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Hyndburn Borough Council

Strategic Flood Risk Assessment (Level 1)

February 2010

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Executive Summary

Situated in the East of Lancashire, the Borough of Hyndburn is composed of a number of townships and settlements within the rural area, some of which are susceptible to flood risk. The main potential causes of fluvial flooding are from the River Calder, the River Hyndburn and its associated tributaries. The main causes of non-fluvial flooding are from various reservoirs, culvert failures and surface water drainage flooding.

The driving policy document of a Strategic Flood Risk Assessment (SFRA) is *Planning Policy Statement 25: Development and Flood Risk (PPS25)*. This SFRA will inform land allocations, development control policies, and sustainability appraisals and will be carried out in liaison with the Environment Agency (EA). The overall aim is to guide development to locations with the lowest risk of flooding using a sequential approach. The sequential test assess development with the three flood zones, (which are delineated by the Environment Agency) and localised drainage issues.

Some of Hyndburn's main built up areas lie within High Flood Risk Zone 3 and Medium Flood Risk Zone 2, including Accrington and Church. Some of the key development pressures within Hyndburn are situated within the Flood Risk Zone 3, which are illustrated in the report. The main causes of flooding in Hyndburn are as a result of failing culverts and localised drainage issues. For sustainable development to be able to proceed attention should be given to failing culverts and Sustainable Urban Drainage Systems (SUDs) should be a requirement for all development.

1. Introduction

The Environment Agency has devised a 'Strategy for Flood Risk Management that endeavours to take a more strategic approach to the assessment and management of flood risk. Previously the management of flood risk was undertaken in a somewhat reactive matter, addressing problems on an 'as needed' basis in a response to a flooding event. It was recognised that this approach was generally not a particularly cost effective solution and failed to consider individual problem areas within the bigger picture of the wider system. It is a requirement of Planning Policy Statement 25: Development and Flood Risk for Local Planning Authorities to undertake a Strategic Flood Risk Assessment (SFRA) to consider the risk of flooding. The development of a SFRA will be considered as a useful background document and will feed into the evidence base for the Local Development Framework (LDF.)

Strategic Flood Risk Assessments (SFRAs) fit into a hierarchy of assessing flood risk, which is a requirement from both Planning Policy Statement 25: Development and Flood Risk and the Water Framework Directive. This document will be used to identify all areas of flood risk, including flooding from rivers, sea, sewers and other sources (e.g. canals and reservoirs) within the Borough. The SFRA will delineate these areas spatially to recommend flood risk measures and to be used as an implementation tool for the creation of such mitigation measures. It will be a powerful driver for sustainable development, through a sequential approach to the allocation of development in decreasing order of flood risk.

In accordance with PPS 25, new development should be directed away from areas considered to be at risk of flooding. This sequential approach to site allocations, which is an essential element of PPS 25, will require the results of the SFRA to be used to ensure development sites are allocated in the lowest flood risk areas. Any proposed allocations identified in areas considered to be at

risk of flooding must be investigated to ensure that they would not be at an unacceptable risk of flooding or exacerbate flood risk elsewhere.

Scope and Objectives

The assessment involves the collection of data, identifying areas of flood risk and development pressure. The information can then be used to assess the sustainability of new development whether this is the allocation of land through the Local Development Framework or a new development proposal put forward by developers.

The primary objectives of this SFRA are to provide a strategic assessment of flood risk issues within the district of Hyndburn using the current best practice and following the sequential test. This will initially identify areas in Hyndburn that may flood, taking into account all forms of flooding and the consequences of climate change. It will provide a key planning tool for Hyndburn and will steer development away from areas prone to flooding in the first instance, and set in train further assessment of sites considered to be at risk of flooding where the requirements of the sequential test and exception test as set out in PPS25 have been achieved.

2. Methodology

The SFRA has been divided into two stages:

- a) Level 1: This involves the collection of data on flooding issues, defining the flood risk areas and the identification of development pressures within Hyndburn to establish the baseline.
- b) Level 2: This will only be conducted where proposals are deemed to be at an unacceptable risk of flooding or could cause an increased risk of flooding elsewhere. In such instances, more detailed assessment and modelling works of the flood risk posed to that site and to the surrounding areas will be required.

Level One of the Strategic Flood Risk Assessment

Through discussions with the Environment Agency (North West), a brief summary has been produced outlining the matters to which the Environment Agency wishes to be considered within a SFRA. The summary has been based on best practice guidance produced jointly by the Environment Agency and the North West Regional Assembly.

Data Collection is identified as a key aspect of an SFRA, the review of relevant data sources will assist in identifying those areas within the local authority which are at high, medium or low risk of flooding and also what the sources of flooding may be. Relevant data sources are considered as:

- Catchment Flood Management Plans
- Flood Zone Maps
- Known or possible non-fluvial sources of flooding e.g. groundwater, sewer surcharges, canals, reservoirs etc.

The collation of as much relevant data as possible will assist in identifying high, medium, or low flood risk areas. Areas that are protected by some form of flood defence should still be considered as 'at risk' (if defences should fail or be breached, significant flooding is still possible).

The SFRA also requires local authorities to identify the main areas of development pressure within the Borough. Such pressure could result from the Council allocating land for future development through the Local Development Framework, or known focuses of development where the future potential for development is great.

The development of such a robust evidence base should provide Hyndburn Borough Council (HBC) with adequate information on whether a site is at risk from flooding.

Level Two of the Strategic Flood Risk Assessment

If any development is proposed on a site, which, through assessment of data compiled through Level 1 of the SFRA process, is considered to be in a high or medium flood risk area, then further detailed work will be required to assess the nature and extent of such a flood risk and the consideration of mitigation measures. Further assessments may also be required for proposal sites over 1 hectare in size or which may impact on surface water run-off and lead to an increase in flood risk elsewhere.

Only specific sites will require such detailed levels of study on the potential for flood risk. This may arise when HBC proposes that a site, which is in a flood risk area, should be allocated for future development. Another instance could be when a developer or landowner submits development proposals for a site which is in a flood risk area.

3. Data Collection

Catchment Flood Management Plans (CFMPs)

The Catchment Flood Management Plan (see appendix 1), which affects the Borough, is the River Ribble Catchment plan published in December 2009.

The River Ribble CFMP area is located in North Yorkshire and Lancashire and in the southern area is mainly urban in character. It includes a significant proportion of land west and north of the Borough, including the settlement areas of Preston, Blackburn, Burnley, South Blackpool, Accrington, Nelson, Darwen and Lytham St Annes. The catchment covers 1,490km² and contains four major rivers, the Ribble, Hodder, Calder and Darwen plus a number of smaller tributaries. The major rivers all rise high in the north Pennines and drain south westwards, all joining the main Ribble before entering the estuary at Preston.

Parts of Accrington and Oswaldtwistle have a relatively high risk of flooding due mainly to the numerous culverted watercourses. Around 230 properties are at risk of flooding rising to 330 taking into account climate change. Accrington is at risk of flooding from the River Hyndburn, Broad Oak Water and Antley Syke, whilst Oswaldtwistle is at risk from Tinker Brook. There is also a risk of sewer and surface water flooding.

This area has a relatively high flood risk, especially bearing in mind the effects of climate change, and action is required to manage the risk. The flow through the numerous culverts within this sub-area requires further investigation, and the feasibility of carrying out measures to manage the associated flood risk needs to be pursued. The local authority also needs to assist in managing flood risk by effective control of the planning system to discourage inappropriate development on floodplains. Finally, the impact of all sources of flooding needs consideration, and the Environment Agency will work with partners to investigate surface water and sewer flooding.

Integrated Catchment Management Plan for the Ribble (June 2007)

This document (See Appendix 1) is prepared by the Environment Agency and provides a strategic overview of how they plan to manage the Ribble Catchment over the coming years. One of the main aims of this document is to restore the flood plains, which can reduce flooding elsewhere in the catchment whilst at the same time provide habitat for wildlife. The report states that there is a risk from flooding within the Calder Catchment; with Oswaldtwistle and Accrington having a 1% chance of a flood occurring in any one year.

The scoping report implemented a geomorphologic characterisation of the catchment. This highlights parts of the catchment, which are sensitive to future catchment changes, such as climate change and urbanisation. This was measured using a Geomorphological Sensitivity Index (GSI) score, with the higher the score the more sensitive it is to future change. The results of this study highlighted that the Hyndburn Brook and the majority of the River Calder had high GSI scores. The sensitivity of this part of the catchment is related to the result of the combination of drift geology, land use and topography; this creates a geomorphologically sensitive system which is easily susceptible to erosion or deposition. The report concluded that even though erosion and deposition are a part of the natural geomorphological processes on the River Ribble Catchment, artificially accelerated erosion might have negative impacts on the river system and create flooding problems.

Flood Risk Zones within Hyndburn

It is apparent through the Indicative Flood Risk Zones maps provided by the Environment Agency, (see appendix 3) that there are areas of land within Hyndburn that are potentially under threat from fluvial flooding. The indicative flood map divides the land into three flood zones, with Flood Risk Zone 3 having the highest risk of fluvial flooding. This zone comprises of land assessed as having a 1 in 100 year or greater annual probability of river flooding (>1%) or a 1

in 200 year or greater annual probability of flooding from the sea (>0.5%) in any one year. The following table (Figure 1) provides an outline of the classification of each Flood Risk Zone, as set out in Annex D of PPS25.

Figure 1: Flood Risk Zone Classification

Zone 1 (Low Probability of Flooding)

Definition

This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).

Appropriate uses

All uses of land are appropriate in this zone.

Flood Risk Assessment requirements

For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a FRA. This need only be brief unless the factors above or other local considerations require particular attention. The minimum requirements for this can be found in Annex E of PPS25.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

Zone 2 (Medium Probability of Flooding)

Definition

This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.

Appropriate uses

The water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure in (set out in Figure 4, page 20) are appropriate in this zone.

Subject to the Sequential Test being applied, the highly vulnerable uses (Figure 4) are only appropriate in this zone if the Exception Test is passed.

Flood Risk Assessment requirements

All development proposals in this zone should be accompanied by a FRA. The requirements for this are set out in PPS 25, Annex E.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

Zone 3a (High Probability of Flooding)

Definition

This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

Appropriate uses

The water-compatible and less vulnerable uses of land (Figure 4) are appropriate in this zone. The highly vulnerable uses in this table should not be permitted in this zone. The more vulnerable and essential infrastructure uses should only be permitted in this zone if the Exception Test (see page 21) is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. The minimum requirements for this are set out in PPS 25, Annex E.

Policy aims

In this zone, developers and local authorities should seek opportunities to:

- i. reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques;
- ii. relocate existing development to land in zones with a lower probability of flooding; and
- iii. create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

Zone 3b (The Functional Floodplain)

Definition

This zone comprises land where water has to flow or be stored in times of flood. SFRA should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes).

Appropriate uses

Only the water-compatible uses and the essential infrastructure listed in Figure 4 that has to be there should be permitted in this zone. It should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows; and
- not increase flood risk elsewhere.

Essential infrastructure in this zone should pass the Exception Test.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. The requirements for this are set out in PPS 25, Annex E.

Policy aims

In this zone, developers and local authorities should seek opportunities to:

- i. reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; and
- ii. relocate existing development to land with a lower probability of flooding.

The areas of Hyndburn most susceptible to fluvial flooding include the ward of Altham, (which has also experienced the highest population increase in the Borough) and parts of Accrington and Church. This results from a proportion of these settlements lying within Flood Risk Zone 3. Parts of Oswaldtwistle, Clayton le Moors and Baxenden are also at risk from fluvial flooding, as a result of various tributaries including Tinker Brook flowing through them. Accrington and Church are the most densely populated areas within the Borough and contain some of the key emergency services and the sports centre, which would be used as an evacuation point in the event of a flood. Accrington and Church also contain some of the most deprived wards within the Borough; hence, the residents will be more vulnerable in the event of a flood.

The recent history of flooding in these areas is set out below:

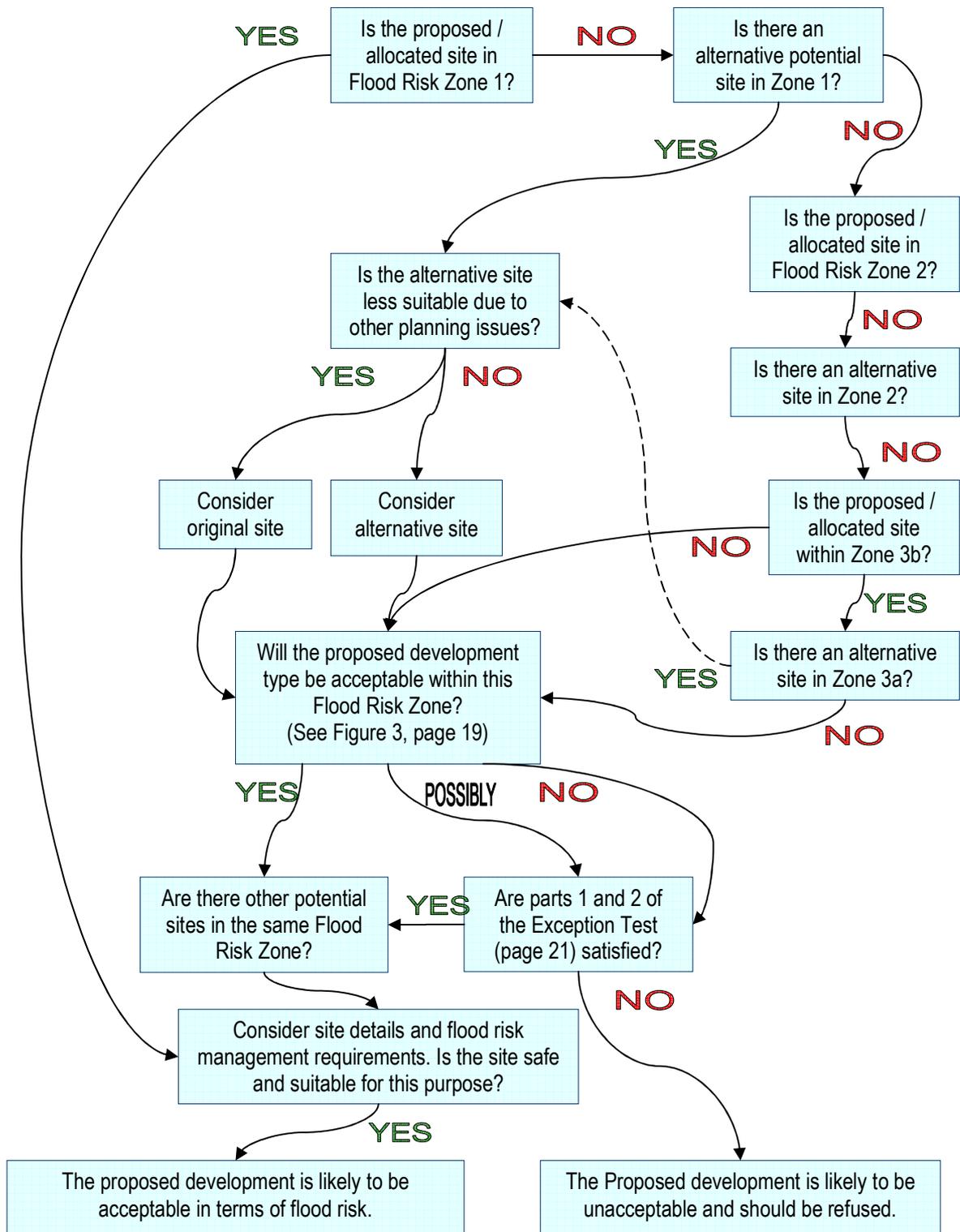
- In, May 2006, water overflowed from the Hyndburn Brook causing flooding in Great Harwood. Queen St was flooded, leaving shops and businesses under water.
- In April 2005, there was a roof collapse of the culvert which flows through Woodnook water.
- In July 2003, there was obstruction in the Harwood Brook in Great Harwood, due to intruding connections causing obstruction to flow.
- In 2002 Thwaites Road in Oswaldtwistle and Spring Street, Rishton have suffered from recurrent flash flooding events, associated with poor drainage systems, where sewerage was seeping into homes. Homes were flooded six times in two years.
- The Tinker Brook in Oswaldtwistle has also suffered from capacity problems and unstable banks associated with bank erosion. This is a potential flood hazard due to it flowing through a densely urban area.
- The culvert situated under the Hyndburn Bridge is at risk from collapsing, hence will have consequences if development is located nearby.

At present there are no flood defences in place, however maintenance has been implemented on unstable culverts.

The Sequential Test

As previously mentioned the driving policy document of a SFRA is Planning Policy Statement 25 (PPS 25). This is national planning guidance and is the primary guidance for control of development in flood risk areas. An important facet of PPS 25 is the Sequential Test, which is to be used to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development or land use proposed. The Sequential Test acts as a set of filters, which work using detailed information on flood risk, based on the three Flood Risk Zones, which aims to ensure that alternative lower risk sites are sought for development. The overall aim is to steer development to Flood Risk Zone 1. The following diagram outlines how the Sequential Test should be applied to development proposals and proposed site allocations.

Figure 2: Application of the Sequential Test



Further explanation of the test is detailed below.

Delineation of High Risk Zone 3

PPS 25 outlines the high flood risk zone as Flood Risk Zone 3, having a 1 in 100 or greater annual probability (1%), including those areas that are defended. Any development that is proposed in this area must demonstrate that it has considered a range of possible sites in conjunction with the information in this SFRA and applied the sequential test and where necessary, the exception test, in the site allocation process. The application must be referred to the Environment Agency for advice and a Flood Risk Assessment (FRA) should be carried out at site level.

The areas of high flood risk (Zone 3) are further delineated into Developed Areas (Zone 3a) and Zone 3b, the Functional Floodplain, which has a much higher risk of flooding, with an annual probability of 5% or greater, or designed to flood in an extreme flood. Zone 3b is only suitable for justifiable water-compatible uses and essential infrastructure.

Assessment of Actual Risk within Zone 3a (Developed & Defended Areas)

Risk is defined as a function of both probability of an event occurring, and the consequence should that event take place. In both economic and practical terms, the consequence of a flood is largely a function of the intended land use. Within residential areas, such as Accrington town centre, the vulnerability of the development should a flooding event occur is considered greater than within an industrial and/or commercial retail park. Within the residential category, there clearly are further delineations that may be made along these lines, for example elderly care homes, which would be at the greatest risk, as opposed to converted mill or warehouse apartments, which would be likely to be at a lesser risk, as the lower levels are more likely to be uninhabitable. Wherever possible, a qualitative

assessment of the likelihood of risk to life and property (as a function of proposed land use) should be carried out, providing some measure of the 'criticality' of the defence system protecting the development area.

Having considered the criticality of the flood and the area that the asset protects against flooding, it is necessary to determine whether further detailed assessment is required to provide a more robust depiction of the likely consequence of a defence failure. It is accepted that the determination of what should be considered 'unacceptably high risk' in this context is inevitably subjective. To assess these residual risks, it is necessary to model the consequence should overtopping and/or a breach of a flood defence occur. Generally, the worst case scenario (i.e. resulting in optimum damage) will be the result of a defence failure coinciding with the peak of the flood event.

Delineation of Medium Risk Zone 2

This zone comprises land as having between a 1 in 100 and a 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year. Having identified those development areas within the Medium Risk Zone 2, it is necessary to review the need for the proposals at that location and to determine whether an acceptable alternative site (outside of Medium Risk Zone 2) may be available. PPS 25 does not preclude development within Zone 2 and requests that a site specific FRA should be accompanied with the application, as in Zone 3. PPS 25 also calls for developers and local authorities to seek opportunities to reduce the overall flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques.

Appropriate uses for Zone 2

PPS 25 suggests appropriate uses to be proposed for this zone, which are deemed less vulnerable and will pose less risk of flooding. These are listed in Figure 1 and should only be permitted if they have passed the exception test. PPS 25 outlines the type of development that is suitable for Zone 2, stating that “these and the higher risk zones are not generally suitable for essential civil infrastructure, such as hospitals, fire stations, emergency depots, etc.”

Delineation of Low Risk Zone 1

PPS 25 Low Risk Zone 1 is defined as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%) and the area within a district that falls outside of Zones 2 and 3. There is generally no flood risk constraints placed upon proposed development within this zone; however, development proposals on sites comprising one hectare or above should be submitted with an FRA. The localised drainage regime must also be reviewed as a matter of best practice.

Requirement of development within Flood Risk Zone 3

As previously mentioned, some of the key townships in Hyndburn contain areas that are within Flood Risk Zone 3, the highest level of risk. These include Accrington, Church, Altham, Oswaldtwistle and Baxenden. In these areas, a precautionary approach should be made when allocating development and reference should be made to Appendix 3. The LDF allocations in these townships, which are near or within the flood risk zone 3, should consider lower risk sites to be transferred to. Where the wider interests of the community are served by development in these high flood risk zones, and this has been demonstrated possible through the SFRA, then an assessment of actual risk should be considered. This is the case through much of, Accrington, Church, Altham, Oswaldtwistle and Baxenden.

Before any allocation can progress, a detailed FRA should be carried out, which should address what the current and future risk of flooding is, and design suitable mitigation measures to ensure that the development is sustainable in terms of flooding, whilst not exacerbating flood risk for other properties. This FRA process should be conducted in close consultation with the Environment Agency to ensure all requirements are met. Any allocations in the functional flood plain (Flood Risk Zone 3b) are deemed unsuitable.

Requirement of development within Flood Risk Zone 2

A precautionary approach should be adopted in Flood Risk Zone 2, in that it is recommended that any LDF allocations within or near the extent of the zone be subject to a FRA.

Requirement of Development in Low Risk Zone 1

Development in Low Flood Risk Zone 1 can generally be implemented without consideration to the strategic flood risk issues, if the development is less than one hectare. The plans will however still have to show that it will not increase surface water runoff, with sustainable urban drainage systems (SUDS) or equivalent representing the preferred method of surface water drainage.

The following table, Figure 3 provides a more definitive classification of which types of development are suitable in which flood zone, by virtue of their Flood Risk Vulnerability Classification.

Figure 3: Flood Risk Vulnerability and Flood Zone Compatibility

	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	✓	Exception Test Required	✓	✓
Flood Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
Flood Zone 3b	Exception Test Required	✓	✗	✗	✗

(✓ - Appropriate development, ✗ - Development should not be permitted)

By following this table, it can be seen whether a development is regarded as appropriate, when applying the sequential test to a development proposal or site allocation. Depending on the location's Flood Risk Zone and the Vulnerability Classification of the proposed development, the development may be appropriate, inappropriate, or it may be necessary for the proposal to pass the Exception Test (explained on page 21). A full classification of the flood risk vulnerability of possible uses and developments, as set out in PPS25, Annex D, is provided in Figure 4, below.

Figure 4: Flood Risk Vulnerability Classification

<p>Essential Infrastructure</p>	<ul style="list-style-type: none"> • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk, and strategic utility infrastructure, including electricity generating power stations and grid and primary substations.
<p>Water-Compatible Development</p>	<ul style="list-style-type: none"> • Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel workings. • Docks, marinas and wharves. • Navigation facilities. • MOD defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.
<p>Highly Vulnerable</p>	<ul style="list-style-type: none"> • Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.
<p>More Vulnerable</p>	<ul style="list-style-type: none"> • Hospitals. • Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
<p>Less Vulnerable</p>	<ul style="list-style-type: none"> • Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in ‘more vulnerable’; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment plants. • Sewage treatment plants (if adequate pollution control measures are in place).

The Exception Test

If following application of the sequential test, the proposal is not consistent with wider sustainability objectives, which would require the development to be located in zones of lower probability of flooding, then the exception test can be applied. This test provides a method of managing flood risk while still allowing necessary development to occur. In order for a development proposal to pass the exception test, the following three criteria must be satisfied:

- 1) It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk.
- 2) The development should be on previously developed land, or if this is not the case, it should be shown that there are no reasonable alternative sites on developable brownfield land.
- 3) A Flood Risk Assessment must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where possible, reducing flood risk overall.

Therefore, the exception test is only appropriate for use in a situation where there are areas within flood risk zones 2 and 3, where the sequential test alone cannot deliver acceptable sites. It is used where continuing development is necessary for wider sustainable development reasons, for example when it is necessary to allocate suitable brownfield sites for housing or commercial redevelopment, taking into account the need to avoid social or economic blight and the need for essential civil infrastructure to remain operational during floods. The Exception Test should be applied by decision makers only after the Sequential Test has been applied and in circumstances where 'more vulnerable' development and essential infrastructure cannot be located in Zones 1 or 2, and where 'highly vulnerable' development cannot be located in Zone 1. It should not be used to justify 'highly vulnerable' development in Flood Zone 3a, or 'less vulnerable', 'more vulnerable' and 'highly vulnerable' development in Flood Zone 3b.

The Exception Test should be applied to Local Development Document (LDD) site allocations for development and should be used to draft criteria-based policies against which to consider planning applications. Where application of the Sequential Test indicates that it needs to be applied, this should be as early in the plan-making process as possible, in LDDs, including Supplementary Planning Documents (such as site development briefs). This will minimise the need to apply it to individual planning applications.

Use of the exception test may also be appropriate where restrictive national designations such as landscape, heritage and nature conservation designations, e.g. Areas of Outstanding Natural Beauty (AONBs), Sites of Specific Scientific Interest (SSSIs) and World Heritage Sites (WHS) prevent the availability of unconstrained sites in lower risk areas. Applications for minor development and changes of use should not be subject to the Sequential or Exception Tests, but will still have to meet the requirements for FRAs and flood risk reduction, as set out in Figure 1.

If there is no suitable land in Flood Zone 1, the scope of decision making should be widened to consider the impact of the flood risk management infrastructure on the frequency, impact speed, of onset, depth and velocity of flooding within the flood zones considering a range of flood risk management maintenance scenarios.

Non- Fluvial Flooding within Hyndburn

It is important to note that the Environment Agency's flood plain maps contain no information on man made structures, such as culverts and buildings. Following discussion from the drainage engineers and emergency planners at Hyndburn Borough Council, a number of flooding events were identified that are sourced from neither tidal nor fluvial actions. Such non-fluvial events are the result of under capacity in the drainage system, the blockages of existing culverts,

reservoirs and mill ponds or through the surcharging of mains sewers. The Environment Agency's report on: Integrated Catchment Management Plan for the Ribble also mentions that the Calder unit has a risk of flooding from sewers and surface water in the built up areas, and flood risks associated with culverts and other potential flow restrictions.

The main areas of concern, relating to such events are Rishton, Great Harwood, Oswaldtwistle and parts of Clayton-le-Moors. These areas are mainly situated in flood zone 1 but they are also in close proximity to flood zone 3. This is due to the Hyndburn Brook flowing to the east of the settlement areas and its associated tributaries flowing through them such as the Tinker Brook, the Norden Brook and the Lattice Brook. The scoping report also highlighted the Tinker Brook as having capacity problems along with parts of the River Hyndburn.

Identification of Localised Drainage Issues

Flooding may occur from one of a number of primary sources, mainly river and/or tidal flooding, as a result of a failure of the local drainage system (flash flooding), or due to groundwater flooding. Though not explicitly addressed within a defined 'zone' in PPS 25, local drainage can result in substantial damage and distress to residents and business owners if not carefully managed, and therefore it is essential that any future development takes due consideration of known problems in this regard.

Within particularly problematic areas, it is agreed that each year a list of watercourses that are denoted as 'critical', known as Critical Ordinary Watercourses (COWs) are identified. The COW designation reflects a known issue with respect to flooding (typically as a result of historical flooding), and is generally associated with:

- Limited channel capacity;
- Channel constrictions (e.g. culverts, bridges); and/or

- Poor maintenance regime (e.g. siltation, culvert blockage).

The Department for the Environment, Food and Rural Affairs (DEFRA) defines a COW as

‘A watercourse that is not classified as "main river" but which the Environment Agency and other operating authorities agree is critical because it has the potential to put at risk from flooding large numbers of people and property.’

The responsibility for management of these COWs currently remains with the Local Authority. However, irrespective of this, it is reasonable to assume that where a local watercourse has been delineated as a COW, this reflects a possible flooding problem.

Where a localised drainage issue has been identified, further development upstream of this location has a potential to exacerbate the existing problem through the altering of the flow regime. For this reason, all proposed development areas that are either directly affected by a localised drainage problem, and/or may impact adversely upon a localised drainage problem area, must be highlighted for further consideration and mitigation.

Requirement of Development in COW catchments and Sewer/Surface Water Drainage

‘Trouble Spots’

A precautionary approach should be adopted in COW catchments or sewer/surface water drainage ‘trouble spots’, in that it is recommended that any LDF allocations within or near these areas be subject to a FRA. These ‘trouble spots’ had been previously identified by the Authority’s Drainage Engineers. The

FRA will be focused not only on the risk of flooding to the property, but also on the requirement for sustainable drainage schemes to be implemented

Reservoirs and other artificial water retaining structures

Hyndburn contains various reservoirs, which have the potential to cause a flooding event. Reservoirs are designed to store water and as such, the failure of a reservoir has the potential to cause catastrophic damage due to sudden releases of large volumes of water. Since 2004, the Environment Agency has regulated reservoirs that are covered by the Reservoirs Act 1976 (those reservoirs, canals or other bodies retaining more than 25,000 cubic metres of water above the natural ground level). The Health and Safety Executive regulates those below this figure where they form part of the commercial activity.

Reservoirs, which could cause flood risk in Hyndburn, are as follows;

- Hags Lodge, (Hyndburn Road, behind Asda)
- Hameldon Reservoir, (On Hameldon Common, East Hyndburn)
- Rishton reservoir (feeds the Canal)
- Scaitcliffe Reservoir
- Great Harwood Reservoir (Deansclough)
- Great Harwood (Delph Road)
- Plantation reservoir (Accrington)
- Foxhill Bank (By the Tinker Brook)
- Jackhouse (Oswaldtwistle)

Development Pressure

In Hyndburn many areas have been developed, which are mainly constructed around watercourses. This is as a result of Hyndburn having a strong industrial heritage associated with cotton weaving and textile industries. During the industrial revolution, industry was mainly attracted to sites in close proximity to flowing water, for transport etc. and hence forming settlements in close proximity

to the River Calder and the Leeds and Liverpool Canal. The Catchment Flood Management Plan mentions that the rivers were historically altered by industrial and urban development.

The Borough of Hyndburn contains areas of High and Medium Risk zones in close proximity to areas of social and economic importance. Whitebirk, Accrington, and Altham are areas designated in the Hyndburn Borough Local Plan (adopted November 1996) for employment use. They are situated in close proximity to the River Calder and its tributaries, Hyndburn Brook and Knuzden Brook. The North West of England Plan Regional Spatial Strategy to 2021 makes provision for 1,069 hectares of employment land in Lancashire for the period 2005 – 2021. Whitebirk is the largest single employment allocation in Hyndburn. Drainage from the site is dependent upon capacity downstream (Whitebirk Employment Site Development Brief).

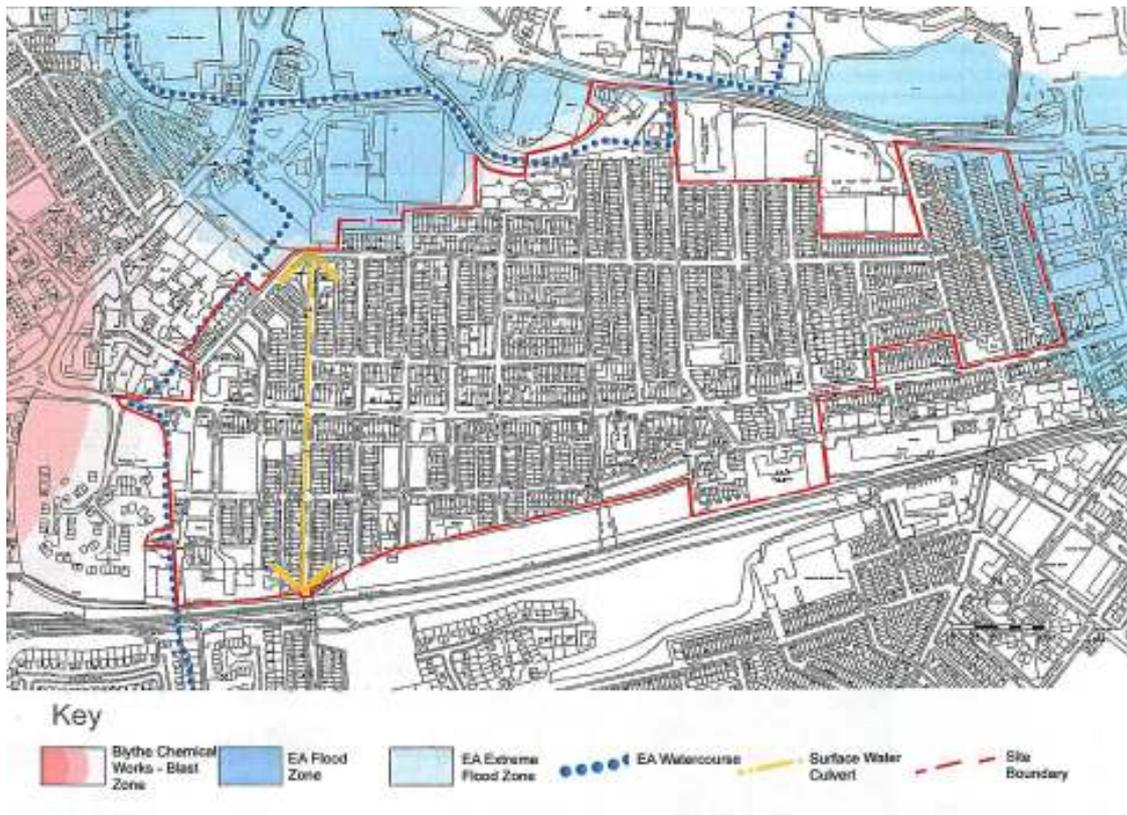
The North West of England Plan Regional Spatial Strategy to 2021 states that provision for 3,400 houses should be made in Hyndburn for the period 2003 to 2021 with 65% of dwellings to be provided on brownfield sites. The Borough of Hyndburn consists of 81,500 people. The Borough has several areas, which are part of the Pennine Lancashire Housing Market Renewal Pathfinder, a major Government initiative to improve local housing markets and deliver sustainable regeneration.

Project Phoenix

Project Phoenix forms part of the Housing Market Renewal Scheme in Hyndburn. It is the first demolition and new build plan to take place. A Supplementary Planning Document (SPD) and masterplan have been adopted for the area. This site is situated to the west of Accrington town centre. The site is bounded to the north by Hyndburn Road and the River Hyndburn. The area will have a low infiltration capacity due to consisting of very dense grid pattern of byelaw terraced housing with small yards. Existing sewers and other services run along

the grid pattern of existing streets, with some sewers running along the lines of the rear alleyways. Parts of Princess Street and Steiner Street are within Flood Risk Zones 2 & 3, as indicated in Figure 5 below. There is a main surface water culvert running along Lonsdale Street across Blackburn Road and up to Persia Street into the Hyndburn River with a 6 metre wide easement along its length. The easement of culverts across the whole site will be affected by development, which needs to be considered with all planning applications in this area. There is a converted watercourse running along the western boundary to the site that is designated as a main river. The Environment Agency also requires consent for tree planting or the erection of structures within 8 m of the water course.

Figure 5: Project Phoenix



Platt's Lodge SPD

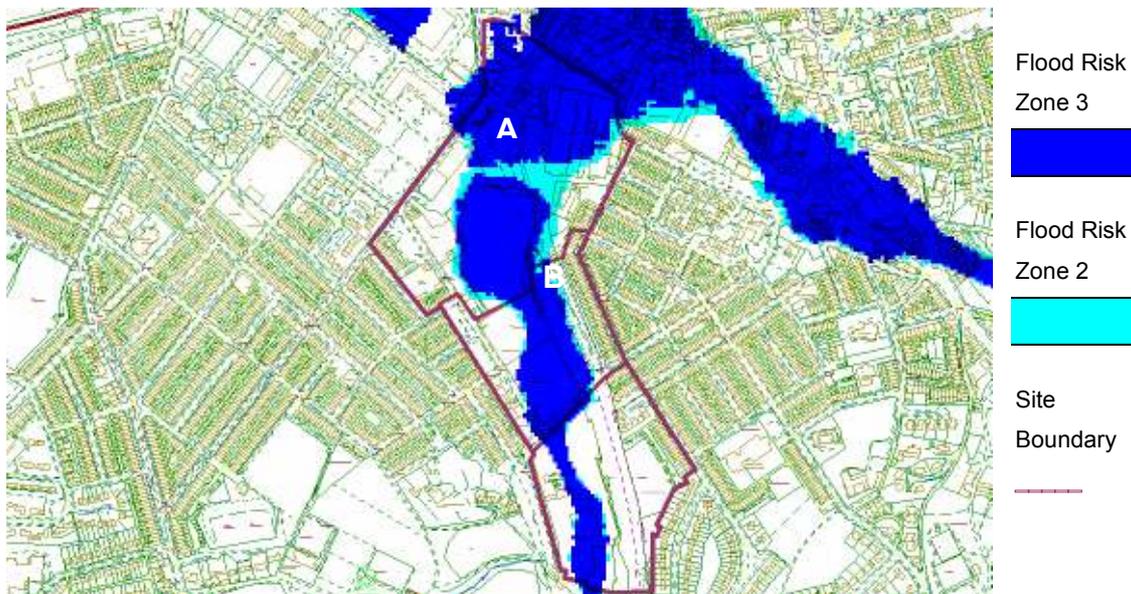
The Platt's Lodge SPD provides guidance to all stakeholders to enable the future of the area to be developed in a coherent and planned manner, due to the large amount of developer interest. Platt's Lodge is included within the Area Development Framework (ADF) for Barnfield and Peel, although the westernmost edge of the SPD area falls within the ADF for Springhill and Scaitcliffe. The principal framework for the proposed regeneration of the area has been based on the policy content set out in the Joint Lancashire Structure Plan 2001-2016, and the emerging Regional Spatial Strategy, which was adopted in September 2008. The allocated area lies to the south east of Accrington town centre, comprising 16 hectares. The area is divided into three zones, A, B, and C, all of which have different land uses allocated to them. As with the Project Phoenix site, it will have a low infiltration rate due to the land use mainly being industrial and consisting of grid pattern terraced housing.

A large proportion of the area comprises of Flood Risk Zones 2 and 3 (as illustrated in figure 6), with Woodnook Water flowing through the majority of the site. The SPD identifies that there is a need for an 8m easement either side of the stream. The Environment Agency has given some guidance on the SPD regarding flood risk issues. They raised the issue that there is a risk of flooding in sub areas A and B due to surcharging of the culvert or overland flow during blockage of the culvert, which should be identified as a constraint in the area. The Sustainability Appraisal Panel also identified sand bagging around industrial units in sub area C during a tour of the site, suggesting that localised flooding is an issue. The EA suggests that the developers should be encouraged to de-culvert the river (where practical), if development takes place around it.

The EA concluded that flood risk should be managed through management of surface water, the details of which should be agreed by them. In order to be in accordance with PPS 25, flood risk to any proposed development within a Flood Risk Zone or down stream need to be considered in a site specific FRA

appropriate to the nature and scale of the proposed development. The EA will comment on the FRA, while considering surface water drainage issues.

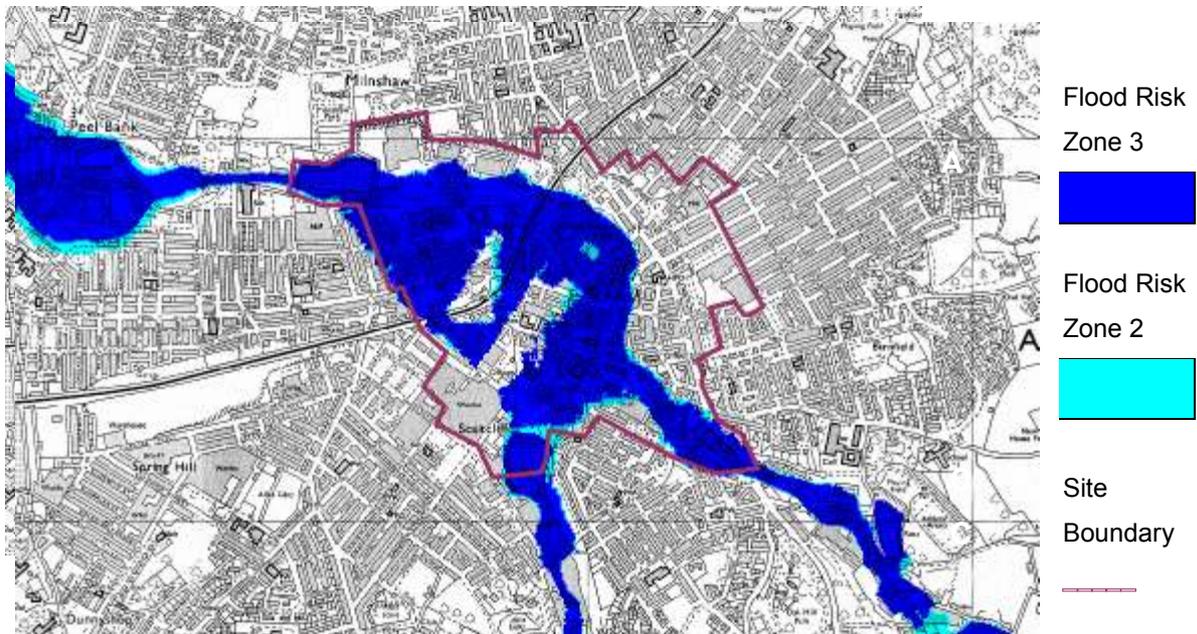
Figure 6: Platt's Lodge



Accrington Area Action Plan

URBED are assisting HBC to create a master plan, which will secure funding for future regeneration projects in the Borough. The town centre strategy builds on the key objectives outlined in a number of important strategic documents that relate to Accrington town centre. It is closely related to the Local Development Framework, Area Development Framework and the Local Transport Plan. The Area Action Plan (AAP) has a series of 5 options, with option 5 being the preferred option. Figure 7 demonstrates that the location of the master plan has a risk of fluvial flooding from the River Hyndburn and Woodnook water, with large portions of the area being identified as being within Flood Zone 3 and 2. The confluence of the two rivers is also located in the town centre on Church St. The area within the AAP is also subject to risk of flooding from non-fluvial causes. This relates to capacity issues and possible blockages of culverts.

Figure 7: Accrington Town Centre Masterplan



Emergency Planning

Hyndburn Borough Council maintains a plan, which establishes an alarm system and lines of communication for initial action in the event of a major peacetime emergency. It also uses a number of contingency plans prepared by Lancashire County Council and uses County resources as necessary during incidents. The Council maintains close liaison with Lancashire County Council, the Emergency Services and Health Care Organisations.

4. The Next Steps

As stated in the methodology, this initial assessment only represents a first stage in the SFRA process. It is expected that any development that is proposed within or adjacent to areas of high risk will require further detailed assessment works, including modelling works to more accurately define the risk of flooding and the impact a proposed development will have, this work will be done to a standard deemed acceptable to the Environment Agency. A similar course of action will be necessary from the Borough Council if proposals to allocate specific land, in an area of flood risk, for development are brought forward through the Local Development Framework.

Where development is proposed within the vicinity of a known non-fluvial flood risk then it should consider the direct and indirect impact of development on the potential for flood risk. If after a thorough assessment the conclusion is that the potential for flood risk is increased, then satisfactory mitigation or improvement works should be included, or planning permission should be refused.