ Not appropriate: N/A Neutral: 0 Negative impact: - or - - Uncertain/depends on implementation: ?
Tourism and recreation in a way that helps the economy, society and the environment.	○ Responsible tourism. • Does it: ○ Promote enjoyment and understanding of the Broads? ○ Raise awareness of the Broads as a special destination? ○ Drive up the quality of the visitor experience? ○ Strengthen tourism performance across the whole Broads area? ○ Maintain the Broads' position as a premier inland boating destination in the UK? ○ Respect the sensitive environment of the Broads? ○ Provide the right conditions for successful tourism businesses? ○ Will it maximise benefits and minimise impacts from visitors to communities?

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Appendix D: Flood Response Plan Guidance and Structure

Broads Authority

Flood Response Plan Guidance and Suggested Structure

Chapter 1: Flood Response Plan Guidance

1. Introduction

This guidance has been produced to assist with the preparation of Flood Response Plans (FRP). FRPs ~~should~~ need to be provided as part of a Flood Risk Assessment where this is necessary to accompany a planning application. ~~or, if not submitted with an application, are often required by planning condition if permission is issued.~~

All residents and businesses in flood risk areas are encouraged to prepare and maintain a Flood Response Plan so they are prepared in the event of a flood.

Floods present a danger to health and life and can damage property. It is important to be prepared in advance to limit the dangers and damage. At times of flooding, emergency and other local services will be under significant pressure. The better prepared you are, the less pressure the services wil be under so they can attend to the most vulnerable in the community. Even if you are not physically injured in a flood, the consequences can have an emotional impact. The shock and disruption and damage to, or loss of, property and possessions can have big impacts. Being proactive and having a Plan you are familiar with in advance can help you take prompt, effective action when warnings are issued and result in an easy and efficient recovery.

Every effort has been made to ensure this guidance is accurate and comprehensive as at the date it was prepared. However, it is the responsibility of the developer to ensure that any additional risks relevant to a particular property development are fully considered. The Broads Authority will not accept responsibility for any errors, omissions or misleading statements in this guidance or for any loss, damage or inconvenience caused as a result of relying on this guidance.

You will need to adapt the template to reflect the specifics of your site; such as the size and the number of people who use and what they use it for.

According to a new guide produced by ADEPT and the Environment Agency in September 2019[61], flood response plans should address the following:

- characterise and quantify the flood risk
- list relevant flood warnings and estimate the likely lead-time available
- detail who is at risk – including vulnerable people and transient users
- explain how the EP will be triggered, by who and when
- define any areas of responsibility for those participating in the EP

[61] Flood risk emergency plans for new development: https://www.adeptnet.org.uk/floodriskemergencyplan

- describe what actions are required by the people in the development
- set out the type and performance of any flood resistance or resilience measures to be installed prior to a flood
- establish safe access and escape routes to a safe location
- outline the evacuation procedure, place of refuge and related equipment needed to serve occupants for the required duration
- detail what emergency service infrastructure and/or contributions are proposed
- establish procedures for implementing, monitoring and maintaining the plan throughout the lifetime of the development

2. Flood Response Plans - considerations

2.1 Flood Warnings

The Environment Agency is responsible for providing flood warnings to the public. Anyone can register with the Environment Agency's flood warning service 'Floodline Warnings Direct[62]'. The Floodline Warnings Direct (FWD) service provides information about the current and future flooding danger. If flooding may happen, the Environment Agency will issue a flood warning to registered users by telephoning a pre-arranged number with a recorded message or by sending a text or email.

The 3 flood warning codes are shown below. You can go to the Flood Information Service[63] to see what warnings are in place around the Country.

Severe Flood Warning
Severe flooding. Danger to life.

Flood Warning
Flooding is expected.
Immediate action required

Flood Alert
Flooding is possible.
Be prepared

2.2 Liaise with neighbours

When drafting a FRP you are strongly encouraged to liaise with the owners/occupiers of any neighbouring and nearby sites. That way you can coordinate procedures and minimise confusion during an incident.

2.3 Evacuating

FRPs should reflect the fact that people should evacuate ***prior*** to a flood occurring. Once flooding has ***inundated*** an area, staying put rather than evacuating, could be the safer option. This is because of the dangers of moving in flooded areas such as lifted manhole covers and contaminated water. It is important to note that in the Broads area, flood waters may take a longer time to subside which can cause difficulties for those taking refuge within buildings. Your FRP needs to reflect the local circumstances.

Ensure that the FRP deals with the potential difficulties involved in immediate evacuation which may need to be carried out in inclement weather. The FRP needs to address how people will reach local authority designated rest centres.

2.4 People requiring extra assistance

Informing appropriate response organisations, such as Social Services, about any elderly or vulnerable people who may require extra assistance in the event of an emergency such as a flood.

Particular attention should be given to the communication of warnings to vulnerable people including those with impaired hearing or sight and those with restricted mobility.

3. Other sources of useful information

[62] Register With Floodline Warnings Direct https://www.gov.uk/sign-up-for-flood-warnings
[63] https://flood-warning-information.service.gov.uk/

Emergencies web pages of the County and District Councils contain useful information which you may wish to consult/refer to in your FRP:

- Norfolk County Council:
  http://www.norfolk.gov.uk/safety_emergencies_and_accidents/index.htm
- Suffolk County Council and Waveney District Council:
  https://www.suffolk.gov.uk/emergency-and-rescue/
- South Norfolk Council:
  http://www.south-norfolk.gov.uk/environment/1507.asp
- Broadland Council:
  http://www.broadland.gov.uk/environment/316.asp
- Norwich Council:
  https://www.norwich.gov.uk/info/20226/emergency_planning
- North Norfolk Council:
  https://www.north-norfolk.gov.uk/tasks/emergency-planning/
- Great Yarmouth Council:
  http://www.great-yarmouth.gov.uk/article/2512/Emergency-planning
- Met Office website.
  http://www.metoffice.gov.uk/public/weather/forecast/?tab=map
- National Flood Forum
  The NFF is an independent body that supports flood preparedness and flood recovery. It has advice about flood protection products and clean up processes. It also covers other areas of post flooding support. http://www.floodforum.org.uk/
- Flood risk emergency plans for new development
  https://www.adeptnet.org.uk/floodriskemergencyplan

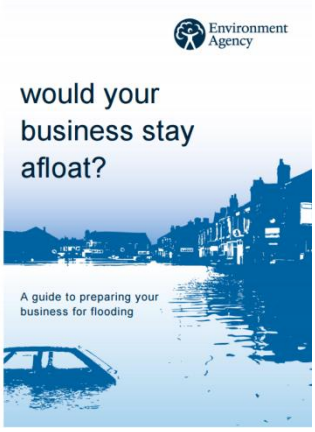
4. Your Flood Response Plan

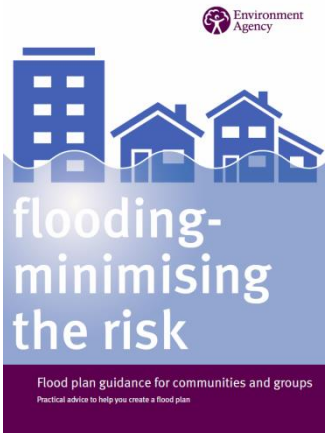
Flood Response Plans may be different for different buildings. This would reflect the time of day someone might be there, how many people are in or around the building and what the building is used for.

- **Businesses** can follow the Environment Agency's guide 'Would your business stay afloat? A guide to preparing your business for flooding'[64].
- **Community organisations** can follow the Environment Agency's guide 'Flooding - minimising the risk. Flood plan guidance for communities and groups. Practical advice to help you create a flood plan'[65].

[64] would your business stay afloat?
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/410606/LIT_5284.pdf

[65] Flooding - minimising the risk
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/292939/LIT_5286_b9ff43.pdf





The following suggested structure is for the production of Plans for residential, holiday and other development which includes overnight accommodation.

Chapter 2: Suggested structure for your Flood Response Plan

1. Introduction

- Describe the site fully and accurately including where it is and what it is used for:
  - State the name and address of the property.
  - Attach a site plan to identify the location and size of the site.
  - Identify what type of development it is (a residential dwelling, holiday let, second home, etc.) and the size (number of storeys, number of bedrooms, any outbuildings, etc).
  - Identify where the access into the site and into the building is – will this be safe at times of flood? If not, are there other safe accesses that can be used?
  - Identify where people could safely be rescued from in an emergency if a flood occurs before the building is evacuated (usable safe refuge).
- Identify potential sources of floodwater and what to look out for.
- What timescale are people likely to have to respond to flood warnings?
- State who will be responsible for implementing the Flood Response Plan and who will review it and how regularly.
- State the date the Plan was adopted and refer to timescales for review.
- State which flood zone the site is in (as identified in a Flood Risk Assessment or on the Environment Agency's website[66]). A flood zone identifies how likely the site is to flood.
- Identify the scope of the plan – the site, building, property and people

Zone 1: Low Probability of flooding
Land having a less than 1 in 1,000 (0.1%) annual probability of river or sea flooding.

Zone 2: Medium Probability of flooding
Land having between a 1 in 100 (1%) and 1 in 1,000 (0.1%) annual probability of river flooding; or Land having between a 1 in 200 (0.5%) and 1 in 1,000 (0.1%) annual probability of sea/tidal flooding.

Zone 3a: High Probability

[66] Long term flood risk assessment for locations in England
http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=floodmap#x=357683&y=355134&scale=2

Land having a 1 in 100 (1%) or greater annual probability of river flooding; or
Land having a 1 in 200 (0.5%) or greater annual probability of sea/tidal flooding.

Zone 3b: The Functional Floodplain
This zone comprises land where water has to flow or be stored in times of flood, during a flood event with an annual probability of 1 in 20 (5%) or greater.

2. Warning arrangements

- Register the site with the Environment Agency's Floodline Warnings Direct service.
- Who receives these warnings and how? What if they are away? What will they do when they receive a warning?
- Where will a copy of this Plan be kept? How will all residents/tenants know where to find it?
- How will response organisations (like the police and fire service) be made aware of elderly or vulnerable people who may require extra assistance in the event of an emergency such as a flood?
- If warnings are received outside of normal working hours, how will you tell the staff/visitors before they leave for work? Who will inspect the premises before letting them arrive?

3. Instructions to residents/tenants in the event of a flood warning

The plan needs to set out clear instructions and actions for each stage of warning. This needs to form an easy-to-refer-to plan that can be followed in an emergency, providing all the necessary information and identifying who is responsible for doing what. It needs to identify at which stage the property should be evacuated, how and where to. A plan showing a safe exit route needs to be included.

If refuge is to be taken within the property, the plan needs to identify the circumstances when this should take place, where there is safe refuge and where any resources such as a flood kit (see below) will be found. Single storey properties may not have a place of safe refuge, so evacuating at an early stage to a safe place is more important.

The following table shows the stages of flood warning. What will you do at each stage?

 **Flood Alert** Flooding is possible. Be prepared.	• How will you respond to this alert? • What will you need to do to be prepared? • Is any other action necessary? • Who do you need to tell there is an alert in place? What will they need to do?
 **Flood Warning** Flooding is expected. Immediate action required.	• How will you respond to this warning? • What is the immediate action you need to take? • Who do you need to tell there is a warning in place? What will they need to do?
	• How will you respond to this severe warning? • What action(s) do you need to take?

 **Severe Flood Warning** Severe flooding. Danger to life.	• Who do you need to tell there is a severe warning in place? What will they need to do?
Warnings no longer in force - no flooding occurred	• How will you know when warnings are no longer in force? • Who do you need to tell the danger has passed? • What action is necessary?
Warnings no longer in force - flooding has occurred	• How will you know when warnings are no longer in force? • Who do you need to tell the danger has passed? • What action is necessary? • Re-occupation of flooded premises should only be carried out following consultation with the emergency services and appropriate authorities. This is because of any residual hazards. Identify who needs to be consulted, when and how.

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Chapter 3: Important Considerations for your Flood Response Plan

The following considerations may be relevant and important to your Flood Response Plan. They could help reduce the impact of a flood on people and property. A comprehensive and effective Plan will identify all actions that would be necessary before, during and after a flood event.

Be Proactive

- Do not wait for a flood – be proactive and consider what can be permanently moved to a safer higher level. Produce a checklist of remaining items that must be moved if there is a flood event. E.g. important documents, IT or vehicles.
- Check your insurance policy covers flooding.
- Look at the best way of stopping floodwater entering your property. There are a range of flood protection products on the market, a directory of these is available from the National Flood Forum at www.bluepages.org.uk
- Find out where you can get gel bags if you are in a fresh water area.
- Identify who can help you and who you can help.
- Understand the different flood warning levels.
- Make sure you keep an up to date contact list for all staff/residents
- Produce a Business Continuity Plan – part could relate to how to continue at times of flood.

Familiarisation

- Emphasise the need for all who work/live at your site to be familiar and comfortable with the Plan and its contents. You may wish to hold staff awareness briefings or add flood risk to the staff induction.
- Consider practicing your response to warnings and how to evacuate.
- Become familiar with the safest route from the property to any local evacuation centre. Get to know your local volunteer Emergency Co-ordinator. Ask the Emergency Planning Team at your local District Council for details.

Actions to consider (to identify at each stage of warning)

The plan should identify which actions will be undertaken when a flood alert is issued, which will be done when a flood warning is issued, etc.

- Check at what time the flooding is expected. If the site is vulnerable to tidal flooding, there can be 6 to 12-hour warning.
- Stay calm and tune in to BBC Radio Norfolk/Suffolk for weather forecasts and local information.
- Fasten your outer doors and fix any flood protection devices.
- Shut off your gas/electric supplies – show on a plan where this is as well as give details of how to do this. Do not touch electrics if already wet.
- Fill bath and buckets with water in case supply is shut off. Drinking water should be stored in clean containers.
- Move any important documents, valuables and sentimental items above the flood level or protect them by placing them in sealed plastic bags.
- Move furniture and electrical items if possible. Roll up carpets and rugs. Remove curtains, or hang them over rods.
- Consider moving vehicles to higher ground and make safe or secure any large or loose items outside that could cause damage if moved by floodwater. Pay particular attention to how boats

are moored – if too tightly, they could list. If too loose they could cast adrift or float onto the landside of the quay heading.

- Ensure any hazardous materials are safe and secure and do not create any additional risks by coming in contact with flood waters
- Tie or anchor down equipment that could potentially float and cause an additional hazard (e.g. containers used for storage).
- Tell your neighbours about the warning, especially if they are elderly or vulnerable. Consider coordinating plans with neighbours/neighbouring organisations.
- If advised to do so, move to an identified Evacuation Centre or other safe place (such as a friend or relative). If it is not possible to evacuate, move to a safe refuge. If the property is single storey, move to an identified refuge place with nearby neighbours with safe, higher level accommodation.
- Take essential medicines, infant care items, personal documents/identification for each member of the family when you evacuate.
- Take food, clothes, blankets, candles/torches with you when you evacuate.
- Remember any pets (and their needs such as food, cages and litter trays).
- Notify visitors to the site that it is not safe.
- How will you shut down the site in an orderly fashion so people and assets can be protected?

Flood Kit

The flood kit should include essential items, be stored in the refuge area and be as easily accessible as possible. The flood kit could contain:

- Copies of insurance documents
- A torch with spare batteries (or a wind-up torch)
- Portable radio (wind-up preferred or store spare batteries)
- Warm, waterproof clothing.
- Rubber gloves
- Wellingtons
- Blankets
- First aid kit with essential prescription medication/repeat prescription form
- Bottled water and high energy food snacks (non-perishable and check use by dates)
- A copy of the Flood response plan
- List of important contact numbers
- Wash kit and essential toiletries (such as toilet paper and wet wipes)
- Children's essentials (such as milk, baby food, sterilised bottles, wipes, nappies, nappy bags, clothing, comforter, teddy or favourite toy)
- Food and cages for pets
- Laminated copy of the emergency card from the FRP
- Plus, anything else you consider important.

Dangers of flood water

Include the dangers associated with flooding in your FEP. Do not assume that every flood event will be the same; just because flood water hasn't been deep or flowed fast in the past, it doesn't mean it won't in future. A brief guide is given below:

REMEMBER!

- **Don't walk through flowing water –** currents can be deceptive. Shallow and fast-moving water can knock you off your feet!
- **Don't swim through fast flowing water** – you may get swept away or struck by an object in the water.
- If you ***have*** to walk in standing water, **use a pole or stick** to ensure that you do not step into deep water, open manholes or ditches. Use the stick to 'feel' your way.
- **Don't drive through a flooded area**. You may not be able to see obstacles under the water or abrupt drop-offs. Even half a meter of flood water can carry a car away.
- **Avoid contact with water** as it may be contaminated with sewerage, chemicals, oil or other substances.

Re-occupation after a flood

Re-occupation of flooded premises should only be carried out following consultation with the emergency services and appropriate authorities. This is because of any residual hazards. A statement to this effect could usefully be included in the response plan.

When you can reoccupy, you shall need to:

- Safely throw away food that has been in contact with flood water – it could be contaminated.
- Open doors and windows to ventilate your property.
- Call your insurance company Emergency Helpline as soon as possible. Makes notes of what the insurers say and keep correspondence with the insurers.
- Keep a record of the flood damage (use photographs or videos).
- Commission immediate emergency pumping/repair work if necessary, to protect your property from further damage. Check that you can do this without your insurance company's approval.
- Keep receipts of work paid for.
- Where detailed or lengthy repairs needed, get advice. Your insurer or loss adjuster can give advice on reputable contractors/tradesmen. Always check references of tradesmen.
- Check with your insurer regarding cost of alternative accommodation, if you need to move out. Make sure the insurer knows where to contact you.

Cleaning up…

- Find out where you can get help to clean up. Look on the internet for suppliers of cleaning materials and equipment to dry out your property. As a guide, it can take a brick house one month per inch to dry out.
- Don't attempt to dry out photos or papers – place in a plastic bag and if possible store in a fridge
- The Citizens Advice Bureau may be able to help.
- **Don't think flooding will not happen again – restock supplies and review your plan!**

Advice and information

- List useful telephone numbers and website - including responsible persons, emergency contacts, utilities providers, insurance companies and sources of information such as the local radio station. A copy could be included in the flood kit.
- Provide residents/tenants with information on how to register with the Environment Agency's Floodline Warnings Direct service.

- Display notices within properties (translated where foreign visitors may be present), outlining procedures to be followed, escape routes and evacuation plans.
- Review your FRP regularly.

Chapter 4: Flood Response plan checklist

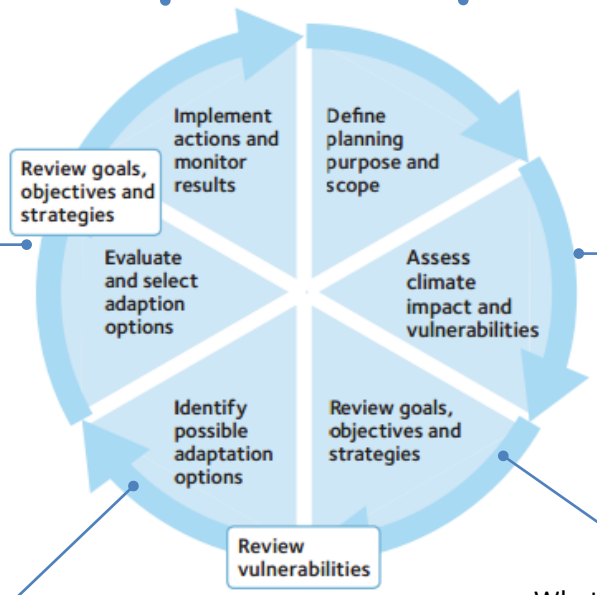
The following table is a summary of this FRP. Please use it as a checklist for when you produce your FRP. Include this checklist as part of your FRP, perhaps as an appendix. Please complete it with details such as page number or explanatory text. This checklist does not constitute your FRP – it is a summary and simply a checklist to help you produce a robust FRP.

Have you done these things?	
Liaised with neighbours about responding to flood event	
Registered for flood warnings	
Identified anyone who will need extra assistance	
Identified a safe refuge	
Identified a safe escape route	
Made a flood kit	
Does your FRP address these things?	
Description and location of site	
Date FRP produced	
Warning arrangements	
How instructions will be given	
What you can do to be pro-active	
Identify escape routes, local evacuation centre and local emergency coordinator	
How tenants/occupiers will be made aware of the FRP including the safe refuge, escape route and flood kit	
Actions at each level of flood alert	
What will be in your flood kit	
Dangers of flood water	
Re-occupation procedure	
List useful telephone numbers and website	
Review after a flood event	
Other things to address:	
How often will you review the FRP?	
How will you tell your tenants/occupiers about the FRP and escape routes?	
Where will important information be displayed?	
Have you put your flood kit together?	
Where is the flood kit stored?	

Appendix E: Climate smart planning cycle

It may be sensible to keep an accurate record of your options and decisions, so you can go back to the assumptions made if the adaptation choice is not working. The changes in the weather and climate can be recorded to give an accurate picture of any changes. Keep informed of changing predictions for climate change and monitor what happens to your development over the years. Different results to what was expected may suggest it would be sensible to go through the steps again to see what

Climate change predictions are based on what could happen, rather than knowing precisely what will happen. As such, do you want to consider the most likely changes, or be prepared for the most extreme conditions just in case? You probably need to understand the lifetime of your development and how things could change over that timescale.



Make the choice about which option to follow. This may be immediate action, or you can identify 'triggers' as to when you are going to act (e.g. you are willing to live with the driveway being flooded a few times a year at very high tides, but when it's happening monthly it will be time to act).

Taking the preferred projections (See the Met Office/UKCIP09 projections website for details) consider what the climate differences are likely to be and how they may impact on the proposed development. List, and possibly rank, the likely things that could create an adverse impact, as well as any opportunities a changing climate might offer for your development and how it is used.

Are there actions you can implement now that would help you cope with a new climate regime? Can you alter construction or management choices that minimise any risks? Can what you construct be altered easily in the future if predictions and/or on site experience is worse than you planned for? Are there different technologies that could be applied to lessen risks? If no options seem possible, you may wish to go back through the steps and modify your goals or objectives.

What do you want to achieve? What will you have at the end of the timescale being considered? For example, how often will you use the development and at what time of year? Perhaps the flood impacts will be negligible or not manifesting themselves in the short-term. Be clear about what you would prefer to have in the future – for example, a development that never floods or one that floods a few times a year.

Appendix F: Flood Risk Assessment Tick Sheet

Flood Risk Assessments for Householder and other minor extensions in Flood Zones 2 & 3

Applications for planning permission within either Flood Zones 2 & 3 should be accompanied by a flood risk assessment. This guidance is for domestic applications and non-domestic extensions where the additional footprint created by the development does not exceed 250 sq. metres (minor development[67]). It does NOT apply if an additional dwelling is being created e.g. a self-contained annex. This Tick Sheet is consistent with the Environment Agency's Standing Advice. It is a pragmatic and proportionate response to low risk developments in order to reduce the burden on applicants, the LPA and consultees.

Make sure that **floor levels are either no lower than existing floor levels** or **300 millimetres (mm) above the estimated flood level**. If your floor levels aren't going to be 300mm above existing flood levels, you will need to consider appropriate flood resistance and resilience measures. If floor levels are proposed to be set lower than existing floor levels they should be above the known or modelled 1 in 100 annual probability river flood (1%) or 1 in 200 annual probability sea flood (0.5%) in any year.

Further information and guidance on flood resistance and resilience measures is available in the Flood Risk SPD and here https://www.gov.uk/guidance/flood-risk-assessment-in-flood-zones-2-and-3#extra-flood-resistance-and-resilience-measures & https://www.gov.uk/government/publications/flood-resilient-construction-of-new-buildings

State in your Flood Risk Assessment all levels in relation to Ordnance Datum (the height above average sea level). You may be able to get this information from the Ordnance Survey[68]. If not, you'll need to get a land survey carried out by a qualified surveyor.

Applicants/Agents: Please complete the table overleaf and include it with the planning application submission. The table, together with a plan showing the finished floor levels and estimated flood levels, will form the Flood Risk Assessment (FRA) and will act as an assurance to the Local Planning Authority that flood risk issues have been adequately addressed.

You may be able to get the estimated flood level from the Environment Agency. Please contact ensenquiries@environment-agency.gov.uk. If not, you'll need a flood risk specialist to calculate this for you.

You can use the Tick Sheet over page or provide your written flood risk assessment in another format but it must include the relevant plans, surveys and assessments.

Any proposed works or structures, in, under, over or within 8m of the top of the bank of a main river, or 16m of a tidal main river, may require a permit under the Environmental Permitting (England and Wales) Regulations 2010 from the Environment Agency. This was formerly called a Flood Defence Consent. Some activities[69] are also now excluded or exempt. A permit is separate to and in addition to any planning permission granted. Also note that a Marine Management Organisation Marine Licence may be required for works that are carried out on tidal rivers.

Further details and guidance are available at: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits. Or by contacting: floodriskpermit@environment-agency.gov.uk

[67] Minor development in relation to flood risk: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/what-is-meant-by-minor-development-in-relation-to-flood-risk/

[68] OS MAPS https://www.ordnancesurvey.co.uk/

[69] Flood risk activities: environmental permits https://www.gov.uk/guidance/flood-risk-activities-environmental-permits#check-if-what-you-are-doing-is-an-excluded-activity

Flood Risk Assessment

Flood Risk Assessments for Householder and other minor extensions in Flood Zones 2 & 3

Applicant to choose one or other of the flood mitigation measures below	Applicant to indicate their choice in the box below. Enter 'yes' or 'no'
Either; Floor levels within the proposed development will be set no lower than existing levels AND, flood resilient and/or flood resistant measures have been incorporated in the proposed development where appropriate	
Or; Floor levels within the proposed development will be set 300mm above the known or modelled 1 in 100 annual probability river flood (1%) or 1 in 200 annual probability sea flood (0.5%) in any year. This flood level is the extent of the Flood Zones. Please remember to include a plan showing the finished floor levels and the estimated flood levels.	

Site Address	
Proposal Description	
Estimated flood level (i.e. The 1 in 100 year flood level)	
Details of flood resilience and resistance measures	

Appendix G: Privacy notice

Personal data

The following is to explain your rights and give you the information you are entitled to under the Data Protection Act 2018. Our Data Protection Policy can be found here: http://www.broads-authority.gov.uk/__data/assets/pdf_file/0003/1111485/Data-Protection-Policy-2018.pdf.

The Broads Authority will process your personal data in accordance with the law and in the majority of circumstances this will mean that your personal data will be made publicly available as part of the process. It will not however be sold or transferred to third parties other than for the purposes of the consultation.

1. The identity of the data controller and contact details of our Data Protection Officer

The Broads Authority is the data controller. The Data Protection Officer can be contacted at dpo@broads-authority.gov.uk or (01603) 610734.

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters. We will also contact you about later stages of the Local Plan process.

3. Our legal basis for processing your personal data

The Data Protection Act 2018 states that, as a Local Planning Authority, the Broads Authority may process personal data as necessary for the effective performance of a task carried out in the public interest, i.e. a consultation.

4. With whom we will be sharing your personal data

Your personal data will not be shared with any organisation outside of MHCLG. Only your name and organisation will be made public alongside your response to this consultation. Your personal data will not be transferred outside the EU.

5. For how long we will keep your personal data, or criteria used to determine the retention period.

Your personal data will be held for 16 years from the closure of the consultation in accordance with our Data and Information Retention Policy. A copy can be found here http://www.broads-authority.gov.uk/about-us/privacy.

6. Your rights, e.g. access, rectification, erasure

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right:

a) to see what data we have about you
b) to ask us to stop using your data, but keep it on record
c) to ask to have all or some of your data deleted or corrected
d) to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at ttps://ico.org.uk/, or telephone 0303 123 1113.

7. Your personal data will not be used for any automated decision making.

Appendix H: SEA Screening

The Strategic Environmental Assessment (SEA) Directive is a European Union requirement that seeks to provide a high level of protection of the environment by integrating environmental considerations into the process of preparing certain plans and programmes. Its aim is "to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuing that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment."

With regards to a SPD requiring a SEA, the NPPG says:

> Supplementary planning documents do not require a sustainability appraisal but may in exceptional circumstances require a strategic environmental assessment if they are likely to have significant environmental effects that have not already have been assessed during the preparation of the Local Plan.
>
> A strategic environmental assessment is unlikely to be required where a supplementary planning document deals only with a small area at a local level (see regulation 5(6) of the Environmental Assessment of Plans and Programmes Regulations 2004), unless it is considered that there are likely to be significant environmental effects.
>
> Before deciding whether significant environment effects are likely, the local planning authority should take into account the criteria specified in Schedule 1 to the Environmental Assessment of Plans and Programmes Regulations 2004 and consult the consultation bodies.

The following is an internal assessment relating to the requirement of the Flood Risk SPD to undergo a Strategic Environmental Assessment.

The Environmental Assessment of Plans and Programmes Regulations 2004 requirement	Assessment of the Flood Risk SPD
Environmental assessment for plans and programmes: first formal preparatory act on or after 21st July 2004	
Is on or after 21st July 2004.	Yes. The SPD will be completed in 2019.
The plan or programme sets the framework for future development consent of projects.	No. It elaborates on already adopted policy.
The plan or programme is the subject of a determination under regulation 9(1) or a direction under regulation 10(3) that it is likely to have significant environmental effects.	See assessment in this table.
CRITERIA FOR DETERMINING THE LIKELY SIGNIFICANCE OF EFFECTS ON THE ENVIRONMENT	
1. The characteristics of plans and programmes, having regard, in particular, to	
The degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources.	The SPD expands on adopted policy. It will be a material consideration in determining planning applications. The SPD does relate to location (in referring to flood zones 3a and 3b) and size (of replacement dwellings) as well as operating conditions (in relation to resilience and guidance for flood evacuation plans).
the degree to which the plan or programme influences other plans and programmes including those in a hierarchy	The SPD does not influence other plans, rather expands on adopted policy. That is to say, it has been influenced by other plans or programmes.
the relevance of the plan or programme for the integration of environmental considerations in	The adopted policy and the SPD (which expands on adopted policy) seek to promote sustainable development.

particular with a view to promoting sustainable development	
environmental problems relevant to the plan or programme	The SPD relates to adopted policies on flood risk. The environmental problem is flood risk.
the relevance of the plan or programme for the implementation of Community legislation on the environment (for example, plans and programmes linked to waste management or water protection).	The SPD relates to adopted policies on flood risk. The environmental problem is flood risk.
2. Characteristics of the effects and of the area likely to be affected, having regard, in particular, to	
the probability, duration, frequency and reversibility of the effects	The SPD will not affect the probability, duration or frequency of the causes of flood events. That is down to the weather or tide in the main. The impact of flooding on development (and people) already in place is not likely to be affected by this SPD (unless an application is submitted to change the existing development in some form). The adopted policy (on which this SPD expands) could affect the scale of flooding and impact on flooding although the development in the Broads tends to be minor in scale. If the SPD is followed, this could be a positive effect when compared to a development that does not follow a revised SPD.
the cumulative nature of the effects	Flood risk can be increased because of other developments. The SPD refers to the issue of increasing flood risk elsewhere which is linked to cumulative effects.
the transboundary nature of the effects	The Broads Authority sits within six districts so by its very nature there are transboundary considerations, in relation to administrative boundaries. Flood plains are identified for watercourses so to some extent, the transboundary nature of fluvial flooding is known. The transboundary nature of surface water flooding is an area of work which the Lead Local Flood Authorities either have or are working on.
the risks to human health or the environment (for example, due to accidents)	The SPD seeks to elaborate on adopted policies relating to flood risk. Flood risk can affect human health and the environment. The contents of the SPD seek to reduce flood risk and therefore reduce impacts on human health and the environment.
the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)	The SPD will cover the Broads Authority which includes 6,000 permanent residents. There are also visitors throughout the year.
the value and vulnerability of the area likely to be affected due to— • special natural characteristics or cultural heritage;	The Broads is special in its natural characteristics and cultural heritage.

• exceeded environmental quality standards or limit values; or • intensive land-use;	Unsure if standards or limits have been exceeded in the Broads Not relevant
The effects on areas or landscapes which have a recognised national, Community or international protection status.	The area to which the SPD applies is the Broads with an equivalent status to that of a National Park.