Appendix E

E Local Plan sites assessment

This appendix provides a strategic assessment of the suitability of the sites to be considered for allocation in the Copeland Local Plan, relative to flood risk.

The information and guidance provided in this appendix (also supported by the SFRA maps in Appendix B and the development site assessment spreadsheet in Appendix C) can be used by Copeland Borough Council (CBC) to inform its Local Plan and provide the basis from which to apply the Sequential Test in the development allocation and development management process.

The LPA must use Appendix C to record its decisions on how to take each site forward or whether to remove a site from allocation, based on the evidence and strategic recommendations provided in this Level 1 SFRA. Recording decisions in the Sites Assessment Spreadsheet demonstrates that a sequential, sustainable approach to development and flood risk has been adopted.

CBC provided a GIS layer of sites under consideration (119 sites) with potential to be included as site allocations in the new Local Plan. Of these sites, 79 are housing, 21 for employment, 18 for opportunity areas and one for a wellbeing village. The sites with proposed use of 'Opportunity area' have been assessed with an unknown flood risk vulnerability.

In order to inform the Sequential Test to the allocation of development through the Local Plan (as illustrated in Figure 6-2 of the main report), this assessment entails a high-level GIS screening exercise overlaying the potential development sites against Flood Zones 1, 2, 3a and 3b, calculating the area of each site at risk. Flood Zones 1, 2 and 3 are sourced from the EA's Flood Map for Planning (Rivers and Sea) and Flood Zone 3 is split into Flood Zone 3a and Flood Zone 3b (functional floodplain) as part of this Level 1 SFRA, as required by the National Planning Policy Framework (NPPF). The flood zones are displayed on the GeoPDF maps in Appendix B.

Surface water risk to assessed sites is analysed by way of the EA's Risk of Flooding from Surface Water (RoFSW) dataset. For this SFRA, surface water flood risk is afforded the equivalent level of importance as fluvial risk in terms of strategic recommendations assigned to each potential development site.

It is important to consider that each individual site will require further investigation, following this assessment, as local circumstances may dictate the outcome of the strategic recommendation. Such local circumstances are discussed in Section E.1.

The outcomes of the site assessments are presented in the Sites Assessment spreadsheet in Appendix C.

E.1 Screening of proposed development sites

This section of the report draws together the results included in the assessment spreadsheet (Appendix B), produced from the GIS screening exercise. The LPA should use the spreadsheet to identify which sites should be avoided during the Sequential Test. If sites cannot be directed to Flood Zone 1, or where wider strategic objectives require development in areas identified through this Level 1 SFRA to be at risk of flooding, then the LPA should consider the compatibility of vulnerability classifications and Flood Zones and whether or not the Exception Test will be required before finalising sites for allocation in the Local Plan. Strategic recommendations are based on Tables

1, 2 and 3 of the flood risk and vulnerability tables[1] of the Flood Risk and Coastal Change Planning Practice Guidance (FRCC-PPG) (Paragraphs 065 - 067).

The decision-making process on site suitability should be transparent and information from this SFRA should be used to justify decisions to allocate land in areas at high risk of flooding.

The Sites Assessment spreadsheet provide a breakdown of each site and the area (in hectares) and percentage coverage of each fluvial flood zone and each surface water flood zone. Fluvial Flood Zones 3b, 3a, 2 and 1 are considered in isolation. Any area of a site within the higher risk Flood Zone 3b that is also within Flood Zone 3a is excluded from Flood Zone 3a and any within Flood Zone 3a is excluded from Flood Zone 2. This allows for the sequential assessment of risk at each site by addressing those sites at higher risk first. The same approach applies to the surface water flood zones. Maps showing the proposed sites categorised by strategic recommendation are located in Appendix F. Table E.1.1-1 shows the number of sites within each fluvial flood zone and Table E.1.1-2 shows the number of sites within each surface water flood zone.

Proposed use	Number of sites within...			
	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
Housing	69	9	6	6
Employment	14	5	3	5
Opportunity area	6	11	7	6
Wellbeing village	0	1	1	1
TOTAL	**89**	**26**	**17**	**18**
*Note: Sites may be in more than one flood zone. In reality, a site in Flood Zone 3a will also be in Flood Zone 2				

Table E.1.1-1: Number of proposed development sites at risk from fluvial flooding

Proposed use	RoFSW flood zone		
	Low risk (1 in 1000)	Medium risk (1 in 100)	High risk (1 in 30)
Housing	48	33	27
Employment	17	14	12
Opportunity area	14	12	9
Wellbeing village	1	1	1
TOTAL	**80**	**60**	**49**
*Note: Sites may be in more than one flood zone. In reality, a site in the high risk zone will also be in the medium and low risk zones			

Table E.1.1-2: Number of proposed development sites at risk from surface water flooding

[1] https://www.gov.uk/guidance/flood-risk-and-coastal-change#flood-zone-and-flood-risk-tables

The strategic recommendations are intended to assist the LPA in carrying out the Sequential Test and to highlight those sites at greatest flood risk.

Table E.1.1-3 shows the number of sites each strategic recommendation applies to:

- Strategic Recommendation A – consider withdrawal based on significant level of fluvial /tidal flood risk; **(if development cannot be directed away from risk areas, the site may be unsuitable for development)**
- Strategic Recommendation B – Exception Test required, if site passes Sequential Test;
- Strategic Recommendation C – consider site layout and design around the identified flood risk if site passes Sequential Test i.e. redrawing of development boundaries to remove risk or incorporation of risk through appropriate mitigation techniques;
- Strategic Recommendation D – site-specific FRA required as a minimum; and
- Strategic Recommendation E – subject to consultation with the LPA and LLFA, the site could be allocated or permitted for development on flood risk grounds due to little perceived risk.

Proposed use	Number of sites within...				
	A	**B**	**C**	**D**	**E**
Housing	1	1	8	61	8
Employment	0	0	6	15	0
Opportunity area	2	1	5	8	2
Wellbeing village	0	0	1	0	0
TOTAL	**3**	**2**	**20**	**84**	**10**

Table E.1.1-3: Number of proposed development sites per strategic recommendation

It is important to note that each individual site will require further investigation before development is allocated or permitted, as local circumstances may dictate the outcome of the strategic recommendation. Such local circumstances may include the following:

- Flood depths and hazards will differ locally to each at risk site therefore modelled depth, hazard and velocity data should be assessed for the relevant flood event outlines, including climate change (using the EA's February 2016 allowances at the time of writing, as part of a site-specific FRA or Level 2 SFRA.
- The RoFSW map is national scale and is not considered suitable for robustly identifying risk at the property level. For sites identified to be at significant risk from surface water based on the RoFSW, more detailed surface water modelling may therefore reveal increased risk or less risk to the site. The LLFA should be consulted when considering development viability at such sites.
- Current surface water drainage infrastructure and applicability of SuDS techniques are likely to differ at each site considered to be at risk from surface water flooding. Further investigation would therefore be required for any site at surface water flood risk. The LLFA requires that all planning applications

must be accompanied by an appropriate drainage strategy, independent of the requirement for a site-specific FRA.

- If sites have planning permission but construction has not started, the SFRA will only be able to influence the design of the development e.g. finished floor levels. New, more extensive flood extents (from new or updated models) cannot be used to reject development where planning permission has already been granted.
- It may be possible at some sites to develop around the flood risk. Planners are best placed to make this judgement i.e. will the site still be deliverable if part of it needs to be retained to make space for flood water?
- Surrounding infrastructure may influence scope for layout redesign/removal of site footprints from risk.
- Safe access and egress must exist at all times during a flood event for emergency response and evacuation.
- Current land use. A number of sites included in the assessment are likely to be brownfield, thus the existing development structure could be taken into account as further development may not lead to increased flood risk.
- Existing planning permissions may exist on some sites where the EA may have already passed comment and/or agreed to appropriate remedial works concerning flood risk. Previous flood risk investigations/FRAs may already have been carried out at some sites.
- Cumulative impacts. New development may result in increased risk to other potential or existing sites. This should be assessed through a Level 2 SFRA/site specific FRA or drainage strategy, if required.

E.1.1 Strategic Recommendation A – consider withdrawal based on significant level of fluvial or surface water flood risk (if development cannot be directed away from areas at risk)

This strategic recommendation DOES NOT take into account local circumstances, only that part of a site area falls within a flood zone.

Strategic Recommendation A applies to any site where one or more of the following criteria is true:

- A significant proportion (10%) of the site area is within the functional floodplain. The FRCC-PPG flood risk vulnerability classification states that only water-compatible uses and essential infrastructure should be permitted in the functional floodplain, though any essential infrastructure must pass the Exception Test and water-compatible uses must be designed and constructed to remain operational and safe for users in times of flood; must result in no net loss of floodplain storage; and not impede water flows and not increase flood risk elsewhere. Development should not be allocated or permitted for sites within the highly, more or less vulnerable categories (when allocated) that fall within the functional floodplain. If the developer can avoid 3b however, then part of the site could still be delivered.

It is important to state that it may still be possible to deliver a site that has been recommended for withdrawal from allocation upon more detailed investigation through a Level 2 SFRA.

Depending on local circumstances, if it is not possible to adjust the site boundary to remove the developable area from Flood Zone 3b to a lower risk zone then development should not be allocated or permitted.

Strategic Recommendation A applies to three sites due to the location in the functional floodplain and are displayed below in **Error! Reference source not found.**.

Any area within Flood Zone 3b must be left as open green space or the site boundary amended to remove the developable area from the risk area. For the smaller sites, this approach is unlikely to be achievable compared to larger sites where there may be enough space to limit the impact through effective SuDS. If this is not possible, the site should be withdrawn.

Site ID	Site name and location	Proposed Use	Site area (ha)	% area in FZ3b	% area at high surface water risk	% area at medium surface water risk
BE019	Land north of West Holme Forge	Housing	4.23	**10.86**	0.00	6.84
OWH08	Pow Beck	Opportunity area	12.02	**10.51**	0.46	3.77
WP005	Meadow View, Coach Rd	Opportunity area	5.70	**16.63**	0.10	2.89

Table E.1.1-1: Sites potentially unsuitable for development based on fluvial /tidal flood risk (if development cannot be directed away from risk areas, the site will be unsuitable for development)

Of the three sites recommended as being potentially unsuitable for development, one is proposed for housing use and two opportunity areas shown on the SFRA maps in Appendix B. There are three sites (Site IDs BE019, OS2 and WP005) that have been recommended as potentially unsuitable (if development cannot be directed away from flood risk areas, the site will be unsuitable for development) based on being located within the functional floodplain; any area within the functional floodplain must be either be removed from the site boundary (i.e. redrawn site boundaries) or the risk area incorporated into the site design as open space / amenity areas free from development and allowed to flood.

E.1.2 Strategic Recommendation B – Exception Test required

This strategic recommendation DOES NOT take account of local circumstances, only that part of a site area falls within a flood zone.

Strategic Recommendation B applies to sites where it is likely the Exception Test would be required, assuming the Sequential Test has been passed in the first instance. This does not include any recommendation on the likelihood of a site passing the Exception Test. A more in-depth investigation such as a Level 2 SFRA would be required to assess this. The developer / LPA should always attempt to avoid the risk area where possible.

It is up to the LPA to demonstrate, through the use of a Level 2 SFRA, that the sites are safe and viable for development prior to their allocation in the Local Plan. The EA would object to any Local Plan site allocations that could not be shown to be safe for viable development.

Strategic Recommendation B applies to sites where the following criteria is true:

- A significant proportion (10%) of a more vulnerable site (residential) is within Flood Zone 3a. Less vulnerable (employment) uses of land do not require the Exception Test.

NOTE: All development proposals in Flood Zone 3a must be accompanied by a flood risk assessment.

Strategic Recommendation B applies to two assessed sites shown in Table E.1.2-1.

All sites must pass both parts of the Exception Test in order to proceed. It is up to the LPA to prove whether the first part of the Exception Test can be satisfied, before moving on to the second part.

Site ID	Site name and location	Proposed Use	Site area (ha)	% area in FZ3a	% area at high surface water risk	% area at medium surface water risk
OCL01	Cleator Mills and surrounding area	Opportunity area	9.88	71.57	2.64	6.92
HSE1	Land to west of Santon Way	Housing	2.32	15.24	1.35	3.32

Table E.1.2-1: Sites which Strategic Recommendation B applies to

E.1.3 Strategic Recommendation C – consider site layout and design OR must consider SW flood risk through a full drainage strategy

This strategic recommendation DOES NOT take account of local circumstances, only that part of a site area falls within a Flood Zone.

Strategic Recommendation C applies to sites where one or more of the following criteria is true:

- A manageable proportion of any site type is within Flood Zone 3b.
- A manageable proportion of any residential or mixed use (more vulnerable) site is within Flood Zone 3a.
- A significant proportion (10%) of the site area of any site type is within the high risk or medium risk surface water flood outline, and therefore at significant surface water flood risk.

Overall there are 20 sites to which Strategic Recommendation C applies; of these sites, 10 have over 97% within Flood Zone 1, meaning surface water risk is what chiefly needs to be mitigated at these sites; though fluvial risk should still be assessed. For these sites, the developer should consider the site layout with a view to removing the developable area from the flood zone that is obstructing development i.e. the high and medium risk surface water flood risk zones. If this is not possible then the alternative would be to investigate the incorporation of on-site storage of water into the site design through appropriate SuDS.

Site Ref	Site name and location	Proposed Use	Site area (ha)	% area in FZ3a	% area in high surface water risk	% area in medium surface water risk
BE010	Land east of Bankfold	Housing	1.68	0.00	0.00	0.00
BE020	Land to rear/west Station House 2	Housing	1.18	0.24	1.26	1.40
BE020a	Land to rear/west Station House 2	Housing	3.47	0.06	0.39	0.45
CL004	Flosh Meadows	Housing	1.21	0.00	4.34	19.43
ES5	Haig Business Park	Employment	2.61	0.00	5.78	11.23
EN001	Ennerdale Bridge Extension	Housing	1.16	0.02	0.96	1.03
HBE2	Land adjacent to Mill Fields	Housing	1.66	0.00	0.00	0.00
HCM3	Former Ehenside School	Housing	8.45	0.01	0.12	1.56
HSE3	Town End Farm East	Housing	1.29	0.00	3.84	12.27
WE031	Hensingham Common	Employment	33.03	0.00	0.49	0.68
OWH05	Land at Ginns	Opportunity area	2.99	0.29	0.01	0.35
WS022	Mirehouse Road, Whitehaven	Wellbeing village	73.49	0.52	0.71	1.46
ES2a	Leconfield Industrial Estate	Employment	14.52	0.00	0.00	0.37
ES2c	Leconfield Industrial Estate Extension 2	Employment	13.90	6.20	10.25	15.24
ES7	Bridge End	Employment	12.59	1.40	0.21	0.59
ES11	Haverigg Industrial Estate	Employment	2.65	90.16	5.58	9.55
OMI01	Millom Pier	Opportunity Area	3.10	1.46	0.00	0.00
OWH09	Car Park Quay Street East	Opportunity Area	0.14	6.15	0.00	0.00
OWH10	Quay Street West	Opportunity Area	0.26	6.43	0.00	2.57
OWH11	Mark House & Park Nightclub	Opportunity Area	0.25	0.00	11.70	16.35

Table E.1.3-1: Sites which Strategic Recommendation C applies to

Strategic Recommendation C applies in instances where, from a high-level strategic viewpoint, there is a greater possibility that risk may be manageable onsite, following a detailed review of site layout and design around the flood risk, as part of a detailed FRA at the development planning stage, may enable the site to be allocated. Or it may be possible to incorporate suitable SuDS into the site layout to mitigate surface water risk on-site, following a detailed FRA or drainage strategy. Similarly, in line with the daylighting policy and where there may be opportunities to do so, there could be

potential to remove culverts and restore watercourses to a more natural condition. In many cases, opening culverts can reduce flood risk when combined with SuDS. A Level 2 SFRA and/or detailed site-specific FRA would be required to help inform on site layout and design.

Where Strategic Recommendation C applies to a potential site, the developer should consider the site layout with a view to excluding the developable area from the flood extent that is obstructing development. If this is not possible then the alternative would be to investigate the incorporation of on-site storage of water into the site design. Depending on local circumstances, if it is not possible to adjust the site boundary to confine the developable area to a lower risk zone then this part of the development should not be permitted (for any site in Flood Zone 3b), or the Exception Test should be undertaken and passed as part of a site-specific FRA for the more vulnerable sites within Flood Zone 3a.

Development planning should always be aware of the requirement to not develop within 8 metres of any watercourse, flood defence structure or culvert, or within 16 metres on a tidal river which is likely to be a regulated flood risk activity under Schedule 25 of the Environmental Permitting (England and Wales) Regulations 2016. Site layout and design will have to take this into consideration for development proposals. The 8 metre no development buffer zone of watercourses, shown on the SFRA maps in Appendix B, is recommended by the EA to allow ease of access to watercourses for maintenance works. Any site redesign, where Flood Zones 3b and 3a, are included within the site footprint, should allow water to flow naturally or be stored in times of flood through application of suitable SuDS.

The EA state that a Level 2 SFRA should be undertaken to inform the viability and capacity of the site prior to allocation in the Local Plan.

E.1.4 Strategic Recommendation D – development could be allocated subject to FRA

This strategic recommendation DOES NOT take account of local circumstances, only that part of a site area falls within a flood zone.

This recommends that development could be allocated due to low flood risk perceived from the EA flood zones, assuming a site-specific FRA shows the site can be safe for its lifetime and it is demonstrated that the site is sequentially preferable. A site within Flood Zone 2 could still be rejected if the conclusions of the FRA decide development is unsafe or inappropriate.

Strategic Recommendation D applies to sites where one or more of the following criteria is true:

- Any site within Flood Zone 2 that does not have any part of its footprint within Flood Zone 3a, with the exception of highly vulnerable development which would be subject to, and have to pass, the Exception Test.
- Less vulnerable and water compatible sites within Flood Zone 3a. No part of the site can be within Flood Zone 3b.
- Less vulnerable sites which are 100% within Flood Zone 1 where surface water flood risk is apparent but not considered significant.
- Any site which is 100% within Flood Zone 1 that is greater than or equal to 1 hectare in area.
- Any site at no present risk, but subject to risk from climate change.

Strategic Recommendation D applies to 84 assessed sites. Of which, 76 sites are 100% within Flood Zone 1 with a further four sites having over 90% within Flood Zone 1. The surface water risk at these sites will be nominal although will still require appropriate

assessment through an FRA. Each site-specific FRA should investigate the risk and mitigate accordingly, including consideration of plans for safe site access and egress during a possible flood event.

There are also eight sites (BE009, DI021, E12, ES13, OWH01, OWH02, OWH06, OWH07) at some risk from Flood Zone 2 and must therefore be subject to an FRA at planning application stage by the applicant. Each site-specific FRA should investigate the risk and mitigate accordingly, including consideration of plans for site access and egress during a possible flood event. Each FRA should include its own emergency plan.

Those sites that are a Strategic Recommendation D due to being subject to risk from climate change but are at no present risk may be subject to change when the climate change modelling is updated to encompass the newly updated peak river flow allowances published by the EA in July 2021.

E.1.5 Strategic Recommendation E – development could be allocated on flood risk grounds subject to consultation with the LPA / LLFA

This strategic recommendation DOES NOT take account of local circumstances, only that part of a site area falls within a flood zone.

This recommends that development could be allocated on flood risk grounds, based on the evidence provided within this SFRA. Further investigation (i.e. FRA) may be required by the developer at the planning application stage if any further or new information becomes available since the publication of this SFRA. Strategic Recommendation E applies to 10 sites.

- Strategic Recommendation E applies to any site with 100% of its area within Flood Zone 1 and not within any surface water flood zone, and therefore considered to be at very low risk.
- Water compatible sites with proposed use of open space where:
  - Site can remain operational and safe for users in times of flood;
  - There will be no net loss of floodplain storage;
  - Water flows will not be impeded and will not increase risk elsewhere.

E.2 Assessment of climate change

At the strategic level, it could be said that any site currently at risk, will likely be at increased risk in the long term, due to climate change. This does not account for any existing or planned flood defence works or mitigation solutions. However, for this SFRA, it should be assumed that all potential development sites identified to be at existing risk from fluvial flooding, are at risk from the effects of climate change. This accounts for 11 (11%) of the 102 potential development sites assessed.

To represent the increased flood risk resulting from climate change in fluvially dominated scenarios, 100 yr +20% climate change peak inflow uplifts for the models listed below were provided by the EA. There are 11 sites identified at risk from these climate change modelled outlines.

- Black Beck 2006
- Distington 2010
- Pow Beck 2012
- Tidal Annaside, Duddon-Sands, Ravenglass, and Whitehaven 2012
- River Ehen 2016

The absence of appropriate up-to-date modelling means it cannot be gauged as to what extent a site may be at increased risk. However, for this SFRA, Flood Zone 2 is used

as a proxy for Flood Zone 3 + 50% peak flow uplift for climate change. Based on climate change modelling elsewhere in England, Flood Zone 2 is generally larger in extent than the +50% upper end allowance for the 2080s. It can therefore be considered to be a worst-case scenario.

There may also be sites that are currently wholly located in Flood Zone 1 that may be at risk from climate change. Again, without appropriate modelling it is not possible to robustly identify such sites. In the absence of modelling we have therefore identified any site within Flood Zone 1 that is within 20 metres of Flood Zone 2 to be at some level of fluvial risk in the future. Again, this is a precautionary approach that is somewhat arbitrary in that there are a number of localised factors, such as topography; existing and future flood risk management practices; existing and future flood defence infrastructure, that would dictate whether any such sites would be at increased risk in the future. Using this approach, there are 2 sites that are currently shown to be in Flood Zone 1 that may be at risk in the long term. Together with the 22 sites at increased risk, this adds up to 24 (24%) of the 102 sites assessed.

It should be noted that changes in flood zone extents in well-defined floodplains will be more negligible compared to very flat floodplains. However, changes in flood depth within the more well-defined floodplains will be greater. The expected increase in flood extents and depths as a result of climate change will have implications for the type of development that is considered appropriate according to its vulnerability.

Using the above approaches, all sites identified to be at increased risk from climate change are indicated in the Sites Assessment Spreadsheet in Appendix C. It is recommended that each of these sites are subject to climate change modelling as part of, either, an addendum to this Level 1 SFRA, at the Level 2 SFRA stage, or the site-specific FRA stage.

This particularly applies to the sites (BE009, BE010, HBE2, HSE1, MI040, and WEOS5) that have a significant proportion in FZ2 or FZ3, and there is a medium or high risk that climate change will have an impact.

The EA's 2020 SFRA guidance states that the LPA…

…may need to commission new or updated modelling if:

- *models are not available*
- *climate change allowances (predicted effects of climate) in the model are not in line with current climate change allowances.*

You may be able to commission modelling with other planning authorities, the Environment Agency or relevant developers to share the benefits and costs. Any new modelling will need to go through a transparent quality assurance process to make sure it is fit for purpose. Contact your local Environment Agency office for the available data and to discuss joint working and quality assurance.

Time and budget constraints has not allowed for new modelling to be carried out as part of this Level 1 SFRA.

E.3 Summary of sites assessment outcomes

There are several consequential development considerations which could come out of the site assessment sequential testing process. Each outcome is discussed below. The LPA should refer to Section E.1 and Appendix C for details on the site assessments carried out for this SFRA.

E.3.1 Rejection of site

A site which fails to pass the Sequential Test and / or the Exception Test should be rejected, and development should not be permitted or allocated. Rejection would also apply to any more (residential, mixed use inclusive of residential) or less vulnerable (employment) sites within the functional floodplain where development should not be permitted or allocated. If the developer is able to avoid the functional floodplain, part of the site could still be delivered. However, depending on local circumstances, if it is not possible to adjust the site boundary to remove the site footprint from the functional floodplain to a lower risk zone then development should not be permitted.

In terms of surface water flood risk, if risk is considered significant, based on AEP or development vulnerability, or where the size of the site does not allow for on-site storage or application or appropriate SuDS then such sites could be rejected. The LLFA will be best placed to advise on site-specific surface water flood risk and whether sites can be taken forward or not.

E.3.2 Exception Test required

Applies to those sites that, according to the FRCC-PPG vulnerability tables, would require the Exception Test. Only water-compatible and less vulnerable land uses would not require the Exception Test in Flood Zone 3a. More vulnerable uses and essential infrastructure are only permitted if the Exception Test is passed and all development proposals in Flood Zone 3a must be accompanied by a Flood Risk Assessment at the planning application stage.

E.3.3 Consideration of site layout and design

Applies to sites where, based on the strategic assessment of risk, it may be possible to alter the site boundary to remove the risk from the site or to incorporate the risk within the site layout through careful design. Site layout and site design is important at the site planning stage where flood risk exists. The site area would have to be large enough to enable any alteration of the developable area of the site to remove development from the functional floodplain, or to leave space for on-site storage of flood water. Careful layout and design at the site planning stage may apply to such sites where it is considered viable based on the level of risk. Surface water risk and opportunities for SuDS should also be assessed during the planning stage.

Depending on local circumstances, if it is not possible to adjust the site boundary to remove the site footprint from the functional floodplain to a lower risk zone then development should not be allocated or permitted. If it is not possible to adjust the developable area from Flood Zone 3a to a lower risk zone or to incorporate the on-site storage of water within site design, then the Exception Test would have to be passed. Highly vulnerable sites should be rejected.

Any development within 8 metres of any flood defence structure or culvert on a Main River is likely to be regulated flood risk activity under Schedule 25 of the Environment Permitting (England and Wales) Regulations 2016. Any site redesign, where Flood Zone 3a is included within the site footprint, should allow water to flow naturally or be stored in times of flood through application of appropriate SuDS techniques (see Section 6.7 of the main report). Similarly, any change or alteration to an ordinary

watercourse within the site would need consent from the LLFA under the Land Drainage Act 1991[2].

E.3.4 Site-specific Flood Risk Assessment

A site-specific Flood Risk Assessment should assess whether a potential development is likely to be affected by current or future flooding (including effects of climate change) from any source. This should include referencing this SFRA to establish sources of flooding. Further analysis should be performed to improve the understanding of flood risk including agreement with the LPA and the EA on areas of functional floodplain that have not been specified within this SFRA. The LLFA should be consulted on risk from surface water and from ordinary watercourses.

According to the FRCC-PPG (Para 030), a site-specific FRA is:

"…carried out by (or on behalf of) a developer to assess the flood risk to and from a development site. Where necessary (see footnote 50 in the National Planning Policy Framework), the assessment should accompany a planning application submitted to the local planning authority. 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, and with regard to the vulnerability of its users (see Table 2 – Flood Risk Vulnerability of FRCC-PPG)."

The objectives of a site-specific FRA are to establish:

- Whether the development 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;
- Whether the development will be safe for its lifetime and pass the Exception Test, if applicable; and
- That an appropriate Emergency Plan is in place that accounts for the possibility of a flood event and shows the availability of safe access and egress points accessible during times of flood. (Para 030)

[2] https://www.legislation.gov.uk/ukpga/1991/59/contents

When is a Site-Specific FRA Required?

According to the NPPF (2019) footnote 50, a site-specific FRA should be prepared when the application site is:

- Situated in Flood Zone 2 and 3; for all proposals for new development (including minor development and change of use);
- 1 hectare or greater in size and located in Flood Zone 1;
- Located in Flood Zone 1 on land which has been identified by the EA as having critical drainage problems (i.e. within an ACDP);
- Land identified in the SFRA as being at increased flood risk in future (i.e. based on RoFSW mapping; sites within Flood Zone 2 that may be within Flood Zone 3 in the longer term (in the absence of modelled climate change outputs));
- At risk of flooding from other sources of flooding, such as those identified in this SFRA; or
- Subject to a change of use to a higher vulnerability classification which may be subject to other sources of flooding.

Optionally, the LPA may also like to consider further options for stipulating FRA requirements, such as:

- Situated in an area currently benefitting from defences;
- At residual risk from reservoirs or canals;
- Within a council designated CDA; or
- Situated over a culverted watercourse or where development will require controlling the flow of any watercourse, drain or ditch or the development could potentially change structures known to influence flood flow.

These further options should be considered during the preparation and development of the Local Plan.

Paragraph 031 of the FRCC-PPG contains information regarding the level of detail required in the FRAs and indicates that it should always be proportionate to the degree of flood risk whilst making use of existing information, including this SFRA. Paragraph 068 of the FRCC-PPG contains an easy to follow FRA checklist for developers to follow.

Together with the information in the FRCC-PPG, there is further detail and support provided for the LPA and developers via:

https://www.gov.uk/guidance/flood-risk-assessment-standing-advice

advice for LPAs:

https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities

also, EA guidance for Flood Risk Assessments for planning applications:

https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications

Section 6.5 of the main report provides further guidance for developers.

E.3.5 Sites passing the Sequential and Exception Tests

Development sites can be allocated or granted planning permission where the Sequential Test and the Exception Test (if required) are passed and agreement is reached between the LPA, the EA, the LLFA, UU and any ancillary stakeholders. In addition, a site is likely to be allocated without the need to assess flood risk where the indicative use is for open space. Assuming the site is not to include any development

and is to be left open then the allocation is likely to be acceptable from a flood risk point of view. However, for sites where there is potential for flood storage, options should be explored as part of a FRA.

In terms of opportunities for reducing flood risk overall as a requirement of the Exception Test, the FRCC-PPG states:

"Local authorities and developers should seek opportunities to reduce the overall level of flood risk in the area and beyond. This can be achieved, for instance, through the layout and form of development, including green infrastructure and the appropriate application of sustainable drainage systems, through safeguarding land for flood risk management, or where appropriate, through designing off-site works required to protect and support development in ways that benefit the area more generally." (Paragraph 50).

E.3.6 Surface water risk to assessed sites

For sites at surface water flood risk the following should be considered:

- Possible withdrawal, redesign or relocation for those sites considered to be at significant risk. More detailed surface water modelling may reveal increased risk or less risk to a site. The LLFA should be consulted when considering development viability at such sites;
- Outline drainage strategy to ascertain natural flow paths and topographic depressions, particularly for the larger sites which may influence sites elsewhere;
- A detailed site-specific FRA incorporating surface water flood risk management;
- Full drainage strategy encompassing detailed surface water modelling of proposed site layouts, attenuation areas, diversion of flow routes;
- Ensuring future maintenance of surface water and SuDS assets through s106 agreements;
- The size of development and the possibility of increased surface water flood risk caused by development on current greenfield land (where applicable), and cumulative impacts of this within specific areas;
- Management and re-use of surface water on-site, assuming the site is large enough to facilitate this and achieve effective mitigation. Effective surface water management should ensure risks on and off site are controlled;
- Larger sites could leave surface water flood-prone areas as open greenspace, incorporating social and environmental benefits;
- SuDS should be used where possible. Appropriate SuDS may offer opportunities to control runoff to greenfield rates or better. Restrictions on surface water runoff from new development should be incorporated into the development planning stage. For brownfield sites, where current infrastructure may be staying in place, then runoff should attempt to mimic that of greenfield rates, unless it can be demonstrated that this is unachievable or hydraulically impractical. Developers should refer to the national 'non-statutory technical standards for sustainable drainage systems' and other guidance documents cited in Section 6.8 of the main report;
- Runoff up to and including the 1 in 100 AEP event (1%) should be managed on-site where possible;
- Measures of source control should be required for development sites;

- Developers should be required to set part of their side aside for surface water management, to contribute to flood risk management in the wider area and supplement green infrastructure networks;
- Developers should be required to maximise permeable surfaces;
- Flow routes on new development where the sewerage system surcharges as a consequence of exceedance of the 1 in 30 AEP design event should be retained; and
- Whether the delineation of CDAs may be appropriate for areas particularly prone to surface water flooding. Detailed analysis and consultation with the LLFA and UU would be required. It may then be beneficial to carry out a local SWMP or drainage strategy for targeted locations with any such critical drainage problems. Investigation into the capacity of existing sewer systems would be required in order to identify critical parts of the system i.e. pinch points. Drainage model outputs could be obtained from UU to confirm the critical parts of the drainage network and subsequent recommendations could then be made for future development i.e. strategic SuDS sites, parts of the drainage system where any new connections should be avoided, and parts of the system that may have any additional capacity and recommended runoff rates.