

# **Level 2 SFRA: Flood Risk Sequential Test Paper**

**Assessing Flood Risk of Proposed Site Allocations**

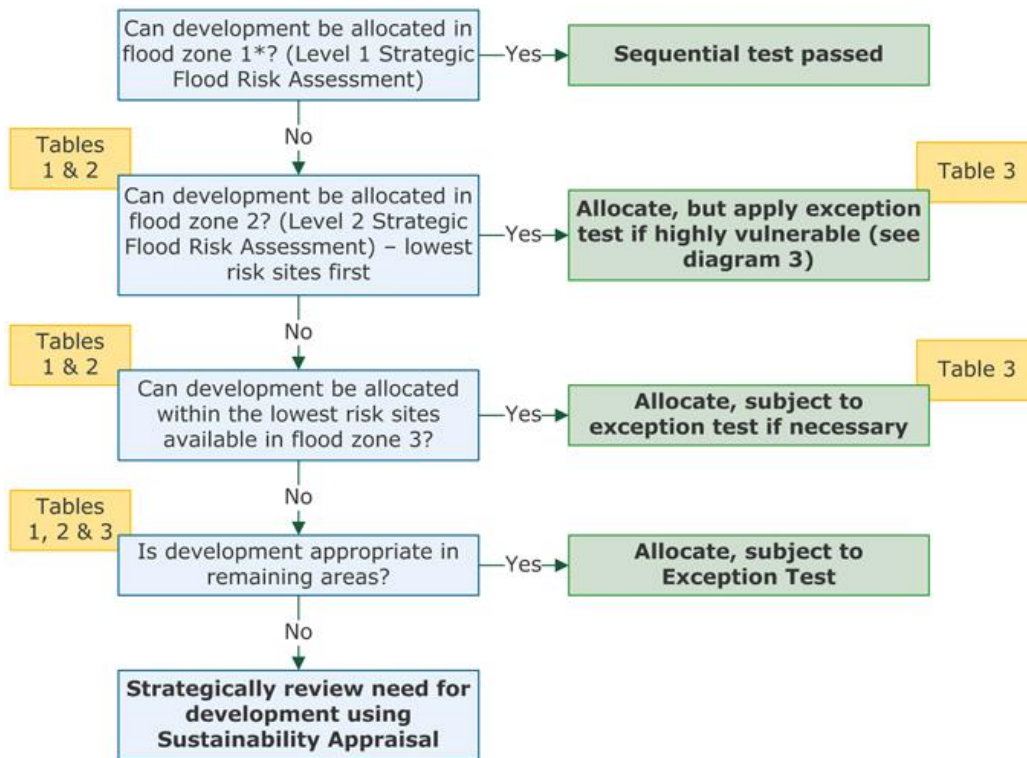
August 2017

# 1. Introduction

- 1.1. The National Planning Policy Framework (NPPF) requires that Local Plans take full account of flood risk, should be supported by a Strategic Flood Risk Assessment, and should include policies to manage flood risk from all sources. It also states that Local Plans should apply a sequential, risk based approach to the location of development.
- 1.2. This document sets out the local flood risk context before describing how flood risk has been taken into account in the selection of sites for allocation as part of the new Local Plan. It identifies those sites and mixed use areas partly or wholly within areas at higher risk of flooding and which require more detailed Sequential and Exception Testing in line with national planning policy. It sets out how these Sequential and Exception Test assessments have been undertaken.

## 2. Sequential and exceptions test methodology

- 2.1. In selecting sites for allocation the Council has adopted a sequential approach to ensure that sites at lower risk of flooding are preferred to sites at higher risk of flooding. The approach to the sequential and exceptions test is set in national policy.
- 2.2. The Environment Agency produces a flood map that indicates the risk of flooding across the country. Land is classified as being in one of the following flood zones. These flood zones refer to the probability of flooding ignoring the presence of defences:
  - Flood Zone 1: areas where there is low probability of flooding from rivers and the sea.
  - Flood Zone 2: areas where there is medium probability of flooding from rivers and the sea.
  - Flood Zone 3: areas where there is a high probability of flooding from rivers or the sea.
- 2.3. The first choice for location of new development should be within flood zone 1, areas at least risk of flooding. The SFRA identifies the flood zones which affect all sites considered for development. Whilst there are some sites wholly located in flood zone 1 many sites are affected by flood zones two and three. Where there are no reasonably available sites in flood zone 1 Local Authorities should consider reasonably available sites in flood zone 2, taking into account the flood risk vulnerability of the land uses. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 be considered. The diagram below shows the approach to sequential approach to site sieving on flooding grounds, and when the exceptions test will need to be applied.



2.4. The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. The exceptions test provides an opportunity for development that provides wider sustainability benefits to the community that outweigh flood risk to be allocated in higher risk flood zones.

2.5. One of the key considerations as part of applying the exceptions test is the flood risk vulnerability of the type of development proposed, the table below shows the instances when the exceptions test will be required.

Flood Risk Vulnerability and Flood Zone Compatibility	Essential Infrastructure e.g. transport and utility infrastructure	Water Compatible e.g. open space, docks, marinas and wharves	Highly Vulnerable e.g. police stations, mobile homes and emergency points	More Vulnerable e.g. hospitals, homes and residential institutions	Less Vulnerable e.g. offices, industry and storage and distribution
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	✓	Exceptions test required	✓	✓
Flood Zone 3a	Exceptions test required	✓	✗	Exceptions test required	✓
Flood Zone 3b	Exceptions test required	✓	✗	✗	✗

✓ = development appropriate      ✗ = development should not be permitted.

2.6. There are two elements to the Exception Test as set out below. Both elements need to be passed for a site to be allocated for development in the Local Plan:

- The development must provide wider sustainability benefits to the community that outweigh the flood risk informed by a Strategic Flood Risk Assessment (where available); and
- A site specific flood risk assessment (FRA) must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing and where possible reducing flood risk elsewhere.

2.7. An important consideration which should be taken into account is the presence of defences. The flood zones referred to are the probability of river and sea flooding, ignoring any defences. Defences can be considered as part of a site specific FRA as part of the exceptions test. This is particularly important in Wyre where much of the borough is affected by flood zones but there are also substantial maintained flood defences protecting most areas. Where developers are required to produce an FRA this must be used to inform a sequential approach to site layout. The detailed site specific FRAs must consider the depth and velocity of flood events, including allowances for climate change, and use this to design the most appropriate scheme to minimise risk.

### 3. Wyre Local Flood Risk Context

- 3.1. The Council produced a Level 1 SFRA which assessed the risk of flooding from all sources to the Borough, now and in the future, taking account of the impacts of climate change. It identified that large parts of the Borough were at risk from a variety of sources of flooding. In particular high levels of risk were identified in the coastal peninsula and the rural towns and villages situated along major river network where undefended fluvial and tidal flood zones cover large areas of existing urban development. Surface water flooding is also a key consideration in the more urban parts of the Borough. Whilst much of the borough benefits from existing flood defences, risk is still prevalent in some areas and from other sources.
- 3.2. Where a Level 1 Assessment shows that land outside of flood risk areas cannot appropriately accommodate all the necessary development a Level 2 SFRA is required. Due to the high levels of risk covering most of the main built up areas of the borough a Level 2 SFRA was deemed necessary.
- 3.3. The Level 2 SFRA in Wyre is made up of several documents
  - Level 2 SFRA Report and Community Assessment (Jacobs)
  - Level 2 SFRA Flood Maps (Jacobs)
  - SFRA Addendum including Development Site Proformas
  - This sequential paper
- 3.4. The Council undertook a substantial amount of work in house, reviewing potential development sites against a range of flood risk information and local knowledge collected in the Level 1 SFRA. This work is collated in a set of 'Site Proformas' setting out each sites flood risk and vulnerability classification, Sequential and Exception Test requirements, potential discharge options and drainage calculations, and suitable flood mitigation measures.
- 3.5. Following this, consultants were procured to produce a Level 2 SFRA Report which considered all potential development sites in the Borough providing further detailed information of flood hazard, taking account of the presence of flood management assets such as flood defences. The Level 2 SFRA Report splits the Borough into 4 Community Areas reflecting variation in character across the borough. The community assessments aim to provide spatial planners with sufficient information to apply the Sequential Test, especially where the existing Flood Zones do not offer enough detail to understand the complex geographical distribution of flood risk from multiple sources across a single high-risk area.
- 3.6. This sequential paper draws together the work carried out in the above documents on assessing flood risk across the Borough. It assesses the allocated sites in more detail, including analysis of flood depths.

## 4. Allocations

- 4.1. The Draft Local Plan contains housing, employment and mixed use allocations. The site selection background paper sets out the range of factors that were taken into consideration in arriving at the final list of sites for allocation. Throughout this process the identification of each site's flood risk has been taken into account by having regard to the findings of the Level 1 and Level 2 Strategic Flood Risk Assessments. From the earliest stage in the site selection process the risk of flooding has been a key consideration.
- 4.2. However, in Wyre highway capacity constitutes the most significant constraint on where development can be located. As a result the approach to allocations has had to reflect where land can realistically be developed. Nevertheless, the majority of allocated sites in the Wyre Local Plan are located either wholly or predominantly in flood zone 1, as per the sequential approach set out in the NPPF. Sites wholly within flood zone 1 are not required to be subject to the sequential and exceptions tests.
- 4.3. There are also a number of sites that already have planning permission secured<sup>1</sup> and in some cases these are being implemented. These sites are also no longer required to be subject to further Sequential / Exception Test assessment on the basis that matters relating to flood risk have been thoroughly investigated and found acceptable. The sites to which this applies are set out in Table 1: Allocated sites requiring no further Sequential / Exception Test assessment below.

**Table 1: Allocated sites requiring no further Sequential / Exception Test assessment**

<b>Allocation Site Ref.</b>	<b>Site Name</b>	<b>SFRA Site Ref</b>	<b>Reason for not needing sequential / exceptions testing</b>
SA1/2	Lambs Road/Raikes Road	SFRA_18_02, SFRA_18_03, SFRA_18_04	Site is wholly located in FZ1
SA1/4	Bourne Poacher	SFRA_85	Has planning permission subject to S106 agreement
SA1/5	South East Poulton le Fylde	SFRA_22_01, SFRA_22_02	Site is wholly located in FZ1
SA1/6	Land at Garstang Road	Part of SFRA_21_02	Has planning permission
SA1/7	Land off Moorland Road (Rear of St Johns Hall)	Part of SFRA_21_01	Has planning permission
SA1/9	South Stalmine	SFRA_29_04, SFRA_25_05, SFRA_88	Site is wholly located in FZ1 and part of the site has planning permission

<sup>1</sup> Some of these have a resolution to approve subject to the signing of a section 106 agreement.

<b>Allocation Site Ref.</b>	<b>Site Name</b>	<b>SFRA Site Ref</b>	<b>Reason for not needing sequential / exceptions testing</b>
SA1/10	North of Garstang Road, Pilling	SFRA_33_02	Has planning permission
SA1/12	Land at Arthurs Lane, Hambleton	SFRA_30_04, SFRA_30_06	Has planning permission subject to S106 agreement and site is wholly located in FZ1
SA1/13	Land at Inskip	SFRA_36_01, SFRA_36_09	Site is wholly located in FZ1
SA1/14	North of New Holly Hotel and Bodkin Cottage Hollins Lane	SFRA_41_01	Site is wholly located in FZ1 and part of the site has planning permission
SA1/15	Land East of Hollins Lane	SFRA_41_02	Site is wholly located in FZ1 and part of the site has planning permission
SA1/16	West of Cockerham Road	SFRA_47_01, SFRA_47_02, SFRA_47_03 and part not covered	Site is wholly located in FZ1
SA1/17	South of Prospect Farm, West of the A6	SFRA_48	Site is wholly located in FZ1
SA1/19	Bowgreave House Farm, Bowgreave	SFRA_51	Site is wholly located in FZ1 and the site has planning permission
SA1/20	Garstang Road, Bowgreave	SFRA_52_01	Site is wholly located in FZ1 and the site has planning permission subject to S106 agreement
SA1/21	Land South of Calder House Lane, Bowgreave	SFRA_52_03	Has planning permission subject to S106 agreement
SA1/22	Garstang Country Hotel and Golf Club, Garstang Road, Bowgreave	SFRA_86	Has planning permission subject to S106 agreement
SA1/23	Daniel Fold Farm, Daniel Fold Lane, Catterall	SFRA_07, SFRA_55_02, SFRA_55_03	Has planning permission
SA1/24	Daniel Fold Farm Phase 2, Daniel Fold Lane, Catterall	SFRA_55_02, Part not covered	Has planning permission subject to S106 agreement and site is wholly located in FZ1
SA1/25	Land off Garstang Road, Barton	Part of SFRA_61	Site is wholly located in FZ1 and the site has planning

<b>Allocation Site Ref.</b>	<b>Site Name</b>	<b>SFRA Site Ref</b>	<b>Reason for not needing sequential / exceptions testing</b>
			permission subject to S106 agreement
SA1/26	Land Rear of Shepherds Farm, Barton	Part of SFRA_61	Site is wholly located in FZ1 and the site has planning permission subject to S106 agreement
SA1/27	Land to the rear of 876 Garstang Road	Part of SFRA_76	Site is wholly in FZ1 and the site has planning permission subject to S106 agreement
SA2/1	Carrfield Works	SFRA_82	Site is wholly located in FZ1
SA2/2	Valiants Farm	SFRA_81	Site is wholly located in FZ1
SA2/4	South of Goose Lane	SFRA_55_06	Site is wholly located in FZ1
SA3/2	Joe Lane (Land bounded by Garstang Road, A6 and Joe Lane Catterall)	SFRA_55_04	Site is wholly located in FZ1
SA3/3	West of Great Eccleston	SFRA_34_01, SFRA_34_02, SFRA_34_03, SFRA_34_05, SFRA_34_07, SFRA_34_08	Site is wholly located in FZ1
SA3/4	Forton Extension	SFRA_40_02, SFRA_40_03, SFRA_40_04, SFRA_40_05, SFRA_40_06, SFRA_40_07, SFRA_87	Site is wholly located in FZ1
SA3/5	Land West of the A6 (Nateby Crossing), Garstang	SFRA_47_04	Site is wholly located in FZ1 and has planning permission
SA6	Land at Conway, West of the A6, Garstang	SFRA_45_06	Site is wholly located in FZ1

4.4. A number of the sites proposed for allocation are affected either wholly or partly by flood zones 2 and 3. Where a site has either of these flood zones present it has been subject to the sequential test (and exceptions test where relevant).

4.5. The Level 2 SFRA report recommended applying the sequential test across the whole of the Borough. However, it also recognised that applying this strict approach to flood risk avoidance could affect the growth needs for the



various Community Areas and the sustainable development of the Borough as a whole. As a result a pragmatic approach to the sequential test has been adopted in accordance with the spatial strategy of the Plan. This approach also ensures that housing delivery is maximised in areas where it can be supported balancing the highways constraints and flood risk constraints.

## 5. The Spatial Strategy of the Plan

5.1. The Local Plan establishes a settlement hierarchy. This tiered approach aims to locate development where it is most sustainable based on a variety of considerations, including access to employment, facilities and public transport. Flood risk is a consideration as part of this assessment, but the setting of the hierarchy is based on a balance between all relevant sustainability factors including the borough's main constraint of highways capacity<sup>2</sup>.

Hierarchy	Settlement (s)
Urban Town	Fleetwood, Poulton-le-Fylde, Cleveleys, Thornton, Normoss <sup>3</sup>
Key Service Centre	Garstang
Rural Service Centres	Knott End, Great Eccleston, Hambleton, Catterall
Main Rural Settlements	Bilsborrow, Pilling, Barton, St Michaels, Bowgreave, Inskip, Stalmine, Forton, Pressall, Scorton
Small Rural Settlements	Cabus, Churchtown/Kirkland, Hollins Lane, Calder Vale, Dolphinholme
Other undefined Rural Settlements	

5.2. Due to the range of significant constraints affecting the Borough, predominantly highways, the Strategy of the Plan is largely dictated.

5.3. Allocations (housing, provision for travelling show people, employment and mixed use) are made within all areas of the settlement hierarchy. The sequential test has been carried out across each hierarchical area. Whilst this approach may not be the preferred approach of applying the sequential test across the Borough, it is the most reasonable in trying to balance the competing constraints of highways and flooding.

5.4. In all cases it has been demonstrated that there are no suitable and available alternative sites for the proposed uses at a lower risk of flooding within the same hierarchy area – and therefore the sequential tests have been satisfied.

5.5. Whilst in some instances other sequentially preferable sites may be available at other settlements within the same tier of the hierarchy, they are unsuitable to be brought forward due to significant highways constraints present within the Borough<sup>4</sup>.

5.6. The detailed site assessments below contain information about the predicted depth of flooding within sites and the associated hazard ratings for a range of undefended and defended flood event scenarios. This information has been

<sup>2</sup> [http://www.wyre.gov.uk/info/200459/highways/1064/highways\\_evidence](http://www.wyre.gov.uk/info/200459/highways/1064/highways_evidence)

<sup>3</sup> Normoss is part of the Blackpool's urban area

<sup>4</sup> [http://www.wyre.gov.uk/info/200459/highways/1064/highways\\_evidence](http://www.wyre.gov.uk/info/200459/highways/1064/highways_evidence)

taken from the Level 2 SFRA produced by Jacobs. The data in the Jacobs report is based on the EA's Lancashire Tidal Areas Benefitting from Defences Revisited Study and the Lancashire Tidal Flood Risk Mapping Study. The Jacobs report did not provide detailed information on climate change, only showing the extent of flooding including climate change. As such the Council has assumed that incorporating climate change into the depth and hazard assessment that the depth and risk moves up one level. The Council has set out a response to the flood hazards on site in the policy requirements for appropriate mitigation. As explained at paragraph 2.7 the detailed FRA which will be produced by developers of the sites as part of the planning application stage must consider flood depths and velocities, including allowance for climate change, in more detail.

5.7. The Council has presented the worst case scenario assessed and presented the highest hazard rating present on site. On all sites a means of access / egress to higher ground is noted, this access will be taken at points within the site which do not cross dangerous zones, i.e. through lower risk areas.

5.8. In addition, for all sites;

- Where sites are partially in flood zone 2 and 3 public open space should be located in these zones
- Surface water attenuation ponds should not be located in flood zone 3
- Single storey dwellings should not be located in areas of the site with the greatest depth
- Flats should not be located in areas of the site with the greatest depth and they should have internal access to upper floors.

5.9. The following sections of this document assess each sub area of the hierarchy and the sites within that area that must pass the sequential and exceptions test.

## **6. Urban Town Sites Sequential Test**

### **Context of the hierarchy area**

- 6.1. The Urban Town sub area covers the peninsula towns from Fleetwood to Poulton, including Thornton, Cleveleys and Normoss. This area is arguably the most sustainable area of the Borough. It contains the greatest concentration of services and facilities and has the best accessibility to public transport options.
- 6.2. The Urban Town has been the focus of growth for most of the previous Plan period. As a result it is predominantly built out with few options for future growth. A large swathe of the undeveloped area on the peninsula is covered by Green Belt designation, following the Green Belt Review it has been established that most of this land should remain protected by the designation.

### **Flood Risk**

- 6.3. The Level 2 SFRA contains a full assessment of risk from all types of flooding. The key considerations here are tidal and fluvial and surface water.
- 6.4. Most of the Northern end of the Urban Town area is covered by either Flood Zone 2 or 3. There are very few pockets of land that are at low risk of flooding according to the EA flood risk maps. However it should be noted that these maps do not take into account the possible impacts of climate change or take account of existing flood defences. In reality much of this area is protected by maintained flood defences on the coast and on the river Wyre.
- 6.5. In considering the flood risk to urban peninsula sites the Council has consulted the EA Lancashire Tidal Areas Benefiting from Defences Revisited Study and the Lancashire Tidal Flood Risk Mapping Study (2015). It has also considered the Thornton / Cleveleys to Fleetwood Strategic Flood Risk Model (2007). It has considered the flood depths, velocities and mechanisms of breaches in the whole of this area, including consideration for climate change. The Council has also had regard to the likely areas of breach as part of the [Wyre Flood and Coastal Defence Strategy Plan: Urban Core Strategy Appraisal Report](#) (February 2013). The document looked at the standard of protection, deterioration and maintenance of the defences. It identified a range of high risk area schemes for implementation to ensure that the peninsula remains protected from flooding. These measures have been reflected in the latest EA mapping showing areas benefiting from flood defences. In this paper, in drawing conclusions from these various models, the Council has adopted the worst case scenario in its assessment of risk to each site.
- 6.6. The risk from surface water flooding is assessed as high, with the greater risks being toward the Southern part of the Urban Town in Poulton and Thornton.

## Proposed Uses

6.7. There are a number of sites proposed for development in the Urban Town, some for housing, some for employment and some for mixed use – which will be a mix of housing and employment. These uses are either less vulnerable or more vulnerable or water compatible.

## Sequential Test

6.8. The following sites within the Urban Town are required to pass the sequential test as either the whole or part of the site is affected by flood zone 2 or 3.

### *Housing allocations – more vulnerable*

Allocation Site Ref	Site Name	SFRA Site Ref	Sequential Test required?	Exceptions Test required?
SA1/1	West of Broadway	Part of SFRA_10_03	Yes	Yes
SA1/3	Land between Fleetwood Road North and Pheasant Wood	Part of SFRA_16_02	Yes	Yes
SA1/8	Land South of Blackpool Road	Part of SFRA_77	Yes	Yes
SA1/11	North of Norcross Lane	Part of SFRA_20	Yes	Yes

### *Employment allocations – less vulnerable*

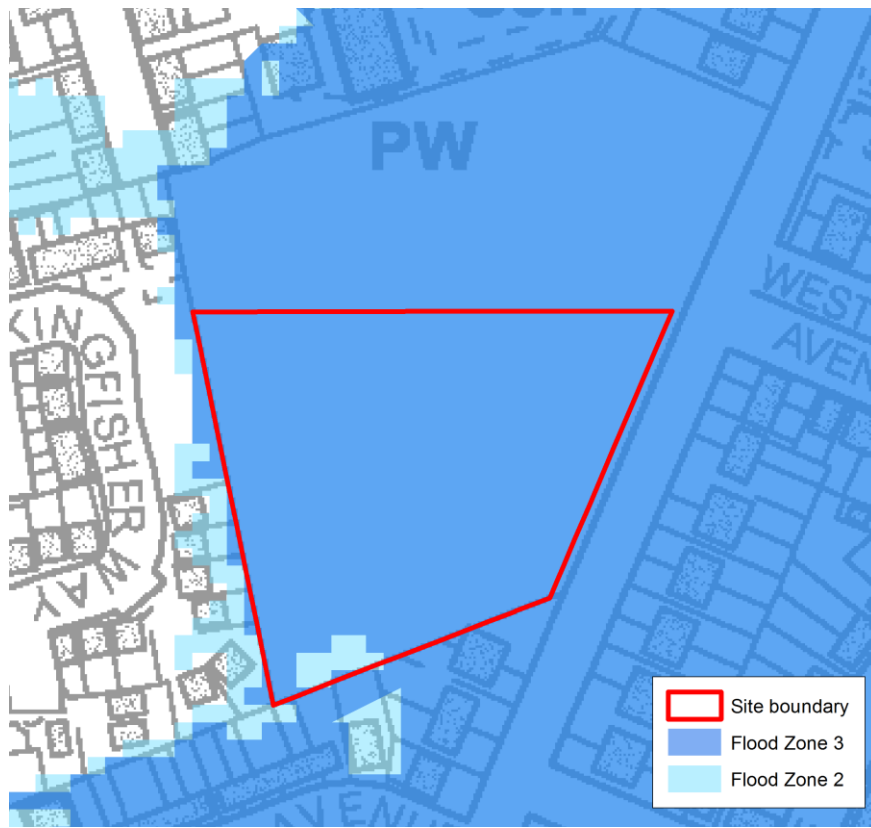
Allocation Site Ref	Site Name	SFRA Site Ref	Sequential Test required?	Exceptions Test required?
SA5	Port of Fleetwood	SFRA_78	Yes	No

### *Mixed Use allocations – more vulnerable and less vulnerable*

Allocation Site Ref	Site Name	SFRA Site Ref	Sequential Test required?	Exceptions Test required?
SA3/1	Fleetwood Dock and Marina	SFRA_12, SFRA_08	Yes	Yes
SA4	Hillhouse Enterprise Zone	SFRA_01, SFRA_02, SFRA_03, SFRA_16_03, SFRA_16_04 Part not covered	Yes	Yes

## Site Assessments

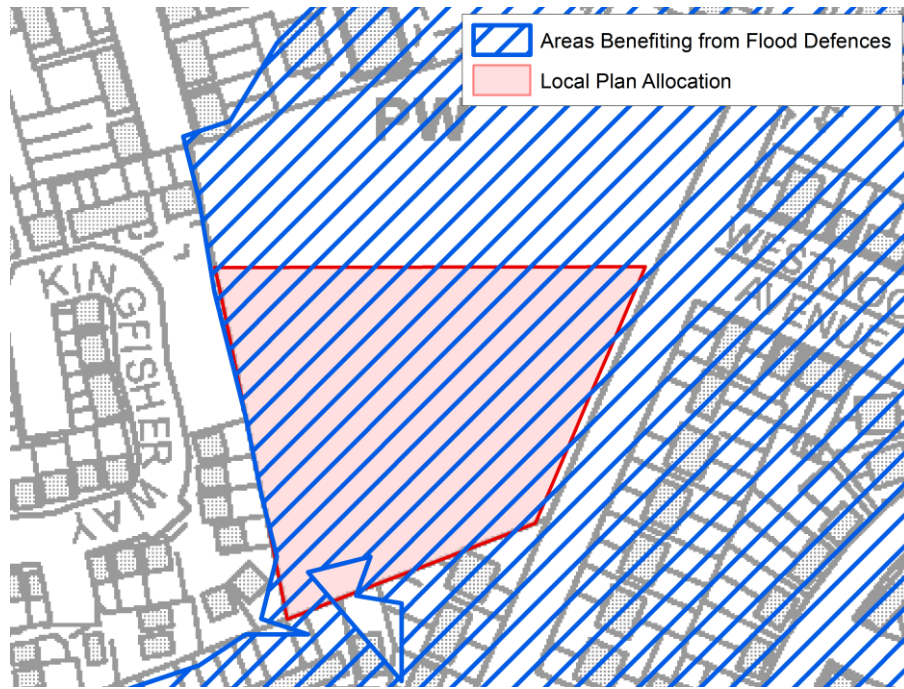
### SA1/1 West of Broadway



6.9. This site was assessed in the SFRA Addendum as site SFRA\_10\_03. The development of this site is considered to be sequentially appropriate given the lack of suitable and available alternative sites for housing within Fleetwood.

6.10. Whilst the site is within flood zone 3 it is protected by river defences maintained by the Environment Agency, ABP and other private land owners to a level of protection of 1 in 200 years and tidal defences maintained by Wyre council. The sea defences to the west are currently being upgraded to provide a level of protection of 1 in 200 years. The defences to the north provide a level of protection of 1 in 200 years. The Level 2 SFRA indicates that there is residual low risk following current investment in flood defences.

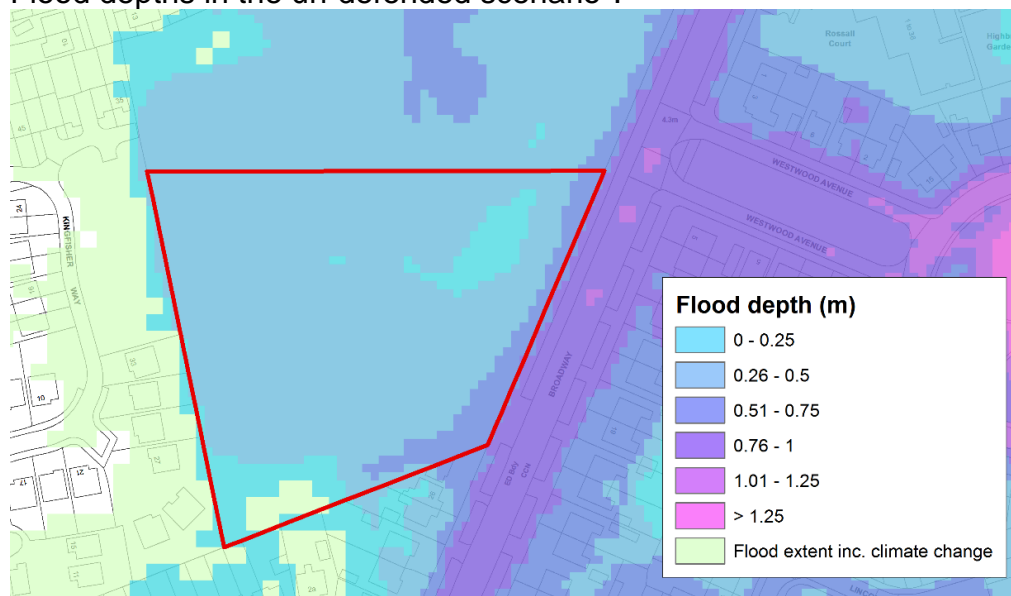
6.11. The map below shows that although the site is within flood zone 3 it is in an area benefitting from flood defences.



6.12. The predicted flood depths across the site are as follows:

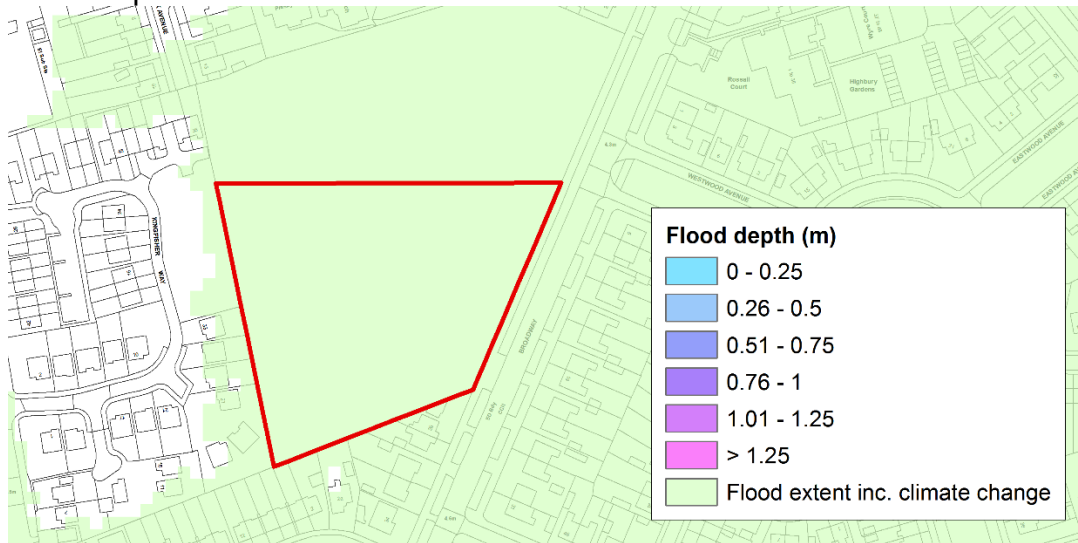
Return period scenario	Max depth (m)	Depth range (m)	Highest flood hazard rating on site
1 in 200 defended	N/A	N/A	N/A
1 in 200 undefended	0.75	0.26 - 0.75	Dangerous for some
1 in 200 defended with climate change	0.75	0.26 - 0.75	Dangerous for some
1 in 200 undefended with climate change	1	0.5 – 1.25	Dangerous for most

Flood depths in the un-defended scenario<sup>5</sup>:



<sup>5</sup> See box explaining the mapping at the bottom of page 9 of the Jacobs Level 2 SFRA

Flood depths in the defended scenario<sup>6</sup>:



6.13. Flood depths are mainly consistent across the site. With a small part of the site liable to more in depth flooding in the undefended scenario.

6.14. The flood hazard is assessed as dangerous for some under the undefended scenario across most of the site, with a small part of the site assessed as dangerous for most in the north west. Access / egress in an undefended state (with climate change) will be to the north of the site and then west, access away from the area is then south down the A587. This access route will be reflected in Wyre's emergency plan however access in this area is dynamic dependent on where flooding is coming from (either estuary/coast).

6.15. The Environment Agency have advised against single storey dwellings and apartment blocks where the ground flats do not have internal access to upper levels on this site.

6.16. As the site is affected by flood zone 3 and the proposed use is residential the exceptions test must also be passed. The provision of housing in Fleetwood has clear sustainability benefits as outlined in the Council's Sustainability Appraisal. The site is considered to be a suitable site for housing and will provide much needed affordable housing in a sustainable location with good access to public transport. Policies within the Local Plan requires applicants to provide mitigation measures to ensure that the site is safe for the lifetime of the development, and a FRA must be carried out. The FRA must be used to take a sequential approach to site layout. Finished floor levels must be above the undefended flood level plus an allowance for climate change for the life of the development. Where finished floor levels cannot be set above the 1 in 200 year plus climate change flood level, the developer must state in their FRA why it is not possible and identify and implement flood proofing/resilience measures that will protect the occupants

<sup>6</sup> See box explaining the mapping at the bottom of page 9 of the Jacobs Level 2 SFRA



and their property up to that floor level. The development is also required to achieve greenfield runoff rates

6.17. Due to the low residual risk, the sustainability benefits outlined above and the requirements set in the site specific policy the site is deemed to have passed the first part of the exceptions test.

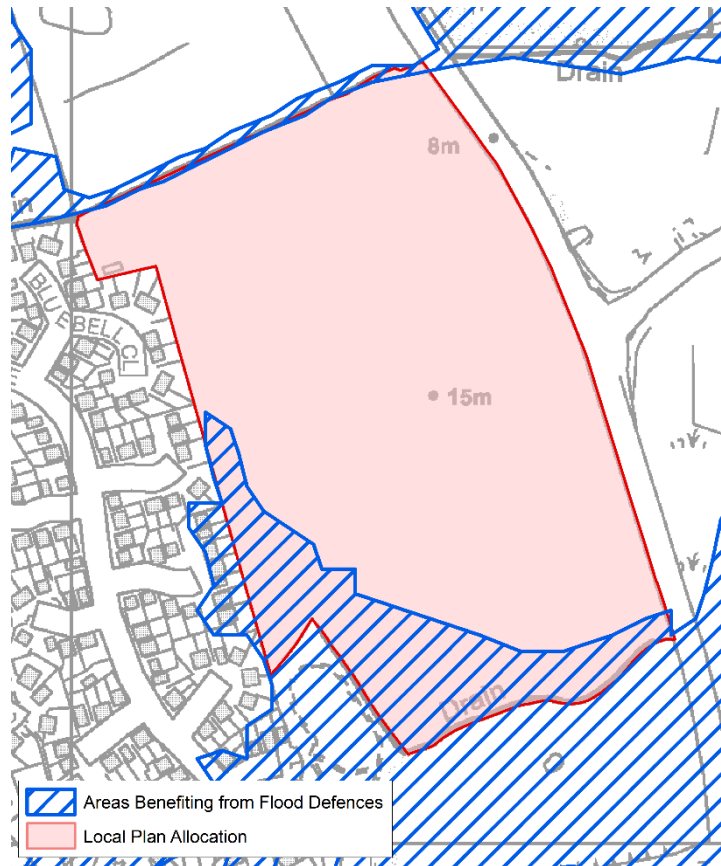
SA1/3 Land between Fleetwood Road north and Pheasant Wood



6.18. This site was assessed in the SFRA Addendum as site SFRA\_16\_02. The development of this site is considered to be sequentially appropriate given the lack of suitable and available alternative sites for housing within Thornton.

6.19. A water course designated as a Main River Line forms the northern boundary of the site. The southern third of the site lies within Flood Zone 3. The Level 2 SFRA indicates that the site lies in an area of residual low risk following current investment in flood defences. It is protected by river defences maintained by the Environment Agency and other private land owners to a level of protection of 1 in 100 years and tidal defences maintained by Wyre council in line with the strategy that looks to achieve a 1 in 200 year standard including an allowance for climate change.

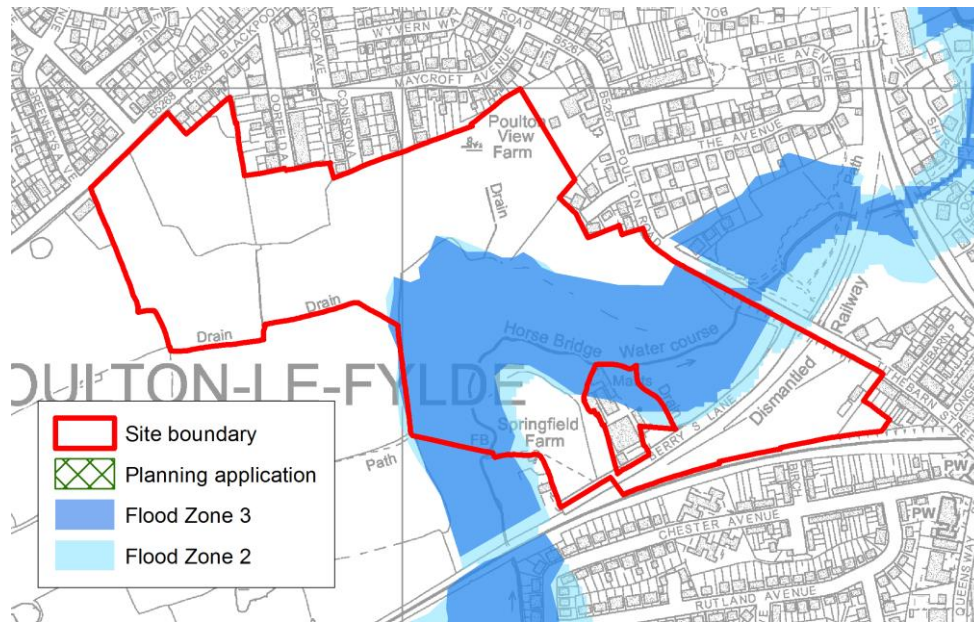
6.20. The map below shows that although part of the site is within flood zone 3 it is in an area benefitting from flood defences. The predicted flood depths are relatively consistent across the site with deeper water centred around the ordinary water course in the undefended scenario, this area is also assessed as dangerous for most in this scenario.



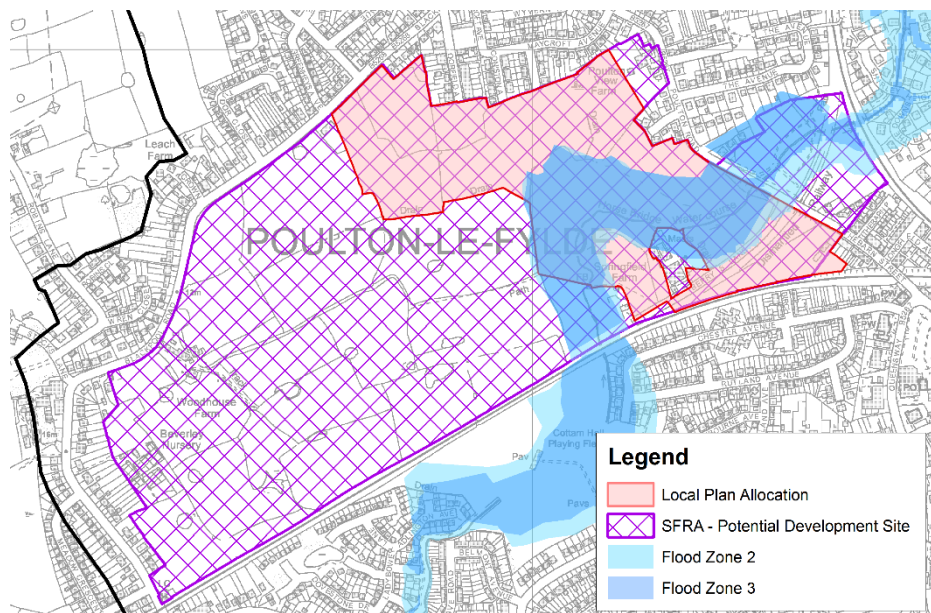
6.21. As the site is affected by flood zone 3 and the proposed use is residential the exceptions test must also be passed. The site is one of the few suitable and available housing sites in Thornton. As outlined in the sustainability appraisal this site provides an opportunity to provide housing in a sustainable location close to employment opportunities. It is expected that all built development on this site will be developed outside of the flood zone, a sequential approach to site layout should be applied. Policies within the Local Plan restrict development of the site to the land outside of flood zone 2 and 3, it also and directs that there should be no development with 8m of the watercourse. Any proposed site layout should identify an 8m easement along the length of the watercourse. Any works within 8m of an Ordinary Watercourse may require the consent of Lancashire County council. The development is also required to achieve greenfield runoff rates

6.22. Due to the limited amount of the site affected by flood zones 2 and 3, the sustainability benefits identified and the requirement for mitigation measures set out in the site specific policy the site is deemed to have passed the first part of the exceptions test.

SA1/8 Land South of Blackpool Road



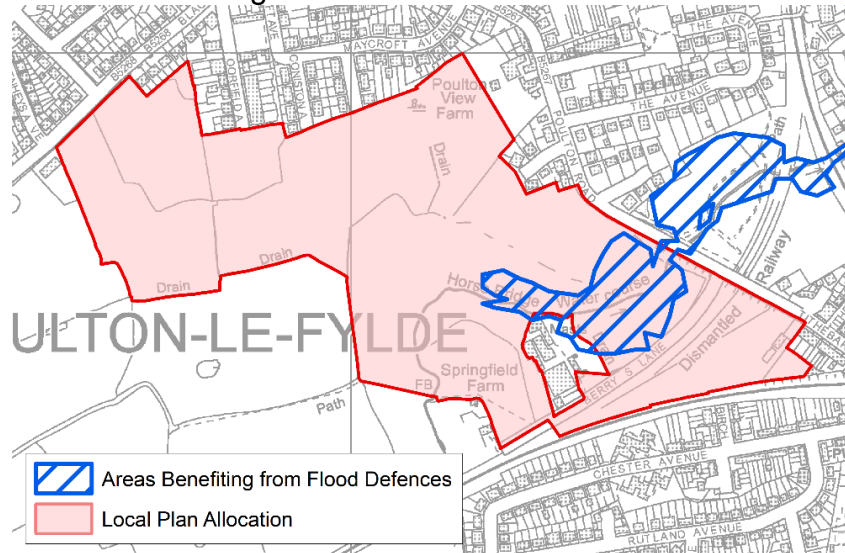
6.23. This site was assessed in the SFRA Addendum as site SFRA\_77. The area allocated is a smaller area than that assessed under the SFRA\_77, there is also a small corner of the south east part of the site that was not covered by SFRA. As can be seen in the overlap map shown below the omitted area is very small. It is not considered that this slight omission alters the conclusions of the SFRA assessment as the small omitted area is the same as the adjoining land in terms of flood risk and vulnerability.



6.24. The development of this site is considered to be sequentially appropriate given the lack of suitable and available alternative sites for housing within Poulton-le-Fylde.

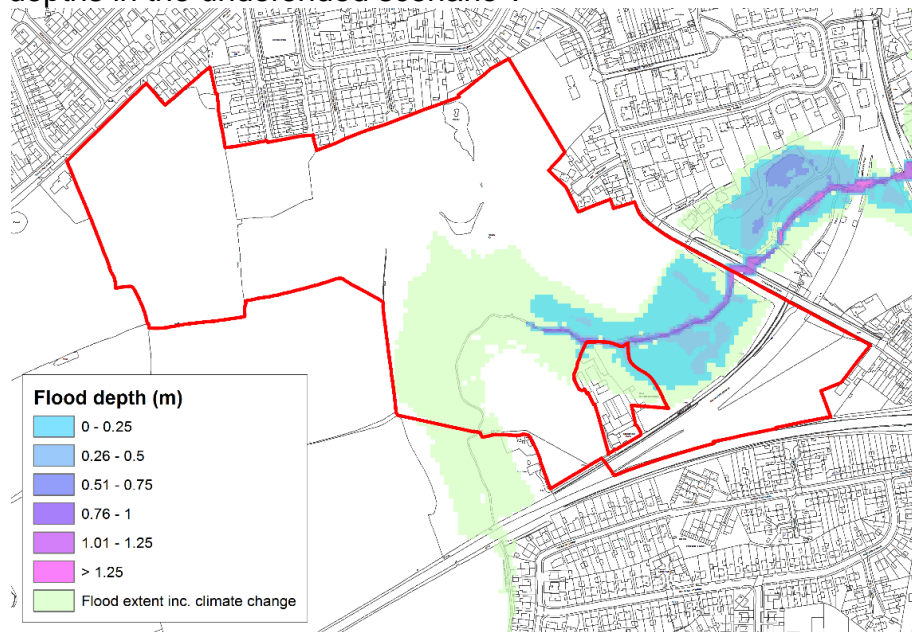
6.25. The site is predominantly located in flood zone 1, with a proportion of the site affected by flood zone 2 and 3 which is located through the south eastern part of the site around the main river (Horsebirdge watercourse). A number of small ponds and ordinary watercourses are spread through the site.

6.26. The map below shows that although part of the site is within flood zone 3 it is in an area benefitting from flood defences.



6.27. Flood depths are greatest in the area abutting the watercourse, in the undefended scenario. This same small area of the north west of the site around the main river is classed as a very low hazard, with small pockets of areas assessed as dangerous for some in the undefended scenario. Access and egress to the site can be taken at points outside the areas of risk.

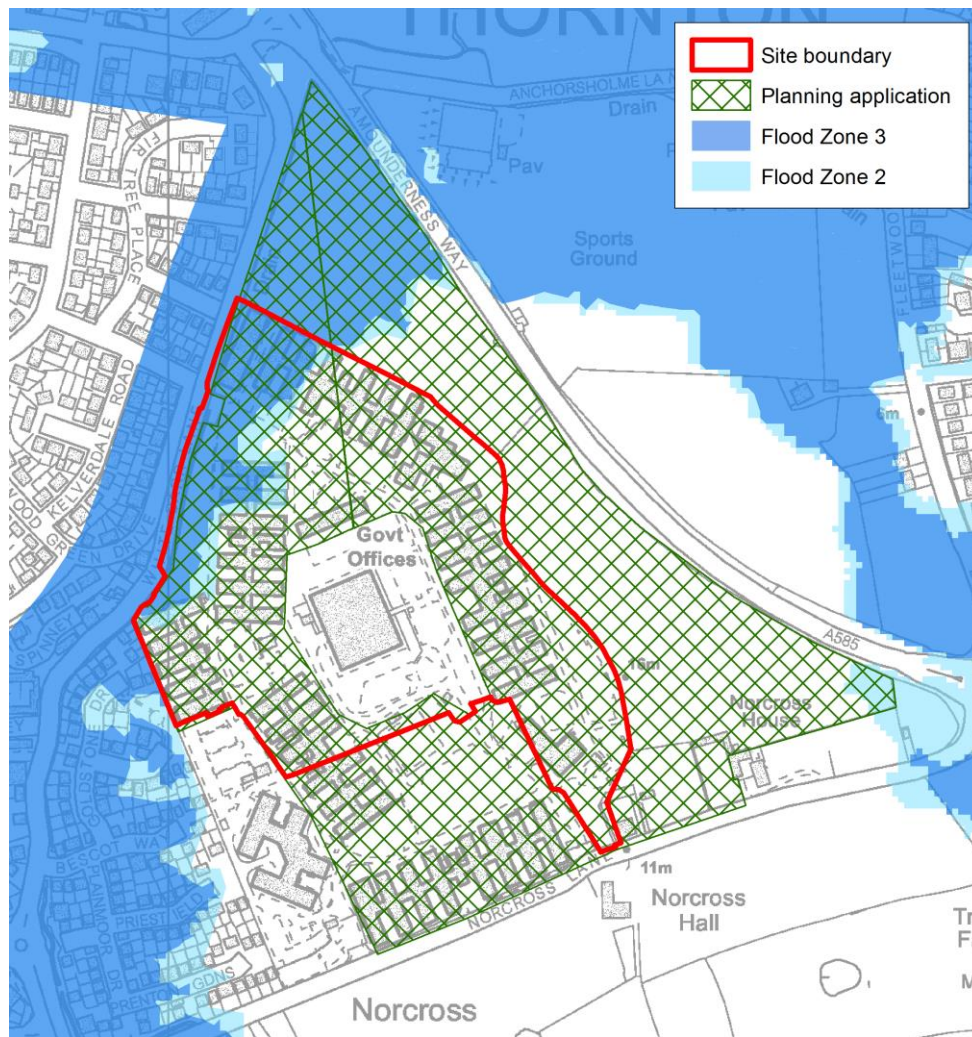
Flood depths in the undefended scenario<sup>7</sup>:



<sup>7</sup> See box explaining the mapping at the bottom of page 9 of the Jacobs Level 2 SFRA

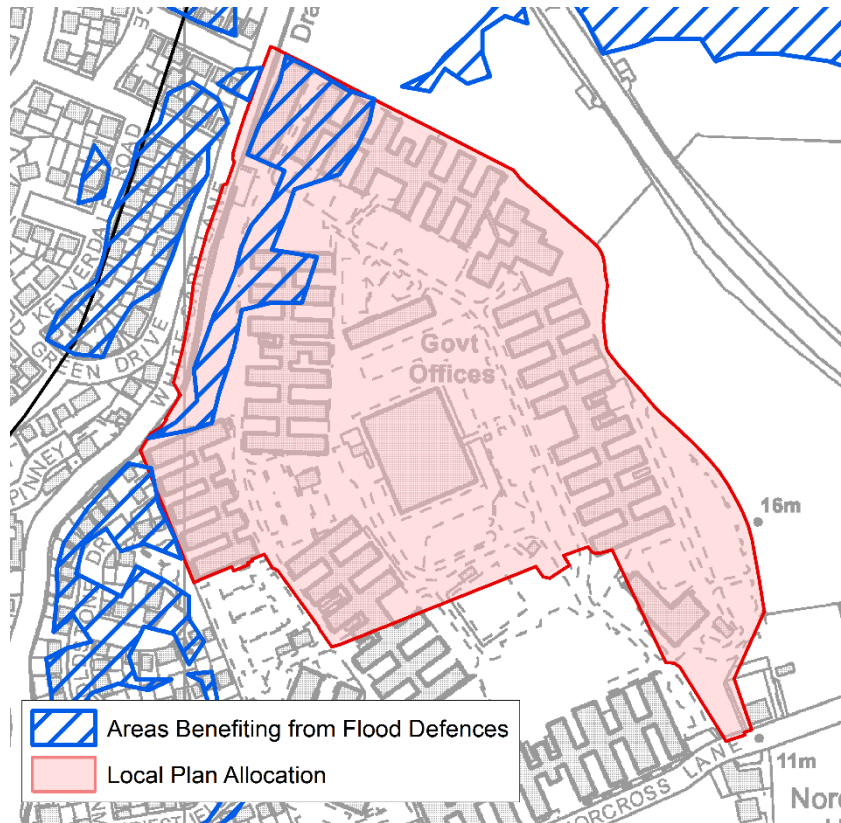
- 6.28. As the site is affected by flood zone 3 and the proposed use is residential the exceptions test must be passed. Due to the lack of suitable and available land in Poulton-le-Fylde the Council carried out a green belt review. This site was identified as not performing the functions of the green belt and potentially suitable for development. The site would enable a greater proportion of the Borough's housing needs to be met and to be located close to services, facilities, employment opportunities and transport choices. As outlined in the Sustainability Appraisal there are a number benefits in bringing this site forward, beyond housing provision.
- 6.29. It is expected that all built development on this site will be developed outside of the flood zone, a sequential approach to site layout should be applied. Policies within the Local Plan restrict development of the site to the land outside of flood zone 2 and 3 it also and directs that there should be no development with 8m of the watercourse. The development is also required to achieve greenfield runoff rates
- 6.30. Due to the relatively limited amount of the site affected by flood zones 2 and 3, the sustainability benefits identified and the requirement for mitigation measures set out in the site specific policy the site is deemed to have passed the first part of the exceptions test.

## SA1/11 North of Norcross Lane



6.1. This site was assessed in the SFRA Addendum as site SFRA\_20. A large part of the site already has planning permission (13/00200) for residential and employment. The allocation site is slightly different the planning application boundary and must therefore pass the sequential test. The site is predominantly located in flood zone 1 with the northwest parts of the site affected by flood zone 2 and 3. The part of the site affected by flood zone 2 and 3 is the part which already has planning permission.

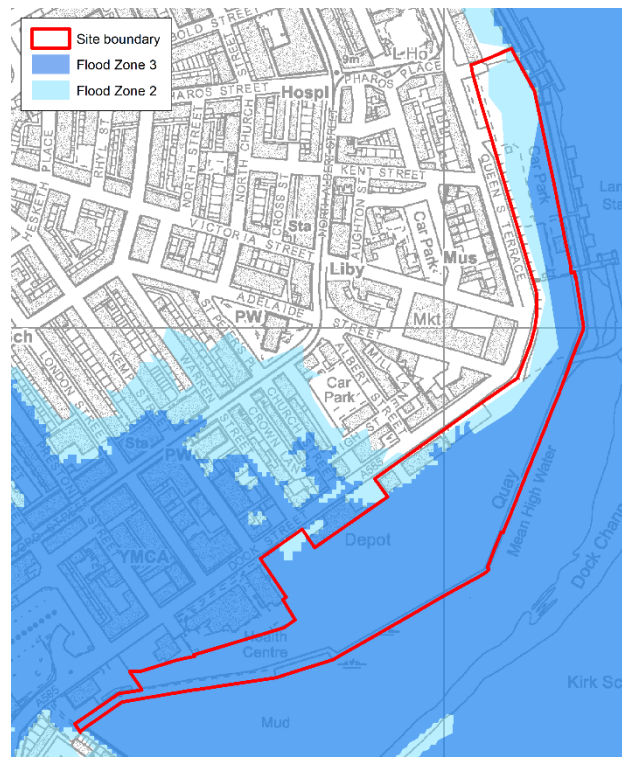
6.2. Royles Brook, a designated main river is located along the western boundary of the site. Any proposed site layout should identify an 8m easement along the length of the watercourse. Any works within 8m of an Ordinary Watercourse may require the consent of Lancashire County council. The map below shows that although the site is within flood zone 3 it is in an area benefitting from flood defences.



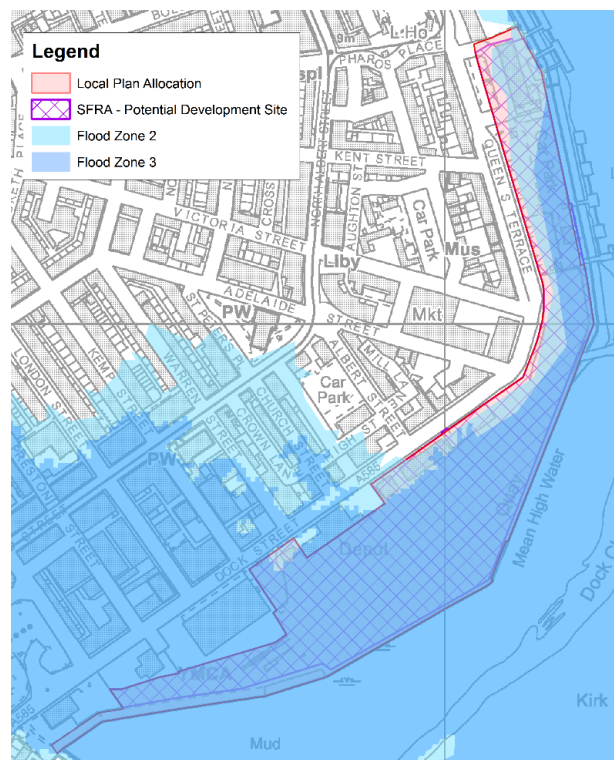
- 6.3. The Level 2 SFRA indicates that the site lies in an area of residual low risk following current investment in flood defences. It is protected by river defences maintained by the Environment Agency and other private landowners to a level of protection of 1 in 100 years and tidal defences maintained by Wyre council at a level of 1 in 200 years.
- 6.4. As the part of the site that lies within flood zone 3 already has planning permission it is deemed to have already passed the sequential and exceptions test.



## SA5 Port of Fleetwood



6.5. This site was assessed in the SFRA Addendum as site SFRA\_78. The site area assessed under SFRA\_78 is slightly different to that which is allocated under SA5. The southern tip of the allocated site extends further than SFRA\_78 to include Bridge Road. This amendment was made to ensure that the site has an access.

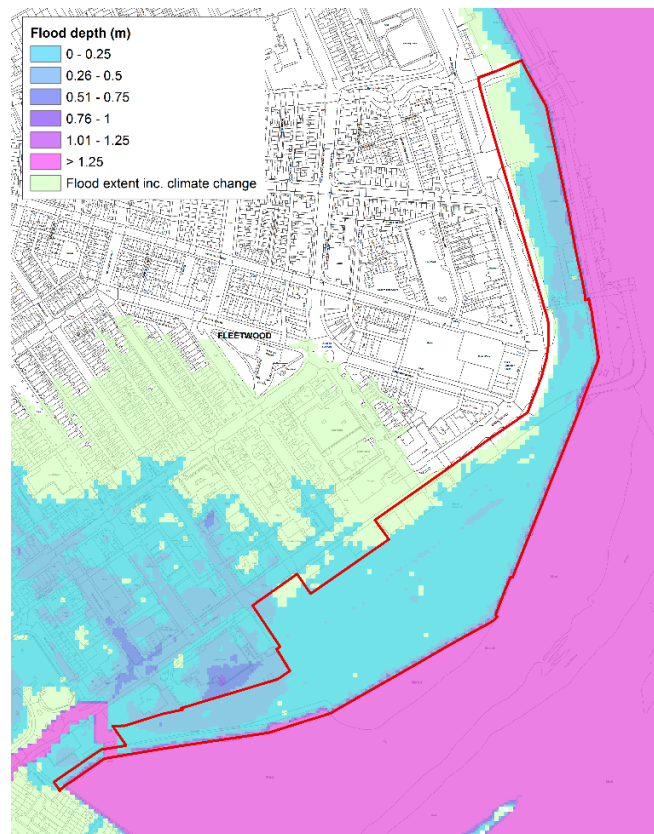


6.6. The site is wholly located in Flood Zone 3. It is situated adjacent to the tidal River Wyre at Fleetwood. It is a brownfield site that benefits from a privately maintained sea defence maintained currently by Associated British Ports. It is allocated for Port related use or B1, B2 B8.

6.7. The predicted flood depths across the site are as follows:

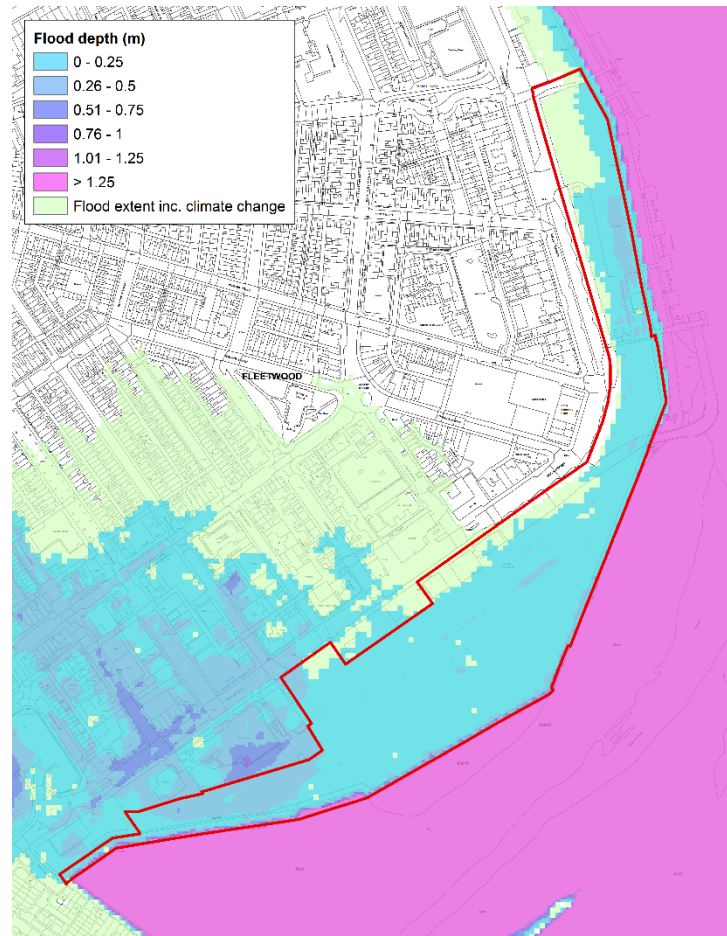
Return period scenario	Max depth (m)	Depth range (m)	Highest flood hazard rating on site
1 in 200 defended	0.5	0 – 0.5	Dangerous for some
1 in 200 undefended	0.5	0 – 0.5	Dangerous for some
1 in 200 defended with climate change	0.75	0.51 – 0.75	Dangerous for most
1 in 200 undefended with climate change	0.75	0.51 – 0.75	Dangerous for most

Flood depths in the un-defended scenario<sup>8</sup>:



<sup>8</sup> See box explaining the mapping at the bottom of page 9 of the Jacobs Level 2 SFRA

### Flood depths in the defended scenario<sup>9</sup>:

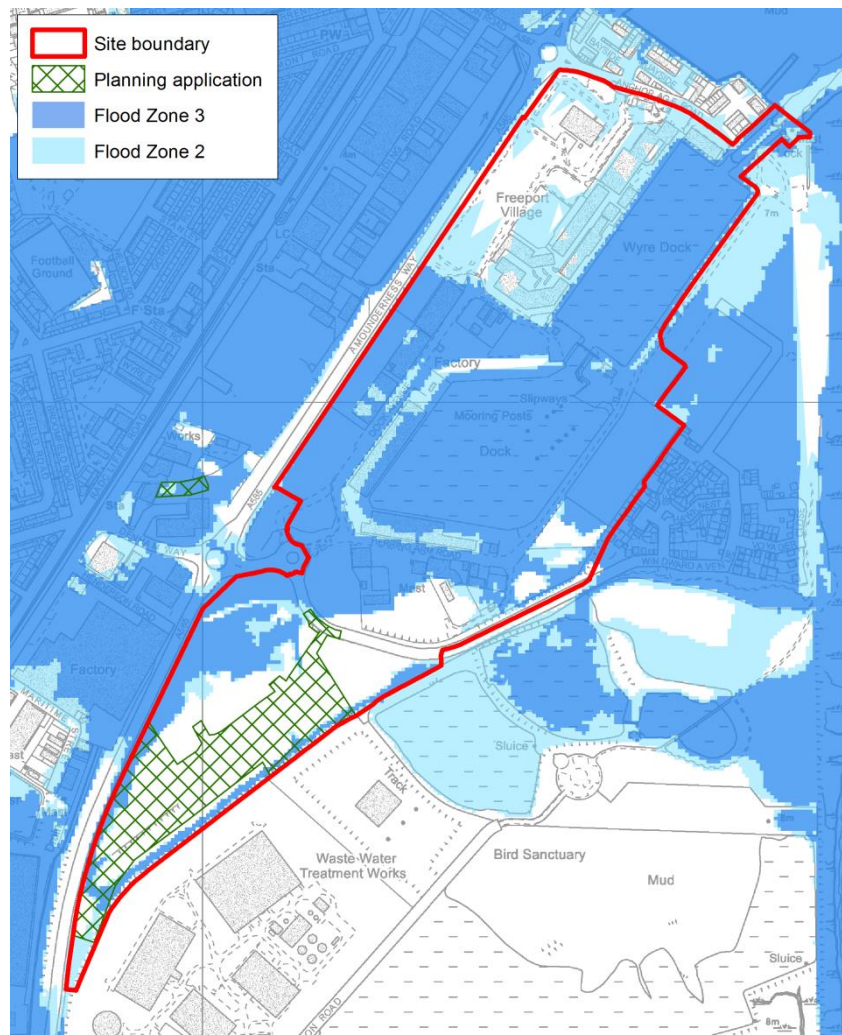


6.8. In the undefended scenario the flood depth risk is consistent across most of the site at 0 - 0.25m, with small pockets in the northern part of the site identified as having greater depths. In the same scenario the site is predominantly assessed as very low hazard with parts of the northern and southern tips predicted to have areas that are dangerous for some and dangerous for most. Access and egress in a flood event would be to the north and west to join the southward route along Amounderness Way.

6.9. Policies within the Local Plan require applicants to provide mitigation measures to ensure that the site is safe for the lifetime of the development, and a FRA must be carried out. The FRA must be used to take a sequential approach to site layout. Finished floor levels must be above the undefended flood level plus an allowance for climate change for the life of the development. Where finished floor levels cannot be set above the 1 in 200 year plus climate change flood level, the developer must state in their FRA why it is not possible and identify and implement flood proofing/resilience measures that will protect the occupants and their property up to that floor level. The development is also required to achieve greenfield runoff rates

<sup>9</sup> See box explaining the mapping at the bottom of page 9 of the Jacobs Level 2 SFRA

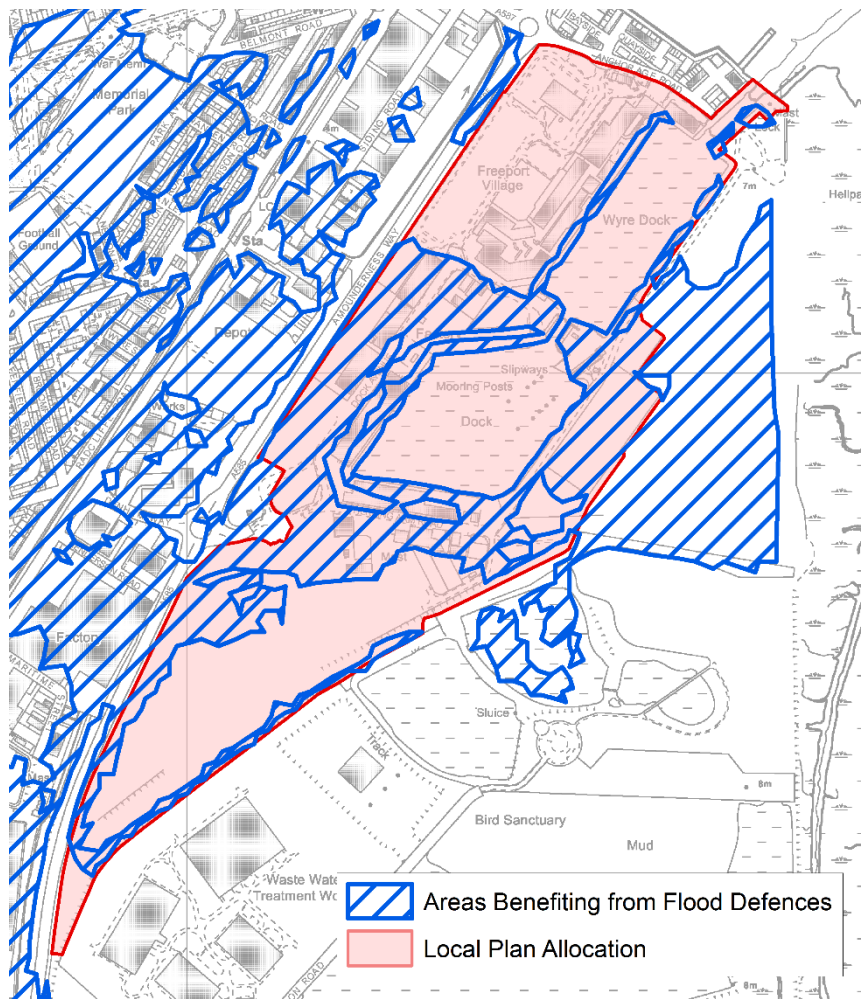
## SA3/1 Fleetwood Dock and Marina



6.10. This site was assessed in the SFRA Addendum as sites SFRA\_08 and SFRA\_12. The development of this site is considered to be sequentially appropriate given the lack of suitable and available alternative sites for employment and housing within Fleetwood.

6.11. Large parts of this site are affected by flood zone 2 and 3, though these areas are mainly the currently docks and mooring pools. The areas at risk of flooding extend slightly beyond these pools. The Level 2 SFRA assesses the residual risk as low-medium following current investment in flood defences. It is protected by river defences maintained by the Environment Agency and other private landowners to a level of protection of 1 in 200 years and tidal defences maintained by Wyre council at a level of 1 in 200 years also.

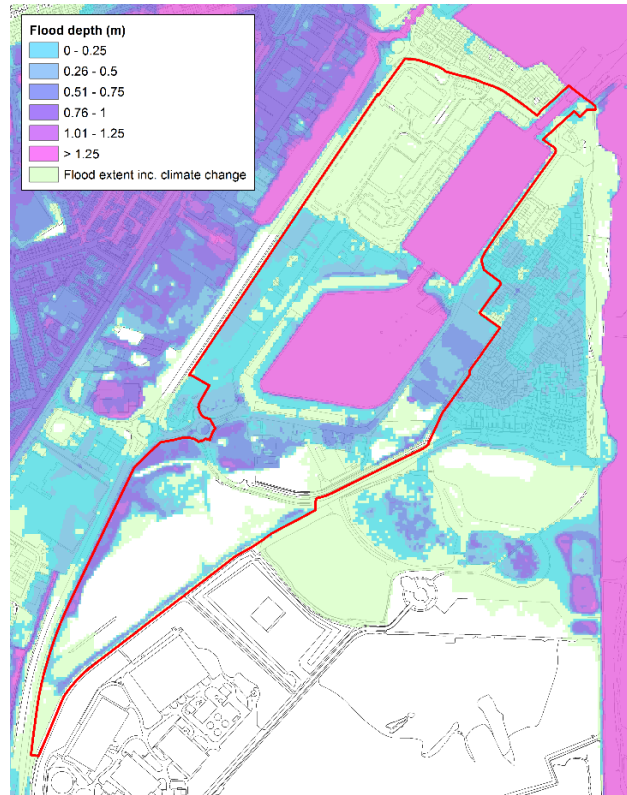
6.12. The map below shows that although the site is within flood zone 3 it is in an area benefitting from flood defences.



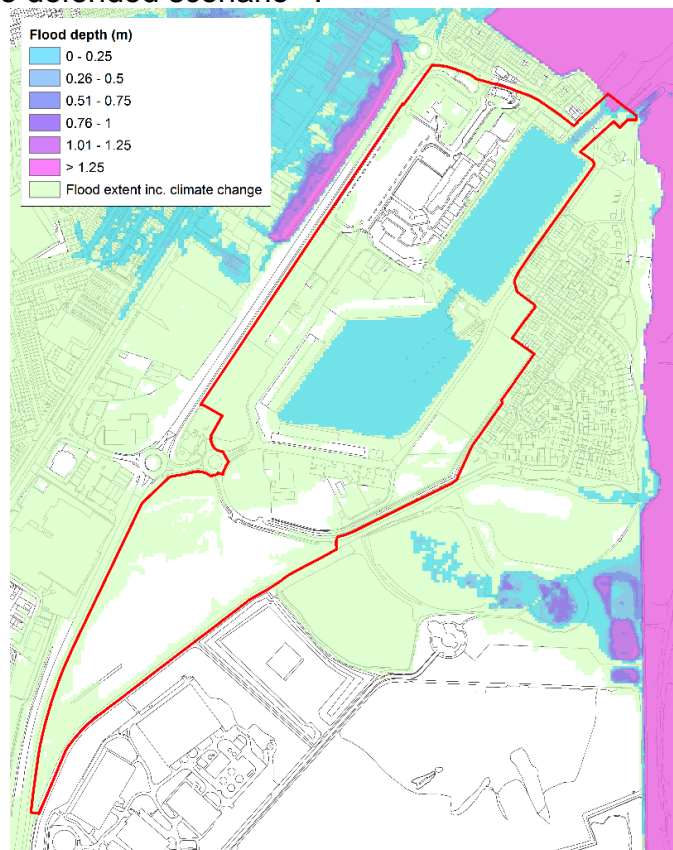
6.13. The predicted flood depths across the site are as follows:

Return period scenario	Max depth (m)	Depth range (m)	Highest flood hazard rating on site
1 in 200 defended	N/A	N/A	N/A
1 in 200 undefended	1	0.76 – 1	Dangerous to most
1 in 200 defended with climate change	1	0.76 – 1	Dangerous to most
1 in 200 undefended with climate change	1.25	1.01 – 1.25	Dangerous for all

Flood depths in the undefended scenario<sup>10</sup>:



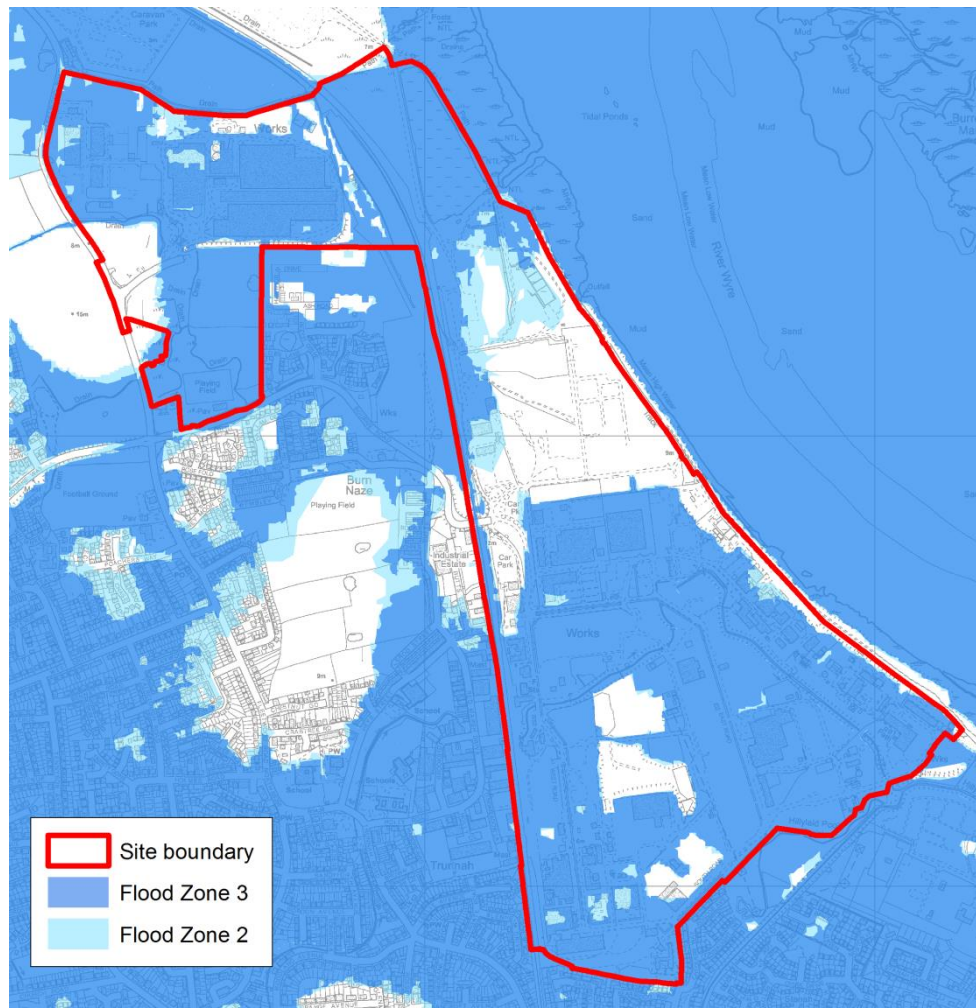
Flood depths in the defended scenario<sup>10</sup>:



<sup>10</sup> See box explaining the mapping at the bottom of page 9 of the Jacobs Level 2 SFRA

- 6.14. The flood depth across the site is varied. The southern part of the site is not at risk of flooding under any scenario. In the undefended scenario the main areas of depth are around the docks, with the deepest areas being to the south of the dock. This is reflected in the hazard ratings which show most of the southern part of the site has no – very low hazard whereas the site around the docks has a score of dangerous for some and dangerous for most. Access and egress is to the south down Amounderness Way.
- 6.15. As the site is affected by flood zone 3 and as the proposed use includes residential the exceptions test must be passed. The docks and the marina are a key brownfield site in the Borough, re-developing this site will provide affordable housing in an area of need and provide local job opportunities alongside this. A sequential approach to site layout should be applied with the aim of locating more vulnerable in lower risk areas. Policies within the Local Plan require applicants to provide mitigation measures to ensure that the site is safe for the lifetime of the development, and a FRA must be carried out. The FRA must be used to take a sequential approach to site layout. Finished floor levels must be above the undefended flood level plus an allowance for climate change for the life of the development. Where finished floor levels cannot be set above the 1 in 200 year plus climate change flood level, the developer must state in their FRA why it is not possible and identify and implement flood proofing/resilience measures that will protect the occupants and their property up to that floor level. The development is also required to achieve greenfield runoff rates
- 6.16. Due to the medium-low residual risk, the sustainability benefits outlined above and site specific policy requirements the site is deemed to have passed the first part of the exceptions test.

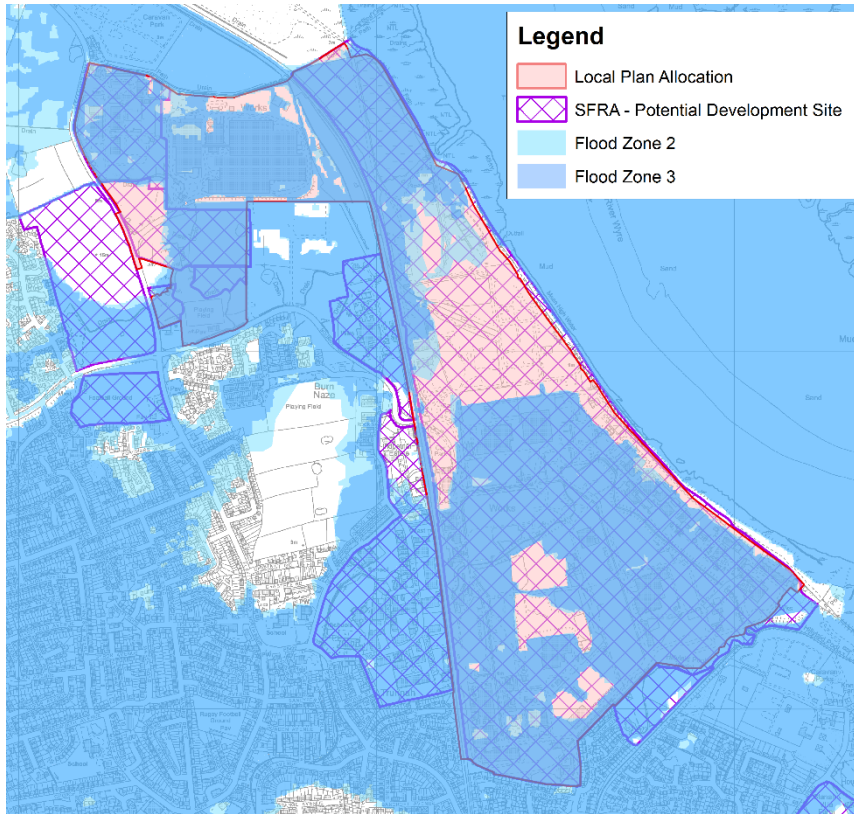
## SA4 Hillhouse Enterprise Zone



6.17. The majority of this site was assessed in the SFRA Addendum as sites SFRA\_01, SFRA\_02, SFRA\_03, SFRA\_16\_03, and SFRA\_16\_04. The central northern part of the site and the south western tip of the site were not assessed as part of the SFRA. The area of omitted land at the north of the allocation is an existing previously developed site, the Thornton Waste Technology Park. Some of the omitted land to the south west of the allocation was previously subject to a planning permission (11/00226) that has since lapsed, and some is previously developed (a Public House).

6.18. The map below shows the area of the allocation that has not been assessed as part of the SFRA. The boundary of the allocation is different to the sites that were assessed in the SFRA; the boundary was updated to reflect the exact boundary of the Hillhouse Enterprise Zone designation. It is considered that the omission of some of the allocated land from the SFRA is not critical as the land is a mixture of previously developed land and land which has previously passed the sequential test, the land is also of the same risk of flooding as the adjacent land which has been assessed.





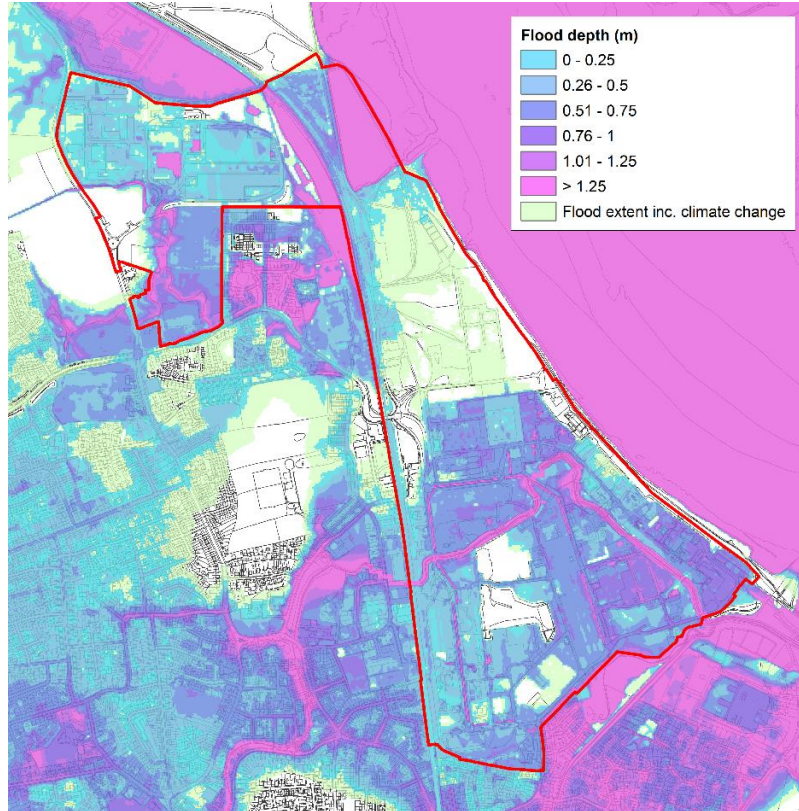
6.19. The development of this site is considered to be sequentially appropriate given the lack of suitable and available alternative sites for employment and housing within Thornton. The whole site has previously been allocated (for various uses) in the Fleetwood-Thornton Area Action Plan.

6.20. A large proportion of the site is located in flood zone 3. The Level 2 SFRA indicates that whilst the site is within the high risk flood zones it is in an area of residual low risk following current investment in flood defences. The defences are privately maintained by the site owners.

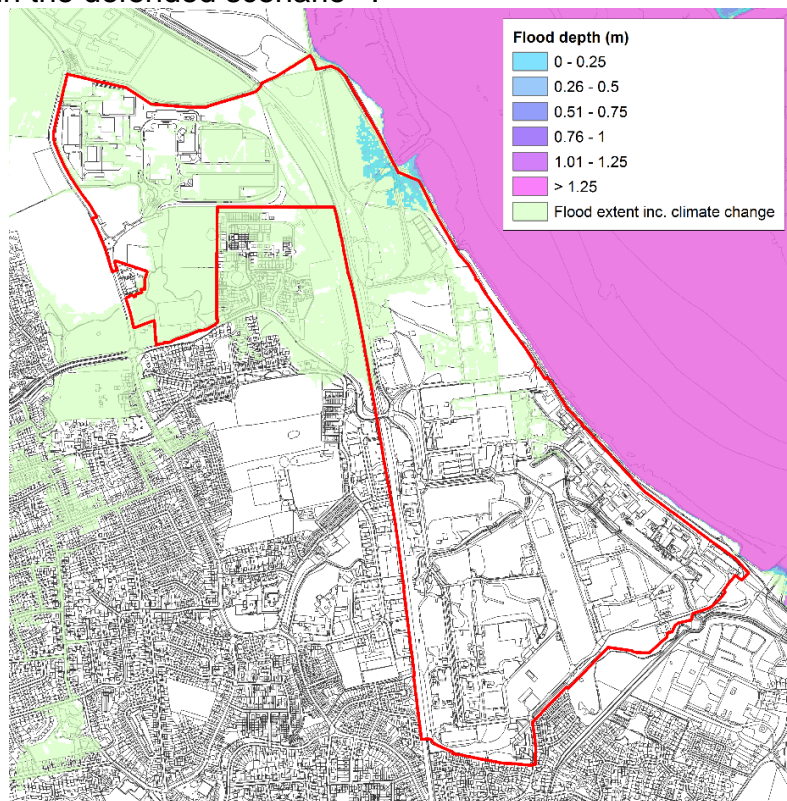
6.21. The predicted flood depths across the site are as follows:

Return period scenario	Max depth (m)	Depth range (m)	Highest flood hazard rating on site
1 in 200 defended	0.5	0-0.5	Dangerous to some
1 in 200 undefended	>1.25	0 - >1.25	Dangerous for all
1 in 200 defended with climate change	0.75	0.51-0.75	Dangerous to most
1 in 200 undefended with climate change	>1.25	0->0.25	Dangerous for all

Flood depths in the un-defended scenario<sup>11</sup>:



Flood depths in the defended scenario<sup>11</sup>:



<sup>11</sup> See box explaining the mapping at the bottom of page 9 of the Jacobs Level 2 SFRA

- 6.22. The flood depths vary across the site. The southern and northern parts of the site have the greatest depth of flooding in the undefended scenario, with some pockets over 1.25m. The depths are greatest surrounding the main rivers crossing the site. Most of the southern part of the site is classed as dangerous for most in the undefended scenario and some areas in the north are assessed as dangerous for all. Access and egress to the site is to be taken directly west onto Amounderness Way and then south.
- 6.23. The Hillhouse EZ is a sub-regionally significant employment area on the Fylde Coast. It is allocated in the local Plan for mixed use development. As the site is affected by flood zone 3 and the proposed use includes residential the exceptions test must be passed. A sequential approach to site layout should be applied which directs residential development to areas at least risk of flooding. Policies within the Local Plan require applicants to provide mitigation measures to ensure that the site is safe for the lifetime of the development, and a FRA must be carried out. The FRA must be used to take a sequential approach to site layout. The FRA must also consider the risk results from a breach of the tidal river embankment adjacent to the lagoon area. Any development must contribute to improvements of this embankment in accordance with the EA's Wyre Urban Core Strategy (2012). Finished floor levels must be above the undefended flood level plus an allowance for climate change for the life of the development. Where finished floor levels cannot be set above the 1 in 200 year plus climate change flood level, the developer must state in their FRA why it is not possible and identify and implement flood proofing/resilience measures that will protect the occupants and their property up to that floor level. The development is also required to achieve greenfield runoff rates.

## 7. Key Service Centre Sites Sequential Test

### Context of the hierarchy area

7.1. Garstang is the only Key Service Centre; it is a large market town in the west of the Borough, just off the A6. Garstang is surrounded by open countryside. It is the largest settlement in the rural part of the Borough and provides services and employment for a lot of the western part of the area.

### Flood Risk

7.2. The built up parts of the town are almost wholly located within flood zone 1. However, the western side of the town is affected by flood zone two and three associated with the River Wyre. These areas are at risk of tidal flooding in the event of a storm surge. The Environment Agency have flood defences along the River Wyre to the north of Garstang and a flood storage area which provide protection for the town. The residual risk in this area is low.

### Proposed Uses

7.3. The Plan allocates a number of sites for housing, employment and mixed uses around Garstang. The majority of these sites already have planning permission (some subject to S106 agreements) and are therefore deemed to have passed the sequential test (where necessary). The only site which is allocated, that does not have planning permission is SA1/18 South of Kepple Lane.

### Sequential Test

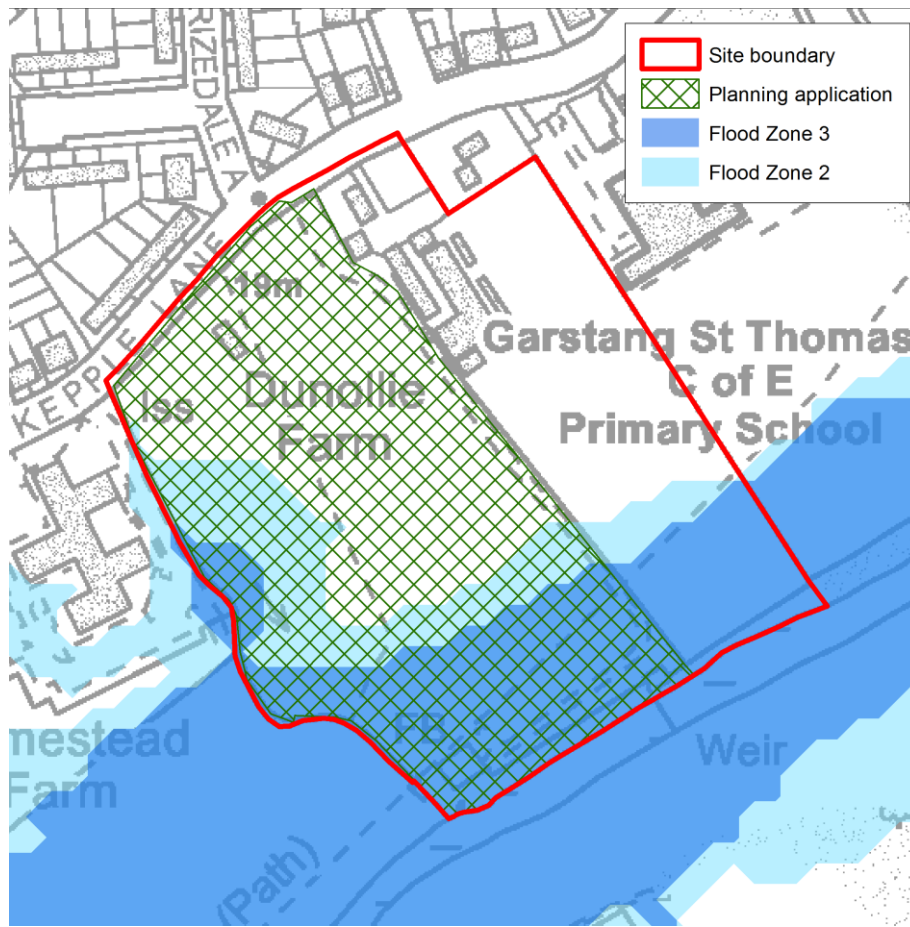
7.4. The below site within the Key Service Centre is required to pass the sequential test as part of the site is affected by flood zone 2 and 3.

#### *Housing allocations – more vulnerable*

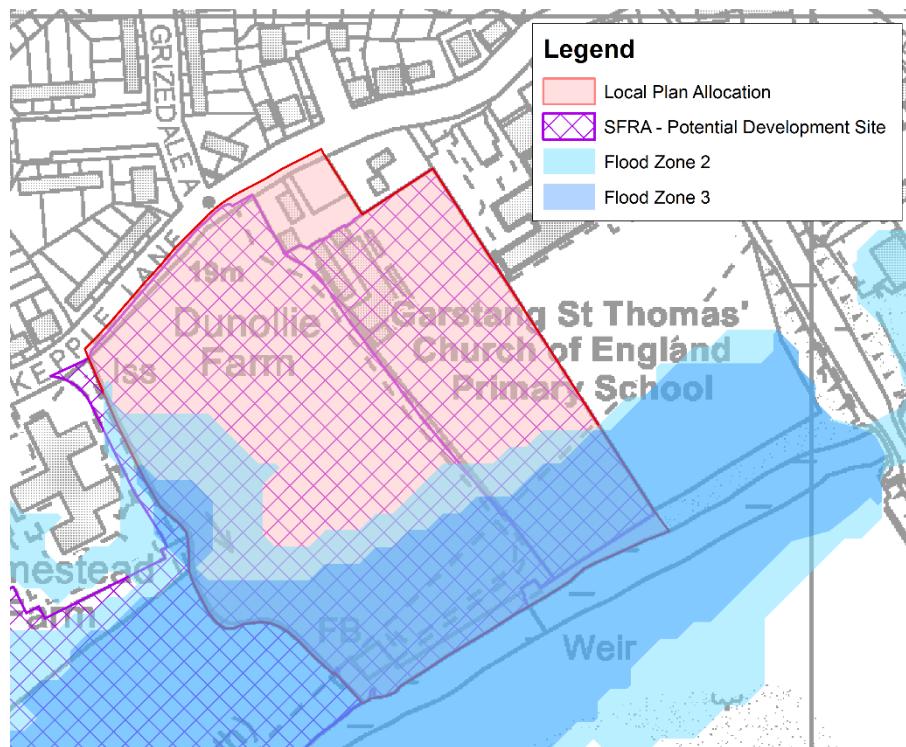
<b>Allocation Site Ref</b>	<b>Site Name</b>	<b>SFRA Site Ref</b>	<b>Sequential Test required?</b>	<b>Exceptions Test required?</b>
SA1/18	South of Kepple Lane	SFRA_75, SFRA_75_01		

## Site Assessments

### SA1/18 South of Kepple Lane



7.5. This site was assessed in the SFRA Addendum as sites SFRA\_75 and SFRA\_75\_01. The most northern tip of the site is not covered by either SFRA\_75 or SFRA\_75\_01. As can be seen in the overlap map shown below the omitted area is very small. It is not considered that this slight omission alters the conclusions of the SFRA assessment as the small omitted area is the same as the adjoining land in terms of flood risk and vulnerability.



- 7.6. The site lies on the north bank of the River Wyre, a main river, and is partially covered by Flood Zone 2 and 3 across the southern part of the site. To the south of the site the land drops sharply to the River Wyre whilst a local watercourse runs along the western boundary of the site.
- 7.7. The western parcel of the site has planning permission (14/00053) for up to 75 dwellings. As part of the planning application the site had to pass the sequential and exceptions tests. The remaining part of the site is predominantly flood zone 1, with the southern part of the site affected by flood zone 2 and 3. The site is allocated for housing and will deliver a mix of market and affordable housing to help meet local needs in a sustainable location.
- 7.8. Policies within the Local Plan prevent development of any housing within flood zone two and three and direct that there should be no development with 8m of the watercourses. Any proposed site layout should identify an 8m easement along the length of the watercourse. Any works within 8m of an Ordinary Watercourse may require the consent of Lancashire County council. The development is also required to achieve greenfield runoff rates
- 7.9. Due to the amount of the site affected by flood zones 2 and 3, the sustainability benefits identified and the requirement for mitigation measures set out in the site specific policy the site is deemed to have passed the first part of the exceptions test.

## **8. Rural Service Centres Sites Sequential Test**

### **Context of the hierarchy area**

8.1. The settlements of Knott End, Great Eccleston, Hambleton and Catterall are all large villages in the rural area. Hambleton and Knott End are located in Over Wyre, Great Eccleston in the far south of the borough and Catterall south of Garstang on the A6 corridor. Within the rural area these settlements are key service hubs where residents of the wider rural area travel to in order to access shops, doctors, employment and leisure facilities.

### **Flood Risk**

8.2. The 4 settlements in this tier of the settlement hierarchy are located within different Community Areas as assessed in the Level 2 SFRA.

8.3. Within the Pilling Community Area lie Knott End and Hambleton. The western and southern sides of Hambleton are completely covered by flood zone 3 and Knott End is wholly covered by flood zone 3. However, these areas currently benefit from hard linear defences along the coast, which are designed to protect the area to a 0.5% (1 in 200-year) AEP Standard of Protection (SoP). During the defended scenario, existing defences protect all sites proposed for development in Knott End from coastal flooding. In Hambleton sites will still be at risk of flooding.

8.4. Within the Pilling Community Area the land is very low-lying, and flat, as such it is particularly susceptible to both fluvial and surface water flooding during extensive periods of rainfall and sewer flooding. The risk of groundwater flooding is very high in Hambleton. Drainage will be a critical consideration in this area particularly because Hambleton is a critical drainage area.

8.5. Great Eccleston lies within the Great Eccleston, Inskip and St Michael's Community Area. The Environment Agency's Flood Zones 3 and 2 mapping identifies the eastern edge of Great Eccleston, as at risk from fluvial flooding from the River Wyre. There is some risk of surface water flooding.

8.6. In the M6 Corridor Community Area that covers Catterall the risk from tidal / fluvial flooding is solely to the north of the village. There is flooding predicted based on the uFMfSW in Catterall, but it is not attributed to a particular watercourse and appears to be overland flow. Catterall is identified as a critical drainage area.

### **Proposed Uses**

8.7. There are a number of sites proposed for development in the Rural Service Centres, some for housing, some for employment and some for mixed use – which will be a mix of housing and employment. These uses are either less vulnerable or more vulnerable. However, all sites allocated for housing are either outside of flood zones 2 and 3 or the sites already benefit from

planning permission. Therefore the only sites allocated which need to pass the sequential test are those allocated for employment use.

### Sequential Test

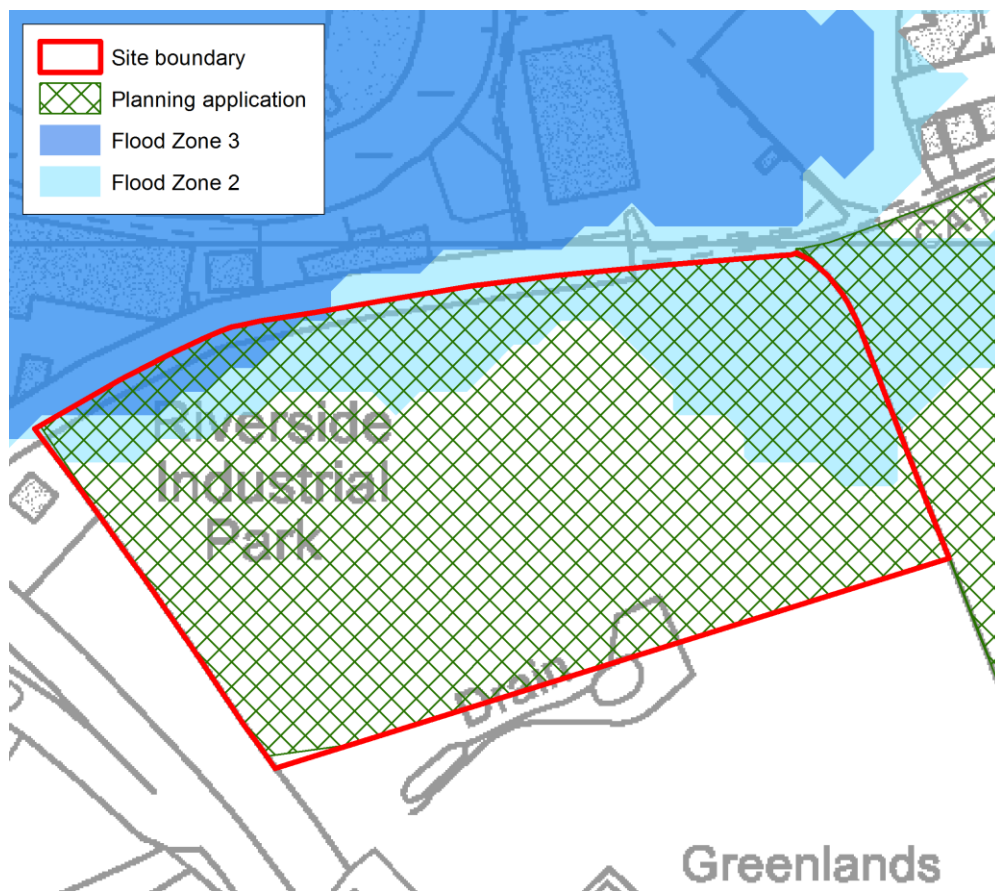
8.8. The following sites within the Rural Service Centres are required to pass the sequential test as either the whole or part of the site is affected by flood zone 2 or 3.

#### *Employment allocations – less vulnerable*

Allocation Site Ref	Site Name	SFRA Site Ref	Sequential Test required?	Exceptions Test required?
SA2/3	Riverside Industrial Park Extension	SFRA_07, SFRA_55_02		
SA7	Brockholes Industrial Estate Extension	SFRA_06		

### Site Assessments

#### SA2/3 Riverside Industrial Park Extension



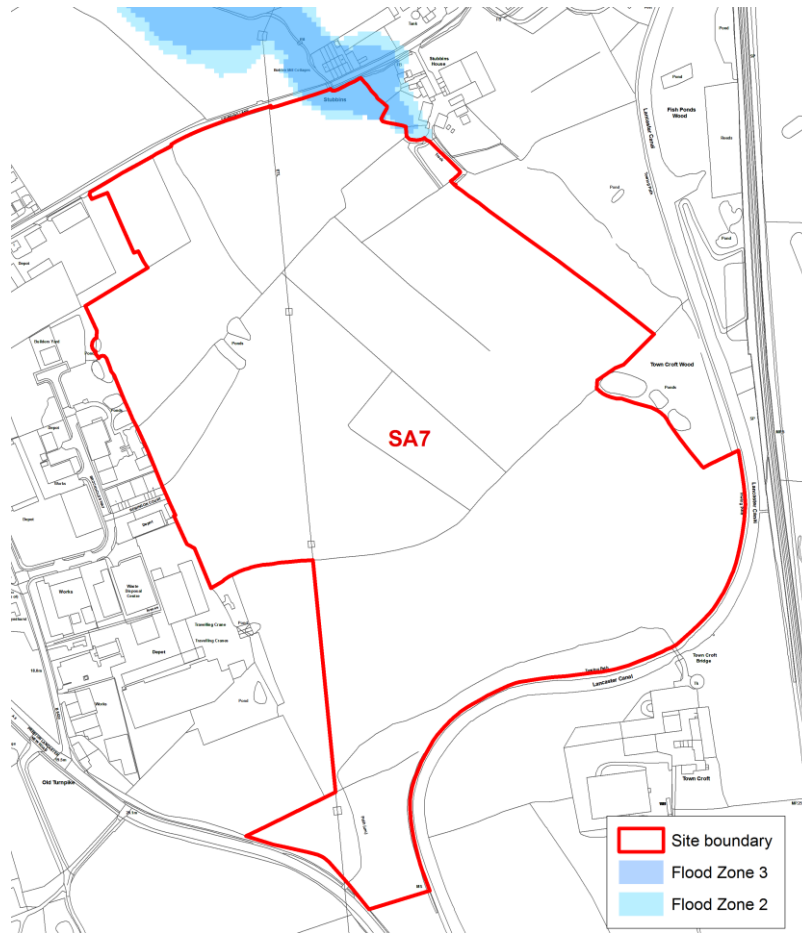
8.9. This site was assessed in the SFRA Addendum as sites SFRA\_07 and SFRA\_55\_02. The northern edge of the site is located in Flood Zone 2 as a



result of the proximity of the River Wyre. The River Calder joins the River Wyre approximately 150m north of the site.

- 8.10. The development of this site is considered to be sequentially appropriate as the site is adjacent to an existing employment site located to the north of Tan Yard Lane. The site is allocated for employment use and this is likely to be taken up by Collinson plc who currently operate from the existing employment site. There is a planning application pending on the site.
- 8.11. Policies within the Local Plan prevent development of any buildings within flood zone two and three. The site is also required to achieve greenfield runoff rates.
- 8.12. Due to the low residual risk, the sustainability benefits outlined above and site specific policy requirements the site is deemed to have passed the first part of the exceptions test.

## SA7 Brockholes Industrial Estate Extension



8.13. This site was assessed in the SFRA Addendum as site SFRA\_06. The site consists an extension to the existing industrial estate. The vast majority of the site is located in flood zone 1. There is a very small section of the northern part of the extension site that is covered by flood zone 3.

8.14. The site is considered sequentially appropriate because it is a logical extension to an existing employment site with only a very small portion of the site affected by flood zone 3. Policies within the Local Plan prevent development of any buildings within flood zone two and three. The site is also required to achieve greenfield runoff rates.

## **9. Main Rural Settlements Sites Sequential Test**

### **Context of the hierarchy area**

- 9.1. Below the Rural Service Centres in the settlement hierarchy are the Main Rural Settlements. These villages are relatively well connected, with some provision of services and employment. The villages in this tier of the hierarchy are Bilsborrow, Pilling, Barton, St Michael's, Bowgreave, Inskip, Stalmine, Forton, Pressall, Scorton.
- 9.2. This tier of the hierarchy covers 10 settlements but allocations that require sequential testing are only proposed in 4 of these settlements (Stalmine, Inskip, Forton, and Pilling). Within each of these settlements the proposed allocations either lie entirely within flood zone 1 or already have planning permission, therefore all are deemed to have passed the sequential test and no further sequential or exception testing is needed.

## **10. Small Rural Settlements Sites Sequential Test**

### **Context of the hierarchy area**

- 10.1. The lowest tier of the settlement hierarchy is Small Rural Settlements. The villages included in this tier are Cabus, Churchtown/Kirkland, Hollins Lane, Calder Vale, Out Rawcliffe and Dolphinholme. There is limited growth anticipated in these villages due to their rural nature, the settlement boundaries allow for natural infill to meet rural needs only.
- 10.2. There is only one site allocated for employment development in the Small Rural Settlements at Out Rawcliffe and this site already has planning permission. Therefore no further sequential or exception testing is needed.

## 11. Conclusions

- 11.1. In order to meet the borough's development requirements (as set out in the Draft Local Plan and supported by Sustainability Appraisal) in accordance with the broader principles of sustainable development, it has been necessary to identify some sites in areas at higher risk from flooding
- 11.2. Where sites are proposed for allocation for development on land in Flood Zones 2 and 3 it has been demonstrated that the Sequential approach and exceptions test outlined in the NPPF have been applied as necessary and met. This paper has shown that development can, in principle, be delivered appropriately in relation to flood risk. It is recognised that more detailed Flood Risk Assessments will remain a requirement of the planning application process for proposals coming forward on some of these sites. Compliance with Local Plan policies will ensure that uses with higher vulnerability are located on parts of the site with the lowest probability of flooding.