Guidance

Flood risk and coastal change

Advises how to take account of and address the risks associated with flooding and coastal change in the planning process.

From: **Ministry of Housing, Communities and Local Government (/government/organisations/ministry-of-housing-communities-local-government)**, **Ministry of Housing, Communities & Local Government (2018 to 2021) (/government/organisations/ministry-of-housing-communities-and-local-government-2018-2021)** and **Department for Levelling Up, Housing and Communities (/government/organisations/department-for-levelling-up-housing-and-communities)**

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This guidance has been updated – see previous version (https://webarchive.nationalarchives.gov.uk/ukgwa/20220802221446/https://www.gov.uk/guidance/flood-risk-and-coastal-change).

Planning and flood risk

What is “flood risk”?

“Flood risk” is a combination of the probability and the potential consequences of flooding. Areas at risk of flooding are those at risk of flooding from any source, now or in the future. Sources include rivers and the sea, direct rainfall on the ground surface, rising groundwater, overwhelmed sewers and drainage systems, reservoirs, canals and lakes and other artificial sources. Flood risk also accounts for the interactions between these different sources. This term is key to the application of the presumption in favour of sustainable development in paragraph 11 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/2-achieving-sustainable-development).

For areas at risk of river and sea flooding, this is principally land within Flood Zones 2 and 3 or where a Strategic Flood Risk Assessment shows it will be at risk of flooding in the future. It can also include an area within Flood Zone 1 which the Environment Agency has notified the local planning authority as having critical drainage problems.

Table 1 provides definitions of the Flood Zones, from low to high probability of river and sea flooding. A map showing river and sea flooding is available from the Environment Agency’s Flood Map for Planning (https://flood-map-for-

planning.service.gov.uk/). The Environment Agency has also set out who is responsible for flood and coastal erosion risk management in its National flood and coastal erosion risk management strategy (Annex A) (https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england--2). Government has also published a Flood and coastal erosion risk management policy statement (https://www.gov.uk/government/publications/flood-and-coastal-erosion-risk-management-policy-statement). Strategic flood risk assessments show all sources of flood risk, now and in the future.

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What is meant by a "design flood"?

This is a flood event of a given annual flood probability, which is generally taken as:

- river flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year); or
- tidal flooding with a 0.5% annual probability (1 in 200 chance each year); or
- surface water flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year),

plus an appropriate allowance for climate change (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances).

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What are the main steps in assessing flood risk?

The National Planning Policy Framework sets out strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Where these tests are not met, new development should not be allowed. The main steps to be followed in addressing flood risk are set out below, starting with assessing and then avoiding flood risk. The steps are designed to ensure that if there are lower risk sites available, or a proposed development cannot be made safe throughout its lifetime without increasing flood risk elsewhere, it should not be permitted. Measures to avoid, control, manage and mitigate flood risk should also not increase flood risk elsewhere.

Assess flood risk

- Strategic policy-making authorities should undertake a Strategic Flood Risk Assessment;
- Where appropriate, in areas at risk of flooding, developers undertake a site-specific flood risk assessment to accompany applications for planning permission (or prior approval for certain permitted development rights, or Technical Details Consent);
- Assessments of flood risk identify sources of uncertainty and how these are accounted for in a mitigation strategy. Further information on how to do this can be found in Flood risk assessment for planning applications (https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications).

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What process is used in plan or decision-making where flood risk is a consideration?

Where an assessment shows that flood risk is a consideration for a plan or development proposal, the process is set out below:

Avoid

- In plan-making, a sequential approach should be employed. This involves applying the 'Sequential Test' and, if needed, the 'Exception Test'.
- In decision-making, where necessary, planning authorities also apply the Sequential Test and, if needed, the Exception Test, to ensure that flood risk is minimised and appropriately addressed.
- Where the sequential and the exception tests have been applied as necessary and not met, development should not be allowed.
- Substitute lower vulnerability uses for higher vulnerability uses.
- Within sites, using site layout to locate the most vulnerable aspects of development in areas of lowest flood risk, unless there are overriding reasons to prefer a different location. In addition, measures to avoid flood risk vertically can then be taken, by locating the most vulnerable uses on upper storeys, and by raising finished floor and/or ground levels, where appropriate and that such techniques are suitably designed (https://knowledge.bsigroup.com/products/flood-resistant-and-resilient-construction-guide-to-improving-the-flood-performance-of-buildings/standard). Such measures should also account for residual flood risks from flood risk management infrastructure.

Control

- Planning authorities and developers can investigate measures to control the risk of flooding affecting the site. Early discussions with relevant flood risk management authorities, reference to Strategic Flood Risk Assessments and any programme of flood and coastal erosion risk management schemes (https://www.gov.uk/government/publications/programme-of-flood-and-coastal-erosion-risk-management-schemes) will help to identify such opportunities.

Mitigate

- Use flood resistance and resilience measures to address any residual risks remaining after the use of the avoidance and control measures described above. Passive measures should be prioritised over active measures as they are likely to be more effective and more reliable. See What is flood resistance and resilience?

Manage residual risk

- Consider further management measures to deal with any residual risk remaining after avoidance, control and mitigation have been utilised. Provide safe access and escape routes.
- Consider whether adequate flood warning would be available to people using the development. Residual risks will need to be safely managed to ensure people are not exposed to hazardous flooding. See What is needed to ensure safe evacuation and flood response procedures are in place?.

This approach should be considered early in the design process to ensure that any tensions between different requirements, such as the impact of raised floor levels on access, are designed out wherever possible. Avoidance measures can discourage or exclude certain sections of society, such as the elderly or those with less mobility. Innovative design can help ensure that communities are safe and sustainable without excluding these sections of society. Where historic buildings are involved, early consultation with Historic England should be undertaken and their guide on flood resilience for historic properties (https://historicengland.org.uk/advice/technical-advice/flooding-and-historic-buildings/) provides additional information. Tensions between flood risk mitigation measures and other planning matters, do not justify unsafe development.

See the Secretary of States role in the call-in process.

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What to consider when determining whether a proposed development will be safe for its lifetime?

When assessing the safety implications of flood risk for development proposed in a site allocation or planning application, the following should be considered:

- the characteristics of a possible flood event, including residual risks from flood risk management infrastructure e.g. the type and source of flooding and frequency, depth, velocity, speed of onset and duration;
- the safety of people within a building if it floods and also the safety of people around a building and in adjacent areas, including people who are less mobile or who have a physical impairment. This includes the ability of residents and users to safely access and exit a building during a design flood and to evacuate before an extreme flood (0.1% annual probability of flooding with allowance for climate change);
- the structural safety of buildings: and
- the impact of a flood on the essential services provided to or from a development.

Further guidance on safety, including safe depth and velocity thresholds can be found in the Flood risk assessment guidance for new development (https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/flood-risk-assessment-guidance-for-new-development).

Where flood risk management infrastructure such as flood defences form part of the strategy for addressing flood risk, strategic and site-specific flood risk assessments should, where appropriate:

- identify how this infrastructure will be operated, funded and maintained;
- ensure there is space for future maintenance or new flood risk management infrastructure that is likely to be needed;
- consider the consequences of flood risk management infrastructure failing or its design standard being exceeded;
- consider the likelihood of defences keeping pace with climate change, e.g. is funding available and what are the funding options (e.g. Community Infrastructure Levy, planning obligations / S106 agreements, or Partnership Funding (https://www.gov.uk/guidance/partnership-funding-for-fcerm-projects)). This should inform the nature of residual risk to be considered.

See also further advice on:

- When are emergency plans needed?
- What emergency planning considerations are there in relation to reservoirs?

Having regard to all the above considerations, the National Planning Policy Framework is clear that flood risk should not be increased elsewhere,

including over the lifetime of the permission not just at the point of grant of permission.

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What is considered to be the lifetime of development when applying policies on flood risk and coastal change?

Residential development can be assumed to have a lifetime of at least 100 years, unless there is specific justification for considering a different period. For example, the time in which flood risk or coastal change is anticipated to affect it, where a development is controlled by a time-limited planning condition. The lifetime of a non-residential development depends on the characteristics of that development but a period of at least 75 years is likely to form a starting point for assessment.

Where development has an anticipated lifetime significantly beyond 100 years such as some major infrastructure projects, or where it would create significant land-use change such as a new settlement or substantial urban extension, it may be appropriate to consider a longer period for the lifetime of development when assessing the potential impacts of climate change on flood risk or coastal change and considering the future prospects for flood and coastal erosion risk management infrastructure. It may also be a consideration when identifying existing development that may not be sustainable in the long term, and seeking opportunities for relocation. These approaches could be particularly justified where long-term risks relate to sea level rise.

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Taking flood risk into account in preparing plans

What are the key steps involved when preparing strategic policies?

Diagram 1: Taking flood risk into account in the preparation of strategic policies

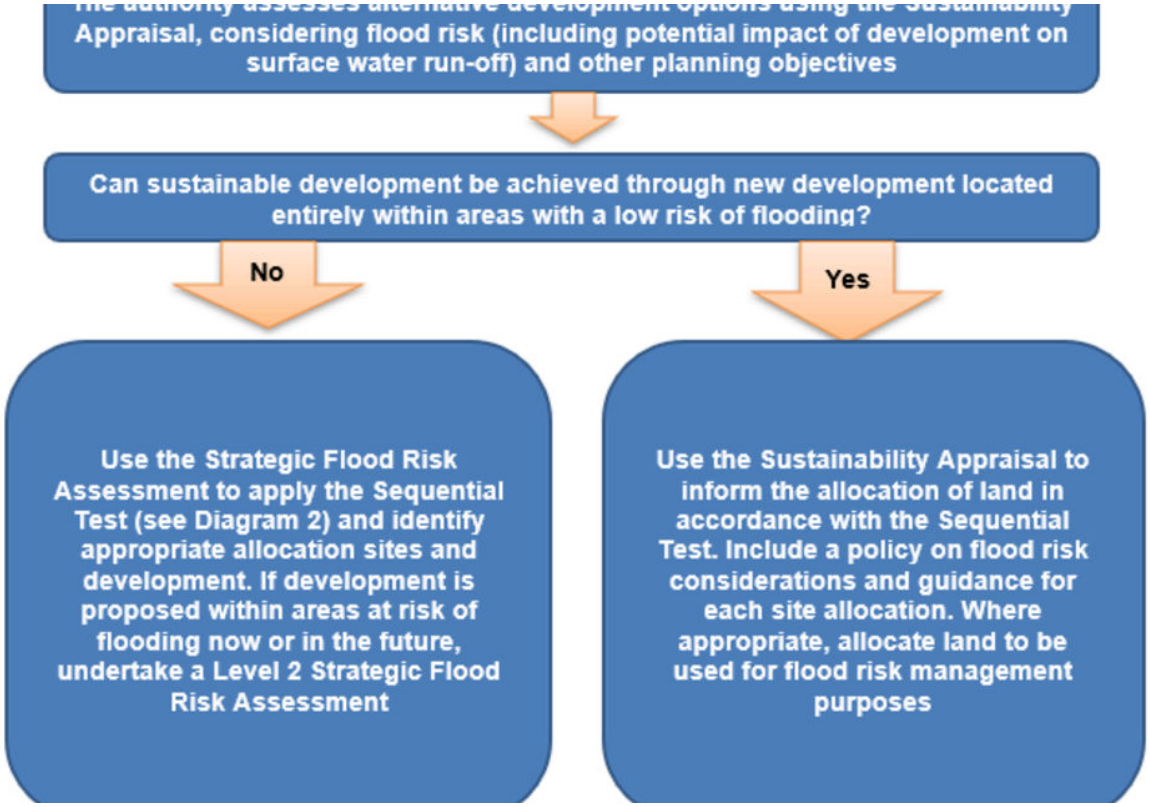

Diagram 1: Taking flood risk into account in the preparation of strategic policies

Accessible version

1. The strategic policy-making authority (on its own or jointly with other authorities/ partners) undertakes a Level 1 Strategic Flood Risk Assessment

2. The authority uses the Strategic Flood Risk Assessment to: (i) inform the scope of the Sustainability Appraisal for consultation; and (ii) identify where development can be located in areas with a low risk of flooding

3. The authority assesses alternative development options using the Sustainability Appraisal, considering flood risk (including potential impact of development on surface water run-off) and other planning objectives

4. Can sustainable development be achieved through new development located entirely within areas with a low risk of flooding?

If Yes:

5. Use the Sustainability Appraisal to inform the allocation of land in accordance with the Sequential Test. Include a policy on flood risk considerations and guidance for each site allocation. Where appropriate, allocate land to be used for flood risk management purposes

6. Include the results of the application of the Sequential Test (and Exception Test see Diagram 3 - where appropriate) in the Sustainability

Appraisal Report. Use flood risk indicators and Core Output Indicators to measure the Plan's success (End).

Alternate process at step 4.

4. Can sustainable development be achieved through new development located entirely within areas with a low risk of flooding?

If No:

5. Use the Strategic Flood Risk Assessment to apply the Sequential Test (see Diagram 2) and identify appropriate allocation sites and development. If development is proposed within areas at risk of flooding now or in the future, undertake a Level 2 Strategic Flood Risk Assessment

6. Assess alternative development options using the Sustainability Appraisal, transparently balancing flood risk against other planning objectives

7. Use the Sustainability Appraisal to inform the allocation of land in accordance with the Sequential Test. Include a policy on flood risk considerations and guidance for each site allocation. Where appropriate, allocate land to be used for flood risk management purposes

8. Include the results of the application of the Sequential Test (and Exception Test see Diagram 3 - where appropriate) in the Sustainability Appraisal Report. Use flood risk indicators and Core Output Indicators to measure the Plan's success (End).

Paragraph: 007 Reference ID: 7-007-20220825

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Notes to diagram 1:

- Read more about Strategic Flood Risk Assessment
- View guidance on Sustainability Appraisal (https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal)
- View diagram 2: Application of the Sequential Test for plan preparation
- View diagram 3: Application of the Exception Test to plan preparation
- Read more about the Sequential Test
- Read more about the Exception Test

See also:

- Which flood risk management bodies should local planning authorities seek advice from when preparing plans?
- Is flood risk relevant to plan policies that change the use of land or buildings?
- Is flood risk relevant to waste and minerals plans?

Paragraph: 008 Reference ID: 7-008-20220825

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What is a Strategic Flood Risk Assessment?

A Strategic Flood Risk Assessment is a study carried out by one or more local authorities or other strategic policy-making 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 (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances), and to assess the cumulative impact that land use changes and development in the area will have on flood risk. It identifies opportunities to reduce the causes and impacts of flooding and gathers information on the land that is likely to be needed for flood risk management infrastructure. A Strategic Flood Risk Assessment should be used to:

- inform the sustainability appraisal (https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal) of the Local Plan, so that flood risk is fully taken into account when considering allocation options and in the preparation of plan policies;
- apply the Sequential Test and, where necessary, the Exception Test when determining land use allocations;
- inform the allocation of land to safeguard it for flood risk management infrastructure;
- inform policies for change of use and reducing the causes and impacts of flooding;
- identify the requirements for site-specific flood risk assessments in particular locations, including those at risk from sources other than river and sea flooding;
- determine the acceptability of flood risk in relation to emergency planning capability;
- help demonstrate how the adaptation to climate change (https://www.legislation.gov.uk/ukpga/2004/5/section/19) has been met.

Local Planning Authorities should take an integrated approach to flood risk management when preparing plans, as per National Planning Policy Framework paragraph 161(c). This is a collaborative, catchment-based approach delivering coordinated management of water storage, supply, demand, wastewater, flood risk, quality of water and the wider environment. It can help to identify the most effective and efficient approaches to addressing too much or too little water, enabling sustainable and climate resilient development in a way which reduces flood risk whilst delivering multiple wider benefits.

For guidance on how to prepare a strategic flood risk assessment, refer to How to prepare a strategic flood risk assessment (https://www.gov.uk/guidance/local-planning-authorities-strategic-flood-risk-assessment).

Paragraph: 009 Reference ID: 7-009-20220825

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Who needs to be consulted when preparing plan policies?

Advice should be sought from the early stages of evidence base collation through to policy preparation, as part of an integrated approach to flood risk management. Consider how Plans can support the actions set out in: strategic flood risk documents (flood risk management plans (https://www.gov.uk/government/collections/flood-risk-management-plans-frmps-2015-to-2021), shoreline management plans (https://www.gov.uk/government/publications/shoreline-management-plans-smps), surface water management plans, and local flood risk management strategies prepared by Lead Local Flood Authorities (https://www.gov.uk/government/collections/flood-and-coastal-erosion-risk-management-authorities#lead-local-flood-authorities)); water cycle studies, drainage and wastewater management plans and green infrastructure strategies where they exist; river basin management plans (https://www.gov.uk/government/collections/river-basin-management-plans-2015); as well as planned capital investment in flood risk management infrastructure (https://www.gov.uk/government/publications/programme-of-flood-and-coastal-erosion-risk-management-schemes).

All plans also need to be informed by flood risk advice where relevant, from:

- The Environment Agency
- Lead local flood authorities
- Internal drainage boards where they exist to identify the scope of their interests
- Water and sewerage companies

- Reservoir owners and operators: to understand the impact on them and on reservoir safety and operation
- Emergency planners, emergency services, local resilience forums (https://www.gov.uk/guidance/local-resilience-forums-contact-details) and other flood incident responders
- Navigation authorities: navigation authorities need to be consulted by the local planning authority in relation to sites adjacent to, or which discharge into, canals – especially where these are impounded above natural ground levels

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How should land for future flood risk management infrastructure be safeguarded?

During the preparation of strategic policies, it is useful to identify any land which is likely to be needed for flood and coastal erosion risk management infrastructure. Consideration can also be given to any necessary access to that land, and any additional land which may be needed temporarily during construction.

Strategic policy-making authorities need to consult with other Risk Management Authorities (https://www.gov.uk/government/collections/flood-and-coastal-erosion-risk-management-authorities) and refer to strategic flood risk documentation (such as flood risk management plans (https://www.gov.uk/government/collections/flood-risk-management-plans-frmps-2015-to-2021), shoreline management plans (https://www.gov.uk/government/publications/shoreline-management-plans-smps), adaptation plans, surface water management plans, and local flood risk management strategies prepared by Lead Local Flood Authorities (https://www.gov.uk/government/collections/flood-and-coastal-erosion-risk-management-authorities#lead-local-flood-authorities)) and the Environment Agency's Programme of flood and coastal erosion risk management schemes (https://www.gov.uk/government/publications/programme-of-flood-and-coastal-erosion-risk-management-schemes), to identify the land that is likely to be needed. Local Planning Authorities may then consider allocating these sites or including policies in their plan to discourage development that could prevent or hinder the delivery of planned flood risk management associated infrastructure. Land could also be safeguarded for natural flood management approaches that help to reduce the causes and impacts of flooding, particularly where development has the potential to prevent, hinder or help to enable their delivery.

Safeguarding land in this way is particularly important for infrastructure that reduces the risk of flooding to large amounts of existing development, or

where options for managing risk in other ways are limited.

Paragraph: 011 Reference ID: 7-011-20220825

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What approach should be taken to making provision for the relocation of development and infrastructure?

Ongoing coastal erosion or change and increasing flood risk due to climate change may mean that some existing development and infrastructure may not be sustainable in the long term. Plans can address this by:

- Identifying locations where existing development and infrastructure may not be sustainable in the long term. Such locations could include those which are, or are expected to be in future, subject to coastal erosion (e.g. Coastal Change Management Areas), frequent (e.g. areas likely to be permanently inundated by the sea or tidal estuaries/rivers or with sufficient frequency as to become intertidal, Flood Zone 3b or areas likely to be in 3b in future), disruptive or hazardous flooding, combined with little or no prospect of these risks being adequately mitigated by new or improved flood and coastal erosion risk management infrastructure, or property level resilience measures.
- Including policies setting out the types of development that will and will not be appropriate in these locations, including by limiting the planned lifetime of the development and preventing increases in vulnerability and development footprint. Local authorities could also consider whether it would be appropriate to make use of their powers under Article 4 of the Town and Country Planning (General Permitted Development) (England) Order 2015 (https://www.legislation.gov.uk/uksi/2015/596/article/4/made) to remove a permitted development right and require planning permission to be sought in each case.
- Formally allocating additional land in plans for relocation or roll-back of existing development (particularly development completed prior to Shoreline Management Plans) and habitat affected by coastal change or increasing flood risk due to climate change. Including policies in plans and conditions on permissions to ensure identified land is used for this purpose.

An approach that considers the exceptional circumstances of having to replace existing development at risk of flooding or coastal change by granting planning permissions where normally they would be refused may be more suitable for some local planning authorities. This could involve for example granting planning permission in open countryside allowing caravan parks to be moved back from the coast when the site is affected by coastal erosion or tidal inundation.

Paragraph: 012 Reference ID: 7-012-20220825

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Is flood risk relevant to minerals and waste plans?

Minerals and waste planning authorities need to take account of flood risk when allocating land for development. They should prepare their plan policies with regard to any available Strategic Flood Risk Assessments. The location of Mineral Safeguarding Areas and site allocations, in particular in relation to sand and gravel workings which are often located in functional floodplains, need to be identified and assessed in Strategic Flood Risk Assessments. Minerals and waste planning authorities could explore possible benefits, such as restoring mineral working located in flood risk areas to increase flood water storage, which can also enhance the natural environment. Partnership working on joint Strategic Flood Risk Assessments offers the best opportunity to identify and realise these opportunities.

Paragraph: 013 Reference ID: 7-013-20220825

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Is flood risk relevant to local policies that change the use of land or buildings?

A change in use may involve an increase in flood risk if the vulnerability of the development is changed – see National Planning Policy Framework Annex 3 (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification). For example, changing from industrial use to residential use will increase the vulnerability classification from 'less' to 'more' vulnerable. Change of use within the same vulnerability classification can also increase the vulnerability of the development, for example the sub-division of a home into a series of flats may introduce more people or confine dwellings to the ground floor. Even if a development's vulnerability is not increasing, change of use can often present an opportunity to improve the flood resilience of existing development, the design of which may not have been informed by a site-specific flood risk assessment when it was first constructed.

As changes of use are not normally subject to the Sequential or Exception tests, when formulating policy, the local planning authority will need to consider what changes of use will be acceptable, taking into account the Strategic Flood Risk Assessment. This is likely to depend on whether developments can be designed to be safe and that there is adequate emergency planning provision.

Paragraph: 014 Reference ID: 7-014-20220825

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How can neighbourhood planning take account of flood risk?

The overall approach in paragraph 161 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change) applies to neighbourhood planning (https://www.gov.uk/guidance/neighbourhood-planning--2).

Where they make provision for development, the qualifying bodies involved in neighbourhood planning will need to:

- ensure that neighbourhood plans (and any neighbourhood development/community right to build orders) are informed by suitable assessment of flood risk from all sources, both now and in the future;
- steer development to areas of lower flood risk as far as possible;
- ensure that any development in an area at risk of flooding would be safe, for its lifetime taking account of climate change impacts (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances);
- be able to demonstrate how flood risk to and from the plan area/ development site(s) will be managed, so that flood risk will not be increased overall, and that opportunities to reduce flood risk, for example, through the use of sustainable drainage systems where appropriate, are included in the plan/order.

Local planning authorities will need to have these aims in mind in providing advice or assistance to qualifying bodies involved in neighbourhood planning. Refer to:

- What to consider if there is a risk of flooding in the neighbourhood plan area?
- What to consider if bringing forward a Neighbourhood Development Order/Community Right to Build Order in an area at risk of flooding?

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What advice and information on flood risk is available for neighbourhood planning?

Locality, in conjunction with the Environment Agency and other statutory agencies, have created a toolkit which provides advice on how to consider the environment when producing neighbourhood plans (https://neighbourhoodplanning.org/toolkits-and-guidance/consider-environment-neighbourhood-plans/). Anyone preparing a neighbourhood plan or order may also find it helpful to consult the lead local flood authority for the area.

Strategic Flood Risk Assessments are the primary source of flood risk information in considering which areas covered by a neighbourhood plan may be appropriate for development. If, however, the strategic flood risk assessment is out-of-date or lacks an appropriate detail in this area, it may be necessary for neighbourhood planning bodies to undertake additional work to assess the risk of flooding to development being promoted in a neighbourhood plan or order. Other important sources include the Environment Agency's Flood Map for Planning (https://flood-map-for-planning.service.gov.uk/). Local planning authorities can make available to qualifying bodies any reports or information relating to the Strategic Flood Risk Assessment, and share any other information relevant to flood risk (such as the application of the Sequential and Exception Tests to the Local Plan).

Paragraph: 016 Reference ID: 7-016-20220825

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What needs to be considered if there is a risk of flooding in the neighbourhood area?

Where the Strategic Flood Risk Assessment, or other available flood risk maps or information, indicates that part or parts of a neighbourhood plan area may be at risk of flooding, the qualifying body should have regard to the National Planning Policy Framework's policies on flood risk. Where they are considering proposing development, they will need to show that this would be consistent with the local planning authority's application of the Sequential Test and if necessary, the Exception Test for the plan. If not, these tests will need to be re-visited on a local authority-wide basis.

Where areas under consideration for development are inconsistent with the spatial strategy set out in the relevant plan, it is likely that the qualifying body will need to provide further information to demonstrate that any development proposed by the neighbourhood plan passes the Sequential Test, and if necessary, the Exception Test.

There is further guidance on the approach to individual development proposals, or where a Neighbourhood Development or Community Right to Build Order is proposed, in an area at risk of flooding.

Paragraph: 017 Reference ID: 7-017-20220825

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What should be considered if bringing forward a Neighbourhood Development Order/Community Right to Build Order/Local Development Order in an area at risk of flooding?

Orders for development in an area at risk of flooding, should, prior to adoption, be subject to:

- the sequential test and, where appropriate, the exception test; and
- a site-specific flood risk assessment

Where the relevant area is identified as being at risk of flooding now or in the future, or is in an area with critical drainage problems, advice on the scope of the flood risk assessment required needs to be sought from the Environment Agency. Where the area may be subject to other sources of flooding, it may be helpful to consult other bodies involved in flood risk management, as appropriate.

Local development orders should not be adopted where:

- they fail to satisfy the sequential test and, where relevant, the exception test; or
- the flood risk assessment fails to demonstrate that the development approved will be safe throughout its lifetime, without increasing flood risk elsewhere and meets the other requirements of National Planning Policy Framework paragraph 167

The flood risk assessment checklist may be helpful in this respect.

Paragraph: 018 Reference ID: 7-018-20220825

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What should be considered for the preparation of local design codes?

Those preparing local design codes need to consider how flood risk from all sources, now or in the future, could affect or be affected by design considerations. Local design codes will need to accord with the National Model Design Code (parts 1 and 2) requirements on water and drainage and follow the approach set out in paragraph 003 and paragraph 004, ensuring all development will be appropriately flood resistant and resilient, with reference to the CIRIA Property Flood Resilience Code of Practice (https://www.ciria.org/ItemDetail?iProductCode=C790F&Category=FREEPUBS).

Local design codes should encourage and support the use of sustainable drainage systems as this can lead to better integration, multi-functional benefits and reduced land-take. They should where possible also use opportunities presented by development to reduce the causes and impacts of flooding, making as much use of natural flood management as possible to increase flood resistance and flood resilience.

Local design codes do not justify unsafe development or development which increases flood risk elsewhere.

Paragraph: 019 Reference ID: 7-019-20220825

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Site-specific flood risk assessment

What is a site-specific flood risk assessment?

A site-specific flood risk assessment is carried out by (or on behalf of) a developer to assess the flood risk to and from a development site and should accompany a planning application where prescribed in footnote 55 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change). The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances), and with regard to the vulnerability of its users (see National Planning Policy Framework Annex 3 – Flood Risk Vulnerability (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification).

Developers can use the Environment Agency guidance on flood risk assessments (https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications) when considering the scope of the assessment.

The objectives of a site-specific flood risk assessment are to establish:

- whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- the evidence for the local planning authority to apply (if necessary) the Sequential Test, and;

- whether the development will be safe and pass the Exception Test, if applicable.

See further information on the detail needed in a flood risk assessment (https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications).

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Revision date: 25 08 2022

What level of detail is needed in a site-specific flood risk assessment?

The information provided in the flood risk assessment needs to be credible and fit for purpose. Site-specific flood risk assessments need to be proportionate to the anticipated degree of flood risk and make optimum use of information already available, including information in a Strategic Flood Risk Assessment for the area, and the Environment Agency's Flood Map (https://flood-map-for-planning.service.gov.uk/) and surface water flood risk information on Check the long term flood risk for an area in England (https://www.gov.uk/check-long-term-flood-risk). Flood risk assessments need to include the information set out in the flood risk assessment checklist.

A flood risk assessment needs to be appropriate to the scale, nature and location of the development. For example, where the development is an extension to an existing house (for which an application for planning permission is required) which would not significantly increase the number of people present in an area at risk of flooding, the local planning authority would generally need a less detailed assessment to be able to reach an informed decision on the planning application. For a new development comprising a greater number of houses in a similar location, or one where the flood risk is greater, the local planning authority would need a more detailed assessment.

See further advice on flood risk assessment. (https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications)

Paragraph: 021 Reference ID: 7-021-20220825

Revision date: 25 08 2022

What further advice is available on the preparation of a site-specific flood risk assessment?

For large or vulnerable developments in areas of high risk, developers should consider consultation with the Environment Agency and/or any other relevant flood risk management bodies for more detailed advice in advance of submitting their planning application. For advice on how to get

environmental advice from the Environment Agency, consult this joint guidance (https://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals) and charging terms and conditions (https://www.gov.uk/government/publications/planning-and-marine-licence-advice-standard-terms-for-our-charges).

Applicants for planning permission (or prior approval for certain permitted development rights, or technical details consent) will find the Agency's advice on assessing flood risk for planning applications (https://www.gov.uk/flood-risk-assessment-for-planning-applications) helpful when preparing a site-specific flood risk assessment.

The checklist may be helpful to applicants/developers in preparing a site-specific flood risk assessment.

Advice should also be sought from the local authority and lead local flood authority. See How should the lead local flood authority be involved when assessing planning applications?

Paragraph: 022 Reference ID: 7-022-20220825

Revision date: 25 08 2022

The sequential approach to the location of development

What is the aim of the sequential approach?

The approach 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. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. Avoiding flood risk through the sequential test is the most effective way of addressing flood risk because it places the least reliance on measures like flood defences, flood warnings and property level resilience features. Application of the sequential approach in the plan-making and decision-making process will help to ensure that development is steered to the lowest risk areas, where it is compatible with sustainable development objectives to do so, and developers do not waste resources promoting proposals which would fail to satisfy the test. Other forms of flooding need to be treated consistently with river and tidal flooding in mapping probability and assessing vulnerability, so that the sequential approach can be applied across all areas of flood risk.

Paragraph: 023 Reference ID: 7-023-20220825

Revision date: 17 09 2025

How can the Sequential Test be applied to the location of development?

The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account. Where it is not possible to locate development in low-risk areas, the Sequential Test should go on to compare reasonably available sites:

- Within medium risk areas; and
- Then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas.

Initially, the presence of existing flood risk management infrastructure should be ignored, as the long-term funding, maintenance and renewal of this infrastructure is uncertain. Climate change will also impact upon the level of protection infrastructure will offer throughout the lifetime of development. The Sequential Test should then consider the spatial variation of risk within medium and then high flood risk areas to identify the lowest risk sites in these areas, ignoring the presence of flood risk management infrastructure.

It may then be appropriate to consider the role of flood risk management infrastructure in the variation of risk within high and medium flood risk areas. In doing so, information such as flood depth, velocity, hazard and speed-of-onset in the event of flood risk management infrastructure exceedance and/or failure, should be considered as appropriate. Information on the probability of flood defence failure is unsuitable for planning purposes given the substantial uncertainties involved in such long-term predictions.

Paragraph: 024 Reference ID: 7-024-20220825

Revision date: 25 08 2022

How can the Sequential Test be applied in the preparation of strategic policies?

This is illustrated in diagram 2. The Sequential Test needs to be applied to the whole local planning authority area to increase the possibilities of accommodating development which is not exposed to flood risk, both now and in the future.

Where possible, local planning authorities can jointly review development options over a wider area (e.g. a river catchment) where this could potentially broaden the scope for opportunities to reduce flood risk and put the most vulnerable development in lower risk areas, considering flood risk both now and in the future.

Plan policies designed to exempt specific types of planning applications, such as windfall sites, from the sequential test may be considered, where such policies can restrict the exemption to specific sites that have been subject to, and satisfy, the sequential test at the plan-making stage.

Paragraph: 025 Reference ID: 7-025-20220825

Revision date: 25 08 2022

Diagram 2: Application of the Sequential Test for plan preparation

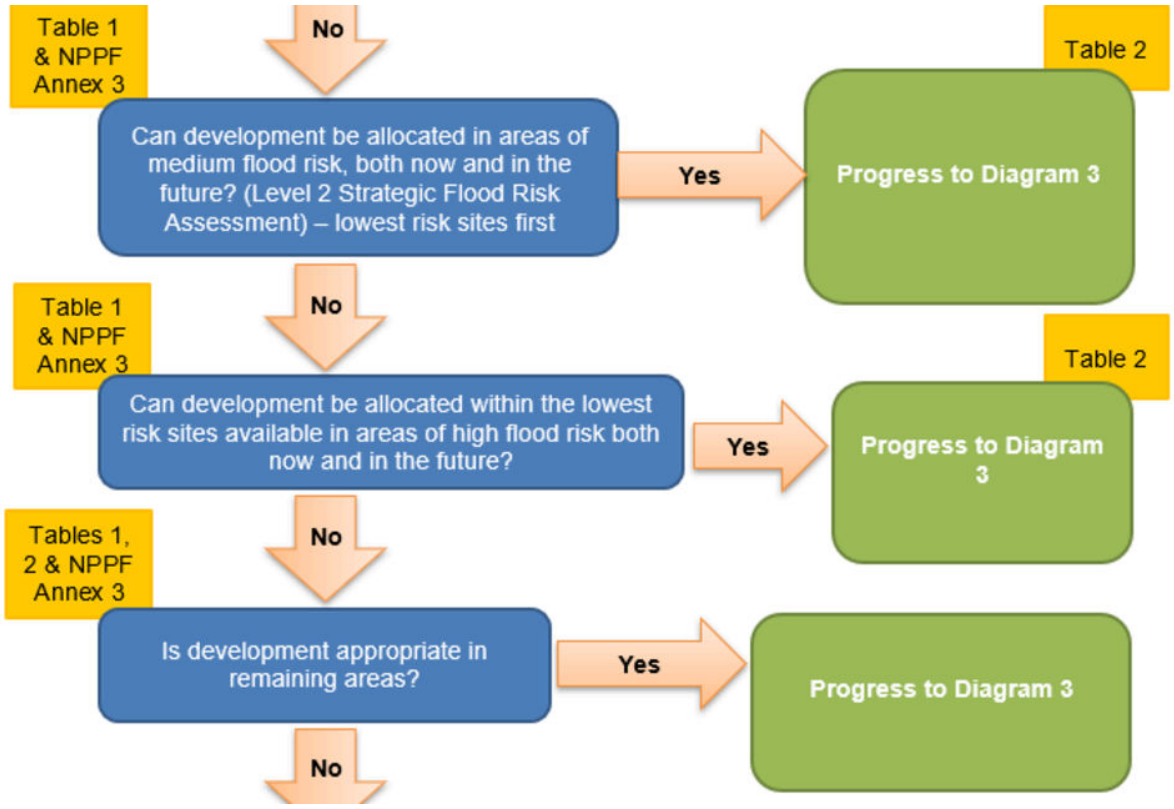

Diagram 2: Application of the Sequential Test for plan preparation

Accessible version

1. Can development be allocated in areas of low flood risk both now and in the future? (Level 1 Strategic Flood Risk Assessment). **If Yes:** Sequential test passed

If No:

2. Can development be allocated in areas of medium flood risk, both now and in the future? (Level 2 Strategic Flood Risk Assessment) – lowest risk sites first. (Table 1 and NPPF Annex 3). **If Yes:** Progress to Diagram 3 (Table 2)

If No:

3. Can development be allocated within the lowest risk sites available in areas of high flood risk both now and in the future? (Table 1 and NPPF

Annex 3). **If Yes:** Progress to Diagram 3 (Table 2)

If No:

4. Is development appropriate in remaining areas? (Tables 1, 2 and NPPF Annex 3). **If Yes:** Progress to Diagram 3

If No:

5. Strategically review need for development using Sustainability Appraisal

Notes to Diagram 2:

Other sources of flooding also need to be considered.

See Table 1, National Planning Policy Framework Annex 3 (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification), Table 2 and Diagram 3.

See guidance on applying the Sequential Test to individual applications.

See further guidance on the role of sustainability appraisal in the sequential test.

Paragraph: 026 Reference ID: 7-026-20220825

Revision date: 25 08 2022

How should the sequential test be applied to planning applications?

See advice on the sequential approach to development and the aim of the sequential test.

The sequential test should be applied to 'Major' and 'Non-major' development proposed in areas at risk of flooding, as set out in paragraphs 173 to 174 of the National Planning Policy Framework. Paragraphs 175, 176 and 180 set out exemptions from the sequential test.

In applying paragraph 175 a proportionate approach should be taken. Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied.

The absence of a 5-year housing land supply is not a relevant consideration in applying the sequential test for individual applications. However, housing considerations, including housing land supply, may be relevant in the planning balance, alongside the outcome of the sequential test.

See also advice on who is responsible for deciding whether an application passes the Sequential Test and further advice on the Sequential Test process available from the Environment Agency (https://www.gov.uk/flood-risk-assessment-the-sequential-test-for-applicants) (flood risk standing advice).

Paragraph: 027 Reference ID: 7-027-20220825

Revision date: 17 09 2025

How should the area of search for the sequential test be identified?

For individual planning applications subject to the sequential test, the area to which the test needs to be applied will be governed by local circumstances relating to the catchment area for the type of development proposed and the needs it is proposing to address. The catchment area should always be appropriate to the nature and scale of the proposal and the settlement it is proposed for. For some developments this may be clear, for example, the catchment area for a school. For a non-major housing development, it would not usually be appropriate for the area of search to extend beyond the specific area of a town or city in which the proposal is located, or beyond an individual village and its immediate neighbouring settlements.

A pragmatic approach needs to be taken where proposals involve comparatively small extensions to existing premises (relative to their existing size), where it may be impractical to accommodate the additional space in an alternative location. Equally, where there are large areas in Flood Zones 2 and 3 (e.g. coastal towns and settlements on major rivers) and development is needed in those areas to sustain the existing community, sites outside them are unlikely to provide reasonable alternatives.

The sequential test should be applied proportionately, focusing on realistic alternatives in areas of lower flood risk that could meet the same development need.

For infrastructure proposals of regional or national importance the area of search may reasonably extend beyond the local planning authority boundary. It may also, in some cases, be relevant to consider whether large scale development could be split across a number of alternative sites at lower risk of flooding, but only where those alternative sites would be capable of accommodating the development in a way which would still serve its intended market(s) as effectively.

Paragraph: 027a Reference ID: 7-027a-20220825

Revision date: 17 09 2025

What is a ‘reasonably available’ site?

Sites should be considered ‘reasonably available’ for the purposes of the sequential test if their location is suitable for the type of development proposed, they are able to meet the same development needs and they have a reasonable prospect of being developed at the same time as the proposal.

In considering whether alternative lower-risk sites (which could, where relevant, be a series of two or more smaller sites) would be capable of accommodating the proposed development, such alternative sites do not need to be owned by the applicant to be considered ‘reasonably available’.

Paragraph: 028 Reference ID: 7-028-20220825

Revision date: 17 09 2025

Who is responsible for deciding whether an application passes the Sequential Test?

Relevant decision makers need to consider whether the test is passed, with reference to the information it holds on land availability. The planning authority will need to determine an appropriate area of search, based on the development type proposed and relevant spatial policies. The applicant will need to identify whether there are any other ‘reasonably available’ sites within the area of search, that have not already been identified by the planning authority in site allocations or relevant housing and/or economic land availability assessments, such as sites currently available on the open market. The applicant may also need to check on the current status of relevant sites to determine if they can be considered ‘reasonably available’.

Local planning authorities should inform the applicant and, where relevant, the Environment Agency about the outcome of the sequential test at the earliest opportunity, as this may avoid other work being undertaken unnecessarily.

Local planning authorities may find it helpful to prepare guidance on the appropriate area of search for common development types. They may also find it helpful to keep an up-to-date register of ‘reasonably available’ sites, clearly ranked in flood risk preference. This could be part of their housing and/or economic land availability assessments or as a separate document. This should be informed by the strategic flood risk assessment with any ranking methodology agreed with the Environment Agency. Such an

approach could increase certainty for developers and save time at application stage.

Ultimately the local planning authority needs to be satisfied in all cases that the proposed development would be safe throughout its lifetime and not lead to increased flood risk elsewhere.

Paragraph: 029 Reference ID: 7-029-20220825

Revision date: 25 08 2022

How does the Sequential Approach apply to minerals and waste development?

Waste and mineral planning authorities should apply the sequential approach to the allocation of sites for waste management and, where possible, mineral extraction and processing. It should also be recognised that mineral deposits have to be worked where there is no scope for relocation (and sand and gravel extraction is defined as 'water-compatible development' in National Planning Policy Framework Annex 3 (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification), acknowledging that these deposits are often in flood risk areas).

However, mineral working should not increase flood risk elsewhere and sites need to be designed, worked and restored accordingly.

Mineral workings can be large and may afford opportunities for applying the sequential approach at the site level. It may be possible to locate ancillary facilities such as processing plant and offices in areas at lowest flood risk. Sequential working and restoration can be designed to reduce flood risk by providing flood storage and attenuation. This is likely to be most effective at a strategic (county) scale.

Paragraph: 030 Reference ID: 7-030-20220825

Revision date: 25 08 2022

The Exception Test

What is the Exception Test?

The Exception Test requires two additional elements to be satisfied (as set out in paragraph 164 of the National Planning Policy Framework) before allowing development to be allocated or permitted in situations where

suitable sites at lower risk of flooding are not available following application of the sequential test.

It should be demonstrated that:

- development that has to be in a flood risk area will provide wider sustainability benefits to the community that outweigh flood risk; and
- 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 Exception Test is not a tool to justify development in flood risk areas when the Sequential Test has already shown that there are reasonably available, lower risk sites, appropriate for the proposed development. It would only be appropriate to move onto the Exception Test in these cases where, accounting for wider sustainable development objectives, application of relevant local and national policies would provide a clear reason for refusing development in any alternative locations identified. Table 2 sets out the circumstances when the Exception Test will be required.

Paragraph: 031 Reference ID: 7-031-20220825

Revision date: 25 08 2022

Does the Exception Test need to be applied to all proposed development in flood risk areas?

The Exception Test should only be applied as set out in Table 2 and only if the Sequential Test has shown that there are no reasonably available, lower-risk sites, suitable for the proposed development, to which the development could be steered.

Paragraph: 032 Reference ID: 7-030-20220825

Revision date: 25 08 2022

How can the Exception Test be applied in preparing plan policies?

This is summarised in diagram 3.

Diagram 3: Application of the Exception Test to plan preparation

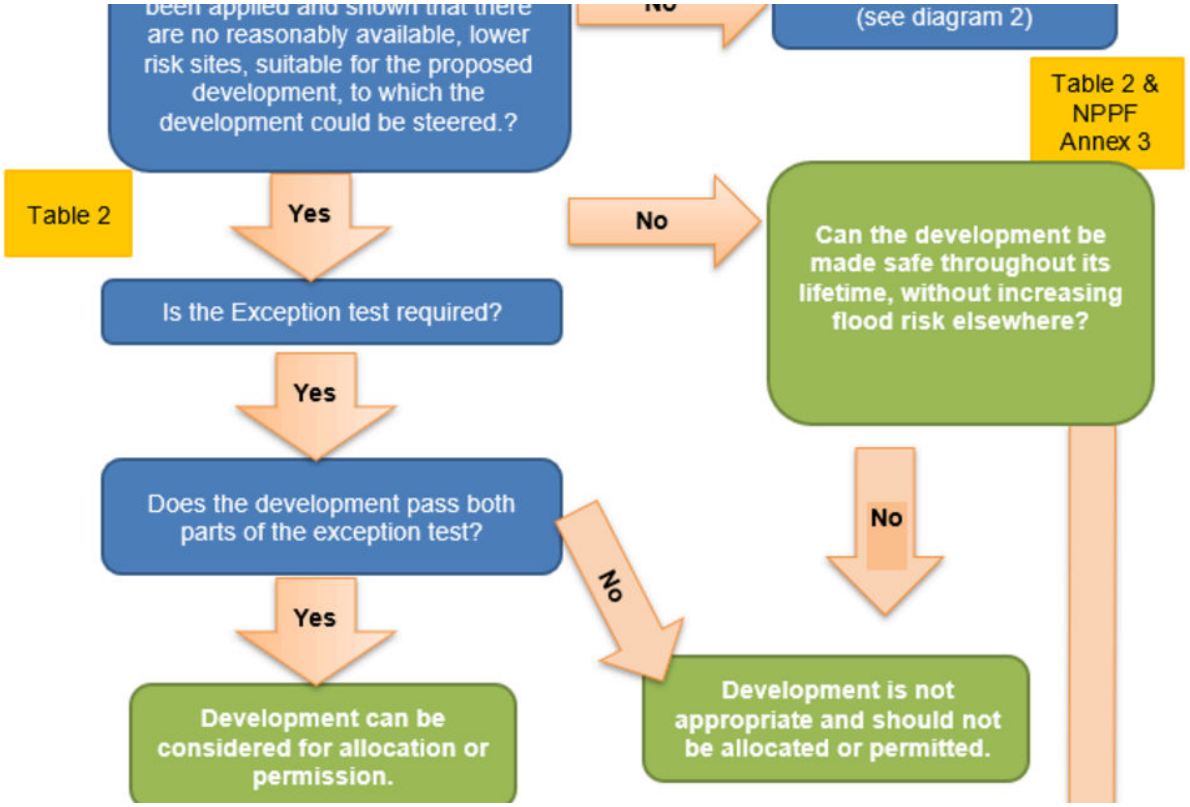

Diagram 3: Application of the Exception Test to plan preparation

Accessible version

1. **Start Here:** Has the sequential test been applied and shown that there are no reasonably available, lower risk sites, suitable for the proposed development, to which the development could be steered? **If No:** Do the sequential test (see diagram 2)

If Yes:

2. Is the Exception test required (Table 2)? **If Yes:**

Does the development pass both parts of the exception test?

- **If Yes:** Development can be considered for allocation or permission.
- **If No:** Development is not appropriate and should not be considered.

2. Is the Exception test required (Table 2)? **If No:**

Can the development be made safe throughout its lifetime, without increasing flood risk elsewhere (NPPF Annex 3 and Table 2)?

- **If Yes:** Development can be considered for allocation or permission.
- **If No:** Development is not appropriate and should not be considered.

Paragraph: 033 Reference ID: 7-033-20220825

Revision date: 25 08 2022

Notes to diagram 3:

- View diagram 2: Application of the Sequential Test for Local Plan preparation
- View National Planning Policy Framework Annex 3: Flood Risk Vulnerability Classification (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification)
- View table 2: Flood risk vulnerability and flood zone 'incompatibility'

Paragraph: 034 Reference ID: 7-034-20220825

Revision date: 25 08 2022

When should the Exception Test be applied to planning applications?

The Exception Test should only be applied when following application of the Sequential Test, it has been demonstrated that it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives). The applicant will need to provide the local planning authority with evidence to demonstrate how both elements of the Exception Test will be satisfied.

Where a development proposal is in accordance with an allocation made in a Plan following the application of the Sequential and Exception Tests, it should not be necessary to repeat aspects of the Exception Test unless:

- Elements of the development that were key to it satisfying the Exception Test at the plan-making stage (such as wider sustainability benefits to the community or measures to reduce flood risk overall) have changed or are not included in the proposed development; or
- The understanding of current or future flood risk has changed significantly.

The test only needs to be repeated to the extent needed to validate its conclusions and secure any measures necessary. In all cases, a suitable site-specific flood risk assessment should be provided at application stage, where prescribed in footnote 55 of the National Planning Policy Framework.

Paragraph: 035 Reference ID: 7-035-20220825

Revision date: 25 08 2022

How can it be demonstrated that wider sustainability benefits to the community outweigh flood risk?

Local planning authorities need to set their own criteria for this assessment, having regard to the objectives of their Plan's Sustainability Appraisal framework, and provide advice which will enable applicants to provide relevant and proportionate evidence.

Examples of wider sustainability benefits to the community could include:

- The re-use of suitable brownfield land as part of a local regeneration scheme,;
- An overall reduction in flood risk to the wider community through the provision of, or financial contribution to, flood risk management infrastructure;
- The provision of multifunctional Sustainable Drainage Systems that integrate with green infrastructure, significantly exceeding National Planning Policy Framework policy requirements for Sustainable Drainage Systems;

Identified sustainability benefits need to be balanced against any associated flood risks, informed by the site-specific flood risk assessment. The impacts of flood risk on social, economic and environmental factors should be considered. Where wider sustainability benefits are absent or where they are outweighed by flood risk, the Exception Test has not been satisfied and the site allocation in the plan should not be made or planning permission should be refused.

Paragraph: 036 Reference ID: 7-036-20220825

Revision date: 25 08 2022

How can it be demonstrated that development will reduce flood risk overall?

Developers should refer to the Strategic Flood Risk Assessments and site-specific Flood Risk Assessments to identify opportunities to reduce flood risk overall and to demonstrate that the measures go beyond just managing the flood risk resulting from the development. Reductions could be achieved, for example by:

- Incorporating green infrastructure within the layout and form of development to make additional space for the flow and storage of flood water;
- Providing Sustainable Drainage Systems, that manage flood risk beyond the proposed site and above the usual standard, such as by removing surface water from existing combined sewers;
- Providing or making contributions to flood risk management infrastructure that will provide additional benefits to existing communities and/or by

safeguarding the land that would be needed to deliver it.

Further guidance is provided on reducing the causes and impacts of flooding.

In order to demonstrate that the Exception Test has been satisfied without securing measures that would reduce flood risk overall, it will need to be demonstrated that such measures cannot be identified or are unfeasible.

Please see How to assess the suitability of development where there is a possibility it will increase flood risk elsewhere

Paragraph: 037 Reference ID: 7-037-20220825

Revision date: 25 08 2022

The role of the Environment Agency and Lead Local Flood Authorities in assessing planning applications

How should the Environment Agency be involved where there is a risk of flooding?

There is a statutory requirement for local planning authorities to consult the Environment Agency for developments in certain areas of flood risk (as defined in Schedule 4 of the Town and Country Planning (Development Management Procedure) (England) Order 2015 (http://www.legislation.gov.uk/uksi/2015/595/schedule/4/made) before granting planning permission. The Environment Agency provides flood risk guidance (https://www.gov.uk/guidance/flood-risk-assessment-standing-advice) for local planning authorities and developers on what to include in a flood risk assessment, when to consult the Environment Agency (https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities) and how to address flood risk using standing advice.

When local planning authorities are providing pre-application advice on development proposed in flood risk areas, they can encourage developers to approach the Environment Agency for detailed advice where flood risk standing advice requires consultation with the Environment Agency.

All local planning authorities should notify the Environment Agency (https://www.gov.uk/guidance/determining-a-planning-application#para019) of the decision on any planning application where the Agency has objected on flood risk grounds.

Paragraph: 038 Reference ID: 7-038-20220825

Revision date: 25 08 2022

What must happen if a local planning authority wants to grant permission for a major development against Environment Agency flood risk advice (referral to the Secretary of State)?

For any planning application for major development where the local planning authority is minded to grant permission and the proposal:

1. Is within Flood Zones 2 or 3, or on land within Flood Zone 1 which has been notified to the local planning authority as having critical drainage problems; and

2. Is the subject of a sustained objection by the Environment Agency on flood-risk grounds,

the local planning authority must follow the procedure provided for in the Town and Country Planning (Consultation) (England) Direction 2021 (https://www.gov.uk/government/publications/the-town-and-country-planning-consultation-england-direction-2021). Prior to this, the authority, the Agency and the applicant should first make all reasonable endeavours to negotiate and come to an agreement as to whether changes could be made to the application that would enable the Agency to withdraw its objection. The referral process set out in the Direction will need to be followed by the local planning authority unless the Environment Agency withdraws its flood risk objection in writing. This means that if the Agency still concludes that it is unable to withdraw its objection and the authority is still minded to grant permission, then the authority must refer the application to the Secretary of State for possible call-in. All documents prescribed by the Direction must be submitted as soon as practicably possible to the Secretary of State, upon which 21 days is the prescribed period in which a call-in decision may be made. During that period the Local Planning Authority must not make a decision on the application unless the Secretary of State advises no call-in will be made before the elapse of the 21 days.

In this context, “major development” means:

- in respect of residential development, the provision of 10 or more dwellings, or a site of 0.5 hectares or more if the number of dwellings is unknown;
- in respect of non-residential development, new floorspace of 1,000 square metres or more, or a site of 1 hectare or more.

The Environment Agency publishes transparency data comprising an annual list of all those planning applications to which it made an initial objection on the basis of flood risk (https://www.gov.uk/government/publications/environment-agency-objections-to-planning-on-the-basis-of-flood-risk). Many of these issues will be resolved before a final decision is made by the Local Planning Authority. Where the

Environment Agency records the Local Planning Authorities final decision, the list also indicates whether or not Environment Agency advice was followed.

The list will help local authorities complete their annual monitoring reports and meet their reporting obligations to government under the Single Data List. The list also helps measure the effectiveness of local planning in relation to flood risk.

Paragraph: 039 Reference ID: 7-039-20220825

Revision date: 25 08 2022

How should the lead local flood authority be involved when assessing planning applications?

When considering proposals for major development the local planning authority will need to consult the lead local flood authority on surface water drainage. Local planning authorities may find it helpful to agree with lead local flood authorities the circumstances and locations where site specific flood risk assessments will be required due to surface water or other local flood risks and lead local flood authority advice can be sought on other planning applications which raise surface water or other local flood risk issues. This can be achieved by having regard to the available information on local flood risks, including the Strategic Flood Risk Assessment and the updated map of flood risk from surface water (https://www.gov.uk/check-long-term-flood-risk).

Where surface water or other local flood risks are likely to significantly affect a proposed development site, early discussions between the planning authority and the developer will help to identify the flood risk issues that the authority would expect to see addressed in the planning application and accompanying site-specific flood risk assessment.

Paragraph: 040 Reference ID: 7-040-20220825

Revision date: 25 08 2022

Addressing residual flood risk

What is “residual risk”?

Residual risk comes in two main forms:

- Residual risk from flood risk management infrastructure; and

- Residual risk to a development once any site-specific flood mitigation measures are taken into account.

Examples of residual flood risk from flood risk management infrastructure include:

- a breach of a raised flood defence, blockage of a surface water conveyance system or failure of a pumped drainage system;
- failure of a reservoir; and
- a flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event which the drainage system cannot accommodate.

Examples of residual flood risk to a development include:

- the depth of internal flooding predicted after any raising of land or floor levels;
- the flood hazard to which people would be exposed on access or escape routes after they have been raised; and
- a failure of flood forecasting or flood warning and the risks associated with people not receiving warnings or acting upon them.

When considering residual risks over the lifetime of development, local planning authorities will need to make informed decisions about the likely presence of flood risk management infrastructure in future, taking advice from relevant risk management authorities. Where flood risk management infrastructure is likely to be improved to keep pace with climate change, the potential consequences of flooding resulting from breach or failure of that improved infrastructure is likely to be the main driver for mitigation.

Where infrastructure is unlikely to be improved, the potential consequences of flooding resulting from overtopping or the design standard being exceeded will also be an important consideration. It is important to consider the consequences of both overtopping and breach, as the nature of flooding will be different in each case. There may, therefore, be a need for different flood risk management measures.

Paragraph: 041 Reference ID: 7-041-20220825

Revision date: 25 08 2022

How can residual risk be addressed?

Residual risk should be minimised using each stage of the process set out in paragraph 004 of this guidance It will not be appropriate to rely solely on emergency plans to mitigate residual risk.

Where residual risk from flood risk management infrastructure affects large areas, the Strategic Flood Risk Assessment will need to indicate the nature, severity and variation in risk within this area, and provide guidance for residual risk issues to be covered in site-specific flood risk assessments. It may also be appropriate for this information to inform a sequential approach to the location of development within these areas, where the initial application of the Sequential Test is unable to steer development to lower risk areas. Where necessary, local planning authorities should use information on identified residual risk to state in strategic policies their preferred mitigation strategy for ensuring development will be safe throughout its lifetime in relation to urban form, risk management and where flood mitigation measures are likely to have wider sustainable design implications.

Areas behind flood defences are at particular risk from rapid onset of fast-flowing and deep-water flooding, with little or no warning if defences are breached. Measures need to be designed to:

- avoid internal flooding from residual risk from flood risk management infrastructure wherever possible; and
- ensure people are not exposed to hazardous flooding, irrespective of the development's vulnerability classification.

Paragraph: 042 Reference ID: 7-042-20220825

Revision date: 25 08 2022

When are emergency plans needed?

One of the considerations to ensure that any new development is safe, including where there is a residual risk of flooding for flood risk management infrastructure, is whether adequate flood warnings would be available to people using the development. An emergency plan will be needed wherever emergency flood response is an important component of making a development safe. Emergency plans will be essential for sites at risk of flooding used for holiday or short-let caravans and camping and for any site with transient occupancy (e.g. hostels and hotels).

Paragraph: 043 Reference ID: 7-043-20220825

Revision date: 25 08 2022

What are the important considerations for emergency plans?

Emergency plans will need to take account of the likely impacts of climate change, e.g. increased water depths and the impact on escape routes. In consultation with emergency planners and services, the local planning

authority will need to ensure that agreed emergency plans are secured and implemented through appropriate planning conditions or planning agreements.

The emergency services are unlikely to regard developments that increase the scale of any rescue that might be required as being safe. Even with defences in place, if the probability of inundation is high, safe access and escape should be maintained for the lifetime of the development. The practicality of safe evacuation from an area will depend on:

- the type of flood risk present, and the extent to which advance warning can be given in a flood event;
- the number of people that would require evacuation from the area potentially at risk;
- the adequacy of both evacuation routes and identified places that people from evacuated places use/are taken to (and taking into account the length of time that the evacuation may last); and
- sufficiently detailed and up to date multi-agency flood plans being in place for the locality that address these and related issues. These are prepared by local resilience forums (https://www.gov.uk/guidance/local-resilience-forums-contact-details).

Paragraph: 044 Reference ID: 7-044-20220825

Revision date: 25 08 2022

Who should be consulted on emergency planning issues?

Local planning authorities are advised to consult with their emergency planning officers as early as possible during the preparation of plans and strategic flood risk assessment, and also regarding any planning applications which have implications for emergency planning. Where development is proposed or expected in flood risk areas with implications for emergency planning, local planning authorities should work with their emergency planning officers to produce local guidelines setting out requirements for flood warning, evacuation and places of safety, against which individual planning applications can then be judged. These should avoid additional burdens on emergency services, explore opportunities for development proposals to address any shortfall in emergency service and infrastructure capacity, and minimise the need for further consultation at planning application stage.

Where issues affecting emergency services are identified during Plan preparation, it may be relevant to contact the local resilience forum – multi-agency partnerships made up of representatives from local public services which prepare for local incidents and catastrophic emergencies. Or in some

cases, it may be appropriate for the local planning authority to consult the emergency services on specific emergency planning issues related to new developments.

Paragraph: 045 Reference ID: 7-045-20220825

Revision date: 25 08 2022

What emergency planning considerations are there in relation to reservoirs?

The failure of a reservoir has the potential to cause catastrophic damage due to the sudden release of large volumes of water. The local planning authority will need to evaluate the potential damage to buildings or loss of life in the event of dam failure, compared to other risks, when considering development downstream of a reservoir. Local planning authorities are also advised to consult with the owners/operators of raised reservoirs, to establish constraints upon safe development.

Local planning authorities should also consider any implications for reservoir safety (https://www.gov.uk/guidance/reservoirs-owner-and-operator-requirements#reservoir-safety) and reservoir owners and operators caused by new development located downstream of a reservoir, such as the cost of measures to improve the design of the dam to reduce flood risk, the operation of the reservoir, and general maintenance costs, by consulting with reservoir owners and operators on plan and development proposals. Local authorities, as category 1 responders (https://www.gov.uk/guidance/preparation-and-planning-for-emergencies-responsibilities-of-responder-agencies-and-others), can access more information about reservoir risk and reservoir owners using the Resilience Direct system (https://rdl.resilience.gov.uk/oxauth/auth/secureia/user-validation.htm). Developers should be expected to cover any additional costs incurred, as required by the National Planning Policy Framework's 'agent of change' policy (paragraph 187). This could be through Community Infrastructure Levy or section 106 obligations for example.

Applications will need to include any evidence Local Planning Authorities need to understand the impact of individual developments on reservoirs. In doing so, they need to refer to relevant guidance in the Institution of Civil Engineers publication Floods and Reservoir Safety (4th edition) (https://www.icevirtuallibrary.com/doi/book/10.1680/frs.60067) and the Environment Agency's Guide to risk assessment for reservoir safety management (https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/risk-assessment-for-reservoirs). It may be necessary to seek expert advice, such as from an All Reservoirs Panel Engineer, from the government accredited list under How to appoint a panel engineer (https://www.gov.uk/guidance/reservoirs-owner-and-operator-requirements#how-to-appoint-a-panel-engineer).

Consideration should also be given to the potential impacts of development on the operation of reservoirs. This is particularly important where impacts could affect the management of flood risk or the supply of water.

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Revision date: 25 08 2022

How can you ensure acceptable emergency planning provision?

Where access and escape are important to the overall safety of development in areas of flood risk, the local planning authority should consult with emergency planning staff and, where appropriate with the emergency services, unless local standards or guidelines have been put in place in lieu of consultation.

Strategic Flood Risk Assessments and site-specific policies in plans may help to identify relevant locations and developments. Safety considerations can affect the overall design or acceptability of the development. Developers should seek to minimise reliance on emergency services to make development safe.

Access considerations should include the voluntary and free movement of people during a 'design flood', as well as the potential for evacuation before a more extreme flood, considering the effects of climate change for the lifetime of the development. Access and escape routes need to be designed to be functional for changing circumstances over the lifetime of the development. Specifically:

- Access routes should allow occupants to safely access and exit their dwellings in design flood conditions. Vehicular access to allow the emergency services to safely reach the development during design flood conditions will also normally be required in addition to the requirements of the building regulations (https://www.gov.uk/government/publications/fire-safety-approved-document-b).
- Wherever possible, safe access routes should be provided that are located above design flood levels and which avoid flow paths. Where this is not possible, limited depths of flooding may be acceptable, provided that the proposed access is designed with appropriate signage etc. to make it safe. The acceptable flood depth for safe access will vary depending on flood velocities and the risk of debris within the flood water. Even low levels of flooding can pose a risk to people in situ (because of, for example, the presence of unseen hazards and contaminants in floodwater, or the risk that people remaining may require medical attention).
- Where a failure of flood risk management infrastructure would result in flooding with a speed-of-onset that would not allow sufficient time for safe

access and escape, an internally accessible place of safety, capable of accommodating the likely number of occupants or users of the proposed development should also be provided. Local planning authorities should consider whether the development can be considered safe given the predicted duration of flooding and the vulnerability of occupants/users. In doing so, local planning authorities should account for the likely impacts of flooding on essential services such as electricity, gas, telecommunications, water supply and sewerage. Any place of safety needs to be designed to facilitate rescue in case emergency care is needed or if it is unlikely to be safe for occupants/users to wait until flood waters have receded sufficiently for safe access/escape to be possible.

Paragraph: 047 Reference ID: 7-047-20220825

Revision date: 25 08 2022

What is needed to ensure safe evacuation and flood response procedures are in place?

To demonstrate to the satisfaction of the local planning authority that the development will be safe for its lifetime taking account of the vulnerability of its users, a site-specific flood risk assessment may need to show that appropriate evacuation procedures and flood response infrastructure are in place to manage the residual risk associated with an extreme flood event.

In locations where there is a residual risk of flooding due to the presence of defences, judgements on whether a proposal can be regarded as safe will need to consider the feasibility and provision of evacuation from the area should it be flooded. See also the advice on emergency plans.

Proposals that are likely to increase the number of people living or working in areas of flood risk require particularly careful consideration, as they could increase the scale of any evacuation required. To mitigate this impact it is especially important to look at ways in which the development could help to reduce the overall consequences of flooding in the locality, either through its design (recognising that some forms of development may be more resistant or resilient to floods than others) or through off-site works that benefit the area more generally. Where the impact cannot be wholly mitigated, developers need to cover the full cost of any additional emergency services provision needed, consistent with the ‘agent of change’ policy contained in the National Planning Policy Framework (at paragraph 187).

Paragraph: 048 Reference ID: 7-048-20220825

Revision date: 25 08 2022

Other flood risk considerations

How to assess the suitability of development where there is a possibility it will increase flood risk elsewhere.

Development or the cumulative impacts of development may result in an increase in flood risk elsewhere as a result of impacts such as the loss of floodplain storage, the deflection or constriction of flood flow routes or through inadequate management of surface water. Site-specific flood risk assessments should assess these impacts and demonstrate how mitigation measures have addressed them. Where flood storage from any source of flooding is to be lost as a result of development, on-site level-for-level compensatory storage, accounting for the predicted impacts of climate change over the lifetime of the development, should be provided. Where it is not possible to provide compensatory storage on site, it may be acceptable to provide it off-site if it is hydraulically and hydrologically linked.

Whilst the use of stilts and voids below buildings may be an appropriate approach to mitigating flood risk to the buildings themselves, such techniques should not normally be relied upon for compensating for any loss of floodplain storage. This is because voids do not allow water to freely flow through them, trash screens get blocked, voids get silted up, they have limited capacity, and it is difficult to stop them being used for storing belongings or other materials.

The loss of floodplain storage is less likely to be a concern in areas benefitting from appropriate flood risk management infrastructure or where the source of flood risk is solely tidal.

Where development proposals would result in the deflection or constriction of identified flood flow routes, a site-specific flood risk assessment will need to demonstrate that such routes will be safely managed within the site. The impact of development on flood flow routes may also be an important consideration for sites which benefit from the presence of flood risk management infrastructure and where flow routes are likely to affect the site in the event of a failure or exceedance of such infrastructure. Any such measures to ensure development will not increase risk elsewhere would need to be secured in any planning permission granted. The provision of multifunctional sustainable drainage systems, natural flood management and green infrastructure can also make a valuable contribution to mitigating the cumulative impacts of development on flood risk.

Where it is not possible to fully mitigate the impacts of development on flood risk elsewhere, now and in the future, the site-specific flood risk assessment will need to fully detail the extent and nature of the increase in risk and to assess its significance. This is likely to be a key consideration in whether planning permission is granted.

Paragraph: 049 Reference ID: 7-049-20220825

Revision date: 25 08 2022

How can planning limit the planned lifetime of development?

This can be achieved by time-limited planning permissions that can contain conditions relating to the review of that permission in relation to factors that may mean the development will need to relocate, for example:

- Rates of coastal erosion and change;
- Rate of increased flood risk due to climate change.

The Local Planning Authority should be satisfied that adequate and secure financial arrangements are in place for the removal of time-limited development.

Paragraph: 050 Reference ID: 7-050-20220825

Revision date: 25 08 2022

The flood risk issues raised by minor developments

What is meant by “minor development” in relation to flood risk?

Minor development means:

- minor non-residential extensions (industrial/commercial/leisure etc): extensions with a floorspace not in excess of 250 square metres.
- alterations: development that does not increase the size of buildings, e.g. 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) or any other development with a purpose not incidental to the enjoyment of the dwelling.

What is meant by “major” and “non-major” development?

“Major development” is defined by the Town and Country Planning (Development Management Procedure) (England) Order 2015 (Article 2) (https://www.legislation.gov.uk/uksi/2015/595/article/2/made).

‘Non major development’ is any development falling below the above thresholds but excluding minor development. For example, a planning application for 8 dwellings an office building creating 750 square metres of floor space, or a development with a site area of 0.4 hectares.

Are minor developments likely to raise flood risk issues?

Minor developments are unlikely to raise significant flood risk issues unless:

- they would have an adverse effect on a watercourse, floodplain or its flood defences;
- they would impede access to flood defence and management facilities; or
- where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows.

Even minor developments can affect flood risk within or beyond the property, particularly in areas susceptible to flooding. Applications for minor development involving extensions or additions should still meet the requirements to provide a site-specific flood risk assessment (as per footnote 55 of the National Planning Policy Framework). A pragmatic approach should be taken to the scope and level of detail of the assessment – a shorter, simpler assessment is likely to be sufficient in most such cases. As a minimum, the assessment needs to show that the development will be safe for its users for the intended lifetime of the development, without increasing flood risk elsewhere, and be sufficiently flood resistant and resilient to the level and nature of the flood risk.

The Environment Agency’s advice on flood risk assessment (https://www.gov.uk/flood-risk-assessment-for-planning-applications) is helpful for ensuring extensions or alterations are designed and constructed to conform to any flood protection already incorporated in the property, and include flood resilience measures in the design.

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The flood risk issues raised by changes of use

What issues need to be considered and what does the applicant need to do?

Applicants for permission to change the use of a property need to meet the requirements to provide a site-specific flood risk assessment set out in footnote 55 of the National Planning Policy Framework

(https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change#footnote55). It is for the applicant to show that the change of use meets the objectives of the National Planning Policy Framework's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively throughout the lifetime of the development.

Changes of use can increase the vulnerability of the development or result in occupation or use by people who are more vulnerable than the previous occupants/users to risks from flooding. Older existing properties may not previously have been subject to a flood risk assessment and appropriate mitigation measures, or the nature or severity of the flood risk may have changed over time, requiring more appropriate mitigation. Even if a development's vulnerability is not increasing, change of use can often present an opportunity to improve the flood resilience of existing development.

The local planning authority may have a Local Plan policy on what changes of use will be acceptable in areas at risk of flooding.

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Permitted development rights and flood risk

What are the flood risk considerations in relation to permitted development rights?

A number of permitted development rights are subject to prior approval by the local planning authority in respect of flooding. Such applications for prior approval in areas of flood risk must be accompanied by a site-specific flood risk assessment as required by the prior approval process set out in the Town and Country Planning (General Permitted Development) (England) Order 2015 (https://www.legislation.gov.uk/uksi/2015/596/contents/made) or footnote 55 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change) as applicable. Flooding prior approvals require consultation with the Environment Agency where the development is in an area within Flood Zone 2 or Flood Zone 3, or in an area within Flood Zone 1 which has critical drainage problems.

Rights that provide for hard surfaces, for householders or business, require that provision is made for a permeable or porous surface.

A local planning authority may consider making an Article 4 direction to remove a specific permitted development right, requiring planning

permission to be sought in each individual case, where such development could impact on the risk of flooding.

Paragraph: 053 Reference ID: 7-053-20220825

Revision date: 25 08 2022

Proximity to watercourses and need for a flood risk activity permit

If works are proposed on or near a river, flood defence or sea defence, a separate permission may be required. The type of permission needed and whether it must be sought from the Environment Agency, Lead Local Flood Authority or Internal Drainage Board will depend on the activity and location proposed. Check if you need permission to do work on a river, flood defence or sea defence (https://www.gov.uk/permission-work-on-river-flood-sea-defence).

If the development of the site involves any activity within specified distances of main rivers, a flood risk activity permit may be required in addition to planning permission. For non-tidal main rivers, a flood risk activity permit may be required if the development of the site is within 8 metres of a riverbank, flood defence structure or culvert. For tidal main rivers, a flood risk activity permit may be required if the development of the site is within 16 metres of a riverbank, flood defence structure or culvert. A flood risk activity permit may also be required for activity (e.g. land raising) in the floodplain of a main river if it could affect flood flow or storage, and potential impacts are not controlled by a planning permission.

The Environment Agency has details on obtaining a Flood Risk Activity Permit (https://www.gov.uk/guidance/flood-risk-activities-environmental-permits).

For works on or near an ordinary watercourse, which have the potential to obstruct flow, you must apply for Ordinary Watercourse Consent. Apply by contacting either:

- Your lead local flood authority through your local council (https://www.gov.uk/find-your-local-council); or
- The internal drainage board (IDB) (https://www.ada.org.uk/member_type/idbs/) in your area, if the proposed development lies within an internal drainage district.

Paragraph: 054 Reference ID: 7-054-20220825

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Sustainable drainage systems

What are sustainable drainage systems and why are they important?

Sustainable drainage systems (or SuDS) are designed to control surface water run off close to where it falls, combining a mixture of built and nature-based techniques to mimic natural drainage as closely as possible, and accounting for the predicted impacts of climate change. They provide benefits for water quantity, water quality, biodiversity and amenity. Many types of sustainable drainage systems are possible, contributing to reducing the causes and impacts of flooding. Multifunctional sustainable drainage systems are those that deliver a wider range of additional biodiversity and environmental net gains such as to:

- ameliorate urban heating and air pollution;
- replenish groundwater resources;
- contribute to biodiversity net gain targets;
- capture and re-use rainwater;
- store carbon;
- reduce the need for carbon-intensive construction techniques and pumped systems;
- release capacity in combined sewerage systems and at wastewater treatment works;
- create and connect valuable areas of blue-green infrastructure
- reduce lifetime maintenance costs; and
- enhance the attractiveness and value of new development by integrating water management with habitat for wildlife and opportunities for amenity and recreation.

The layout and function of drainage systems needs to be considered at the start of the design process for new development, as integration with road networks and other infrastructure can maximise the availability of developable land.

Guidance on the planning considerations on sustainable drainage needs to be read in conjunction with guidance related to:

- water quality (https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality#water-quality)
- what to think about if there are concerns about water supply/quality? (https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality#para019)

Paragraph: 055 Reference ID: 7-055-20220825

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What sort of sustainable drainage systems can be considered?

The types of sustainable drainage system which it may be appropriate to consider, will depend on the proposed development and its location, as well as any planning policies and guidance that apply locally. Where possible, preference should be given to multi-functional sustainable drainage systems, and to solutions that allow surface water to be discharged according to the following hierarchy of drainage options:

1. into the ground (infiltration);
2. to a surface water body;
3. to a surface water sewer, highway drain, or another drainage system;
4. to a combined sewer.

Particular types of sustainable drainage features may not be practicable or appropriate in some locations, such as the use of infiltration techniques from potentially polluting development in areas where groundwater provides a potable supply of water (e.g. Groundwater Source Protection Zone 1 (https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs)). Local planning authorities may find it helpful to set out those local situations where they anticipate particular sustainable drainage features:

- being inappropriate; or
- delivering the greatest benefits.

Local planning authorities may wish to encourage the incorporation of rainwater harvesting in sustainable drainage systems. Such systems are likely to be most appropriate for larger commercial or industrial applications and/or for development in areas with a current or likely future Water Stressed Area Classification (https://www.gov.uk/government/publications/water-stressed-areas-2021-classification). Refer to Water Efficiency Standards (https://www.gov.uk/guidance/housing-optional-technical-standards#water-efficiency-standards) and consider such features as part of a Water Cycle Study (https://www.gov.uk/guidance/water-cycle-studies).

Consideration of sustainable drainage systems early in the design process for development, including at the pre-application or master-planning stages, can lead to better integration, multi-functional benefits and reduced land-take.

Paragraph: 056 Reference ID: 7-056-20220825

Revision date: 25 08 2022

Where can advice be obtained on surface water drainage?

When considering major development with surface water drainage the local planning authority must consult the lead local flood authority (http://www.legislation.gov.uk/uksi/2015/595/schedule/4/made) on proposed drainage arrangements. For other developments, particularly in areas at risk of flooding, the local planning authority should consider the circumstances where it would be beneficial to seek advice from the lead local flood authority. Local planning authorities are also advised to consult as appropriate:

1. The relevant sewerage undertaker where adoption by the undertaker or a connection with a public sewer is proposed.
2. The Environment Agency, in areas with critical drainage problems (https://data.gov.uk/dataset/d10fb8e5-f3af-48c1-a489-8c975b0165de/areas-with-critical-drainage-problems) (for non-major and major development in Flood Zone 1 consultation is a legal requirement if the Local Planning Authority receives notification from the Environment Agency).
3. The relevant highway authority for an affected road.
4. The Canal and River Trust, if the drainage system may directly or indirectly involve the discharge of water into or under a waterway managed by them.
5. An internal drainage board, if the drainage system may directly or indirectly involve the discharge of water into an ordinary watercourse (within the meaning of section 72 of the Land Drainage Act 1991 (http://www.legislation.gov.uk/ukpga/1991/59/contents)) within the board's district.

Non-statutory technical standards (https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards) are available to guide decisions about the design, maintenance and operation of sustainable drainage systems. Refer to the Environment Agency's approach to groundwater protection (https://www.gov.uk/government/publications/groundwater-protection-position-statements). Detailed industry guidance (for example CIRIA's SuDS Manual (https://www.ciria.org/ItemDetail?iProductCode=C753&), the Institution of Civil Engineers' SuDS Route Maps (https://www.ice.org.uk/engineering-resources/best-practice/sustainable-drainage-systems-latest-guidance/), provide technical details for the suitability of sustainable drainage systems for a wide range of design characteristics.

Applicants and developers should take into consideration the above.

Paragraph: 057 Reference ID: 7-057-20220825

Revision date: 25 08 2022

Are there particular factors the local planning authority will need to address when considering a sustainable drainage system as part of a planning application?

The local planning authority should be satisfied that the minimum standards of operation for the proposed sustainable drainage system are appropriate, and that there are clear maintenance and adoption arrangements in place for the lifetime of the development. The local planning authority will need to consider whether the proposed standard of construction would facilitate adoption and maintenance by an appropriate body such as the water and sewerage company under the Ofwat-approved Sewerage Sector Guidance (https://www.water.org.uk/sewerage-sector-guidance-approved-documents/). Also refer to the non-statutory technical standards (https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards).

The use of monitoring and operation technology as part of sustainable drainage systems could help to optimise their effectiveness and allow their operation to be adapted over time.

Paragraph: 058 Reference ID: 7-058-20220825

Revision date: 25 08 2022

What information on sustainable drainage needs to be submitted with a planning application?

Where SuDS are required in accordance with paragraphs 167 and 169 of the National Planning Policy Framework, to reduce delays in the planning process, applicants need to submit a sustainable drainage strategy containing proportionate information on the proposed sustainable drainage systems as part of their planning application (including outline applications), having regard to the nature and scale of the development proposed. Where a site-specific flood risk assessment is required, it may be appropriate to combine the two. Local planning authorities should consider setting out requirements for supporting information on sustainable drainage systems as part of their local list of information requirements (https://www.gov.uk/guidance/making-an-application#Local-information-requirements).

Supporting information will need to describe the existing and proposed surface water management arrangements to ensure there is no increase in flood risk to others off-site. It may need to address:

1. What are the existing surface water drainage arrangements for the site?
2. If known, what (approximately) are the existing rates and volumes of surface water run-off generated by the site?

3. What are the proposals for managing and discharging surface water from the site using sustainable drainage systems and accounting for the predicted impacts of climate change? What are the proposals for restricting discharge rates?
4. Demonstrate how the hierarchy of drainage options has been followed. Explain and justify why the types of sustainable drainage systems and method of discharge have been selected and why they are considered appropriate. Where sustainable drainage systems are considered to be inappropriate, provide clear evidence to justify this. Where cost is a reason for not including sustainable drainage systems, provide information to enable comparison with the lifetime costs of a conventional public sewer connection.
5. How have sustainable drainage systems been integrated with other aspects of the development such as open space or green infrastructure, so as to ensure an efficient use of the site?
6. What multifunctional benefits will the sustainable drainage system provide? For major developments, if multifunctional sustainable drainage systems are not being provided, what evidence is there that such techniques are not possible?
7. What opportunities to reduce the causes and impacts of flooding have been identified and included as part of the proposed sustainable drainage system?
8. How will run-off from the completed development be prevented from causing an impact elsewhere?
9. How has the sustainable drainage system been designed to facilitate maintenance and, where relevant, adoption? What are the plans for ensuring an acceptable standard of operation and maintenance throughout the lifetime of the development?

Paragraph: 059 Reference ID: 7-059-20220825

Revision date: 25 08 2022

What considerations apply to the adoption of sustainable drainage systems?

Proposals for Sustainable Drainage Systems should include arrangements for their long-term maintenance. Possible arrangements could include (but are not limited to) adoption by:

- a water and sewerage company
- the local authority
- the lead local flood authority
- a community trust

- a private management company

Adoption bodies may have their own specific approval criteria and protocols in place for sustainable drainage systems that need to be satisfied prior to any adoption or maintenance agreement being taken forward. These will need to be examined early in the design process to ensure any such criteria are clearly understood by the applicant.

Section 104 of the Water Industry Act 1991 (http://www.legislation.gov.uk/ukpga/1991/56/section/104) allows for water and sewerage companies to adopt drainage assets that fall within the legal meaning of a sewer (including sewage disposal works) or lateral drain. Some sustainable drainage systems can therefore be considered adoptable by the relevant water and sewerage company. In considering such an adoption route, applicants are advised to consult with the appropriate water and sewerage company at the earliest opportunity, ideally at the design stage of the development. The water and sewerage company is likely to want to see full details of a sustainable drainage system proposed for adoption as part of any Section 104 application. The Ofwat-approved Sewerage Sector Guidance (https://www.water.org.uk/sewerage-sector-guidance-approved-documents/) sets out those design and construction standards that need to be met in order for qualifying features to be adopted by the relevant water and sewerage company.

Paragraph: 060 Reference ID: 7-060-20220825

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Are other permits needed for sustainable drainage systems?

In some cases, a separate permission may be needed for sustainable drainage systems that release polluting liquids:

- to surface water such as rivers or streams
- directly or indirectly to water underground

Check if an Environmental Permit is needed from the Environment Agency by visiting Check if you need an environmental permit (https://www.gov.uk/guidance/check-if-you-need-an-environmental-permit#what-you-need-a-permit-for). In many cases, an Environmental Permit will not be needed. Check when you do not need a permit (https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits#when-you-do-not-need-a-permit).

If a sustainable drainage system involves works on or near a river, flood defence or sea defence, a separate permission may be required. See Proximity to watercourses and need for a flood risk activity permit.

Paragraph: 061 Reference ID: 7-061-20220825

Revision date: 25 08 2022

Reducing the causes and impacts of flooding

In addition to the broad policy aim of securing net gains across each sustainable development objective, all Plans should make as much use as possible of opportunities presented by new development to reduce the causes and impacts of flooding, through the use of natural flood management techniques wherever they would be effective. Strategic flood risk assessments should identify such opportunities. Developments subject to the Exception Test also need to reduce flood risk overall, where possible. This section sets out a number of ways in which these requirements may be met.

Paragraph: 062 Reference ID: 7-062-20220825

Revision date: 25 08 2022

How can sustainable drainage reduce the causes and impacts of flooding?

A comprehensive sustainable drainage approach can help to alleviate flood risk as well as managing the impacts where flooding does occur, for example by:

- Maximising opportunities for infiltration of surface water through replacement of impermeable surfaces with permeable surfaces;
- Maximising opportunities for planting and vegetated areas, in preference to engineered surfaces, to increase evapo-transpiration and provide improvements for biodiversity and wider natural capital benefits;
- Providing additional surface water storage over and above the minimum requirements e.g. an over-sized pond, to accommodate more extreme rainfall events; and
- Reducing surface water loadings on the existing sewerage network. This could include using systems to capture run-off from surrounding development, not just the proposed development, by incorporating it into the provision of an area-wide strategic sustainable drainage system, planned in conjunction with local risk management authorities and sewerage providers. This approach could help reduce the risk of sewer flooding and free up capacity in wastewater treatment works, off-setting the need for off-site reinforcements of the sewerage network.

Paragraph: 063 Reference ID: 7-063-20220825

Revision date: 25 08 2022

What is natural flood management and how can it reduce the causes and impacts of flooding?

Natural flood management techniques work with natural processes to protect, restore and emulate the natural functions of catchments, floodplains, rivers and the coast. They aim to manage the sources and pathways of flood waters whilst providing wider benefits to people, wildlife and the environment. Examples include:

- Land management such as removing impermeable surfacing to maximise infiltration, planting trees to increase evapo-transpiration, or making green space where flood waters are most likely to flow or collect, or where rivers and their meanders are likely to migrate;
- River restoration (https://www.therrc.co.uk/river-restoration) such as removing culverts and other capacity restrictions, reintroducing meanders to provide additional storage, or naturalising river beds and banks to slow the flow;
- Coastal management such as creating saltmarshes, sand dunes and the realignment of coastal risk management structures to absorb wave energy, reduce the impacts of tidal surges and adapt to rising sea levels.

The contribution natural flood management techniques can make to reduce the causes and impacts of flooding will vary greatly from case to case. In some cases, they may be capable of comprehensively addressing flood risk to a site on their own, but in many cases they will need to be used in a complementary way alongside more conventional flood risk management techniques such as engineered defences. Natural flood management techniques can also contribute to the delivery of biodiversity and environmental net gains and support the implementation of river basin management plans (https://www.gov.uk/government/collections/river-basin-management-plans-2015) and the public body duty (http://www.legislation.gov.uk/uksi/2017/407/regulation/33/made) to have regard to them. See further information on other types of natural flood management (1 page summaries) (https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/working-with-natural-processes-to-reduce-flood-risk), along with a working with natural processes evidence directory (https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/working-with-natural-processes-to-reduce-flood-risk).

Paragraph: 064 Reference ID: 7-064-20220825

Revision date: 25 08 2022

How can the most suitable natural flood management techniques be identified?

Local circumstances will dictate which natural flood management techniques are most suitable in each case. You can contact the Environment Agency (https://www.gov.uk/government/publications/planning-and-marine-licence-advice-standard-terms-for-our-charges) or lead local flood authority (https://www.gov.uk/government/collections/flood-and-coastal-erosion-risk-management-authorities#lead-local-flood-authorities) to discuss what is appropriate in specific locations. The working with natural processes evidence base (https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/working-with-natural-processes-to-reduce-flood-risk) contains a wealth of information about natural flood management, including different techniques and their benefits. There are also some maps which may be useful as an initial guide. Mapping the potential for working with natural processes (https://www.arcgis.com/apps/mapviewer/index.html?webmap=7315f943998847e2b3797a85665f5438) shows areas where there may be an opportunity to implement particular techniques and Spatial prioritisation of catchments suitable for using natural flood management (https://environment.data.gov.uk/dataset/793f7e63-0c3e-49cd-808f-9f77e55382d2) identifies some (generally small and rural) catchments where measures that slow the flow of water are likely to provide the greatest flood benefits. These maps should only be used as a guide and should always be supplemented with local catchment knowledge.

Paragraph: 065 Reference ID: 7-065-20220825

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How to deliver natural flood management through strategic plans

The Strategic Flood Risk Assessment and assessment of infrastructure needs (https://www.gov.uk/guidance/plan-making#delivery-of-strategic-matters), are likely to be key sources of evidence to inform strategic policies. Policies could promote the use of natural flood management techniques and set out expectations for natural flood management contributions. Land that is likely to be needed for natural flood management could also be protected by safeguarding land for future flood risk management infrastructure.

Paragraph: 066 Reference ID: 7-066-20220825

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How can natural flood management be delivered through new development?

Developers can consider natural flood management opportunities early in the design process and engage in pre-application discussions with the Environment Agency (https://www.gov.uk/government/publications/planning-and-marine-licence-advice-standard-terms-for-our-charges), lead local flood authority (https://www.gov.uk/government/collections/flood-and-coastal-erosion-risk-management-authorities#lead-local-flood-authorities) and other risk management authorities (https://www.gov.uk/government/collections/flood-and-coastal-erosion-risk-management-authorities). It is likely to be beneficial to integrate natural flood management techniques with any proposed sustainable drainage systems and green infrastructure provision to maximise multifunctional benefits whilst minimising land-take. Site specific flood risk assessments will assess the impact of any proposed natural flood management techniques on flood risk.

Local Planning Authorities can use planning conditions (https://www.gov.uk/guidance/use-of-planning-conditions) and obligations (https://www.gov.uk/guidance/planning-obligations) where appropriate, to secure the implementation, retention and maintenance of any natural flood management techniques proposed, while it may be appropriate to use the community infrastructure levy or planning obligations to fund area-wide flood management improvements. Where off-site natural flood management techniques are proposed, it may be necessary for the Local Planning Authority to secure a contribution towards their delivery, through Community Infrastructure Levy (https://www.gov.uk/guidance/community-infrastructure-levy) or a planning obligation (https://www.gov.uk/guidance/planning-obligations).

Proposals to introduce new culverting or to build on top of existing culverting are likely to have adverse impacts on flood risk, ecology, human health and safety and amenity whilst increasing maintenance costs and hindering future options to restore the watercourse. Such proposals are likely to run contrary to natural flood management objectives and the objectives of River Basin Management Plans.

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Flood resistance and flood resilience

What is flood resistance and flood resilience?

Property Flood Resilience is an approach to building design which aims to reduce flood damage and speed recovery and reoccupation following a flood. It uses a combination of flood resistance and recovery measures (referred to here as resilience measures), and is described in the industry-developed CIRIA Property Flood Resilience Code of Practice (https://www.ciria.org/ItemDetail?iProductCode=C790F&Category=FREEPUBS),

which provides advice for both new-build and retrofit. It includes specific guidance for local authority planners (https://www.ciria.org/Resources/Free_publications/CoP_for_PFR_resource.aspx).

Flood resistance measures, or dry-proofing, stops water entering a building up to a safe structural limit. Resistance measures can be passive, such as flood doors which are normally closed; or active, such as air brick covers or removable flood barriers. Flood resistant construction can prevent entry of water or minimise the amount that may enter a building where there is short duration flooding with water depth up to approximately 0.6 metres, depending on the building's characteristics. Where measures to exclude water in this way are proposed above this level, advice should be sought from a suitably qualified building surveyor, architect or structural engineer.

This form of construction needs to be used with caution and accompanied by resilience measures that will speed-up flood recovery, as effective flood resistance can be difficult to achieve. Hydrostatic pressures exerted by floodwater can cause long-term structural damage, undermine the foundations of a building or cause leakage through the walls, floor or sub-floor, unless the building is specifically designed to withstand such stresses. In addition, temporary and demountable defences are not appropriate for new-build developments.

Flood resilience measures (also called recoverability measures, or wet-proofing), accept that water will enter the building, but through careful design and changes to the construction will minimise damage and allow faster cleaning, drying, repairing and re-occupancy of the building after a flood. Measures are preferably passive, such as the use of resilient building materials (https://knowledge.bsigroup.com/products/flood-resistant-and-resilient-construction-guide-to-improving-the-flood-performance-of-buildings/standard), or active such as moving sensitive equipment or belongings to upper floors when flooding is expected. Flood resistance and resilience measures cannot be used to justify development in inappropriate locations.

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What needs to be considered in the use of appropriate flood resistance and resilience measures?

The first preference is to apply the avoidance measures set out in paragraph 004 Where this is not possible, flood resistance and flood resilience measures may need to be incorporated into the design of buildings and other infrastructure, including behind flood defence systems. Resistance and resilience measures are unlikely to be suitable as the only mitigation measure to manage flood risk, but they may be suitable in some circumstances, such as:

- water-compatible and less vulnerable uses where temporary disruption is acceptable and the development remains safe;
- where the use of an existing building is to be changed and it can be demonstrated that the avoidance measures set out in paragraph 004 are not practicable and the development remains safe;
- as a measure to manage residual flood risk from flood risk management infrastructure when avoidance measures have been exhausted.

Further information on flood resistance and resilience is available as part of the advice on flood risk assessment for planning applications (https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications) available from the Environment Agency and in the CIRIA Property Flood Resilience Code of Practice (https://www.ciria.org/ItemDetail?iProductCode=C790F&Category=FREEPUBS).

Paragraph: 069 Reference ID: 7-069-20220825

Revision date: 25 08 2022

Planning and development in areas of coastal change

What is Integrated Coastal Zone Management?

Integrated Coastal Zone Management is a joined-up and participatory approach towards the planning and management of coastal areas (land and marine). The key principles are:

- a long term view
- a broad holistic approach
- adaptive management
- working with natural processes
- support and involvement of all relevant administrative bodies
- use of a combination of instruments
- participatory planning
- reflecting local characteristics

In coastal areas, local planning authorities will need to collaborate with the Marine Management Organisation to ensure that plans and policies across the land/sea boundary are coordinated. See further guidance on the Marine Management Organisation's role (https://www.gov.uk/government/organisations/marine-management-organisation/about).

Local planning authorities are strongly encouraged to adopt the principles set out in the Coastal Concordat for England (https://www.gov.uk/government/publications/a-coastal-concordat-for-england), working in collaboration with other relevant public bodies to coordinate the consenting process for coastal development.

The Local Government Association Special Interest Group on Coastal Issues comprises more than 50 local authorities from around the coast of England to represent the broad range of interests of coastal, estuarine and maritime communities. See the Coastal Change Adaptation Planning Guidance (https://lgacoastalsig.com/).

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What is a Coastal Change Management Area?

This is an area identified in plans as likely to be affected by physical changes to the coast. Such changes include erosion, coastal landslip, permanent inundation or accretion.

See related policy in paragraphs 170 to 173 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change).

Paragraph: 071 Reference ID: 7-071-20220825

Revision date: 25 08 2022

What are the considerations in defining Coastal Change Management Areas?

A Coastal Change Management Area will only need to be defined where rates of shoreline change are expected to be significant over the next 100 years, taking account of climate change (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances). They will not normally need to be defined where the accepted shoreline management plan policy is to hold or advance the line (maintain existing, or build new flood and coastal erosion risk management infrastructure) for the whole period covered by the shoreline management plan, subject to evidence of how this may be secured, taking advice from the Environment Agency. A Coastal Change Management Area should be defined where the shoreline management plan policy is anything other than hold or advance the line at any time during its plan period. In addition, where there is uncertainty about securing funding for the implementation of hold or advance the line policies, local planning authorities can still identify areas that could be affected by coastal change

to ensure prospective developers are made aware of the potential risks and inappropriate development is avoided.

Local planning authorities will need to demonstrate that they have considered shoreline management plans, which provide a large-scale assessment of the risks associated with coastal processes, and provide the primary source of evidence in defining the coastal change management areas.

Shoreline management plans (http://www.environment-agency.gov.uk/research/planning/104939.aspx) identify risk on time horizons up to 100 years and include maps showing the geographical extent of each risk area. In defining Coastal Change Management Areas, local planning authorities, using the best available evidence, may wish to identify separate sub-zones for each of the time horizons – or may alternatively rely on the latest shoreline management plan to provide that level of information.

Other sources that may help inform decisions on the appropriate area for the coastal change management area include:

- catchment flood management plans
- shoreline / coastal strategies
- estuary management plans
- harbour management plans
- river basin management plans (https://www.gov.uk/government/collections/river-basin-management-plans-2015)
- Environment Agency's national coastal erosion risk map (https://www.arcgis.com/apps/webappviewer/index.html?id=9cef4a084bbb4954b970cd35b099d94c&marker=636394.9963403749%2C332466.006489025%2C27700%2C%2C%2C&markertemplate=%7B%22title%22%3A%22%22%2C%22x%22%3A636394.9963403749%2C%22y%22%3A332466.006489025%2C%22wkid%22%3A27700%2C%22isIncludeShareUrl%22%3Atrue%7D&level=16)

Although the primary basis for defining the Coastal Change Management Area are the physical processes affecting the coast, the local planning authority may also wish to take into account the extent of existing settlements and requirements for land-use change or facilitating roll-back and relocation of land uses.

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What development will be appropriate in a Coastal Change Management Area?

Local Planning Authorities should ensure that strategic plans are sufficiently flexible to deal with changing circumstances in coastal areas, such as updates to relevant Shoreline Management Plans or sudden shifts in the protection afforded to a particular area.

General policy tests for considering development in Coastal Change Management Areas are set out in the National Planning Policy Framework.

Within this context, essential infrastructure (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification) may be permitted in a Coastal Change Management Area, provided there are clear plans to manage the impacts of coastal change on it, and it will not have an adverse impact on rates of coastal change elsewhere.

Ministry of Defence installations that require a coastal location can be permitted within a Coastal Change Management Area, provided there are clear plans to manage the impacts of coastal change. Where the installation will have a material impact on coastal processes, this will need to be managed to minimise adverse impacts on other parts of the coast.

For other development, the following may be appropriate, subject to the tests in the National Planning Policy Framework:

- Within the short-term risk areas (i.e. losses are expected within 20-years), a limited range of development directly linked to the coastal strip, such as beach huts, cafes/tea rooms, car parks and sites used for holiday or short-let caravans and camping – all with time-limited planning permissions;
- Within the medium (20 to 50-year) and long-term (up to 100-year) risk areas, a wider range of time-limited development, such as hotels, shops, office or leisure activities requiring a coastal location and providing substantial economic and social benefits to the community. Other significant development, such as key community infrastructure, is unlikely to be appropriate unless it has to be sited within the Coastal Change Management Area to provide the intended benefit to the wider community and there are clear, costed plans to manage the impact of coastal change on it and the service it provides;
- Existing buildings, infrastructure and land-use subject to the relevant planning permission could adapt and diversify to changing circumstances, where it reduces vulnerability, increases resilience and raises funds to facilitate subsequent relocation
- Permanent new residential development (including through change of use) will not be appropriate within a Coastal Change Management Area.

In all cases, there should still be careful consideration of the policies on development and flood risk, including table 2

Further advice on:

- how a vulnerability assessment can be used to demonstrate whether development is appropriate in a coastal change management area
- permitted development rights in areas at risk of coastal change
- how neighbourhood plans and Neighbourhood Development/Community Right to Build Orders should take account of coastal change

Advice is also available on what approach should be taken to making provision for the relocation of development away from Coastal Change Management Areas.

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When will a vulnerability assessment be required to demonstrate whether development is appropriate in a coastal change management area?

Applications for development in a Coastal Change Management Area may need to be accompanied by a coastal change vulnerability assessment, demonstrating whether or not the requirements of National Planning Policy Framework paragraph 172 can be met. It would be advisable for the developer to agree the scope of a coastal change vulnerability assessment (which should be appropriate to the degree of risk and the scale, nature and location of the development) in advance with the local planning authority and in consultation with the coast protection authority, the Environment Agency (where flood risk is also an issue) and any other relevant stakeholders.

In considering the requirements in paragraph 172 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change) a vulnerability assessment will need to demonstrate that the development:

- would not impair the ability of communities and the natural environment to adapt sustainably to the impacts of a changing climate;
- will be safe through its planned lifetime, without increasing risk to life or property, or requiring new or improved coastal defences;
- would not affect the natural balance and stability of the coast or exacerbate the rate of shoreline change to the extent that changes to the coast are increased nearby or elsewhere.

The coastal change vulnerability assessment should also consider measures for managing the development at the end of its planned life, including any proposals for the removal or relocation of the development before the site is immediately threatened by shoreline changes. The use of modular forms of construction can mean buildings can be disassembled and reassembled in a new location as a way of minimising the cost of relocation. Further advice on limiting the planned lifetime of a development.

Local Planning Authorities may also wish to set out in local policy or guidance other areas where applications for development will need to be accompanied by a coastal change vulnerability assessment.

Paragraph: 074 Reference ID: 7-074-20220825

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What issues do local planning authorities need to consider in relation to permitted development rights (https://www.gov.uk/guidance/when-is-permission-required#What-are-permitted-development-rights) in coastal change areas?

Where development is permitted development under the Town and Country Planning (General Permitted Development) (England) (Order) 2015 and is likely to result in an increase in the scale of property or the number or vulnerability of occupants at risk from coastal change, local planning authorities may want to consider whether to make use of their powers under Article 4 of the Order (http://www.legislation.gov.uk/uksi/2015/596/article/4/made) to require planning permission to be sought in each case.

Paragraph: 075 Reference ID: 7-075-20220825

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How can neighbourhood plans and neighbourhood development/community right to build orders take account of coastal change?

In any instance where a Neighbourhood Area is proposed in a Coastal Change Management Area, careful attention should be paid to the guidance on what development would be appropriate in such an area, including whether time-limiting planning permissions are needed. The local planning authority will need to be consulted about existing and anticipated levels of risk, and the types of development that may or may not be appropriate.

See related policy in paragraphs 170 to 173 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change).

Paragraph: 076 Reference ID: 7-076-20220825

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Flood Zone and flood risk tables

- Table 1: Flood Zones
- National Planning Policy Framework Annex 3 - Flood risk vulnerability classification (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification)
- Table 2: Flood risk vulnerability and flood zone 'incompatibility'

Paragraph: 077 Reference ID: 7-077-20220825

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Table 1: Flood Zones

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: • land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or

Flood Zone	Definition
	• land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). 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)

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the Strategic Flood Risk Assessment (https://www.gov.uk/guidance/local-planning-authorities-strategic-flood-risk-assessment) when considering location and potential future flood risks to developments and land uses.

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Table 2: Flood risk vulnerability and flood zone 'incompatibility'

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 †	**X**	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	**X**	**X**	**X**	✓ *

Key:

✓ Exception test is not required

X Development should not be permitted

Notes to table 2:

- This table does not show the application of the Sequential Test which should be applied first to guide development to the lowest flood risk areas; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to those developments set out in National Planning Policy Framework footnote 56 (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change). The Sequential and Exception Tests should be applied to 'major' and 'non major' development;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

"†" 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 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.

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Site-specific flood risk assessment: Checklist

1 - Development site and location

You can use this section to describe the site you are proposing to develop. It would be helpful to include, or make reference to, a location map which clearly indicates the development site.

a. Where is the development site located? (e.g. postal address or national grid reference)

b. What is the current use of the site? (e.g. undeveloped land, housing, shops, offices)

c. Which Flood Zone (for river or sea flooding) is the site within? (i.e. Flood Zone 1, Flood Zone 2, Flood Zone 3). As a first step, you should check the Flood Map for Planning (https://flood-map-for-planning.service.gov.uk/). Check the Strategic Flood Risk Assessment for the area available from the local planning authority to identify if the site is within Flood Zone 1 but at increased risk of flooding in future due to climate change

d. Also check the Strategic Flood Risk Assessment to identify if there are any other sources of flooding that may affect the site now or in the future.

2 - Development proposals

You can use this section to provide a general summary of the development proposals. It would be helpful to include, or make reference to, an existing block plan and a proposed block plan, where appropriate.

a. What are the development proposal(s) for this site? Will this involve a change of use of the site and, if so, what will that change be?

b. In terms of vulnerability to flooding, what is the vulnerability classification of the proposed development? See National Planning Policy Framework Annex 3 (https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification) for an explanation of the vulnerability classifications.

c. What is the expected or estimated lifetime of the proposed development likely to be (e.g. 100 years or 75 years)? See paragraph 006 of this guidance for further advice on how to assess the lifetime of developments for flood risk and coastal change purposes. (It may also be advisable to seek advice from the local planning authority).

3 - Sequential test

For developments in areas identified as being at risk of any source of flooding now or in the future. (If the development lies outside such areas, you can skip this section and go to section 4.)

You can use this section to describe how you have applied the sequential test (if needed as set out in paragraphs 162 to 163 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-

change)) to the proposed development, and the evidence to demonstrate how the requirements of the test have been met. See guidance on the sequential approach for further information. (You are advised to contact the local planning authority to confirm whether the sequential test should be applied and to ensure the appropriate level of information is provided.)

a. What search area have you used to identify alternative sites with a lower risk of flooding? What is your justification for choosing this search area?

b. Which alternative site(s) within the search area have you identified? Do you consider the site(s) to be reasonably available and appropriate for the proposed development? If not, what is your justification for this? With reference to the relevant strategic and site-specific flood risk assessments, are the sites at lower flood risk than your proposed site?

c. If you have identified any reasonably available, lower risk site(s), appropriate to the proposed development, do you consider there to be any other wider sustainable development objectives that would make steering the development to these other locations inappropriate? If so, please explain and justify this.

d. As well as flood risk from rivers or the sea, have you taken account of the risk from any other sources of flooding, such as surface water, in selecting the location for the development?

4 - Climate Change

How is flood risk at the site likely to be affected by climate change? (The local planning authority's Strategic Flood Risk Assessment should have taken this into account.) Further advice on how to take account of the impacts of climate change in flood risk assessments (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances) is available from the Environment Agency.

5 - Site specific flood risk

You can use this section to describe the risk of flooding to and from the proposed development over its expected lifetime, including appropriate allowances for the impacts of climate change. It would be helpful to include any evidence, such as maps and level surveys of the site, flood data sets (e.g. flood levels, depths and/or velocities) and any other relevant data (e.g. speed of onset and duration), which can be acquired through consultation with the Environment Agency (https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#get-information-to-complete-an-assessment), the lead local flood authority for the area, or any other relevant flood risk management authority.

Alternatively, you may consider undertaking or commissioning your own assessment of flood risk, using methods such as computer flood modelling.

a. What is/ are the main source(s) of flood risk to the site? (e.g. tidal/sea, fluvial or rivers, surface water, groundwater, other?). You should consider the flood mapping available from the Environment Agency's Flood Map for Planning (https://flood-map-for-planning.service.gov.uk/), the Strategic Flood Risk Assessment for the area, historic flooding records (e.g. the historic flood map (https://data.gov.uk/dataset/76292bec-7d8b-43e8-9c98-02734fd89c81/historic-flood-map) and local authority section 19 flood investigation reports (https://www.legislation.gov.uk/ukpga/2010/29/section/19)) and any other relevant and available information.

b. What is the probability of the site flooding, taking account of the maps of flood risk available from the Environment Agency's Flood Map for Planning (https://flood-map-for-planning.service.gov.uk/), the local planning authority's Strategic Flood Risk Assessment and any further flood risk information?

c. Are you aware of any other sources of flooding that may affect the site? What are the interactions between different sources of flooding?

d. What is the expected depth and level for the design flood? See paragraph 002 of this guidance for information on what is meant by a "design flood". If possible, flood levels should be presented in metres above Ordnance Datum (i.e. the height above average sea level).

e. With any relevant flood risk management infrastructure operating effectively, are properties expected to flood internally in the design flood and to what depth and velocity? The nature of any internal flooding resulting from any residual risk should also be specified. Internal flood depths should be provided in metres.

f. How will the development be made safe from flooding and the impacts of climate change (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances), for its lifetime, taking residual risk into account? Demonstrate how the steps set out in paragraph 004 have been followed to develop the strategy for addressing flood risk for the development.

g. How will you ensure that the development and any measures to protect the site from flooding will not cause any increase in flood risk off-site and elsewhere? Have you taken into account the impacts of climate change (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances), over the expected lifetime of the development (e.g. providing compensatory flood storage which has been agreed with the Environment Agency)?

h. Are there any opportunities offered by the development to reduce the causes and impacts of flooding? See paragraph 037 of this guidance for further advice.

i. What are the sources of uncertainty in the assessment of risk and how have they been accounted for in the proposed strategy for addressing flood risk?

6. Surface water management *

You can use this section to describe your arrangements for surface water management. Alternatively, these details could be presented in a separate sustainable drainage strategy. Details of what to include can be found in the sustainable drainage systems section.

7. Occupants and users of the development

You can use this section to provide a summary of the numbers of future occupants and users of the new development; the likely future pattern of occupancy and use; and proposed measures for protecting vulnerable people from flooding.

a. Will the development proposals increase the overall number of occupants and/or people using the building or land, compared with the current use? If this is the case, by approximately how many will the number(s) increase?

b. Will the proposals change the nature or times of occupation or use, such that it may affect the degree of flood risk to these people? If this is the case, describe the extent of the change.

c. Where appropriate, are you able to demonstrate how the occupants and users that may be more vulnerable to the impact of flooding (e.g. residents who will sleep in the building; people with health or mobility issues etc) will be located primarily in the parts of the building and site that are at lowest risk of flooding? If not, are there any overriding reasons why this approach is not being followed?

8. Exception test

You can use this section to provide the evidence to support certain development proposals in flood zones 2 or 3 if, following application of the sequential test, it is appropriate to apply the exception test, as set out in paragraphs 163-164 of the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change). See this guidance for further information on the exception test. It is advisable to contact the local planning authority to confirm whether the exception test needs to be applied and to ensure the appropriate level of information is provided.

a. Would the proposed development provide wider sustainability benefits to the community? If so, with reference to the site-specific flood risk assessment, could these benefits be considered to outweigh the flood risk to and from the proposed development? See paragraph 36 of this guidance for further information.

b. How can it be demonstrated that the proposed development will remain safe over its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere? See paragraph 038 of this guidance for further information.

c. Will it be possible for the development to reduce flood risk overall (e.g. through the provision of new or improved flood defences, or improved drainage)? See paragraph 038 for further advice.

9. Residual risk

You can use this section to describe any residual risks that remain after the flood risk management and mitigation measures are implemented, and to explain how these risks can be managed to keep the users of the development safe over its lifetime. See addressing residual flood risk (https://www.gov.uk/guidance/flood-risk-and-coastal-change#para41) for more information.

a. What flood related risks will remain after the flood risk avoidance, management and mitigation measures have been implemented?

b. How, and by whom, will these residual risks be managed over the lifetime of the development? (e.g. putting in place emergency plans).

10. Flood risk assessment credentials

You can use this section to provide details of the author and date of the flood risk assessment.

a. Who has undertaken the flood risk assessment?

b. When was the flood risk assessment completed?

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