

Portsmouth Local Plan 2038

Development and Tidal Flood Risk Position Statement



July 2021

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1. Executive Summary

- 1.1. Being a coastal city brings with it a huge array of benefits and the city wants to make the most of its historic and deeply rooted connection with the sea. However, the sea can also cause immense damage at times of extreme tides and weather, not only to the built fabric of the city, but also to people's health, livelihoods and even their lives. This threat cannot be ignored in the future planning of the city. The City Council acknowledges the risk and that any danger to people and property from flooding from the sea must be minimised. This paper sets out how the City Council is approaching this for the preparation of the new Local Plan.
- 1.2. Significant investment is planned in Portsmouth in order to accommodate the future needs of its residents, meet growth aspirations and bring about successful regeneration. Portsmouth is however a city that is exposed to significant degrees of flood risk with large areas to the south of the island and to the north, including the mainland, falling within flood zones 2 and 3, (areas most at risk of extreme flood events). This flood risk is expected to grow with the accompanying sea level rise brought about by future projected climate change.
- 1.3. The Council's approach to addressing development and flood risk in the city is guided by national policy as set out in the National Planning Policy Framework (NPPF) and the accompanying National Planning Practice Guidance (NPPG). This is in principle a four step approach, which aims to avoid inappropriate development in flood risk areas and to locate development away from flood risk whenever possible. The approach is to assess risk so it can be avoided in the first place, and where development needs to occur in areas of risk, to manage and mitigate that risk, so as to ensure that development is safe.
- 1.4. Using the latest methodology as set out by Government identifies a Local Housing Need for the city of 872 homes per annum, equivalent to a need for 17,701 new homes over the Plan period inclusive of appropriate delivery buffers. In response, the Council has undertaken a full assessment of the capacity of the city to accommodate development in the Housing and Economic Land Availability Assessment (HELAA). The document identified a potential capacity of approximately around 17,000 homes across the city in the same period although is expected to change as the plan progresses. Due to the built up nature of the city, and the level of development required, it is accepted that not all of this will realistically be able to be located in areas of no flood risk entirely and some must therefore be located within areas at risk of flooding. It is expected that applicants will have regard to all stages in the flood risk approach, and ultimately demonstrate how they have addressed flood risk in their proposals in accordance with the approach set out in this document.
- 1.5. In order to manage flood risk, a range of coastal defence works are currently being planned for, or being implemented around Portsmouth, by the Coastal Partners, a partnership of four local authorities of which Portsmouth City Council is a part, in order to ensure that flood risk from the sea is being managed and reduced. These are important not only for replacing old, deteriorating defence structures, but also for ensuring resilience to future climate change related sea level rise. This work is in varying stages of development with those around the north of Portsea Island already well under way and the commencement of the Southsea scheme.
- 1.6. The approach set out in this document has been put together in collaboration with the Environment Agency. The City Council will continue to work together with the Agency in respect to all matters concerning flood risk going forwards. If necessary this

document will be updated in the future in order to reflect any significant changes that might affect the approach to dealing with flood risk and development in the city.

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2. Introduction

Context

- 2.1. Being a coastal city brings with it a huge array of benefits and the city wants to make the most of its historic and deeply rooted connection with the sea. However, the sea can also cause immense damage at times of extreme tides and weather, not only to the built fabric of the city, but also to people's health, livelihoods and even their lives. Indeed, flood risk is arguably one of the biggest issues with regard to the future development of the city and this threat cannot be ignored in its future planning. The City Council acknowledges the risk and that any danger to people and property from flooding from the sea must be minimised. This paper sets out how the City Council is approaching flood risk in developing the new Local Plan.
- 2.2. Portsmouth has a shoreline with a total length of 44 km. The City Council is directly responsible for 23 km of Portsmouth's coastline with the remainder in private ownership, predominantly owned by the Ministry of Defence. The open coast (8 km) is the southern and most exposed shoreline of Portsea Island. The eastern section of this frontage is protected by a wide storm beach that has been accreting over several years which now buries the flood defences with shingle. Much of the western section of the open coastline consists of promenades behind sea walls or historic fortifications that defend the area against erosion. The shingle beach, between Clarence Pier and the aquarium, is subject to storm erosion with predominant beach drift from east to west. To maintain the level of this beach it is re-nourished with recycled material. Portsmouth's shoreline within Portsmouth Harbour and Langstone Harbour (36 km) is predominantly defined by sea wall structures built to prevent coastal erosion and flooding from the sea.
- 2.3. The basic measure of flood risk from the sea is the mapping of the flood zones published by the Environment Agency (EA). They show in Zone 2 those areas that have between a 1 in 1000 and a 1 in 200 year chance of flooding each year, and in Zone 3 those that have greater than a 1 in 200 chance of flooding. Flood Zone 1 shows those areas at low risk of flooding. These maps are updated frequently, and the latest version can always be found on the Government's website¹.
- 2.4. The current flood zones for Portsmouth are shown on the left hand map in figure 1 below. The Portsea Island Coastal Strategy (PICS)² identified that the number of properties at risk from a 0.5% annual exceedance probability of flooding, includes 4,211 residential, 364 commercial and 48 Ministry of Defence (MoD) properties. On the mainland, the Portchester to Emsworth Strategy (PEMS)³ estimated that there were a further 259 residential properties and 98 commercial properties at risk in the M27 and Farlington Marshes sections of coastal frontage.
- 2.5. With climate change, and predicted rates of sea level rise, the scale of the issue will only increase (as demonstrated in the right hand map of Figure 1). Indeed the PICS identified that with climate change the amount of properties at risk would increase to 9,355 residential, 950 commercial and 117 MoD properties. Whilst on the mainland the PEMS predicts an additional 3,102 residential and 321 commercial properties would be at risk by 2110 from a 0.5% annual exceedance probability of flooding event (greater than 1 in 200 year flood). It is for this reason that addressing the issue of flood risk is such a major objective for the city. Seeking to address flood risk will ensure the safety

¹ <https://flood-map-for-planning.service.gov.uk/>

² <http://www.escp.org.uk/portsea-island-coastal-strategy>

³ <https://www.escp.org.uk/portchester-castle-emsworth-strategy>

of existing and future residents and their property, and the sustainability of investment in the city into the future.

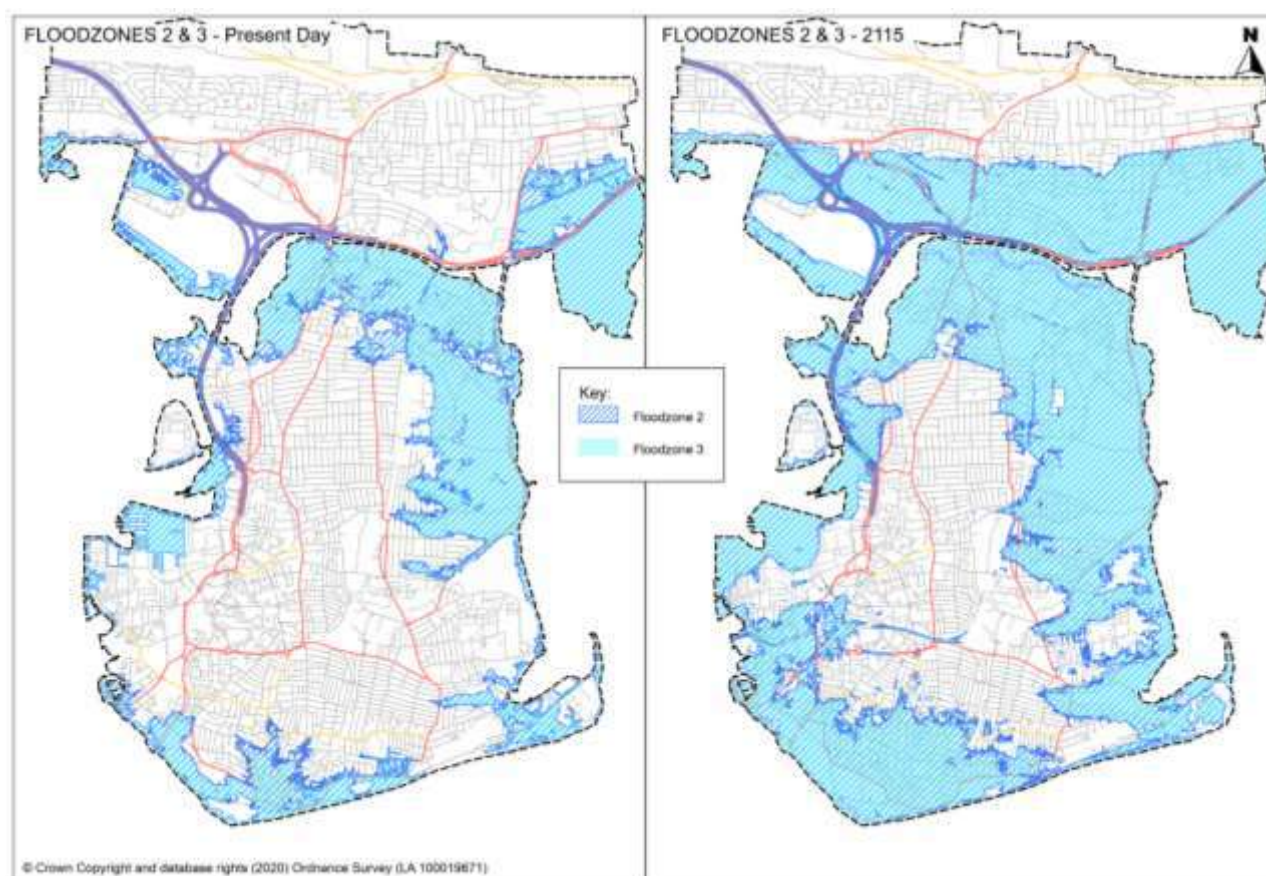


Figure 1 - EA flood zones March 2020 and predicted 2115

- 2.6. The planned levels of growth for the city up to 2038 are currently being assessed as part of the City Council's evidence gathering for the new Local Plan. The current adopted Core Strategy⁴ plans sought 420 new dwellings a year, 243,000m² of new employment floor space and 50,000m² of new retail floor space, as well as the necessary infrastructure to support this development. Continued growth is essential to provide much needed homes and employment and to help bring about regeneration throughout the city.
- 2.7. In developing new growth targets, the City Council has to consider the balance between the need for the additional development and the need to avoid putting more people and property at risk of flooding. The overall goal is that people and properties, whether existing or yet to be developed, are safe from flooding.

New Development and Tidal Flood Risk

- 2.8. This paper sets out the City Council's approach to addressing new development and tidal flood risk, both in preparing its Local Plan, and in dealing with development proposals in the future. It looks at the context in terms of the current policy requirements as well as the likely scale and location of development and what this

⁴ PCC (2012) The Portsmouth Plan: Portsmouth's Core Strategy

means in terms of flood risk. It then goes on to consider Portsmouth's approach to future development in light of this risk, in its Local Plan work, for development management proposals and in progressing proposed flood defence schemes. This paper will form a part of the evidence base for the new Local Plan and in particular the Plan's policy relating to flood risk and drainage.

- 2.9. It should be noted that tidal flooding is only one of a variety of forms of flooding that could affect the city. In particular, surface water flooding is an issue for Portsmouth given the potential limits on the capacity of the Victorian sewer system. This paper does not seek to deal with all forms of flooding, but concentrates on the approach to dealing with flooding from the sea. Other forms of flooding will be dealt with in other strategies such as the Council's Surface Water Management Plan⁵ and draft Infrastructure Delivery Plan.
- 2.10. The approach and this paper have been developed in partnership between officers from Portsmouth City Council and the Environment Agency and represents the agreement regarding development and flood risk in Portsmouth. It is acknowledged that the City Council will need to continue to work with the Environment Agency to achieve the best possible developments in the light of flood risk. The key areas of future work are acknowledged in section 4.
- 2.11. This background paper represents evidence of an agreed position between the City Council and the EA as part of the duty to co-operate on wider planning issues⁶.

5 Available from: <https://www.portsmouth.gov.uk/ext/environment/flood-protection-policies>

6 Paragraph 25 of National Planning Policy Framework

3. Policy Context

- 3.1. The chief policy document regarding development and flood risk is the National Planning Policy Framework (NPPF), specifically paragraphs 159 to 169 with further guidance provided National Planning Practice Guidance (NPPG) on Flood Risk and Coastal Change⁷. The NPPF and NPPG replaced Planning Policy Statement (PPS)25 which was the principle policy document that formerly set out guidance in relation to this topic.
- 3.2. As with PPS25 before it; the NPPF aims to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, the NPPF aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.
- 3.3. Specifically, national policy sets out clear guidance relating to the 'sequential, risk-based approach', which seeks to guide development to areas at lowest risk of flooding, both at the strategic planning (Local Plan) stage as well as the planning application stage (development management), taking account of climate change and the vulnerability of future uses to flood risk. It also requires an 'exception test' for cases where it is not possible to locate the development in lower risk flood areas. The NPPG advises that the exception test must show how a development will provide wider sustainability benefits to the community that outweigh flood risk, and that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reducing flood risk overall.
- 3.4. The NPPF also states that Local Plans should be supported by Strategic Flood Risk Assessments (SFRAs) to refine flood risk information available from the Environment Agency and to inform the authority's approach to the issue. The SFRA information helps to inform the formulation of policies and new development to manage flood risk from all sources, taking account of advice from the Environment Agency and other relevant flood risk management bodies.

⁷ National Planning Policy Guidance on Flood Risk and Coastal Change (updated August 2021) online at: <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

4. Portsmouth's Approach to Development & Flood Risk

4.1. Overview

4.2. The City Council's approach to managing tidal flood risk in Portsmouth follows the steps as set out in the National Planning Practice Guidance which are detailed in Figure 2. The overall aim of this approach is to avoid inappropriate development in flood risk areas and to locate development away from flood risk whenever possible. The first step is to assess flood risks and then to avoid this risk wherever possible. Where development does need to occur in areas of risk, risks should be managed and mitigated, so as to ensure that development is safe.

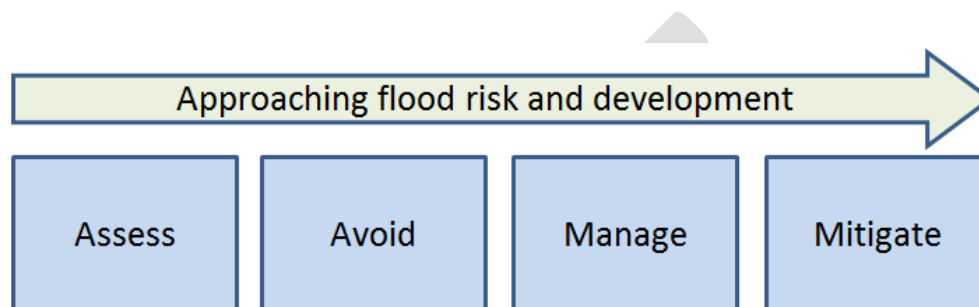


Figure 2 - The principle stages comprising National Planning Policy's approach to flood risk and development

4.3. National Planning policy requires flood risk to be taken into account at all stages of the planning process to avoid inappropriate development. The following sections set out how the City Council will apply the flood and risk and development hierarchy to its strategic planning, development management, coastal defence and emergency planning considerations. In overview, the approach is:

- **To assess the level of flood risk.** The starting point of developing the city's approach was a thorough assessment of the scale of the issue in Portsmouth. The significant scale of flood risk (figure 1) demonstrated that all further levels of the flood risk hierarchy will be needed to ensure that future development in Portsmouth is safe.
- **To avoid risk to new development** by directing it wherever possible to the areas of lower risk, both across the city and within individual sites, and by requiring applicants to demonstrate that development will be safe over its lifetime. As part of this step substituting wherever possible more vulnerable development types for less vulnerable types in areas of flood risk.
- **To manage risk** by maintaining and improving its sea defences to a high standard, which will benefit existing and future buildings and their occupiers.
- **To mitigate against residual risk** by requiring development to incorporate flood resistance and resilience measures, as well as having in place effective emergency response procedures for the development. Emergency response procedures must be based upon reasonable expectations of the ability of the emergency services to carry out evacuation and rescue actions in the event of a widespread flood incident.

4.4. Central to this approach is an agreed definition between the Environment Agency and the City Council as to what is considered to be 'safe' development in relation to flood risk.

Defining what is 'safe' from flooding

- 4.5. The City Council and the Environment Agency agree that the ultimate aim is for people to be safe from flooding. Levels of safety will vary across different areas of the city, at different sites and over time, determined by a number of factors, including the standard of sea defences and their level of maintenance. But just as importantly, whatever level of flood defences are implemented, there is the potential for residual risks arising in the event of flood defence breaches or other infrastructure failures during extreme events (which is in part why flood risk can never be entirely eradicated). Such residual risk must be considered in determining what is 'safe'. Factors such as the below, will determine what measures need to be put in place for development to be made safe from flooding:
- Predicted flood level;
 - Flood duration;
 - likely frequency of flooding;
 - velocity of flood water;
 - Flood depth; and
 - amount of warning time of flooding
- 4.6. Flood safety measures may be physical or non-physical measures (e.g. flood warning plans), or a combination of the two. For example, 'safe' could mean that people are safe in the building or that they are able to escape safely, either because there are dry access routes or there will be enough time to evacuate safely. What is considered safe in respect of flood risk will vary from site to site and vary depending of the flood vulnerability classification level of the proposed development.

Uncertainty

- 4.7. It is important to note that the information relating to tidal flood risk in this document is based upon the best data available to the City Council at the time of writing. Mapping of flood risk however, always involves a level of uncertainty and can never be an exact science. It should be recognised that areas that are highlighted as having high risk of flooding now or in the future in this document may not flood and areas with low risk are not guaranteed to be safe. The approach set out in this document is considered to be the most appropriate to ensure that development in the city is as resilient to tidal flood risks as it can be, based upon the best available data.

4.8. Assess – Defining the Scale of the Issue

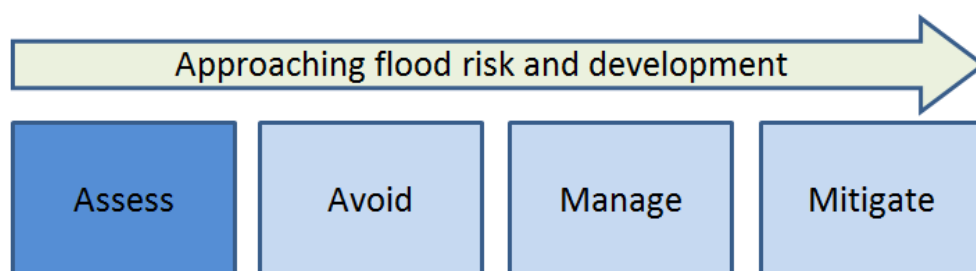


Figure 3 - the first stage of the Portsmouth approach to flood risk and development is to make an assessment of flood risk.

4.9. National policy suggests that this should take the form of undertaking studies to collect data to understand what the flood risk is, chiefly in the form of Flood Risk Assessments. At the plan making stage, this should take the form of a Strategic Flood Risk Assessment (SFRA), while at application stage; a site specific Flood Risk Assessment (FRA) may be required to fully understand the level of risk and possible ways to address it.

PfSH Strategic Flood Risk Assessment (updated 2016)

4.10. Rather than discharge the duty to prepare an SFRA individually, the Partnership for South Hampshire authorities jointly commissioned Atkins to undertake the SFRA. The Environment Agency was also a partner on the steering group for the project. The SFRA was originally completed in December 2007 and was updated in February 2016⁸.

4.11. Strategic Flood Risk Assessments (SFRAs) are designed, amongst other things, to:

- Refine Environment Agency information on the probability of flooding;
- Consider how flood risk management infrastructure alters the frequency, impact, speed of onset, depth and velocity of flooding;
- Consider the residual risk remaining even with flood risk management infrastructure in place;
- Inform the location of development proposed in Local Plans, as well as policies for the management of flood risk; and
- Inform site-specific FRAs at the planning application stage.

4.12. The findings of the PfSH SFRA (2007/ 2016) made it clear that existing flood risk in the city was considerable, with approximately 47% of existing dwellings lying in Flood Zones 2 and 3, while the projected levels of housing growth are predicted to put additional development pressure on Flood Zone 3.

4.13. The key consideration in terms of development in flood risk areas is an understanding of what is safe. What is safe is influenced by the level of protection afforded by defences, but is also substantially affected by the level of residual risk behind these defences, in case they should fail (which is in part why flood risk can never be entirely eradicated from a site). In order to assess residual risk, the PfSH SFRA work, mapping outputs add to existing Environment Agency flood zones maps, created maps of

⁸ Available from: <https://www.push.gov.uk/work/planning-and-infrastructure/green-infrastructure-flooding-water-management/>

hazard levels, both assuming no defences and a breach in defences⁹. These maps allow a more accurate assessment to be made of flood risk should a hypothetical breach occur within the tidal frontages and help provide an understanding of the likely residual risks that would remain even with investment in defending an area to a 1 in 200 year standard.

Implications of SFRA findings

- 4.14. The PfSH SFRA showed that given the extent of the flood zones affecting the city, historic patterns of development and the limited amount of available developable land, reconciling the need for development and flood risk considerations would be a difficult task. Flood risk in Portsmouth would be one of many considerations in determining where development should take place, and National Planning Policy supports this notion.
- 4.15. It was apparent to City Council that it would not be possible for it to follow the national policy approach of avoiding new development in areas at risk of flooding completely, given the need for growth and limited space available for development. As well as protecting people and property from the risk of flooding, the City Council equally has a duty to provide housing, jobs and facilities to meet the city's needs, and to ensure that those sites and areas in need of regeneration are able to realise their full potential to support the sustainable development of the city. Equally there is a significant amount of investment and development that already exists in the flood plain, indeed the city is currently home to thousands of people, businesses and their property, and it is unrealistic to abandon these areas at risk of flooding. The City Council believes that these areas must be made safe for the sake of existing properties, and in order to enable potential development sites. Not doing so would severely limit the city's ability to meet its growth needs and contribute to the development aims for the sub region. Utilising land for development in Portsmouth is further supported by the PfSH SFRA's conclusion that concentrating development on brownfield sites in the older urban areas of South Hampshire provides the best solution in terms of mitigating further climate change impacts, through reducing the need to travel and greater proximity to sustainable transport options.
- 4.16. The City Council's approach is therefore to seek to address flood risk as much as possible at the next highest levels of the flood risk management hierarchy ('avoid' & 'substitute'), while acknowledging from the outset that the lower levels of the hierarchy ('manage' and 'mitigate') will also have to be relied upon to a substantial degree to ensure that development can go ahead and be safe over its lifetime.

A new SFRA for the PfSH area

- 4.17. The PfSH SFRA work is increasingly becoming outdated and work has now begun on developing a new SFRA to replace it. An update is considered necessary for a couple of reasons, firstly because there have been various investments in defences around the coastline which have modified risk in certain parts of the city. Secondly, the UK Climate Projections which underpin the modelling were recently updated with new projections published in 2018, (referred to as UKCP18 project). The updated projections provide key information about how future impacts of climate change including sea level rise will affect the UK. Amongst other data, the UKCP18 project updates the previous UKCP09 data on sea-level rise "giving greater regional detail, further analysis of the risks we face, both nationally and globally, and provide more information on potential extremes and impacts of climate change." It is likely that these

⁹ <https://www.push.gov.uk/work/planning-and-infrastructure/green-infrastructure-flooding-water-management/>

projections will modify the pattern of flood risk that can be expected to impact the city in the future.

- 4.18. The new SFRA is a substantial modelling exercise which is expected to be completed in 2022. This document will be updated to reflect any changes as appropriate. In the interim, the draft SFRA of the new Local Plan will use all existing data sources as appropriate to consider the flood risk implications of the proposed strategic development sites.

4.19. Avoiding Flood Risk

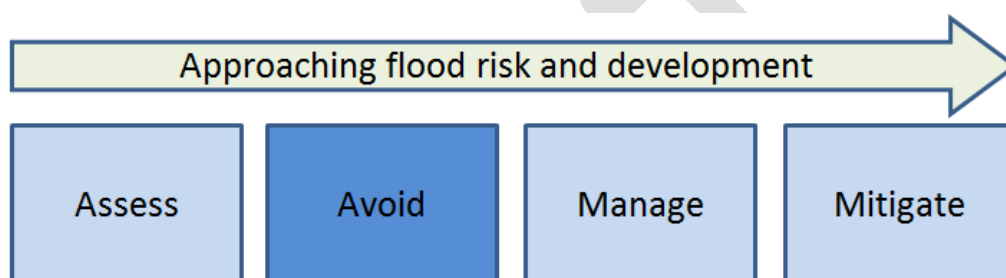


Figure 4 - the second stage of the Portsmouth approach to flood risk and development is to avoid locating development in areas of flood risk.

General Principles

- 4.20. In order to avoid flood risk, the NPPG recommends using the sequential approach to site selection for development, so that development allocations are located in areas of least flood risk. Flood risk can also be avoided at the development management stage through the application of the sequential test and the exception test.
- 4.21. Government guidance does not intend to prevent all development on sites liable to flooding; accepting that some form of development may have to take place there. The focus is instead on minimising risks to people and property.
- 4.22. The guidance sets out that the overall aim of decision-makers should be to steer new development to Flood Zone 1. Where there are no reasonably available sites in Flood Zone 1, decision-makers should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2, applying the Exception Test¹⁰ if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should decision-makers consider the suitability of sites in Flood Zone 3, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.
- 4.23. Within each Flood Zone classification, any new development should be directed first to sites at the lowest probability of flooding and the flood vulnerability of the intended

¹⁰ The Exception Test, is a method to demonstrate and help ensure that flood risk to people and property will be managed satisfactorily, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available. The Test requires proposed development to show that it will provide wider sustainability benefits to the community that outweigh flood risk, and that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall.

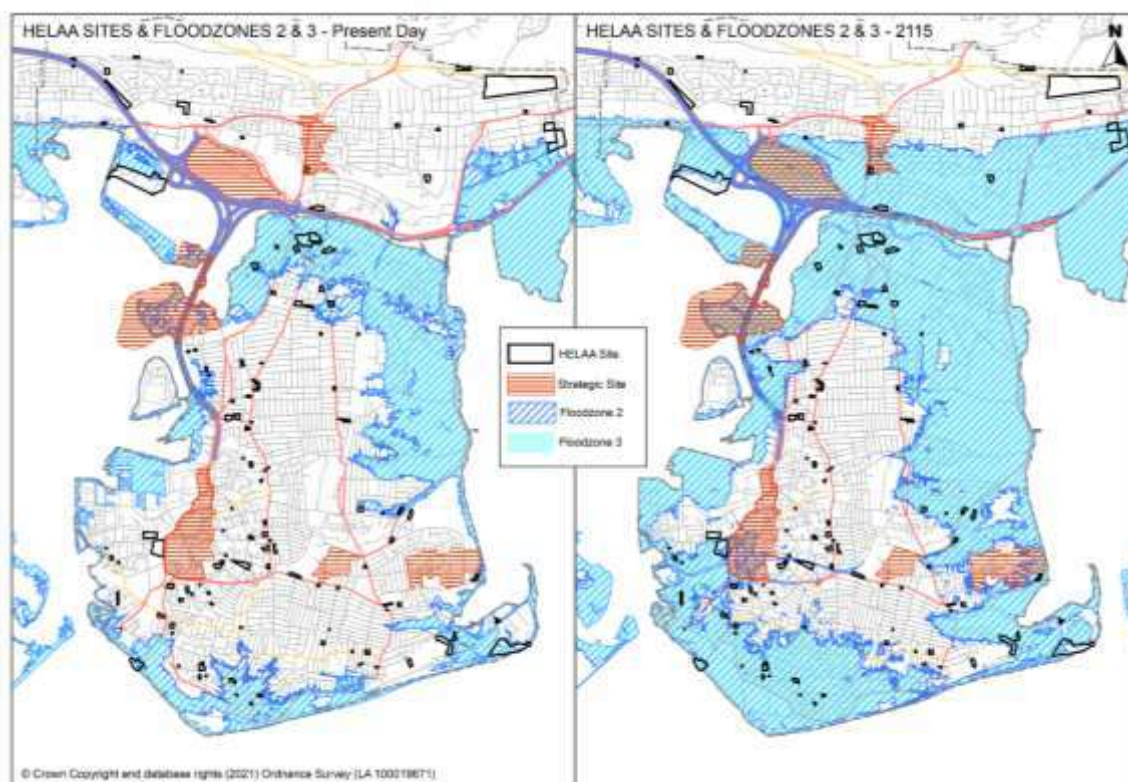
use matched to the flood risk of the site, i.e. higher vulnerability uses should be located on parts of the site at lowest probability of flooding.

Considering Flood Risk in Strategic Planning – The sequential approach

- 4.24. The key study that indicates where future housing and employment may occur is the Housing Economic Land Availability Assessment (HELAA). This reviews the availability of land for housing and employment uses, and forms the first step in identifying potential sites for allocation in the Local Plan. The HELAA:
- identifies sites that have the potential for housing and employment
 - assesses how many units they could accommodate
 - suggests a timeframe for when these sites could become available.
- 4.25. The HELAA takes the form of a written report with an appendix with information on each of the sites 'identified' to be have development potential. Site information assessed includes flood risk categorisation based on the EA Flood Risk maps and the PfSH SFRA hazard mapping. Given the limited amount of available, developable land in the city, sites in all Flood Zones were included for assessment in the HELAA. The assessment of potential sites took into account flood risk by reference to the flood zones which was one factor of many in determining the ultimate deliverability of sites.
- 4.26. The HELAA looks at where new housing and employment land is to go in the city. Housing in areas more vulnerable to flooding and should, where possible, be accommodated in flood zone 1. Employment uses (including offices, general industry and storage and distribution) are considered be 'less vulnerable' uses¹¹, potentially appropriate in Flood Zones 2 and 3 (apart from Flood Zone 3b (functional floodplain)), following the application of the sequential test.
- 4.27. Figure 5 shows the distribution of the sites identified in the HELAA set against the EA Flood Zones 2 and 3 (2020), and for the year 2115. The maps in figure 5 show that many of the identified development sites for the plan would fall within flood zones 2 and 3 over time. This would leave a greatly reduced scope for development opportunity if these areas were to be wholly avoided. By 2115, only one for the proposed strategic development sites will not be at least in part in flood zones 2 or 3, (an increase from only two of the strategic sites at present). In addition there would be a significant increase in the numbers of smaller (non strategic) sites in flood zones 2 and 3 by 2115

Figure 5 - Sites identified through the HELAA and 2020 and 2115 flood zones

11 National Planning Policy Guidance (updated March 2021) Flood Risk and Coastal Change, para.066



4.28. In terms of assessing sites for development, the City Council has sought to prioritise areas that are at the lowest risk of flooding. However, the results of the HELAA demonstrate that the level of growth required during the plan period cannot be accommodated through areas at low risk of flooding alone. It is clear that it is not possible to avoid all areas of flood risk and strive to meet the city's housing, employment land and other growth needs. This is particularly true for the proposed strategic sites key to meeting the new Local Plan's draft spatial development strategy and growth requirements, in so far possible within the capacity of the city.

Taking account flood risk in Local Plan housing allocations

4.29. Portsmouth's urban capacity relies considerably on its larger 'strategic' level sites. Potentially just over 11,000 of the dwellings could be delivered in the city across the plan period through draft allocations for the City Centre, St James and Langstone campus, Cosham, Lakeside, Fratton Park and the Pompey Centre and Tipner.

4.30. Given the built up nature of the city and the lack of significant development sites outside of those already identified above, there are no other sequentially preferable sites in the city that could fully accommodate the scale of development proposed for these sites to 2115, even with the possibility of Portsmouth's housing supply being delivered outside of the city through the Duty to Co-operate. Given that these sites cannot be accommodated in lower risk areas, it must then be considered whether it will be possible to manage flood risk in other ways on these sites, as the allocation will only be deliverable where there is a reasonable prospect that the site can be made safe.

4.31. A draft SFRA of the new Local Plan has been undertaken to evaluate each of these sites¹² and the findings have been provisionally agreed with the EA in order to satisfy

¹² PCC (August 2021) Portsmouth Draft Local Plan Strategic Site Allocations Strategic Flood Risk Assessments

the requirements of a level 2 strategic flood risk assessment. Whilst the findings of each assessment differ depending on the context of each site, in general, the site specific assessment has concluded that based upon current information these locations are self-contained development sites, and therefore are more capable of managing flood risk, either through substituting uses within the site, controlling flood risk through defences and site design and mitigating against residual risk at site level, making them acceptable in principle for allocation. Specific findings from each assessment have helped to inform the detail of the draft strategic site policies. It should be noted that the site assessments have been based upon the existing PfSH SFRA. Work is currently underway to produce a new SFRA for the region incorporating the most recent national climate projections and EA allowances. As such, the content of the site assessments have been prepared with the best available information at present, but these will be updated in advance of the Reg 19 consultation on the Local Plan, where possible, to incorporate the findings from any updated modelling and to provide more certainty on the assessment conclusions. The draft strategic site policies may also need to be updated to reflect the new analysis once this is available.

Taking account of flood risk in the other identified sites

- 4.32. Beyond the sites identified and allocated for housing or employment in the Local Plan, a number of other sites are identified through the HELAA in order to ensure that the city is able to meet its housing and employment needs for the Plan period.
- 4.33. Flood risk has been considered as part of the work on the HELAA site identification through assessing and identifying which flood zone's each site is located in, both in respect to current flood data and 2115 projected data. This assessment has then been recorded as part of each site's individual proforma. Should a development proposal subsequently come forward for such a site, flood risk would be considered further through the development management process.

Flood Risk in Development Proposals – Sequential & Exception Testing at the Development Management stage

- 4.34. National policy requires development proposals of 1 hectare or greater in Flood Zone 1 and all proposals for new development located in Flood Zones 2 and 3 to be accompanied by a Flood Risk Assessment (FRA). Developers would also be expected to comply with the sequential and exception test. To assist them with these tests, the developer can utilise the information put together by PfSH as part of their SFRA.
- 4.35. **The Sequential Test** plays an important role in assessing individual development applications in the light of flood risk. National policy requires applicants for new development proposed in areas at risk of flooding to comply with the Sequential Test, that is they must demonstrate that there are no other sites available at lower risk of flooding. The Sequential Test can be considered met for individual developments on strategic sites which have been allocated in the Local Plan as these will have been subjected to the sequential test as part of their allocation. The sequential test will also not be required for minor development (as defined by the NPPG¹³) and for changes of use, including changes of use to residential.
- 4.36. Given the extent of the areas at risk of flooding in Portsmouth, there is a particular difficulty in the city in directing development to lower risk areas. The City Council and

13 <https://www.gov.uk/guidance/flood-risk-and-coastal-change> (paragraph 033 Reference ID: 7-033-20140306)

the Environment Agency therefore developed a flood risk protocol to apply to unallocated development proposals in the city which was then adopted into the Core Strategy. It is an agreement between the EA and PCC which sets out the common goal of enabling safe development in the city, and agrees common principles for dealing with the sequential and exception tests on brownfield windfall sites in Portsmouth, regardless of size.

- 4.37. The NPPG makes clear that where a specific area is identified for regeneration, there are large areas in Flood Zones 2 and 3; and development is needed in those areas to sustain the existing community, sites outside of those areas would not be reasonable alternatives. As Portsmouth has been identified as key to the regeneration of the sub-region, both the PFSH Spatial Strategy and by the Solent Local Enterprise Partnership, the Environment Agency have provisionally accept this principle as applicable to the whole of the city.
- 4.38. The PFSH SFRA identifies the level of hazard in different areas of the flood zones, in four categories from low hazard to very high hazard (Figure 6 over the page), based on the depth and velocity of flooding. It allows for a greater level of detail than purely the EA flood zones can provide, identifying those areas where a flood of equal probability may have vastly different consequences for those affected depending on their location. If the proposed development site lies in an area of low or moderate hazard, the proposed development will be considered acceptable in terms of the sequential test.

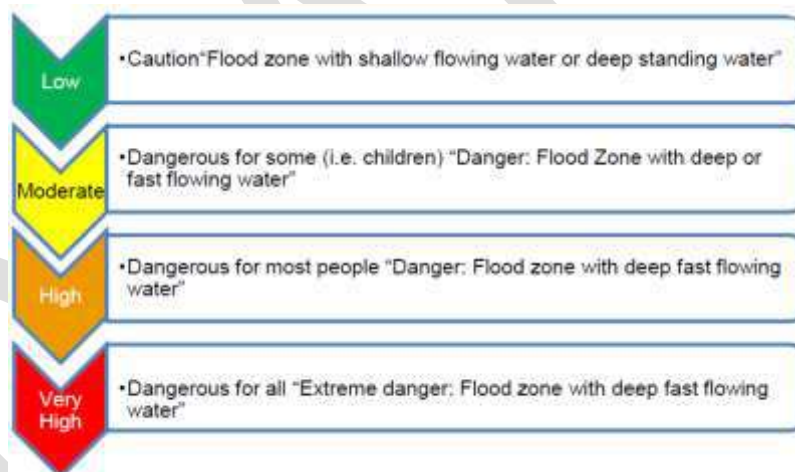


Figure 6 - Definition of Undefended Flood Hazard Index¹⁴

- 4.39. Based on the principles set out in this section, the sequential test will be considered met on:
- strategic sites and
 - non-allocated brownfield sites in those parts of Flood Zones 2 & 3 that the SFRA shows as low or moderate hazard areas
- 4.40. **The Exception Test** - Any development which is justifiably located within an area of flood risk because it has passed the sequential test, must be demonstrated to be safe over its lifetime. Part of this is to apply the exception test where it is required. Whether this applies depends on the proposed use and its acceptability in terms of vulnerability as per the NPPG.

¹⁴ PUSH Strategic Flood Risk Assessment 2016 update

- 4.41. The Exception Test requires that it is shown that proposed development will provide wider sustainability benefits to the community that outweigh flood risk. Furthermore the applicant must be able to demonstrate that development will be safe for its lifetime which must be met through site specific flood risk assessments for development proposals in flood zones 2 & 3 as part of the planning application. This assessment must also take into account climate change (sea level rise).
- 4.42. **Flood Risk Assessments for Climate Change Scenarios** - modelling of sea level rise predictions through the SFRA shows that over time, the extent of Flood Zones 2 & 3, particularly 3, is likely to increase. SFRA map sets are available for the climate change scenarios for 2025, 2055, 2085 and 2115. Given the city's vulnerability to flood risk and sea level rise, the Council and the Environment Agency consider that the requirement for flood risk assessment must to be extended to take account of future risk in order to ensure development will be resilient to flood risk for its lifetime. Therefore, the Council will require site specific Flood Risk Assessment for developments currently in Flood Zone 1 that, according to the SFRA and best available information, indicates that it will move into Flood Zones 2 or 3 in the future.

Substituting less vulnerable development – the Sequential Test at site level

- 4.43. Applying the Sequential Test within a site will likely involve substituting more vulnerable for less vulnerable development types in areas of flood risk. This approach will be taken wherever possible in making strategic allocations, and will also be used in development management decisions.
- 4.44. Using this approach requires firstly an identification of the variation of flood risk within the site, using the Flood Zone maps, the SFRA and / or a site level FRA. In determining the vulnerability classification of different land uses, the City Council will refer to Table 2: Flood risk vulnerability classification of the NPPG flood risk and coastal change guidance¹⁵.
- 4.45. Where a site is large enough to contain a number of different risk or hazard levels, and where it may be suitable terms of other planning and urban design considerations, more vulnerable uses such as housing will be directed to the safer areas, while less vulnerable uses, such as open space, retail or employment development can be accommodated in the areas of higher flood risk.
- 4.46. On smaller sites that may only contain one building, or where there is less capacity to orientate the site layout to accommodate flood risk/hazards, uses can be directed to safer areas vertically, that is, more vulnerable uses will be directed to the upper floors of buildings.

Manage - Delivering Coastal Defences

15 Paragraph: 066 Reference ID: 7-066-20140306, paragraph: 067 Reference ID: 7-067-20140306

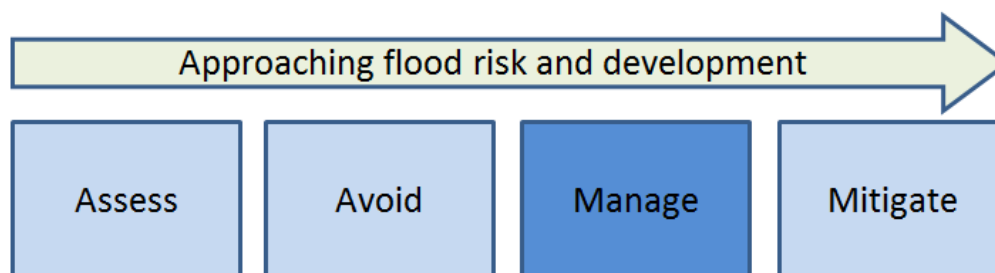


Figure 7 - the third stage of the Portsmouth approach to flood risk and development is to manage the flood risk that is present, this is principally being done through the delivery of coastal defences.

Overview

- 4.47. The Environment Agency and the City Council are the operating authorities for Portsmouth's coastline and work in partnership to manage the coastal erosion and coastal flood risks to the city.
- 4.48. Operating Authorities have no legal duty to build and/or maintain coastal defences, but do have permissive powers that allow them to protect both people and property where it is economically, technically and environmentally viable to do so, and if it is affordable within national budgets.
- 4.49. The Council is a part of the Coastal Partners¹⁶ organisation (formerly known as the Eastern Solent Coastal Partnership (ESCP)) which was formed in 2012 to deliver a combined, efficient and comprehensive coastal management service across the coastlines of the four Local Authorities of Fareham Borough Council, Gosport Borough Council, Havant Borough Council and Portsmouth City Council. The Partnership has the role of delivering the coastal defences around the city both on the island and on the mainland.

Framework for the delivery of the coastal defences

- 4.50. There is a national framework relating to Flood and Coastal Erosion Risk Management (FCERM) which is set out in the National FCERM Strategy (DEFRA, 2011). At the highest level, policy is set by Shoreline Management Plans (SMPs). Following this, FCERM Strategies are developed to set out how the SMP policies can be delivered and the costs and implications of doing so. Finally, the strategic management approaches are implemented through local level projects such as FCERM schemes. Catchment Flood Management Plans (CFMPs) are also relevant, but these are related to pluvial flood risk.
- 4.51. SMPs are high-level, non-statutory, policy documents planning the future management of England's coastline over the next 100 years.
- 4.52. Portsmouth's coastline is covered by the North Solent SMP (2010), which covers the Solent's mainland coastline between Selsey Bill in West Sussex to Hurst Spit in the New Forest. The North Solent SMP recommends a long-term policy of 'hold the line' for all of Portsmouth's frontages but also recognises that Farlington Marshes has the

¹⁶ <https://coastalpartners.org.uk/>

potential, subject to the outcome of detailed ecological studies, to be fully or partially realigned from 2030.

- 4.53. At the more detailed level, FCERM Strategies consider the various options available for protecting the coastline and propose management options or flood defence schemes which are economically, socially and environmentally acceptable within the constraints which apply to that location. Strategies assess the impacts of implementing the policies which have been set within the corresponding, high level, Shoreline Management Plan (SMP) and recommend the most appropriate way for delivering it. They do this by looking at much smaller sections of shoreline in much more detail than the SMP and include a detailed assessment of the various defence options available.
- 4.54. The Portsmouth City Council led Portsea Island Coastal Strategy Study (PICSS, 2012)¹⁷ forms the backbone of coastal flood risk management planning for the city which sits on Portsea Island. The city's mainland coastline is covered by the Portchester to Emsworth Coastal Flood and Erosion Risk Management Strategy (PEMS, 2013)¹⁸.

Progress on the Portsea Island Coastal Defence Strategy

- 4.55. This study sets out the proposals for a 100-year flood and coastal erosion risk management strategy for Portsea Island (excluding Whale Island and Old Portsmouth).
- 4.56. The strategy area contains assets at risk of flooding with an estimated present value of £1.25 billion over the next 100 years if no coastal management activities took place. The Eastern Solent Coastal Partnership Portsea Island Coastal Strategy identified that assets at risk of flooding include:
- Over 9000 residential properties
 - 950 commercial properties
 - 117 MoD Properties
 - HM Naval Base
 - Historic Dockyards including the HMS Victory and Mary Rose
 - Continental Ferry Port
 - 15 areas of known landfill
 - 2 main road arteries on and off Portsea Island
 - The rail line
 - 40 scheduled monuments and more than 450 listed buildings
 - 70 sites of archaeological interest
 - Key infrastructure such as local roads, rail links and utilities.
- 4.57. Portsea Island's coastline extends over 27km in length, and incorporates a variety of different defence types, of which over 14km have an assessed residual life of less than 10 years. The study indicated that in 50 years' time approximately 11.5km of the coastline will not be able to provide safe levels of flood risk management to the City due to the effects of predicted sea level rise.
- 4.58. The study concluded that Portsea Island consists of seven discrete flood cells (Figure 8 over the page). Flood Cells 1: Southsea, 2: Eastney, and 4: North Portsea Island, have a low existing standard of protection and require improvements works to raise defence levels. Flood Cells 3: Eastney Lake, 6: Continental Ferry Ports and 7: HM

¹⁷ Portsea Island Coastal Strategy: <https://coastalpartners.org.uk/project/portsea-island-coastal-strategy/>

¹⁸ Portchester to Emsworth Strategy: <https://coastalpartners.org.uk/project/portchester-castle-to-emsworth-strategy/>

Naval Base have an appropriate standard of protection now but need future improvement works due to sea level rise. Flood Cell 5: Tipner contains a large area of contaminated land and requires defence improvement works to protect against leaching of contaminants. All Flood Cells contain defences with a low residual life (without maintenance) that require improvement works to protect against potential breach formation.



Figure 8 - there are seven distinct flood cells around Portsea Island. If one cell was to flood (or breach) from the sea, the flood water would not flood a neighbouring flood cell.

- 4.59. The strategy proposes a programme of capital works to manage the coastal flood and erosion risk to Portsea Island. The strategy recommends that coastal flood and erosion risk management schemes are progressed within the next 5 to 10 years for Flood Cell 1: Southsea and Flood Cell 4: North Portsea Island due to the coastal defences' low residual life and the potential consequences of a significant number of properties flooding in the event of a breach. The strategy also recommends that a coastal defence scheme is progressed for Flood Cell 5: Tipner as a priority to secure the environmental interests of Portsmouth Harbour.
- 4.60. Several further studies have progressed for both the North Portsea Island FCERM scheme and the Southsea FCERM scheme.

- 4.61. The business case for detailed design and construction for the North Portsea Island scheme was approved in 2015 by the Environment Agency. The total approval value of the scheme was £43,992,000. Subsequently several phases of the scheme have been completed including Anchorage Park, Milton Common, whilst Tipner Lake is underway. Further phases are planned for future years to complete the rest of the Flood Cell 4 defences and it is estimated that the scheme will be completed around 2024/25.
- 4.62. The Southsea scheme has secured funding from the Environment Agency to undertake the detailed design and pre-construction stage of the project. Given the scale, impact, and estimated cost of the project, there are further funding and planning gateways to be achieved before any construction work can be undertaken. Subject to funding, the project would take up to six years to construct. A full summary of the status of the other flood cells is contained in Table 2.

Table 2 - Summarising the status of flood defence works around Portsea Island.

| Flood cell | Status |
|---|---|
| Flood cell 1 <i>Southsea</i> | The planning application for the defences was granted permission in December of 2019 and initial work prior to construction is in progress. The relevant conditions have now been cleared from the planning consent, marine license consent and scheduled monument consent. Construction on Phase 1 commenced on 7th September 2020. The project is envisaged to take up to six years to construct. |
| Flood cell 2 <i>Fraser Battery</i> | Need for further defence works is considered to be lower priority here, though the case for investment will be revisited within the next 5-10 years. The majority of funding would need to come from new development. |
| Flood cell 3 <i>Eastney Lake</i> | Need for further defence works is considered to be lower priority here, though the case for investment will be revisited within the next 5-10 years. The majority of funding would need to come from new development. |
| Flood cell 4 <i>Portsea North</i> | Anchorage Park, Milton Common and Tipner Lake phases of the scheme are complete. Construction of flood defences are underway at Kendall's Wharf. Construction of the Eastern Road flood defences are due to commence in April 2021, with completion of construction estimated for winter 2023. Phase 5 of the scheme (Ports Creek) is currently undergoing a detailed design review. |
| Flood cell 5 <i>Tipner</i> | Flood defences are needed to allow development though work has not taken place on this part of the project. It is anticipated that the majority of the estimated project costs would need to come from developer contributions / private funding. |
| Flood cell 6 <i>Continental Ferry Port</i> | Need for further defence works is considered to be lower priority here. The majority of funding would need to come from new development. |
| Flood cell 7 <i>H.M. Naval base</i> | Need for further defence works is considered to be lower priority here. The majority of funding would need to come from new development or landowner contributions. |

- 4.63. The area around Old Portsmouth, to the west of the island, was covered by a separate coastal strategy and led to the implementation of a coastal defence scheme in 2005 which consisted of various works including the placement of rock armour, sea wall improvements, and a system of flood gate barriers intended to provide a 1 in 200 year level of protection. The defences here are therefore considered to be at an acceptable level over the short term and will be revisited once the more urgent works required to the north and the south of the island are completed.

- 4.64. Publicly funded coastal defences will be maintained by the City Council, funded from its coastal revenue budget on the basis of priority. In order to keep future revenue costs down, capital schemes will be designed to incorporate low maintenance solutions.
- 4.65. Private owners will continue to be responsible for the maintenance of their own coastal defences. This maintenance will be monitored by the Council in order to manage the coastal flood and erosion risks to wider communities.
- 4.66. Where a developer improves a coastal defence the future maintenance of the asset should be with the developer but this will need to be confirmed through a legal agreement.

Progress on the Portchester Castle to Emsworth Coastal Flood and Erosion Risk Management Strategy

- 4.67. The defence strategy for the city’s coastline north of Portcreek is covered by a wider strategy for the coastline from Portchester to Emsworth.
- 4.68. The strategy area has been divided into seven frontages, three of which cover Portsmouth’s northern coastline. These frontages are:
- Portchester Castle to Paulsgrove
 - Horsea Island
 - M27 and Farlington Marshes
- 4.69. The business case for the Portchester to Paulsgrove FCERM scheme was approved by the Environment Agency in 2015 securing £470,000 to undertake the outline design stage of the project. This has now been completed and estimates are that the first phase of the scheme will cost £8,486,000. The Environment Agency have approved £5,111,000 of capital grant towards the detailed design and construction stage of the project however, this is subject to securing a significant external contribution for the remaining funds. Subject to securing all the funding required it is estimated that the first phase of the project could be completed by 2022. Further phases of work would be required 15 years and 30 years after the first phase to manage flood risk and predicted rates of sea level rise in an adaptive manner. A full summary of the frontages in the Portchester to Paulsgrove scheme is contained in Table 3.

Table 3 - Summarising the status of flood defence works along the Portchester to Paulsgrove coastline (as of 2020)

| Frontage | Status |
|----------------------------------|---|
| Portchester Castle to Paulsgrove | Outline design stage of project now complete. Environment Agency have approved a proportion of the capital grant towards the detailed design and construction stage of the project however, this is subject to securing the remaining funds from a private developer. Despite negotiations, an agreement to secure the remaining funds from a private developer has not progressed. As the scheme cannot progress without these contributions the project is now on hold and therefore, unlikely to progress in its current form. |
| Horsea Island | The short, medium and long term strategy is to maintain the existing defences by continued maintenance and replacement. |
| M27 & Farlington Marshes | New flood defences are considered lower priority along the M27, the preferred option here is to maintain defences at present but improvements are anticipated to be needed in around fifty years. The Environment Agency have however, recently gained approval to commence a study to develop outline designs for defences to protect and enhance the natural habitats at Farlington Marshes. |

Controlling flood risk at site level

- 4.70. As well as strategic flood defences for the whole city, flood risk can also be controlled at site level.
- 4.71. Large sites may have to incorporate their own flood defence infrastructure. The proposed strategic site at Tipner is one such example. Here, public funding of the defences is unlikely, so if the site is to be developed safely, the developer will have to provide flood defences or manage flood risk by land raising.
- 4.72. On site flood risk management measures can also be integrated into smaller developments. However, on smaller sites in particular, flood risk management measures could have a significant impact on the townscape on a development sites. The urban design implications of the proposed measures must be taken into account in determining the most appropriate measures. Further guidance on controlling flood risk at site level can be found on the NPPG website.
- 4.73. On-site flood risk management is not only necessary where strategic defences are lacking or are not built to a high enough standard, but can also be a way of dealing with the residual risk behind defences. Flood defences reduce the likelihood of flooding, but they may be overtopped or even fail as a result of extreme loads and as such risk can never be entirely removed. For this reason, flood risk for new developments would not usually be considered adequately managed through the provision of defences alone, there may still be a requirement for other mitigation i.e. resilience or resistance measures included within the building design.
- 4.74. **Mitigate Residual Risk**

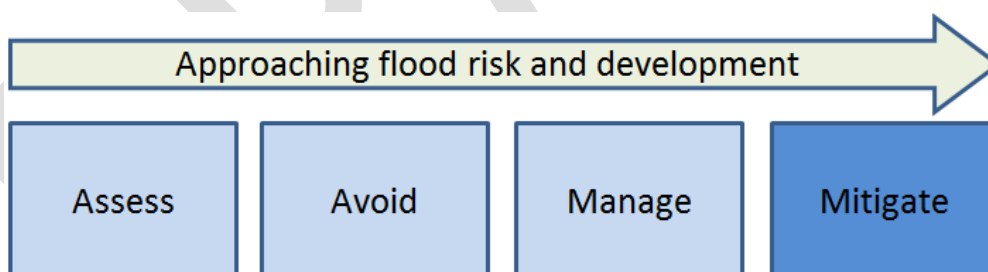


Figure 9 - the final stage of the Portsmouth approach to flood risk and development is to mitigate the damage that arises from flooding.

- 4.75. The chief aim of this step in the approach to flood risk management is to limit the damage done if a flood does occur. It is about addressing the residual risk left after the other levels of the hierarchy have been considered. Even behind defences there is a residual risk of flooding which needs to be adequately understood and managed.
- 4.76. The residual flood risk behind a flood defence depends on:
- depth of flooding;
 - speed of flow of flood water;
 - local flow paths;
 - speed of onset of the flood;

- distance from the defences (as distance from a defence typically has an effect on velocities and the rate of onset of flooding); and
 - duration of the flood and how water will be removed.
- 4.77. The NPPG recommends that mitigation measures should include flood risk assessments for development sites, which can help identify flood resistance and resilience measures. Emergency Planning, flood warning and evacuation procedures can also minimise risk to life in the event of a flood by allowing people to move out of harm's way. Such plans and procedures cannot be based upon an expectation placed upon the emergency services to deliver evacuation assistance.
- 4.78. In order to understand residual flood risk, reference can also be made to the PUSH SFRA work which as detailed in section 4.2 includes residual risk mapping to help understand levels of risk should a hypothetical breach in defences.

Mitigation measures at site level

- 4.79. In developments in Flood Zones 2 and 3, the City Council will expect the developer to minimise the potential damage to property and risk to people through design and layout. While at this stage of the flood risk management approach, flooding is not prevented, ensuring that people are safe on site or can escape safely, and flood resilient and resistant construction can minimise the damage caused in case of a flood.
- 4.80. In assessing the residual flood risk associated with overtopping or breaching of a flood defence, the following factors should be taken into account:
- how the flood defence infrastructure protecting an area might fail.
 - the standard of protection and design freeboard of the flood defence;
 - the potential of the defence to fail, including the condition of the flood defence and the potential for human interference;
 - the height of the flood defence structure and retained water levels compared to ground levels. Generally the higher a defence is and the greater the depth of water it retains, the more serious and far-reaching the consequences of breaching will be;
 - where breach(es) in the flood defences might occur, and their width;
 - how long it would take for the operating authority and/or defence owner to close the breach;
 - how long it would take for water to drain from the flooded area following an overtopping or breach event;
 - the topography of the land and depth of the flooding behind the flood defence;
 - the velocity of flood water flowing across the site following a breach or overtopping of the defences;
 - the lead time available before depth and velocity of flood water become hazardous to people; and
 - the capability of emergency planning to mitigate the risks identified.
- 4.81. These and other factors will determine the level of safety measures for people and flood resilience measures in buildings that are needed at the sites.
- 4.82. For example, if a site is likely to be inundated very slowly and to a low level, then the building itself may need few resilience measures, and a good emergency warning plan for the site will be sufficient. By contrast, sites that may be rapidly inundated, or sites where flood water levels are likely to be high, will have to ensure that there are safe escape routes and that the building itself is resilient to standing water, particularly if the

water is likely to stay for an extended period. Flood risk to people may be mitigated through the design of the development, for example through raised floor levels, or designing in places of safety or temporary refuges.

- 4.83. In the first instance, the design of the development should try to minimise risks through the construction of the development and its surrounds (at site level) to avoid it being flooded (such as by raising the land above flood level). This will include, even where defences are in place, safe access and egress routes that are ensured for the lifetime of the development where the probability of inundation is high. Beyond this, where necessary, measures including flood resistance (dry proofing to prevent flooding from entering a building) and flood resilience (wet proofing to enable quicker re-occupancy after flooding has entered a building) should be incorporated to further reduce the impacts of flooding. The proposal should also incorporate adequate flood warnings and evacuation plans if necessary (devised in accordance with guidance from the appropriate emergency services) which will help to address any remaining residual flood risk for the occupants.

Emergency planning

- 4.84. The aim of any emergency planning is to mitigate the effects of an incident on people, infrastructure and the environment and aid recovery. The City Council has a Flood Response Plan that focuses on the roles and responsibilities of the Council within the co-ordinated response of a number of agencies to an incident. The plan sets out trigger points for activation of the plan, different response levels for different types of flood events, priorities for action and action points for the council. The wider multi-agency response is set out in a Multi-Agency Flood Plan (MAFP). The City Council keeps its response plans under review to ensure the most effective response will be given in the event of a flood.
- 4.85. Emergency planning is based on anticipating the risks, assessing them and where possible preventing them from impacting upon those at risk. Preparations are then made to establish a prudent response capability and to be able to recover after the event. The emphasis is on developers to design out the risk, and if they cannot achieve this to mitigate the risk to as low as reasonably practicable. The mitigations they put in place cannot be dependent upon a response from Portsmouth City Council or the emergency services. The responses of the category one responders¹⁹ are in exceptional circumstances and should not be a component of planned mitigation procedures to make a site safe.

¹⁹ As defined in Civil Contingencies Act 2004

5. Conclusions

- 5.1. This document has set out the City Council's current approach to development and flood risk. This approach has been put together with regard to national policy as set out in the NPPF and NPPG supporting guidance.
- 5.2. This paper and the approach set out within it have been developed in partnership the Environment Agency. Officers from both parties are satisfied that the approach is currently the most appropriate way to ensure continued development in the city, while avoiding putting people and property at unacceptable risk of tidal flooding.
- 5.3. However, setting out this approach and developing the draft Local Plan policy is only one part of this process, and continued partnership working will be essential in ensuring a sound approach to development and flood risk in Portsmouth.
- 5.4. The partnership approach over the last few years has worked effectively and the City Council and the Environment Agency look forward to working closely together in the future. The Environment Agency is confident that Portsmouth is committed to reducing flood risk in the city to ensure a sustainable future.