APPENDIX B

New Broads Flood Risk Supplementary Planning Document

Adopted March 2017~~6~~

Tracked Changed Version for reference only.

Contents

1. Introduction

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.

Flooding can cause damage to property and infrastructure. Coastal flooding can be particularly damaging. ~~In extreme cases, flooding can lead to loss of life.~~ The threat of flooding can also cause fear and distress to ~~local residents~~people and ~~I~~in ~~extreme~~some cases, flooding can lead to injury[1] and even loss of life. ~~.~~ On the other hand, flooding is also a natural process within a floodplain. In some circumstances it can be beneficial to wildlife.

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.

This SPD ~~will~~ replaces the 2008 SPD. ~~We are reviewing the current 2008 SPD because:~~
~~The current SPD is out of date. It initially bridged the policy gap between 2007 Core Strategy and 2011 DM DPD.~~
~~The current SPD was based on PPS25. This has been withdrawn with national flood risk policy and guidance contained in the NPPF and NPPG.~~
~~The Broads Authority has explored climate change issues in more detail.~~

With regards to producing a supplementary planning document (SPD), the NPPF paragraph 155 says:

> *'Supplementary planning documents should be used where they can help applicants make successful applications or aid infrastructure delivery, and should not be used to add unnecessarily to the financial burdens on development'.*

The Authority considers that this SPD ~~will~~ helps applicants prepare schemes that consider the issue of flooding in an appropriate way. The SPD should be read alongside policy DP29 of the Development Management DPD and is a material consideration in the determination of planning applications. The advice and guidance herein will not add unnecessary financial burden to development. ~~The new~~This SPD ~~will~~ provides guidance and advice in advance of the adoption of the new Local Plan in early 2018. ~~The process and timeline is summarised below.~~

~~Stage~~	~~Timeline~~
~~To Planning Committee~~	~~14 OCtober~~
~~To Full Authority~~	~~18 November~~
~~Consult for at least 4 weeks~~	~~21 November until 4pm on 23 December~~
~~Make consultation statement~~	~~Until 13 January~~
~~Amend if need be~~	
~~Adopt by Full Authority~~	~~27 January~~
~~Let those know it is adopted who wanted to know~~	~~After adoption~~

[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.

~~it is being adopted~~	

~~2. About this Consultation~~

~~The consultation on this SPD runs from 21 November until 4pm on 16 December. That is a period of 5 weeks and reflects the build up to Christmas as well as the next version of the Local Plan being out for consultation on 4 December for 9 weeks. The minimum period for consultation for a SPD is 4 weeks.~~

~~The consultation version of the SPD is available at http://www.broads-authority.gov.uk/broadsconsultations.~~

~~There are printed copies of this document and the Sustainability Appraisal at these locations. For opening times, please contact the venue or check on their website:~~

- ~~Broads Authority, Yare House, 62-64 Thorpe Road, Norwich NR1 1RY~~
- ~~Broadland District Council, 1 Yarmouth Road, Norwich NR7 0DU~~
- ~~Great Yarmouth Borough Council, Town Hall, Hall Plain, Great Yarmouth, Norfolk NR30 2QF~~
- ~~North Norfolk District Council, Holt Road, Cromer NR27 9EN~~
- ~~Norwich City Council, City Hall, St Peter's St, Norwich NR2 1NH~~
- ~~South Norfolk Council, Swan Lane, Long Stratton NR15 2XE~~
- ~~Waveney District Council, Riverside, 4 Canning Road, Lowestoft NR33 0EQ~~
- ~~Norfolk County Council, County Hall, Martineau Lane, Norwich NR1 2DH~~
- ~~Suffolk County Council, Endeavour House, 8 Russell Road, Ipswich IP1 2BX~~
- ~~Acle Library, Bridewell Lane, Acle NR13 3RA~~
- ~~Beccles Library, Blyburgate, Beccles NR34 9TB~~
- ~~Brundall Library, 90 The Street, Brundall NR13 5LH~~
- ~~Bungay Library, Wharton Street, Bungay NR35 1EL~~
- ~~Cromer Library, Prince of Wales Road, Cromer NR27 9HS~~
- ~~Great Yarmouth Library, Tolhouse Street, Great Yarmouth NR30 2SH~~
- ~~Loddon Library, 31 Church Plain, Loddon NR14 6EX~~
- ~~Lowestoft Library, Clapham Road South, Lowestoft, NR32 1DR~~
- ~~Oulton Broad, Library Council Offices, 92 Bridge Road, Oulton Broad NR32 3LR~~
- ~~Norwich Millennium Library, The Forum, Millennium Plain, Norwich NR2 1AW~~
- ~~Stalham Library, High Street, Stalham NR12 9AN~~
- ~~Wroxham Library, Norwich Road, Wroxham NR12 8RX~~

~~The consultation ends at 4pm on 23 December 2016.~~

~~3.~~2. Development Management Policy DP29

The Development and Flood Risk SPD is in conformity with the Core Strategy, Development Management DPD and the National Planning Policy Framework (NPPF). It expands on DM policy DP29:

DP29 Development on Sites with a High Probability of Flooding

Development will only be permitted in Environment Agency Flood Zones 2 and 3 and those areas deemed to be at risk of flooding in the Authority's Strategic Flood Risk Assessment, where appropriate and when the Sequential Test and Exception Test (parts (a), (b) and (c)) where applicable, as set out in PPS25, have been satisfied. Development proposals should be supported by a Site Specific Flood Risk Assessment.

The Flood Risk Assessment will need to meet the requirements of PPS25 and give consideration to the following:

(a) Whether the proposed development will make a significant contribution to achieving the objectives of the Core Strategy and other policies of the Development Plan;

(b) 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;

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

(d) Whether appropriate measures to reduce the risk of flooding (on and offsite), including sustainable drainage systems with effective attenuation of flows to adjoining land or waterways, have been incorporated;

(e) The impact of the proposal on flood risk elsewhere and on the effectiveness of flood alleviation or flood defence schemes; and

(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.

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

(g) The vacated site would be reinstated as naturally functioning flood plain;

(h) The benefits of flood risk reduction outweigh the benefits of leaving the new site undeveloped; and

(i) The development of the new site is appropriate when considered against the other policies of the Development Plan.

Surface water run-off proposals should address the requirements of the Flood and Water Management Act 2010.

~~4.~~3. Understanding Flood Risk

~~4.1.~~3.1. What is flood risk?

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.

~~4.2.~~3.2. What are flood risk zones?

Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea)[2] and defined in the table below (taken from the NPPG).

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. (Shown as 'clear' on the Flood Map – 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. (Land shown in light blue on the Flood Map)
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. (Land shown in dark blue on the Flood Map)
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. (Not separately distinguished from Zone 3a on the Flood Map)

~~4.3.~~3.3. EA flood risk

The Environment Agency (EA) flood risk maps depict 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 distinguish between zones 3a and 3b. Consequently 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, and these should also include climate change considerations.

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 updated surface water flood map on the EA

[2] See the flood maps here: http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap

website. This shows surface water flooding but also indicates 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~~3)).

~~4.4.~~3.4. Strategic Flood Risk Assessment

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, taking account of the impacts of climate change, and to assess the impact that land use changes and development in the area will have on flood risk.

In accordance with advice from the Environment Agency the Broads Authority, jointly with Broadland District Council, North Norfolk Council , Norwich City Council and South Norfolk District Council, commissioned a Strategic Flood Risk Assessment (SFRA) to inform preparation of the LDF and also to provide further details of varying levels of flood risk within the area. The Inception Report was completed in 2006 with the stage two report completed in 2008[3].

At the time of ~~writing~~adopting this SPD, all the Norfolk Authorities were working together to plan strategically across Norfolk. One particular cross boundary issue is that of flood risk. Working together also offers the opportunity for efficiency savings when commissioning evidence bases to support Local Plans. The potential to work together to update the SFRAs around the county was being explored.

~~4.5.~~3.5. The Broads Flood Risk Alleviation Project

The 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.

Appointed by the Environment Agency Broadland Environmental Services Ltd deliver these services and, in partnership with the Environment Agency, are responsible for implementing the 20-year programme of works. This contract was awarded in May 2001 as a Public Private Partnership Programme.

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 floodbanks.

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

- Strengthening the existing floodbanks, 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

[3] This is available to see at the main office of the Broads Authority – paper version only.

- Providing new protection where erosion is currently threatening the integrity of the flood defences
- Carrying out works at undefended communities

~~4.6.~~3.6. Nature of flood risk in the Broads

Approximately 95% of the Broads Authority area is at some risk of flooding. This includes more than 2000 properties and almost 30,000 hectares. The Broads Authority boundary is tightly drawn around the edge of the floodplain.

The flood risk in the Broads is mainly from both fluvial and tidal sources and 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 historic case within the Broads.

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.

The Broads is not subject to open sea conditions (relating to tidal range and wave action) but parts of the Broads are tidally influenced. Any flood risk assessment should therefore consider both tidal and fluvial flood risk. ~~Therefore, although parts of the Broads are tidally influenced, for flood risk assessment purposes the river flooding probabilities are used to define the Flood Zones.~~

The SFRA (2008) shows that coastal flooding and flooding associated with defence failure are likely to produce the most significant consequences and greatest hazard because of the speed of onset of the flood, the high water velocities and the deep water. Settlements towards the east of the Broads which are at risk of flooding from failure of the coastal defences are indicated on the Environment Agency maps.

The flood probability mapping carried out within the SFRA does not represent 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, because it does not quantify depth or water 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., all of which could be masked by turbid floodwaters. The effect of climate change on hazard was also not assessed in the SFRA.

~~The flood probability mapping indicates in some areas that the functional floodplain extends to the boundary of the Broads Authority area. Intuition, or engineering judgement, indicates that this is likely to be the case in reality, with the functional floodplain as defined as the 1 in 20 year event.~~

It is suggested in the 2008 SFRA that if hazard mapping were to be carried out in order to quantify depth and water velocity at the various flood events (hazard, or "danger to people", is a function of depth and velocity) it would quite likely indicate that both flood depth and velocity are not great. As a result of this, hazard is generally likely to be low. However, site specific factors significantly contribute to risk and a site-specific Flood Risk Assessment will need to quantify this.

The 2008 SFRA suggests flooding from the tidally influenced Broads' river systems is likely to be less hazardous because of the slower onset. This may be an oversimplification due to the interaction of site specific factors and the condition of winds and tides. The above notwithstanding, hazard and risk does tend to be predictable on the Broads and this has implications for how these are managed.

Fluvial flooding associated with upstream areas of individual catchments within the Broads is not normally "flashy" and the hazard from these floods, excepting unusual meteorological conditions, is least onerous. Consideration of the flood risk at a particular location should also take account of climate change as highlighted in section ~~x~~ 6.5~~below~~.

The typical Broads river has a permeable catchment[4], is groundwater dominated[5], 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 as a result 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 some measure of early warning.~~, however, u~~Uptake of the service is voluntary and is not enforceable within the context of planning.

It is also the case that existing flood defences in the Broads area offer a very low standard of defence (typically up to a 1 in 7 year standard) so that overtopping events, or events in which defences are outflanked or breached, are likely to produce a slow speed of approach of the flood, slow water velocities, shallow depth and low hazard although immediately behind or close to the breach, the flow could be greater and subsequently the risk would be higher.~~ The majority of~~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 prospect 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.

Any development encroaching within any of the plotted Flood Zones may increase flood risk to adjacent areas, and the effect on flood risk of a number of small encroachments is cumulative. If the requirements of the NPPF and NPPG are met in full, then additional development should not increase flood risk elsewhere.

~~4.7.~~3.7. Other Sources of flood risk

[4] 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.
[5] Where groundwater accounts for much of the inflow and outflow of the watercourse.

i) Surface runoff

The Flood and Water Management Act 2010 (FWMA) defines surface runoff as; 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.

Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems, can run quickly off land and result in local flooding.

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

ii) Ordinary Watercourses

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~~river flood map~~, can be a source of fluvial flooding. The Environment Agency flood map for planning~~River Flood map~~ can only model and hence show risk of flooding on catchments sized greater than 3km^2. Appropriate site specific risk assessment would still need to consider ordinary watercourse as a source of flood risk.

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

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.

iii) Groundwater

The Flood and Water Management Act 2010 defines groundwater as; 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 UK Groundwater Forum describes groundwater flooding as a result of water rising up from the underlying rocks or from water flowing from abnormal springs.

Flooding from groundwater is classed as a Local Flood Risk and as such is the responsibility of the Lead Local Flood Authority which ~~in Norfolk is~~is Suffolk/~~-~~Norfolk County Council.

iv) Foul Sewerage Flooding

Applicants should also assess the risk of foul sewerage flooding. Anglian Water Services as sewerage undertaker can provide relevant information to applicants to inform preparation of Flood Risk Assessments.

~~4.8.~~3.8. Functional Flood Plain

The NPPG[6] describes the Functional Flood Plain as '*where water has to flow or be stored in times of flood*' and goes on to say:

> *The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. However, land which would naturally flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood (such as a flood attenuation scheme) in an extreme (0.1% annual probability) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.*
>
> *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.*
>
> *The area identified as functional floodplain should take into account the effects of defences and other flood risk management infrastructure. Areas which would naturally flood, but which are prevented from doing so by existing defences and infrastructure or solid buildings, will not normally be identified as functional floodplain. If an area is intended to flood, e.g. an upstream flood storage area designed to protect communities further downstream, then this should be safeguarded from development and identified as functional floodplain, even though it might not flood very often.*

The flood probability mapping indicates in some areas that the functional floodplain extends to the boundary of the Broads Authority area. Intuition, or engineering judgement, indicates that this is likely to be the case in reality, with the functional floodplain as defined as the 1 in 20 year event.

~~4.9.~~3.9. The Coast

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[7] covers Eccles to Winterton Beach Road. ~~The~~ 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.'*

[6] Functional floodplain: https://www.gov.uk/guidance/flood-risk-and-coastal-change#Strategic-Flood-Risk-Assessment-section

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

~~5.~~4. Making and assessing a planning application

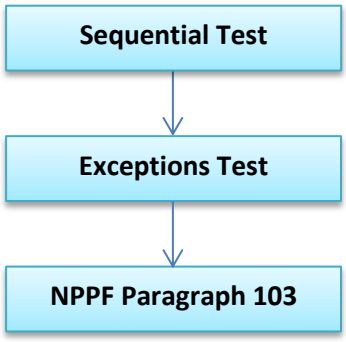
~~5.1.~~4.1. Section introduction

Proposals for developments in areas at risk of flooding are subject to appropriate detailed 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[8].

The Broads Authority encourages all applicants to seek pre-application advice on their proposals and officers can provide advice on which proposals will require an FRA. The Environment Agency[9] can provide some of the necessary data for an FRA and offer a pre-application advice service[10]~~, subject to charges~~.. 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.

Developers should assess carefully the full range of issues associated with all sources of flood risk when considering and formulating development proposals. Failure to consider these issues is likely to lead to delay or to refusal of planning permission. Developers must demonstrate that development both 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.

The NPPG sets out a Sequential Test[11] to development and flood risk that is undertaken by the planning authority to direct development away from flood risk areas. It also sets out an Exception Test[12] for development located in zones of higher flood risk to provide a method to manage flood risk, while still allowing necessary development to occur, subject to appropriate risk reduction and mitigation measures. In essence the steps taken to assess an application for development in flood zones 3a and 3b are:



[8] How to carry out a flood risk assessment so that you can complete your planning application https://www.gov.uk/guidance/flood-risk-assessment-in-flood-zones-2-and-3

[9] You can email@ enquiries_eastanglia@environment-agency.gov.uk~~ensenquiries@environment-agency.gov.uk~~

[10] The pre application enquiry form can be found here: https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

[11] Sequential test: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/the-sequential-risk-based-approach-to-the-location-of-development/

[12] Exceptions Test: http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/the-exception-test/

~~5.2.~~4.2. Land Use and Development in Areas of Flood Risk

The NPPG sets out clearly what are acceptable land uses in different flood zones. 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[13] [14].

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.

[13] 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/

[14] 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 Eenvironment Aagenc'yies flood map should also be consulted 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) and the 1:100 year surface water map can be seen as equivalent to Flood Zone 3 (river and sea flood map). This is only practical to apply to significant flow paths shown on the surface water flood map and not to small areas of ponding.

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

a) Greenfield sites

In the case of a 'green field' 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.

b) Brownfield sites which have been previously developed

Sites categorised as "brownfield sites which have been previously developed" will ~~typically~~ often cover sites larger than a single plot and may have been in use for a variety of uses, often employment based. ~~Typically t~~These ~~will~~ 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 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, but 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.

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.

A comprehensive and accurate site appraisal will be essential as part of an FRA in order to identify constraints and potential areas for development on a site within the floodplain. 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;
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

Any site specific FRA needs to also include an assessment of historical flooding.

Provision of this information 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.

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.

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

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.

c) Brownfield sites which are currently developed

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

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

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

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

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

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

~~5.3.~~4.3. Sequential Test

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 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.

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

The following sections elaborate on how various elements of the Sequential Test should be addressed. 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.

a) Area of search

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.

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)

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. However sites that are at less risk of flooding could be in the non-Broads part of the settlement.

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.

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

b) Passing the sequential test

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.

If however there are no other reasonably available sites, then the development can be deemed as passing the Sequential Test. The Exception Test may also need to be undertaken at this point (if required).

c) Reasonably available sites

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

- The site is available to be developed;
- The site is within the agreed area of search;
- The site is of comparable size in that it can accommodate the requirements of the proposed development;
- The site is not safeguarded in the relevant Local Plan for another use; and
- It does not conflict with any other policies in the Core Strategy, Development Management DPD or Sites Specifics Local Plan.

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.

~~5.4.~~4.4. Exception Test

The NPPF says that *'If, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if appropriate.* ~~*'applications for minor development*[15] *and changes of use should not be subject to the Sequential or Exception Tests (except for any proposal involving a change of use to a caravan, camping or chalet site, or to a mobile home or park home site, where the Sequential and Exception Tests should be applied as appropriate) but should still meet the requirements for site-specific flood risk assessments'.*~~

The requirements of the Exception Test are set out in the NPPG. Table 3[16] 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.

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

a) The NPPF at paragraph 102 says that 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*'. To assess this, the Authority will use the most up to **date Local Plan Sustainability Appraisal Objectives**. The current objectives ~~se~~ are set out at Appendix C.

b) The NPPF at paragraph 102 says that for the Exception Test to be passed '*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*'. 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**.

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

c) The development must not compromise future flood alleviation or flood defence schemes;

d) 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;

e) The site-specific Flood Risk Assessment must demonstrate how the development will be compatible with the nature of flooding in the Broads, taking into account climate change and sea level rise over the planned life of the development (see section ~~x~~ 6.5 on Climate Smart Thinking); and, ~~in the case of the replacement of a residential property~~

~~[15] http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/what-is-meant-by-minor-development-in-relation-to-flood-risk/~~

[16] 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/

f) in the case of the replacement of a residential property, ~~A~~a residential development must be on a like-for-like basis, with no increase in the number of bedrooms, on the same sized footprint[17], potentially being relocated in a less vulnerable part of the site.

~~5.5.~~4.5. Information for Flood Risk Assessments

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[18]. The NPPG[19] sets what is required in an FRA with a useful checklist.

The flood maps on the Environment Agency website 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 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[20] or local studies.

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. 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.

Redevelopment proposals in FZ3a & 3b ~~should seek to demonstrate an improvement~~ should seek to demonstrate an improvement in flood risk management (taking into account 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. Some landowners may decide that risk management is too onerous and seek to relocate.

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 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 developments with internal flooding 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

[17] 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.
[18] Flood risk assessment for planning applications https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications
[19] Site-specific flood risk assessment: Checklist http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/site-specific-flood-risk-assessment-checklist/
[20] 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

Guidance for New Development'[21]. Advice on the flood resistance and resilience of buildings can be found at section ~~x~~ 5 of this SPD.

Environment Agency has prepared a locally specific factsheet on climate change allowances. This can be requested via enquiries_eastanglia@environment-agency.gov.uk.

~~The table below shows Sea level allowance for each period of time in millimeters (mm) per year with cumulative sea level rise for each time period in brackets (using 1990 baseline/ as at April 2016)~~

~~Area of England~~	~~1990 to 2025~~	~~2026 to 2050~~	~~2051 to 2080~~	~~2081 to 2115~~	~~Total sea level rise 1990 to 2115 / metres (m)~~
~~East, east midlands, London, south east~~	~~4 (140 mm)~~	~~8.5 (255 mm)~~	~~12 (360 mm)~~	~~15 (450 mm)~~	~~1.21 m~~

For certain application types the Environment Agency has prepared Flood Risk Standing Advice[22]. Considerable additional information for developers and landowners ~~can be found in the Environment Agency's Standing Advice Development and Flood Risk~~is available. Developers should refer to these sources of information so they are fully informed of the requirements at the time of their application.

For minor development[23], 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.

~~5.6.~~4.6. Without increasing flood risk elsewhere

The NPPF at paragraph 203 says '*when determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere…".* 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. A Flood Risk Assessment should consider whether this will happen and propose mitigation measures. These may include for example the provision of compensatory floodplain storage, although this can be difficult to achieve in The Broads area. 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. 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

[21] Defra/EA Research Report FD2320 http://sciencesearch.defra.gov.uk/Document.aspx?Document=FD2320_3364_TRP.pdf
[22] Standing advice https://www.gov.uk/guidance/flood-risk-assessment-standing-advice
[23] 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/

elsewhere. For Brownfield sites, proposals should be put forward to limit the surface water discharge as close to greenfield runoff rates.

~~5.7.~~4.7. Flood response plan template.

A 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[24].

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.

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

~~6.~~5. Reducing Flood Risk to Development

~~6.1.~~5.1. Section introduction

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 which is inappropriate in the landscape or built environment.

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.

It should be noted that all aspects of the development need to comply with policies of the Core Strategy, Development Management DPD and Sites Specifics Local Plan and that conformity with Core Strategy policy CS20/DP29 does not override applicability of other plans.

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.

The following sections discuss ways of potentially reducing flood risk to development. In their response to the consultation on this DPD, Historic England was keen (in their response to the consultation on this SPD) to emphasise the waterlogged archaeology in the area and that changes to the flow of water could affect preservation.

~~6.2.~~5.2. Raising Floor Levels

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.

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. In addition, flooding may prevent the effective operation of local drainage and sewage systems, with potential adverse environmental and amenity consequences.

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

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 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.

~~6.3.~~5.3. Raising Plot Levels

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.

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.

~~6.4.~~5.4. Bunds or Flood Walls

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.

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.

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.

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

~~6.5.~~5.5. Floating/Amphibious Structures

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 development experienced throughout the Broads system.

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. ~~The new Local Plan (in production at the time of this SPD) seeks to address floating buildings.~~

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).

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

~~6.6.~~5.6. Resilience and Resistance

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) so that 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.

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.

Developers may also put forward innovative approaches towards reducing the risks or effects of flooding. The Broads Authority will give careful consideration to 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[25].
- Provide compensatory flood storage capacity or washlands (which are areas provided to be deliberately flooded).

Further information can be found in the following documents:

- Improving the Flood Performance of New Buildings: Flood Resilient Construction (CLG 2007)[26]

[25] See Design Guides: http://www.broads-authority.gov.uk/planning/Planning-permission/design-guides
[26] Flood Resilient Construction https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

- Six Steps To Property Level Flood Protection - Guidance for property owners[27]
- Flood Protection and your property. A guide to protecting your home (Property Care Association, 2014)[28]
- Homeowner's guide to flood resilience – A living document (Know Your Flood Risk)[29]
- The Property Flood Resilience Action Plan - DEFRA[30]

~~6.7.~~5.7. Sustainable Drainage Systems (SUDS)

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 take into account water quantity (flooding), water quality (pollution), amenity and biodiversity issues are collectively referred to as Sustainable drainage. The philosophy of SuDS is to replicate, as closely as possible, the natural drainage from a site before development. Including the use of shallow surface structures to mimic 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~~d~~ 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.

All major development is expected to include Sustainable Drainage (SuDS) to manage surface water runoff, unless it is demonstrated to be in appropriate. SuDS are the subject of a ~~The~~ written Ministerial Statement (December 2014) (effective provision of advice to local planning authorities in relation to water drainage management) which can be found at https://www.gov.uk/government/speeches/sustainable-drainage-systems

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); and
- the SuDS components used within the management train (source, site and regional control).

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

[27] http://www.smartfloodprotection.com/wp-content/uploads/dlm_uploads/2014/09/property_owners_guidance_revised.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 and www.tech.floodresilience.eu).

[28] 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

[29] Homeowners Guide to Flood resilience http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForHomeowners.pdf

[30] 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

that it is not possible to discharge surface water via infiltration or to a watercourse in accordance with 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. However, other SuDS disposal ~~locations~~ 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). There may also be constraints to surface water discharges relating to high water levels in a receiving watercourse especially those which are tidal.

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

- NPPG[31]
- Non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems[32]
- SuDS manual produced by CIRIA[33].
- 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

[31] 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/

[32] 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

[33] 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. http://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx

~~7.~~6. Other Important Considerations

~~7.1.~~6.1. Planning permission does not guarantee insurance cover

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[34] who is 'helping to provide affordable and available home insurance'.

~~7.2.~~6.2. Check Building Regulation requirements

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.

~~7.3.~~6.3. Consents

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.

'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.

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

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

Land drainage consent may also be required for any culverts or works affecting the flow of an ordinary watercourse (non-main river). It should be noted that the Broads Authority ~~seeks~~ tries to avoid the use of culverts. ~~, and c~~Consent for such works will not normally be granted 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

[34] Flood Re is helping to provide affordable and available home insurance. http://www.floodre.co.uk/

culvert cannot be avoided then their size should be designed such that they have capacity for high flow conditions (and this specification might be a matter for the IDB or Environment Agency to consider). It should be noted that these approvals are separate from the planning process.

~~7.4.~~6.4. Flood Warnings

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.

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. In the event that flooding in your area is anticipated, the Environment Agency will issue a flood warning by phone, text or email.

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). However 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.

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.

~~7.5.~~6.5. Climate Smart Approach

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

The uncertainty about 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.

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

829 We can test whether our plans will help us adapt to changes in weather, climate change and sea
830 level rise by:
831 • Focusing on future possibilities rather than trying to retain the past
832 • Being flexible enough to cope with climate uncertainties
833 • Avoiding adaptation actions that actually makes (other) things worse – sometimes known as
834 'maladaptation'

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

840 An increased risk of flooding (from a rising sea level and more extreme rainfall events) is probably
841 the greatest changing risk but consideration of all extreme events, periods of increased temperature
842 and more cloud free days could all have impacts. Warmer weather and less days of frost could be
843 opportunities that might help a development and could be easily adapted to. A simple table of likely
844 risks and some initial thinking about adaptation options can be found in the Full and Summary
845 Broads Climate Adaptation Plans[35].

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

7. Links to useful websites

Finding out about flood risk

The EA website shows flood risk in the area:
http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap

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 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

Preparing for flooding

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

Protecting property

SIX STEPS TO PROPERTY LEVEL FLOOD PROTECTION. Guidance for property owners.
http://www.smartfloodprotection.com/wp-content/uploads/dlm_uploads/2014/09/property_owners_guidance_revised.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 .
http://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.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/

8. 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 ~~will~~ replaces the 2008 SPD~~. We are reviewing the current 2008 SPD because:~~
~~The current SPD is out of date. It initially bridged the policy gap between 2007 Core Strategy and 2011 DM DPD.~~
~~The current SPD was based on PPS25. This has been withdrawn with national flood risk policy and guidance contained in the NPPF and NPPG.~~
~~The Broads Authority has explored climate change issues in more detail~~

The SPD seeks to clarify and expand on Policy DM29. It sets out a local approach to some ~~some~~ national guidance. Furthermore, there are templates and checklists relating to small scale Flood Risk Assessments and Flood Response Plans.

~~The consultation on this SPD runs from 21 November until 4pm on 16 December. That is a period of 5 weeks and reflects the build up to Christmas as well as the next version of the Local Plan being out for consultation on 4 December for 9 weeks. The minimum period for consultation for a SPD is 4 weeks.~~

~~The consultation version of the SPD is available at http://www.broads-authority.gov.uk/broadsconsultations.~~

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~~Any long-term significant change in the average weather that a given region experiences.~~

~~Average weather may include average temperature, precipitation and wind patterns.~~

Environment Agency

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

~~**Functional Floodplain –**~~
~~Land where water has to flow or be stored in times of flood.~~

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[36]

The remaining flood risk after risk reduction measures have been taken into account. 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.

[36] 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/

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.

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 100 generally summarises the approach taken to flood risk:

100. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Local Plans should be supported by Strategic Flood Risk Assessment and develop policies to manage flood risk from all sources, taking account of advice from the Environment Agency and other relevant flood risk management bodies, such as lead local flood authorities and internal drainage boards. Local Plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account of the impacts of climate change, by:

- applying the Sequential Test;
- if necessary, applying the Exception Test;
- safeguarding land from development that is required for current and future flood management;
- using opportunities offered by new development to reduce the causes and impacts of flooding; and
- where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to facilitate the relocation of development, including housing, to more sustainable locations.

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

Core Strategy

The Core Strategy was adopted in 2007. Within the Core strategy are strategic policies. Flood risk related policies of relevance are listed below.

CS18 Development will be located to protect the countryside from inappropriate uses to achieve sustainable patterns of development, by concentrating development in locations:

- with local facilities;
- with high levels of accessibility; and
- where previously developed land is utilised.

CS20 Development within the Environment Agency's flood risk zones will only be acceptable when it is:

- compatible with national policy and when the sequential test and the exception test, where applicable, as set out in PPS25 have been satisfied,
- demonstrated that it is necessary to support the social and economic needs of the local community,
- would not increase flood risk elsewhere; and
- would not affect the ability for future flood alleviation projects to be undertaken.

CS23 A network of waterside sites will be maintained throughout the system in employment use, providing:

- boating support services;
- provision of visitor facilities;
- access to the water;
- wider infrastructure to support tourism;
- recreational facilities; and
- community facilities.

Limited redevelopment of boatyards and other waterside employment sites for tourism or leisure-based operations will be permitted, subject to retention of a network of boating services and to the use for employment purposes of the major part of the sites.

Please note that these three policies have been assessed against the NPPF, which came into force in March 2012:

- CS18: Generally consistent, but potential for a degree of inconsistency only if this is used to exclude all development elsewhere (see, e.g., NPPF para 29).
- CS20: Generally consistent, but potential for a degree of inconsistency only if this is used too rigidly (for instance in relation to minor development, non- „new" development, development, etc.), and reference to PPS25 is redundant. No action required ahead of Plan review.
- CS23: policies are considered to be wholly consistent with the NPPF and can be afforded full weight in decision making.

Development Management DPD

The Development Management DPD was adopted in 2011. The policies within this document provide detail to help determine planning applications.

DP4 – Design

All development will be expected to be of a high design quality. Development should integrate effectively with its surroundings, reinforce local distinctiveness and landscape character and preserve or enhance cultural heritage. Innovative designs will be encouraged where appropriate.

Proposals will be assessed to ensure they effectively address the following matters (i*Inter ali)*

(i) Flood Risk and Resilience: Development should be designed to reduce flood risk but still be of a scale and design appropriate to its Broads setting. Traditional or innovative approaches may be employed to reduce the risks and effects of flooding.

DP24 – Replacement Dwellings
Replacement dwellings outside of the development boundary will be permitted on a one-for-one basis provided that: (*inter alia)*
(b) The replacement would be located within the same building footprint as the existing dwelling or in an alternative location within the same curtilage, which would be less visually prominent and/or at a lower risk of flooding.

DP29 - Development on Sites with a High Probability of Flooding
See section 2 for policy text.

Please note that these three policies have been assessed against the NPPF, which came into force in March 2012:

- DP4 and DP29: policies are considered to be wholly consistent with the NPPF and can be afforded full weight in decision making.
- DP24: Policy issues not specifically reflected in NPPF. However general thrust of housing policies in the NPPF would be less restrictive than this policy. Continue to apply weight to policy. No action required ahead of Plan review. See para 3.2 of main report.

Sites Specifics Local Plan

The Sites Specifics Local Plan was adopted in 2014. The allocations range from open space and mixed use development to areas of tranquillity. No additional local policy on flood risk is included. Where flood risk has the potential to be a consideration on a particular site, the policy emphasises this and directs towards national flood risk policy.

Neighbourhood Plans

At the time of writing, Acle, Brundall and Strumpshaw Neighbourhood Plans ~~were~~ 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

At the time of writing, a new Local Plan was being produced for the Broads. This Local Plan will bring together strategic, development management and site specific policies. Some existing adopted policies will be rolled forward and some new issues will be addressed. Flood risk will be one of the issues addressed in the new Local Plan. The Local Plan is due for adoption in spring 2018.

Appendix C: Strategic Environmental Assessment

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 2016.
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 response plans).
the degree to which the plan or programme influences other plans and programmes	The SPD does not influence other plans, rather expands on adopted policy. That is to say, it

The Environmental Assessment of Plans and Programmes Regulations 2004 requirement	Assessment of the Flood Risk SPD
including those in a hierarchy	has been influenced by other plans or programmes.
the relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development	The adopted policy and the SPD (which expands on adopted policy) seek to promote 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

The Environmental Assessment of Plans and Programmes Regulations 2004 requirement	Assessment of the Flood Risk SPD
	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; • exceeded environmental quality standards or limit values; or • intensive land-use;	 The Broads is special in its natural characteristics and cultural heritage. 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.

The environment bodies were consulted in April 2016. Their responses are below.

- **Natural England:** It is our advice, on the basis of the material supplied with the consultation, that, in so far as our strategic environmental interests are concerned (including but not limited to statutory designated sites, landscapes and protected species, geology and soils), that there are unlikely to be significant environmental effects from the proposed plan on sensitive sites that Natural England has a statutory duty to protect.
- **Historic England:** It does not appear that the historic environment is affected, which would be the primary focus for Historic England. In light of the points raised by other statutory consultees such as the Environment Agency in particular then I would conclude that an SEA is unlikely to be required. If the Broads Authority are minded to undertake an assessment against the existing SA objectives that are being developed for the Local Plan, then Historic England would conclude that this is beneficial to the assessment of any significant impacts
- **Environment Agency:** I've considered the question on whether the Broads Flood Risk SPD requires SEA; and in my opinion it does not. This is based primarily on the assertion (which I support) that it is not the SPD that is setting the framework for future consents and projects. The SPD is not setting policy, it is assisting with the interpretation and application of existing policy primarily that contained in the National Planning Policy Framework, but also the policy approach as detailed in the Planning Practice Guidance and reflected in the Local Plan.

As such, an SEA has not been completed on the Flood Risk SPD. The SPD has been assessed against the Broads Local Plan Sustainability Appraisal Objectives however.

The SA Scoping Report was consulted on between October 2014 and 14 November 2014 with the following organisations, as required by legislation: Historic England, Natural England and The Environment Agency. In the spirit of Duty to Cooperate, the constituent district and county councils have also been consulted: Norfolk County Council, Suffolk County Council, North Norfolk District Council, Waveney District Council, Great Yarmouth Borough Council, Norwich City Council, South Norfolk District Council and Broadland District Council. The Authority also consulted the RSPB, New Anglia, Wild Anglia and Marine Management Organisation to ascertain their views. The organisations generally supported the objectives.

SA Objective	Assessment	
ENV1: To reduce the adverse effects of traffic (on roads and water).	-	Does not directly address traffic
ENV2: To improve water quality and use water efficiently.		A flood event can result in some water quality issues if drains, sewers or toilets are flooded.
ENV3: To protect and enhance biodiversity and geodiversity.		Highlights that some forms of resilience could impact wildlife.
ENV4: To conserve and enhance the quality and local distinctiveness of landscapes and towns/villages.		Highlights that some forms of resilience could impact on landscapes.
ENV5: To adapt to and mitigate against the impacts of climate change.		Flooding is a potential consequence of climate change.
ENV6: To avoid, reduce and manage flood risk.		The SPD is on the subject of flood risk.
ENV7: To manage resources sustainably through the effective use of land, energy and materials.		Does not directly address land, energy and materials.
ENV8: To minimise the production and impacts of waste through reducing what is wasted, re-using and recycling what is left.		Does not directly address waste.
ENV9: To conserve and enhance the cultural heritage, historic environment, heritage assets and their settings		Highlights that some forms of resilience could impact on heritage.
ENV10: To achieve the highest quality of design that is innovative, imaginative, and sustainable and reflects local distinctiveness.		Design is addressed in the SPD.
ENV11: To improve air quality and minimise noise, vibration and light pollution.		Does not directly address these forms of pollution.
ENV12: To increase the proportion of energy generated through renewable/low carbon processes without unacceptable adverse impacts to/on the Broads landscape		Does not directly address energy.
ENV13: To reduce vulnerability to coastal change.		Does not directly address climate change.
SOC1: To improve the health of the population and promote a healthy lifestyle.		There can be impacts on health from flooding.
SCO2: To reduce poverty, inequality and social exclusion.		Does not directly address poverty.
SOC3: To improve education and skills including those related to local traditional industries.		Does not directly address education.
SOC4: To enable suitable stock of housing meeting local needs including affordability.		Housing is referred to in the SPD.
SOC5: To maximise opportunities for new/ additional employment		Employment development is referred to in the SPD.
SOC6a: To improve the quality, range and accessibility of community services and facilities		Does not directly address access to services.
SOC6b: To ensure new development is sustainably located with good access by means other than a private car to a range of community services and facilities.		
SOC7: To build community identity, improve social welfare and reduce crime and anti-social activity.		Does not directly address crime or community identity.
ECO1: To support a flourishing and sustainable economy		Employment development is referred to in the SPD.
ECO2: To ensure the economy actively contributes to social and environmental well-being.		Employment development is referred to in the SPD.
ECO3: To improve economic performance in rural areas.		Does not directly address economic performance.
ECO4: To offer opportunities for Tourism and recreation in a way that helps the economy, society and the environment.		Employment development is referred to in the SPD.

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 prepared for the purpose of assisting the preparation of Flood Response Plans (FRP). Such Plans should 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 and the better prepared you are as an individual, the less pressure they will 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 due to the shock and disruption and damage to, or loss of, property and possessions. Being proactive and having a Plan you are familiar with in advance can help you take prompt, effective action when warnings are issued and enable 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.

2. Flood Response Plans - considerations

The Environment Agency is responsible for the provision of flood warnings to the public. Anyone can register with the Environment Agency's flood warning service 'Floodline Warnings Direct[37]'. The Floodline Warnings Direct (FWD) service provides information concerning the current and future flooding danger. In the event that flooding in your area is anticipated, 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.

[37] Register With Floodline Warnings Direct https://fwd.environment-agency.gov.uk/app/olr/register

The 3 flood warning codes are shown below. You can go to the Flood Information Service[38] 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

When drafting a FRP you are strongly encouraged to liaise with the owners/occupiers of any neighbouring and nearby sites ~~in the drafting of their FRPs~~ to coordinate procedures and so minimise confusion during an incident.

FRPs should reflect the fact that people should evacuate ***prior*** to a flood occurring. Once an area has been ***inundated*** by flooding, staying put~~,~~ rather than evacuating, could be the safer option in the ~~event of flooding~~ because of the dangers of moving in flooded areas such as lifted manhole covers and contaminated water~~, but~~. ~~i~~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 should reflect the local circumstances.

Consideration should be given to 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.

Ensure that the FRP deals with the potential difficulties involved in immediate evacuation which may need to be carried out in inclement weather and require the provision of transport to reach local authority designated rest centres.

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

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:

[38] https://flood-warning-information.service.gov.uk/

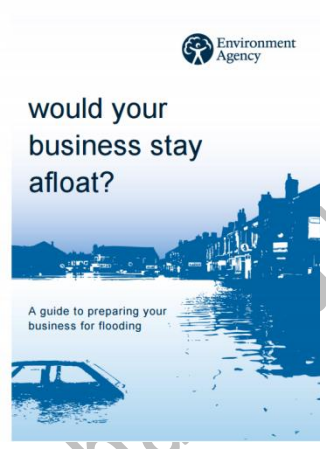
http://www.broadland.gov.uk/environment/316.asp

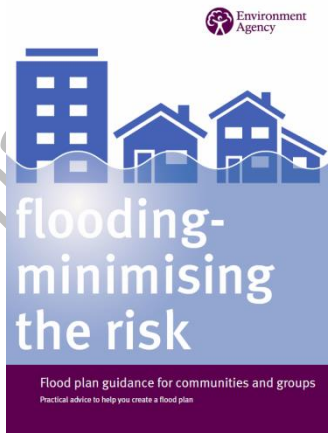
- Norwich Council: https://www.norwich.gov.uk/info/20226/emergency_planning
- North Norfolk Council: https://www.northnorfolk.org/environment/18874.asp
- Great Yarmouth Council: http://www.great-yarmouth.gov.uk/article/2512/Emergency-planning

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'[39].
- **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'[40].





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

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

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

Chapter 2: Suggested structure for your Flood Response Plan

1. Introduction

- Describe the location of the site fully and accurately.
  - State the name and address of the property.
  - Attach a site plan to identify the location and size of the site ~~to those using the plan~~.
  - 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 (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 which flood zone the site is in (as identified in a Flood Risk Assessment or on the Environment Agency's website[41]). A flood zone identifies how likely the site is to flood.

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.

2. Warning arrangements

- Is the site registered with the Environment Agency's Floodline Warnings Direct service?
- Who receives these warnings and how? What if they are away?
- 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?

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

[41] 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

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?
 **Severe Flood Warning** Severe flooding. Danger to life.	• How will you respond to this severe warning? • What action(s) do you need to take? • 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.

Chapter 3: Important Considerations for your Flood Response Plan

The following considerations may be of relevance and importance to your Flood Response Plan~~,~~ ~~think about what you need to include in your plan.~~. They could help reduce the impact of a flood on people and property. A comprehensive and effective Plan should 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 ~~sandbags.~~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.

Familiarisation

- Emphasise the need to be familiar and comfortable with the Plan and its contents.
- 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.
- 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.
- 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.

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 in 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. Ensure 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!**

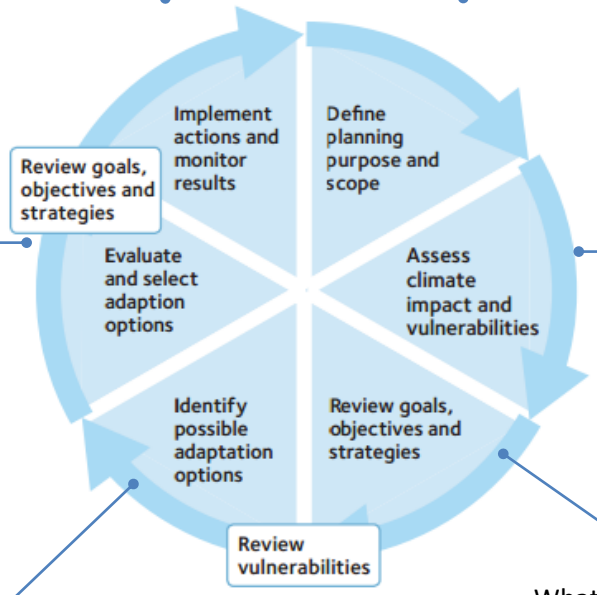
Advice and information

- 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.
- Provide residents/tenants with information on how to register with the Environment Agency's Floodline Warnings Direct service.
- It is good practice to display notices within properties (translated where foreign visitors may be present), outlining procedures to be followed, escape routes and evacuation plans.

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[42]). 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[43]. 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[44] are also now excluded or exempt. A permit is separate to and in addition to any planning permission granted.

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

[42] 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/
[43] OS MAPS https://www.ordnancesurvey.co.uk/
[44] 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

39 # Flood Risk Assessment

40 **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	