

Blackpool Council

Level 1 Strategic Flood Risk Assessment

Updated November 2014

Blackpool Council



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Abbreviations

CFMP	Catchment Flood Management Plan
EA	Environment Agency
DAP	Drainage Area Plan
Defra	Department for Environment, Food and Rural Affairs
LDDs	Local Development Documents
LPAs	Local Planning Authorities
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
FRA	Site-Specific Flood Risk Assessment
RSS	Regional Spatial Strategy
SA	Sustainability Appraisal
SFRA	Strategic Flood Risk Assessment
SMP	Shoreline Management Plan
SuDS	Sustainable Drainage Systems
SW	Surface Water
SWMP	Surface Water Management Plan

Executive Summary

Flooding from rivers and coastal waters is a natural process that plays an important role in shaping the natural environment. However, flooding threatens life and can cause substantial damage to property. The effects of weather events can be increased in severity both as a consequence of previous decisions about the location, design and nature of development and land use, and as a potential consequence of future climate change. Although flooding cannot be wholly prevented, its impacts can be reduced and possibly avoided through good planning and management.

It is predicted that climate change over the next few decades will mean milder wetter winters and hotter drier summers in the UK, while sea levels will continue to rise. These factors will lead to increased and new risks of flooding within the lifetime of planned developments.

The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is exceptionally necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.

Blackpool Council have prepared this borough-wide Level 1 Strategic Flood Risk Assessment (SFRA) in accordance with the National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG). The SFRA for Blackpool was originally published in June 2008 and updated in 2009. This 2014 update takes into consideration changes to national planning policy, the current Core Strategy approach and alterations to the Environment Agency (EA) flood risk maps. It has been produced to inform the preparation of the Council's Local Development Documents, having regard to catchment-wide flooding issues that affect the area. The SFRA provides the information needed to apply the sequential approach. Blackpool Council has liaised with adjoining local authorities and the Environment Agency in its preparation.

The Sequential Approach

A sequential risk-based approach to determining the suitability of land for development in flood risk areas is central to the approach put forward in the NPPF and it should be applied at all levels of the planning process. Local Planning Authorities should apply the sequential approach as part of the identification of land for development in areas at risk of flooding and in the determination of planning applications.

The Sequential Test

In areas at risk of river or sea flooding, councils are advised to consult the Environment Agency Flood Zone maps and check which areas fall within the different flood zones. (Zone 1 is the area least likely to experience flooding and Zone 3 the most likely). Preference should be given to locating new development in Flood Zone 1. If there is no reasonably available site in Flood Zone 1, the flood vulnerability of the proposed development can be taken into account in locating development in Flood Zone 2 and then Flood Zone 3. Within each Flood Zone, new development should be directed to sites at the lowest probability of flooding from all sources as indicated by the SFRA.

The Exception Test

If, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives, for the development to be located in zones of lower probability of flooding, the Exception Test can be applied. The Test provides a method of managing flood risk while still allowing necessary development to occur.

The Sequential and Exception Test are described in detail in the NPPF and NPPG.

Development Areas

The SFRA identifies the key development areas and considers flood risk for each of these areas. Inner Area regeneration is a priority for the Council along with supporting growth at South Blackpool to help meet wider housing and employment needs, whilst recognising the important character of Marton Moss (see policy CS1 of the Local Plan Part 1 – Core Strategy). Strategic policy for flood risk is set out in Core Strategy policy CS9 ‘Water Management’ which should be applied to all relevant planning applications including development in the identified areas.

In terms of flood risk assessment, the focus of NPPF is on tidal and fluvial risks of flooding. In many locations, including Blackpool, it is the risk of surface water flooding which is not directly related to tidal or fluvial inundation that is increasingly the cause of flooding and the Blackpool SFRA defines the areas at such risk, incorporating future strategic development plans for Blackpool.

Recommended Policies for Development Areas

Area	Recommended Policy (in respect of Flood Risk issues only)
Central Area	<p>Developments of all types should be permitted in this area, which lies within Zone 1 of the EA Flood Map.</p> <p>All proposed development of 1 hectare or greater in Flood Zone 1 should be supported by a Site-Specific Flood Risk Assessment (FRA).</p> <p>Consideration to emergency warning and response including safe access routes should be given in all cases. As this area relies on flood and erosion, protection consideration should be given to the policy within the Shoreline Management Plan as to the long-term sustainability of the defence.</p> <p>The use of Sustainable Drainage Systems (SuDS) should be considered in conjunction with the capacity of the receiving sewers to ensure that containment during exceptional rainfall is controlled.</p>
Ryscar Way/ Blackpool Technology Park	<p>Development of all types should be permitted within this area, which lies within Flood Zone 1. All proposed development of 1 hectare or greater in flood zone 1 should be supported by a FRA. The use of SuDS should be considered, in conjunction with the capacity of the receiving sewers, to ensure that containment during exceptional rainfall is controlled.</p>
Leys Nursery Site	<p>Development of all types should be allowed within this area, which lies within Flood Zone 1. All proposed development of 1 hectare or greater in Flood Zone 1 should be supported by a FRA. Consideration to SuDS and surface water runoff should be given in all cases.</p>
Warren Drive	<p>Parts of this site lie within Flood Zone 2 on the EA flood risk map, however the existing defences mitigate the risk from tidal inundation. A continued residual risk from a breach of the defences, surface water flooding and infrastructure failure should be considered and which may require some extra measures on finished floor levels and flood proofing. FRAs will be required to support all developments showing that a breach scenario has been considered using climate change allowance of the time. Consideration of alternative uses for ground floor rooms may be advisable. Maintenance and integration of watercourses and consideration of SuDS in conjunction with the capacities of receiving sewers and watercourses should be mandatory for areas within Flood Zone 2.</p>
Cornford Road	<p>There are no tidal flood issues in this site which is in Flood zone 1, therefore there should not be any restriction on tidal flooding grounds for development of all types within this area, however the enforced maintenance and integration of peripheral watercourses is critical to avoid historical and periodic inundation of surface water. All proposed developments of 1 hectare or greater in Flood Zone 1 should be supported by a FRA. Technical Assessment of</p>

	<p>surface water runoff should be given in all cases to prevent inundation of the on-site surface water pumping station and consideration of SuDS or on-site retention must be given in all cases.</p>
Preston New Road	<p>There are no flood issues in this site which is in Flood Zone 1 therefore there should not be any restriction on flooding grounds for development of all types within this area. All proposed development of 1 hectare or greater in flood zone 1 should be supported by a FRA. The technical consideration of SuDS and surface water runoff should be given in all cases.</p>
Mythop Road/Whyndyke Farm	<p>Developments of all types should be allowed within this area, with all proposed development of 1 hectare or greater in Flood Zone 1 supported by a FRA. Enforced maintenance and integration of watercourses and outfalls is mandatory. Consideration should be given to the use of SuDS in all cases, due to the potential extra surface water run off caused by increased impermeability factors.</p> <p>The increased flood risk implications for the sliver of land on the extreme north east edge of the site (within Flood Zone 2) should be mitigated against – potentially most readily by the SuDS approach, and by excluding this small area on the edge of the site from any built development.</p>
Marton Moss	<p>Longstanding sea defences mean there are realistically no tidal flood issues on this site therefore there should not be any restriction on tidal flooding grounds for potential development within this area which is in Flood Zone 1. The main flood risk at Marton Moss relates to surface water flooding from and during exceptional rainfall events and infrastructure capacity and failure. Enforced maintenance and integration of all watercourses and outfalls should be mandatory. Consideration should be given to SuDS, due to extra surface water runoff caused by increased impermeability factors, should be given in all cases. All developments of 1 hectare or greater in Flood Zone 1 should be supported by a FRA which should demonstrate that appropriate mitigation measures are provided and that a breach scenario has been considered using climate change allowances of the time. To address the risk from Public Sewerage Network Operational Failure non-return devices to incidental connections should be considered. There are nominated items of Main River in the area which have been incorporated in the existing infrastructure.</p>

1 BACKGROUND

1.1 Blackpool Council has prepared this borough-wide Strategic Flood Risk Assessment (SFRA) in accordance with the National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG). The SFRA for Blackpool was originally published in June 2008 and updated in 2009 to reflect changes to the Environment Agency (EA) Flood Risk Maps. This 2014 update takes into consideration changes to national planning policy, the current Core Strategy approach and alterations to the EA flood risk maps.

1.2 This SFRA has been developed with the assistance of the EA and key landowners to provide a robust assessment of current and future levels of flood risk within the borough. The SFRA is a key piece of evidence for the Local Plan, ensuring that any future development takes full account of flood risk and sustainability at the outset.

1.3 The aim of this SFRA is ensure an understanding of flood risk and to influence the spatial planning processes to provide sustainable developments.

1.4 The main stages in the development of the SFRA are:

- The identification of flood zones for the area;
- The identification of potential sources and pathways of flooding using appropriate techniques;
- Development of the effects of climate change for a variety of horizons;
- Examination of future development proposals, including sequential testing and the application of exemption testing where appropriate;
- Identification of residual flood risk and appropriate mitigation measures
- Adoption.

2 INTRODUCTION

2.1 Flooding is a natural process that cannot be wholly prevented. Good planning and management of the risk and consequence of flooding can help avoid and reduce the considerable threat to people and property.

2.2 This SFRA has been prepared by Blackpool Council in accordance with the NPPF and NPPG. The Council shares the Government's objectives for the planning system in which planning promotes sustainable patterns of development, avoiding flood risk and accommodating the impacts of climate change. The Council will continue to work in partnership with the EA, other operating authorities and stakeholders to optimise expertise, share knowledge and information to ensure plans are effective and planning policy is guided by clear and accurate information.

Background to Strategic Flood Risk Assessments

2.3 The SFRA highlights the potential levels of risk from flooding throughout the Borough. Where development is identified in flood zones 2 and 3 of the EA flood risk maps, further developer produced Flood Risk Assessments (FRAs) using more detailed scenarios will be required based on the framework identified within this SFRA.

2.4 The SFRA is a strategic risk based approach through policies in Local Development Documents (LDDs) which:

- Avoid adding to **sources** of flood risk by avoiding inappropriate development.
- Manage flood **pathways** to reduce the likelihood of flooding by managing flood defence infrastructure and utilising natural storage of floodwater.
- Reduces the adverse consequences of flooding on people and property, the **receptors** by avoiding inappropriate development in flood risk areas.

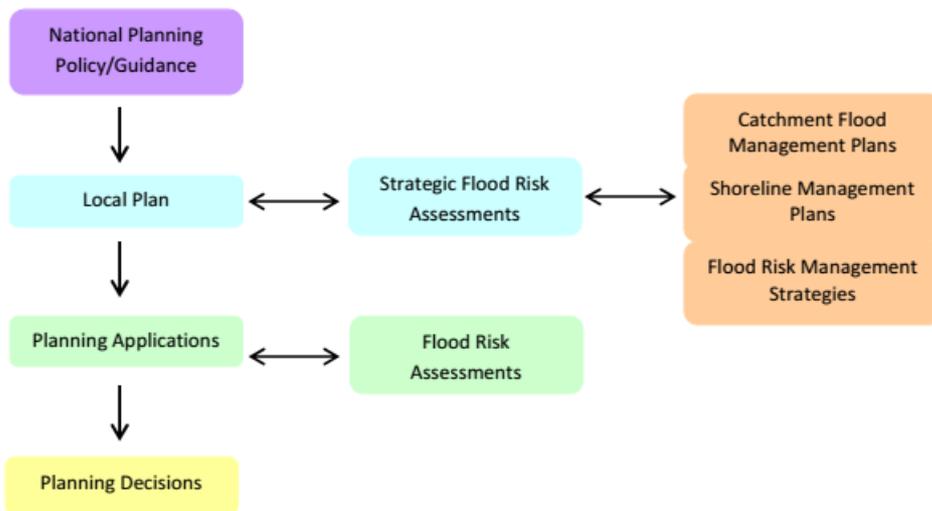
3.5 The SFRA for Blackpool Council uses the source, pathway and receptor model to inform the sequential test for all stages of planning within the Borough. Where development is considered in Flood Zone 2 or 3 it may be necessary to apply the Exception Test in accordance with guidance given in NPPG.

3 MANAGING FLOOD RISK THROUGH THE SPATIAL PLANNING PROCESS

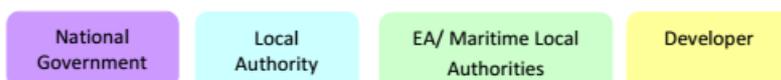
3.1 All forms of flooding and their impact on the natural and built environment are material planning considerations. NPPF requires that planning authorities take flood risk into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding. Where new development is exceptionally necessary in such areas, appropriate action and mitigation should be taken to make it safe without increasing the risk elsewhere and where possible reducing overall risk.

3.2 This SFRA fits within the overall planning process as a foundation to sustainable and appropriate planning policy. Figure 1 identifies the core role of the SFRA within the overall planning process.

Figure 1: Key documents in the spatial planning process and the links with other key strategies for managing flood risk



Responsibilities are indicated using the colour coding as follows:



4 SEQUENTIAL AND EXCEPTION TESTS

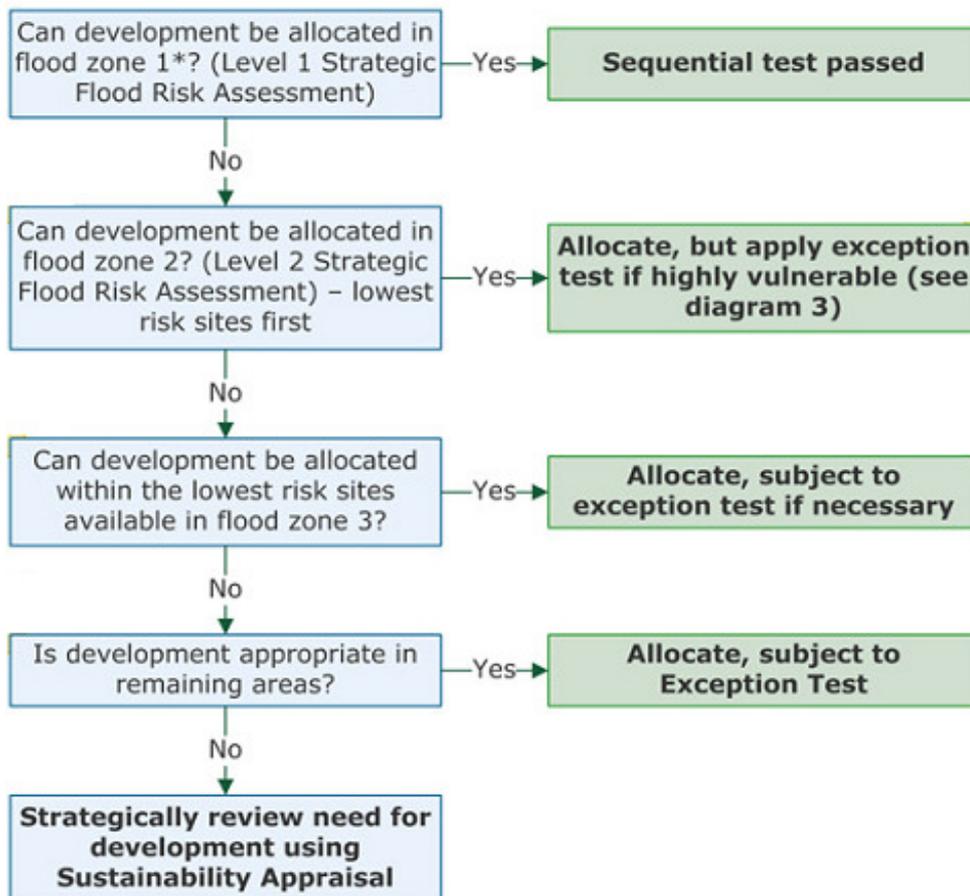
4.1 The NPPF states that Local Planning Authorities, in allocating land and determining planning applications, should avoid inappropriate development in areas at risk of flooding. Development should be directed away from areas at highest risk but where it is necessary, it should be made safe without increasing flood risk elsewhere.

Sequential Test

4.2 Local Plans should apply a sequential approach to the location of development to avoid, where possible, flood risk to people and property and manage any residual risk, including the impacts of climate change. This SFRA provides a framework on which an informed sequential test and understanding of flood risk within Blackpool can be based.

4.3 The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. A sequential approach should be used in areas known to be at risk from any form of flooding.

Figure 2: Application of the Sequential Test for Local Plan preparation (from NPPG)



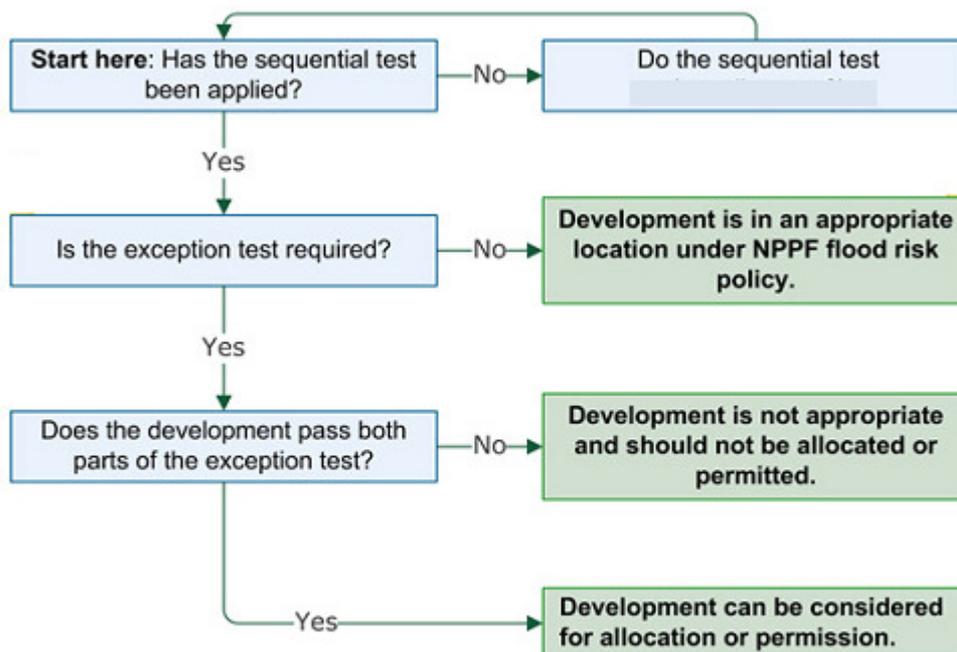
Exception Test

4.3 If, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if appropriate. For the Exception Test to be passed:

- it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; and
- a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

4.4 Both elements of the test have to be passed for development to be allocated or permitted.

Figure 3: Application of the Exception Test for Local Plan preparation (from NPPG)



4.5 Figure 4 shows the hierarchy of flood risk management measures and illustrates the important role that the planning process has to play in reducing flood risk.

Figure 4: Hierarchy of Flood Risk Management Measures

Flood Risk Management Measure	Description	Example tools and measures	Key responsible parties	Reference within this Assessment
Avoidance/ Prevention	Allocate developments to areas of least flood risk and apportion development types vulnerable to the impact of flooding to areas of least risk.	<ul style="list-style-type: none"> ▪ Strategic Flood Risk Assessment ▪ Flood Risk Assessment 	<ul style="list-style-type: none"> ▪ Planning bodies 	Sections 16 - 18
Substitution	Substitute less vulnerable development types for those incompatible with the degree of flood risk.	<ul style="list-style-type: none"> ▪ Flood Risk Assessment ▪ Application of the sequential approach 	<ul style="list-style-type: none"> ▪ Planning bodies ▪ Developers 	Section 18
Control	Implement measures to reduce flood frequency to existing developments. Appropriate design of new developments.	<ul style="list-style-type: none"> ▪ River Basin Management Plans ▪ Catchment Flood Managements Plans ▪ Shoreline Management Plans ▪ Flood Risk Management Strategies ▪ Appraisal, design and implementation of flood defences 	<ul style="list-style-type: none"> ▪ Environment Agency ▪ Other flood and coastal defence operating authorities ▪ Developers ▪ Sewerage undertakers 	Section 17
Mitigation	Implement measures to mitigate residual risks.	<ul style="list-style-type: none"> ▪ FRAs ▪ Incorporating flood resistance and resilience measures ▪ Emergency planning documents ▪ Implementation of flood warning and evacuation procedures. 	<ul style="list-style-type: none"> ▪ Planning bodies ▪ Developers ▪ The Environment Agency ▪ Other flood and coastal defence operating authorities and ▪ Sewerage undertakers. 	Section 18 to 21

5 AIMS AND OBJECTIVES OF THE STRATEGIC FLOOD RISK ASSESSMENT

5.1 The aim of this SFRA is to influence the spatial planning process in the context of sustainable developments and to provide sufficient and robust evidence to allow the Sequential Test to be applied in the site allocation process.

5.2 In the pursuit of this aim, the following objectives are required to be met:

- The assessment should be inclusive, taking account of previous studies, and be proactive in encouraging interaction from consultees and the public.
- The assessment should look at all potential pathways including; tidal, fluvial, sewage, open water and ground water.
- The study should take account of the potential for climate change and the effects on the proposed development areas.

- The study should be compatible with wider sustainability considerations in particular the application of a Sustainability Appraisal.
- The study should allow the planning authority to prepare appropriate policies for the management of flood risk.
- The study should identify the level of detail required for FRAs in particular locations, and enable them to determine the acceptability of flood risk in relation to emergency planning capability.

5.3 In order to achieve this, the Council has committed that, its planners and flood risk managers will work together in taking a strategic approach to the management of flood risk by:

- Ensuring flood risk is considered at the earliest stage of the planning process.
- Helping to embed consideration of longer-term issues such as climate change and coastal erosion into spatial planning.
- Providing greater clarity and certainty to developers regarding which sites are suitable for developments of different types.
- Increasing the chances of developing local authority, community and developer-led initiatives to realise opportunities to reduce flood risk, by adopting a partnership approach.
- Ensuring that both the direct and cumulative impacts of development on flood risk zones are acknowledged and appropriately mitigated.
- Increasing the potential for planning policies to reflect catchment-wide considerations enabling integrated, sustainable developments, which deliver multiple benefits and enhance the environment.

5.4 In particular, the Council has applied the strategic approach by:

- Playing an active role in partnership with the EA in the development of Catchment Flood Management Plans for the catchments affecting the borough.
- Playing an active role within the coastal groups and proactive working with neighbouring coastal authorities to develop sustainable coastal policies through the Shoreline Management Plan process.
- Feeding into these processes the cumulative impacts of developments and working with developers on an informed basis to provide sustainable solutions to flood risk problems.
- Proactively involving the community through open forums, consultation and the provision of clear and concise information on flood risk and the community's role in reducing the potential for flood risk and reducing the effects when flooding occurs.

Reducing the risk of flooding has been identified as a key sustainability objective and sustainability issue.

5.5 The aim of this SFRA is to influence the spatial planning process in the context of sustainable developments. Flood risk is an important element in the overall decision-making context. It is therefore recommended that the flood risk assessment is taken into a wider sustainability appraisal process to ensure that other sustainability factors are given due consideration. This appraisal is therefore compatible with current guidance within the government's Sustainability Appraisal (SA) process.

6 OVERVIEW OF KEY ROLES AND RESPONSIBILITIES

6.1 Responsibility for the management of flood risk falls within the remit of a number of bodies. The roles of the key parties are briefly outlined below.

6.2 Landowners have the primary responsibility for draining their land and managing the flood risk issues associated with their property. The owners of assets such as canals and reservoirs are similarly responsible for managing the flood risk issues associated with them.

6.3 Spatial planning is the responsibility of the Local Planning Authorities (LPAs), including Blackpool Council. The Planning and Compulsory Purchase Act 2004 and accompanying regulations require LPAs to produce spatial plans in the form of Local Development Documents (LDDs). These documents form the statutory development plan against which planning applications must be determined, unless material considerations indicate otherwise. Statutory development plans should reflect the Government's policies for sustainable development as developed by Communities and Local Government. Chapter 10 of the NPPF aims to avoid placing new development, of a type, which is incompatible with flooding, in areas at risk of flooding.

6.4 The EA and other flood and coastal defence operating authorities, including this authority, have statutory powers to manage flood risk to **existing** properties and assets. They prepare strategic plans for measures to reduce flood risk posed to existing communities and assets by rivers, watercourses and the sea, in accordance with policies developed by the Department for Environment, Food and Rural Affairs (Defra). The flood and coastal defence operating authorities are key consultees to the spatial planning process. They hold important sources of information for spatial planners considering new developments in accordance with the planning policies set out in the NPPF, including Catchment Flood Management Plans (CFMPs) and Shoreline Management Plans (SMPs) and Surface Water Management Plans (SWMPs).

6.5 Sewerage undertakers are responsible for any sewers adopted under the requirements of the Water Industry Act 1991. They prepare Asset Management Plans approved by the water regulator, Ofwat, which include investment programmes to manage the flood risk from sewers. Responsibility for the maintenance of highway drainage systems lies with the highway authority wherever these are not privately owned.

6.6 Sir Michael Pitt's review of the flooding in 2007 stated "the role of local authorities should be enhanced so that they take on responsibility for leading the co-ordination of flood risk management in their areas". The Flood and Water Management Act 2010 provided for this through the new role of the Lead Local Flood Authority (LLFA). In 2012, responsibilities regarding the consenting of certain works on ordinary watercourses under the Land Drainage Act 1991 were transferred from the Environment Agency to County and Unitary Authorities as specified by the 2010 Act. As a unitary Authority, Blackpool Council is now the LLFA and the Risk Management Authority regarding coastal erosion risk.

6.7 The 2010 Act also establishes SuDS Approval Bodies (SABs) at county and unitary levels. The SAB would have responsibility for the approval of proposed drainage systems in new developments and redevelopments. Approval must be given before the developer can commence construction. In order to be approved, the proposed drainage system would have to meet new national standards for sustainable drainage. Where planning permission is required applications for drainage approval and planning permission can be lodged jointly with the planning authority but the Approving Body will determine the drainage application. Regulations will set a timeframe for the decision so as not to hold up the planning process.

6.8 The (SAB) would also be responsible for adopting and maintaining SuDS which serve more than one property, where they have been approved. Highways authorities will be responsible for maintain SuDS in public roads, to National Standards.

6.9 At present SABs have not yet been implemented. At the time of writing this update, the Government are consulting on further changes which would see the responsibility for SuDS approval transferring to the Local Planning Authority.

7 STUDIES

7.1 A number of key studies have been prepared for the area covered by the Blackpool SFRA. The hierarchy of studies is shown in figure 5 and their conclusions with relevance to this assessment are tabulated in figure 6.

Figure 5: The inter-relationship between the SFRA and other plans influencing development

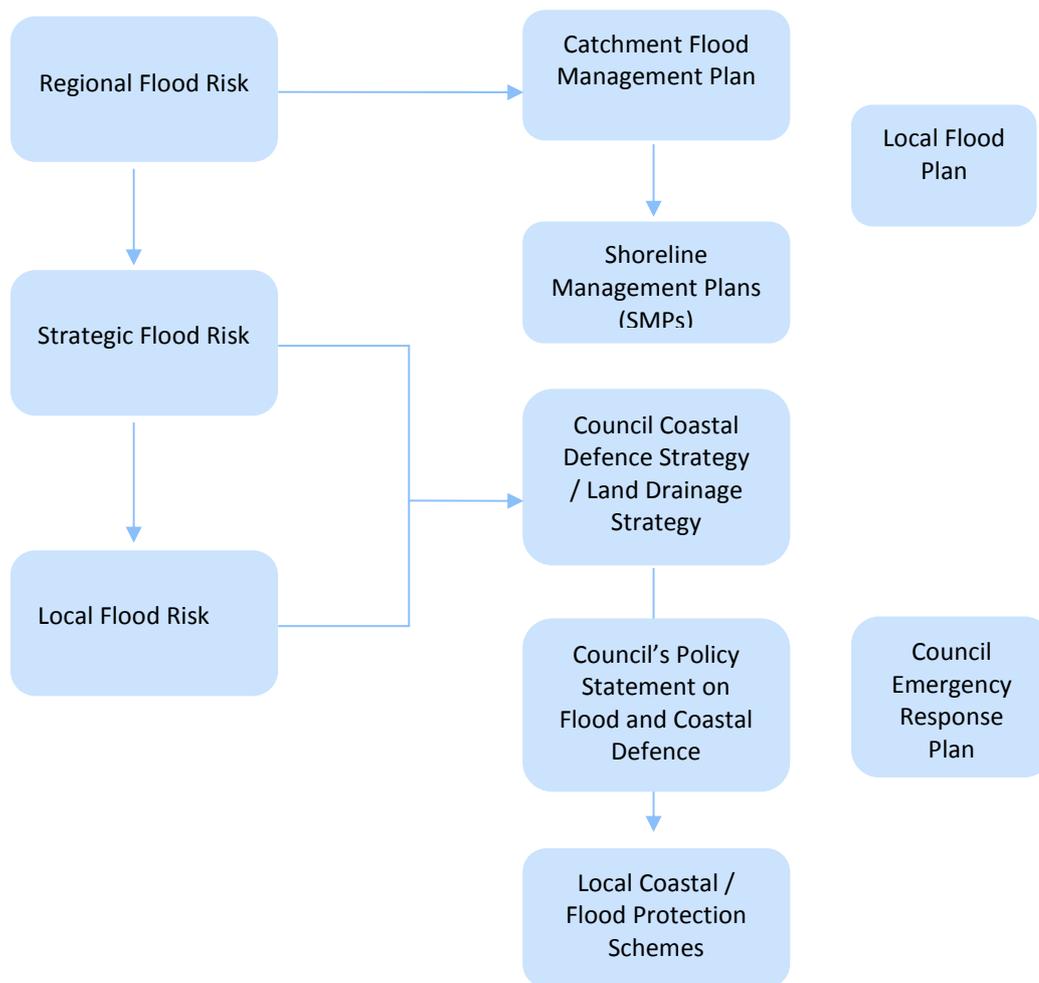


Figure 6: Relevant Studies

Study/Plan	Brief Description of Contents	Key Conclusions
North West England and North Wales Shoreline Management Plan SMP 2, Sub-cell 11b: Southport Pier to Rossall Point	A Shoreline Management Plan (SMP) provides a large-scale assessment of the risks associated with the erosion and flooding at the coast. It also presents policies to help manage these risks to people and to the developed, historic and natural environment in a sustainable manner.	Continue to provide protection through maintenance of formal defences.

Study/Plan	Brief Description of Contents	Key Conclusions
Ribble Catchment Flood Management Plan (CFMP) and Wyre CFMP (2009)	<p>There are a number of CFMPs that EA have currently producing throughout England and Wales. Blackpool Borough straddles both the Wyre and Ribble CFMP areas.</p> <p>A Catchment Flood Management Plan is a high level strategic planning tool through which decision makers can explore and define long term sustainability policies for flood risk management in a catchment.</p> <p>The CFMP identified the size and location of various influences that can make a contribution and affect the consequence of flooding. Increased understanding will allow an estimate of potential changes in the catchment.</p>	<p>Currently there is a low level of risk from fluvial sources due to the existing defences in place.</p> <p>The Wyre Catchment Flood Management Plan provides a framework for Blackpool to develop sustainable policies for flood risk management.</p> <p>The Integrated Catchment Management Plan for the Ribble (June 2007) provides the strategic overview of how the Ribble catchment will be managed. For Blackpool the key point of the flood risk management strategy is to maintain flood defences to the current standard of protection.</p>
Lancashire and Blackpool Flood Risk Management Strategy (2014)	Jointly produced by Lancashire County Council and Blackpool Council, this Flood Risk Management Strategy demonstrates how the relevant authorities intend to manage the risk from local sources of flooding initially over the next 3 years and with revised editions every 6 years.	The Strategy sets out a series of actions to meet the objectives of the Strategy.
Blackpool Surface Water Management Plan	<p>This comprises:</p> <p>A SWMP Risk Assessment Report, which used surface water modelling techniques to identify high risk areas within Blackpool potentially subject to severe flooding from large storm events.</p> <p>A Review of Strategic Options in the context of these high risk areas which the Council could implement that would reduce the flow of surface water to the HRAs.</p> <p>This report looks at these potential options, highlighting those which have the potential to produce the highest benefit for the most people at the lowest cost for the Council based on a qualitative approach.</p> <p>An Economic Appraisal of Site Options to reduce flood risk.</p>	The report identifies and compares the potential combined solutions that could be used to protect the community in high risk areas against flooding following a 1in 100 year storm event. It allows the council to understand which locations it would be best to focus the next stage of the design process. The potential solutions at each HRA have been ranked in terms of overall costs and also benefit cost ratio. All assessment of cost and benefit are based on a 1 in 100 storm event over a 100 year appraisal period.
Lancashire Resilience Forum Multi Agency Flood Plan (MAFP) Part 1	Part 1of the MAFP for Lancashire contains generic information for a flooding incident such as the roles and responsibilities of Category 1 and 2 responders under the Civil Contingencies Act. The plan also	

Study/Plan	Brief Description of Contents	Key Conclusions
Part 2	includes details such as activations and notifications of the plan. Part 2 - Each Local Authority area within Lancashire has produced an appendix for the MAFP based on local Environment Agency Flood Warning Areas. This contains detail about how the council will respond to flooding and warnings which precede the actual event.	
Blackpool Council Major Emergency Plan	The Major Emergency Plan outlines Blackpool Council's systems and procedures for dealing with major emergencies.	Comprehensive emergency arrangements in place and practiced.

8 EXISTING PLANNING POLICIES ON FLOOD RISK MANAGEMENT

8.1 Local Plans provide a key planning tool for ensuring that flood risk is factored into the detailed allocation of land use types across an area in accordance with national policy, but also taking account of specific local issues and concerns. They are an opportunity to provide clarification to prospective developers in the form of clear policies for the management of flood risk, as well as guidance on how flood risk issues should be addressed through site allocations in flood risk areas.

8.2 Blackpool Council sets out in the adopted Blackpool Local Plan (2006) its current policies for the control of development. In June 2009, the majority of the Local Plan policies were saved following a direction from the Government Office for the North West. This included policy NE10 that relates to flood risk. The policy sets out that development in areas at risk from flooding will only be permitted where appropriate measures are in place and focuses on the use of SuDS. Policy NE10 will be saved until the adoption of the Local Plan Part 1: Core Strategy and is set out in full at Appendix 1.

8.3 The emerging Blackpool Local Plan Part 1: Core Strategy – Proposed Submission (June 2014) sets out the Council's strategic policies to guide development to meet Blackpool's future needs to 2027. Policy CS9 'Water Management' states that all new development must manage the impacts of flooding and mitigate the effects of climate change in order to reduce flood risk. Policy CS9 is set out in full at Appendix 1.

9 OVERVIEW OF THE STUDY AREA

9.1 Blackpool Council is a unitary local authority on the North West Coast of England. The core area is bounded on the west by the Irish Sea. The Borough consists of the one main highly populated central urban area, with small peripheral areas of countryside to the south on Marton Moss and to the east of the town between Blackpool and Carleton (Wyre) and between Blackpool and Staining (Wyre).

9.2 The whole of the Borough is relatively flat low-lying land, although most of it lies above the 1 in 1000 year tidal level. It is protected in the west from coastal erosion and tidal inundation from the Irish Sea by concrete coastal defences, inspections of which are undertaken on an annual basis.

9.3 Land drainage to Blackpool is achieved by a variety of watercourses spread throughout the Borough. The three Main Rivers located in Blackpool Borough are:

- Main Dyke/Skipool Creek (Marton Mere) – outfalls to Main Dyke
- Moss Sluice and Wilding Lane Watercourse (Great Marton Moss) – outfalls to Main Dyke

- Bispham Dyke - flows downstream from Chorley Road to outfall into the sewer network at Moor Park Avenue.

9.4 Plans of the Main Rivers can be found in Appendix 2.

9.5 The main causes of flooding throughout the Borough are from Sewer Network failure on public, private or surface water systems due to inadequate maintenance, or due to being overwhelmed by exceptional rainfall events.

9.6 The areas and their main sources of flooding are shown in the table below.

Figure 7: Sources of Flooding

Area	Area Description	Sources of Flooding
Anchorsholme	This area to the north of the Borough is urban in nature. The ground relatively high but has low hydraulic gradients. It is bound to the west by the Irish Sea and is protected from coastal erosion by concrete defences.	The main risk of flooding in this area is from the sewerage network, upon which it is entirely reliant for combined foul and surface water disposal. If operational failure coincides with exceptional rainfall it will result in the surcharge of sewage from this combined sewerage system. Incidental problems are generally caused by inadequate watercourse or highway maintenance.
Central and Coastal Area	This area to the west of the Borough is densely urban in nature with much commercial property. It is bound by the Irish Sea to the west and is protected from coastal erosion and tidal inundation by concrete defences. The area is low lying and flat but is categorised as Flood Zone 1.	Historically the main risk of flooding in this area was from tidal inundation. The immediate coastline is protected by substantial coastal defences. The main risk of flooding within most of this area is from the sewerage network, upon which it is entirely reliant for combined foul and surface water disposal. If operational failure coincides with exceptional rainfall it will result in the surcharge of sewage from this combined sewerage system. Incidental problems are generally caused by inadequate watercourse or highway maintenance.
Marton Area	This area to the south east of the Borough is relatively flat land. Much of the area lies within Flood Zone 1, above the 1 in 1000 year tidal and fluvial level.	The main risk of flooding in this area is not directly from tidal or fluvial sources, but from the drainage of surface water. The area relies almost entirely for its disposal on a series of lift pumping stations, the failure of which results in the surcharge of foul and surface water sewage from this combined sewerage network. Incidental problems are invariably caused by inadequate highway or watercourse maintenance.

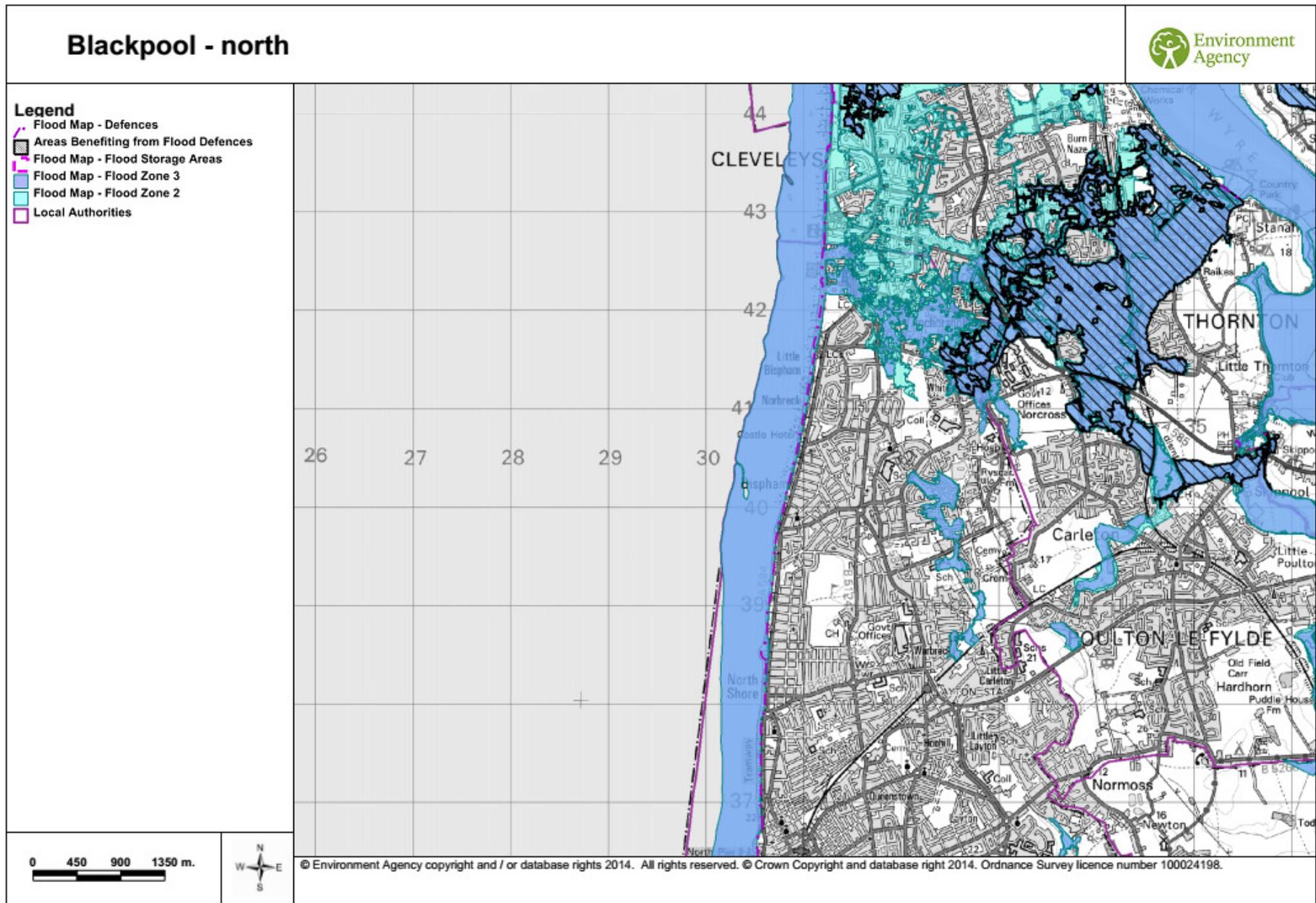
10 ENVIRONMENT AGENCY FLOOD RISK MAP

10.1 The Environment Agency's flood risk map for Blackpool is set out in figure 8 (an up to date version can also be found at <http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=en&topic=floodmap>). The flood risk map and associated information is intended for guidance only, and cannot provide details for individual properties. The map shows current best estimates of the areas at risk from flooding from rivers and the sea only and does not consider other sources. Flood maps take no account of potential climate impact changes. The flood map information is also provided in digital form to local authorities and is updated as new information becomes available.

10.2 The flood risk maps indicate the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Due to the topography of Blackpool's coastline, coastal flooding is limited. Potential flooding elsewhere in the borough is largely attributed to the sewerage network and surface water flooding, however this is not illustrated on the flood risk map (areas in the Borough that are susceptible to surface water flooding are illustrated in Appendix 4). The flood risk map comprises three zones, indicating the probability of flooding:

- Flood Risk Zone 1: Low Probability – 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%).
- Flood Risk Zone 2: Medium Probability – 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.
- Flood Risk Zone 3a: High Probability – 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.

Figure 8: EA Flood Risk Maps

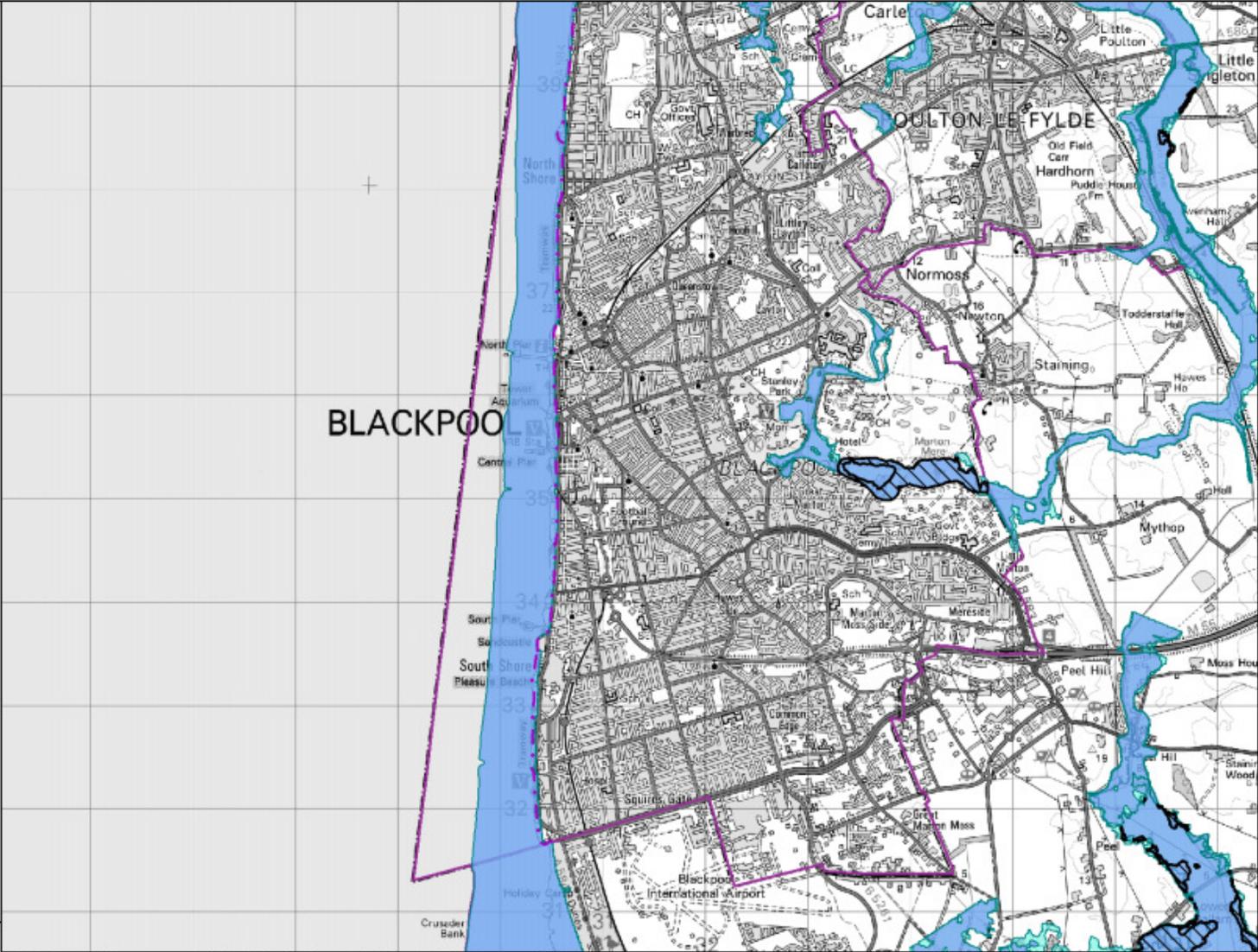


Blackpool - south



Legend

-  Flood Map - Defences
-  Areas Benefiting from Flood Defences
-  Flood Map - Flood Storage Areas
-  Flood Map - Flood Zone 3
-  Flood Map - Flood Zone 2
-  Local Authorities



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10.3 Most of Blackpool's land is within Flood Zone 1 (low probability) as shown on the flood risk maps. Recent substantial improvements to the public sewer network and extensive renewal of sea defences along the coast, which were engineered at the time with the most up-to-date climate change projections, has further reduced the risk of flooding in recent years. Although there are no significant areas of land in Blackpool with flood zone 3 (highest probability), there is some land located within flood zones 2 and 3 in the north of the Borough (Anchorsholme), close to the northern borough boundary.

10.4 The Anchorsholme area within flood zones 2 and 3 reflects the low height of this land, and specifically of the coastline itself north of the cliffs which extend along much of the rest of the north shore of Blackpool.

10.5 To alleviate problems of seawater flooding, the Council commenced an extensive programme of sea defence and coast protection works in 1981, covering the length of the Promenade from Anchorsholme to Starr Gate. The seawall along the whole of the Borough's frontage has been replaced in stages to maintain a high level of defence. The final central section of the promenade was completed in 2009, and is designed to prevent flooding in a 1 in 200 year storm event. Construction on the Anchorsholme section of the promenade commenced in 2014.

10.6 While the completion of the coastal sea defence work and future maintenance and improvements will continue to safeguard the main existing urban area, the SFRA considers the residual risk from a breach of these defences.

10.7 Outside the main urban area, lands within the Marton Mere catchment are shown on the EA flood risk map. Marton Mere itself is a raised reservoir covering an area of 18 hectares and forms part of a safeguarded SSSI, with other open lands within this catchment safeguarded from development. Drainage is controlled and is reliant on a council owned surface water pumping station which also serves to control water levels in Marton Mere itself, and discharges through an outfall structure to Main Dyke out of the Borough. There is no longer any potential for fluvial influence on this catchment. None of this land is under any consideration for future strategic development.

10.8 There are no areas within Blackpool in Zone 3b (functional floodplain).

10.9 A Sequential Test is required to be undertaken for all the potential development sites in accordance with the guidance set out in NPPG to assess their suitability for development. In addition, NPPF requires more detailed Exception Tests to be undertaken where there are potentially more vulnerable development locations with large areas in flood zones 2 and 3.

10.10 All the remaining areas of undeveloped land considered within the SFRA with any potential for strategic levels of development within Blackpool are in flood zone 1 (low probability).

11 FUNCTIONAL FLOOD PLAINS

11.1 The Technical Guidance to the NPPF defines functional flood plains as land where water has to flow or be stored in times of flood, and 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. Analysis of the area indicates that there are no areas of land currently protected by flood defences that should be defined as functional flood plain.

11.2 This study also considers areas of land that currently act as storage areas for surface water that would increase flood risk to other areas should it be displaced. There are currently no significant areas of undeveloped land that could act in this way.

12 SURFACE WATER FLOOD RISK

12.1 There are certain areas of the borough, which, although they are protected from tidal or fluvial influences, are still at risk of surface water flooding from and during exceptional rainfall events. A map of these areas is provided in Appendix 3.

12.2 The principal areas are:-

- Anchorsholme – due to reliance on and inundation of the Public Sewerage Network.
- Marton Mere Catchment – due to reliance on and inundation of a Council operated Pumping Station.
- Staining North Catchment – due to reliance on and inundation of a Council owned culverted watercourse outfall.
- Marton Moss – due to reliance on and inundation of the Public Sewerage Network and incidence of inadequate watercourse maintenance.
- Any area of the borough which is susceptible to inundation from a failure of the Public Sewerage Network/Highway Drainage System, or domestic or watercourse systems due to a lack of adequate maintenance or surcharge from a reliant outfall.

12.3 These do not affect potential for future development outside the urban area, providing the attenuation systems for providing extra storage for surface water in the event of any severe weather events are of sufficient capacity or that effective event monitoring and warning systems are installed.

12.4 The EA provides LPAs with data regarding areas that are susceptible to surface water flooding, to illustrate where potential further investigation may be required. In addition, Blackpool Council have prepared a Surface Water Management Plan. The flood risk map showing areas in the Borough that are susceptible to surface water flooding are shown in Appendix 4.

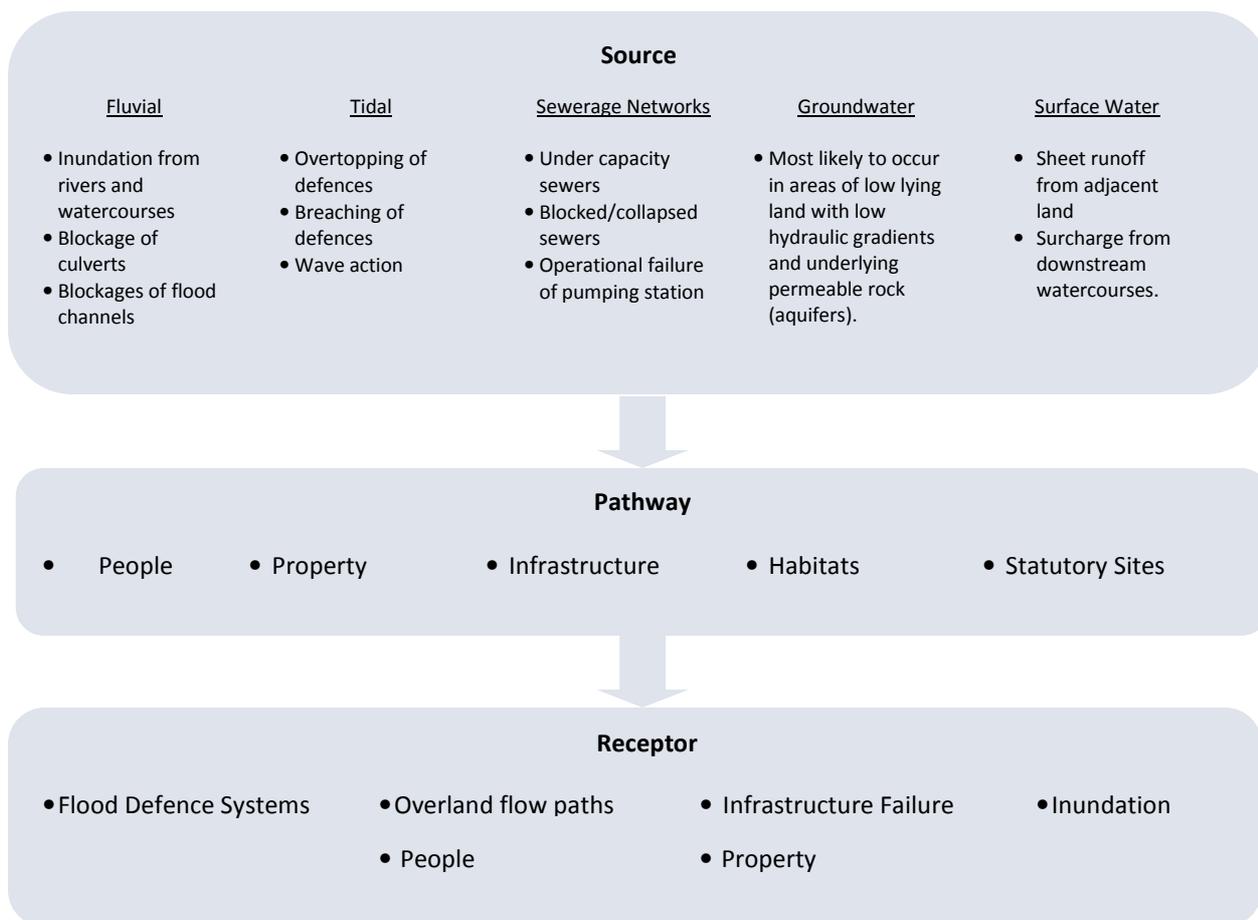
12.5 United Utilities and the EA will continue to be consulted on all such future development issues and specifically on the need for appropriate higher levels of storm capacity for any new strategic housing development if it is assessed that there is a higher risk of both the intensity and incidence of severe weather events related to climate change. Emerging Core Strategy policy requires appropriate mitigation and resilience measures to minimise the risk and impact of flooding from all sources; incorporate appropriate SuDS where surface water run-off is generated and ensure that there is no increase in the rate of surface water run-off from the site as a result of any development.

13 SOURCE-PATHWAY-RECEPTOR MODEL

13.1 The Strategic Flood Risk Assessment is a strategic a risk-based approach through policies in Local Development Documents which:

- avoids adding to the causes or 'sources' of flood risk.
- Manages the flood 'pathways' to reduce the likelihood of flooding by ensuring that the design and location of the development takes account of flood defence infrastructure and utilises natural storage areas without influencing flood risk downstream.
- Reduces the adverse consequences of flooding on the 'receptors' by avoiding inappropriate development in flood risk areas.

Figure 9: Source-Pathway-Receptor Model



14 HISTORICAL FLOODING

Overview

14.1 Historical overtopping of the existing sea defences has occurred during storm events, however the new sea defences have, on the whole, addressed this risk. The coastal defences are inspected on an annual basis and maintenance is carried out regularly. Extra inspections are carried out following storm events so that relevant repairs can be carried out, with flooding mainly confined to the Anchorsholme area, East area, Marton area, and Coastal Area.

14.2 The most serious sea incursion in Blackpool in the last 50 years resulted from the storms of 11/12th November 1977, when a combination of high tides, high winds, overtopping and heavy rainfall, estimated as a 1 in 100 year event, caused major inundation in the Anchorsholme area of north Blackpool, with flooding up to one kilometre inland effecting hundreds of properties. This was in conjunction with serious flooding in the adjacent borough of Wyre in Cleveleys and Fleetwood. Major improvements to the sea defences were constructed in 1981 to protect this area.

14.3 Other sea incursions in Blackpool have resulted from a similar combination of high tides, high winds and high rainfall but have only affected more localised areas of the immediate adjoining catchments, particularly the South Shore and Central seafront areas. The most recent event occurred on 5th December 2013 when sea flooding occurred along the Promenade and further inland during high

tide combined with stormy weather and high winds. Flooding was observed along the Promenade and on various streets off the Promenade close to Waterloo Headland.

14.4 Other historic flooding events in this area have been caused by substantial storm water flooding following severe rainfall events overloading the surface water sewer networks and aggravated by the surcharge of coastal surface water connections through the sea wall by seawater during exceptionally high tides. Under the Coastal Waters Improvement Schemes, undertaken jointly by United Utilities and the Council during 1994 to 2003, all storm and surface water connections to the sea, via the sea wall, were removed and turned into the sewerage network effectively negating tidal influence.

14.5 The Harrowside Outfall is an exception and can still be utilised as an emergency overflow from the Lennox Gate Pumping Station and is allowed to surcharge without penalty, although maintenance of the 5 no. flap valves within the outfall structure is essential to avoid blowing the upstream highway manhole covers off due to wave pressure. An Outfall is also located at Manchester Square, and is currently still utilised by United Utilities.

14.6 The disposal of storm and surface water therefore is now entirely dependent on maintaining the effective operational status of the Public Sewerage Network owned by United Utilities.

14.7 In 2000 and 2002 severe rainfall events resulted in widespread surface water flooding to over 200 properties in the Anchorsholme area of Blackpool caused by the overloading of the sewerage network, which, together with a “capacity shut down” at the Treatments Works at Jameson Road and operational problems at Anchorsholme Pumping Station, caused combined sewage to surcharge from the network through highway drains, (onto the roads) and domestic drainage, (into private properties). Other separate flooding incidents in the same events were caused by inadequacy of localised sewers and were treated separately. The prior installation of a storage tank in parallel with the Warren Drive Culvert had provided some relief but was eventually overtaken. Levels will still require careful monitoring during intense rainfall events to ensure that early essential operational action is taken by United Utilities.

14.8 There have been a number of flooding incidents in Marton Moss (Southern Drainage Area). These have been due to incidental blockages in watercourses and operational failures at Lennox Gate Pumping Station during intense rainfall events. Included are a number of domestic or localised incidents of flooding as a result of temporary watercourse or culvert blockages due to inadequate maintenance or deliberate interference with drainage outlets. Generally, the watercourse incidents do not relate to strategic flood risk caused by inadequate capacity, but are specifically related to incidental instances on existing systems which, once dealt with, eliminates the problem.

14.10 Constant monitoring of the operational status of the lift stations at Worthington Road, Midgeland Road, Dockypool Lane, Moss House Road, the stormwater storage facility in Highfield Road and in particular the main disposal station at Lennox Gate, by United Utilities, is essential during exceptional rainfall events to ensure systems operate efficiently and to prevent flooding incidents.

15 CLIMATE CHANGE

15.1 The NPPF states that Local Plans should take account of the effects of climate change. Accompanying guidance to the NPPF details of the allowances that should be made for climate change when assessing flood risk.

15.2 The uncertainty associated with climate change and the effects of sea level rise could have a significant future impact on the flood risk to low lying areas. It has therefore been identified that areas of low lying land should have further investigation at the time of development taking into account the climate change guidance of the time to study the possible effects of a breach scenario.

15.3 There was no flood modelling or mapping undertaken specifically for this study. However, the sustainability of the potential land use allocations, in terms of the main strategic flood risk of tidal inundation, has been undertaken based on the design specifications of the coastal protection structures all of which take account of the climate change guidance at the time.

15.4 The section of the central seawall that was recently construction was designed using hydraulic modelling. As the projects were started over ten years ago, the guidance over climate change was slightly different. The 100 year life of the wall has been designed to withstand a 1 in 200 year storm event taking into consideration climate change. The guidance at the time gave an increase in water level of 4mm per year and an increase in wave heights of 10%. There was no guidance concerning increased rainfall. As all current works have followed this guidance and all future works will follow future guidance, the long-term sustainability of the development sites is assured.

15.5 Shoreline Management Plans (SMPs) are high-level documents that state the policies of how the coast will be managed for the next 100 years. The current SMP - North West England and North Wales Shoreline Management Plan SMP2 (2010) and management policies within state that the coast of Blackpool will continue to be defended against flooding and coastal erosion (Hold the Line).

16 APPLICATION OF THE SEQUENTIAL AND EXCEPTION TEST

16.1 A sequential test has been undertaken for each potential development site using the source pathway model. The results of the sequential test indicate where appropriate development could take place, and where, in the central area, sites may require further scrutiny and exception testing.

17 SCOPING OF THE BOROUGH

17.1 An initial broad scoping study has been undertaken for the Borough, using the EA's flood risk maps and known flooding from other sources. As a broad outline the key sources and pathways are shown below.

Figure 10: Key Sources and Pathways

Main Source	Main Pathway	Historical Flooding	Notes
Coastal erosion to frontage, surface runoff and sewer flooding to remainder of area.	Coastal storms causing erosion of defences. High volume of surface water into road gullies and combined sewage networks. A majority of the area is urban and hard surfaced. Other pathways due to limited hydraulic gradient and/or sewerage network failure.	Coastal erosion up to early 20 th century. Number of reports of sewer and road flooding particularly around the Anchorsholme area. There has also been historic flooding in the Central, South Shore, Marton and Promenade areas.	Significant investment has been made in coastal defences on the Blackpool frontage and to additional storm storage facilities on the adjacent improved sewer networks. Constant monitoring during exceptional rainfall events remains essential.

18 POTENTIAL DEVELOPMENT SITES WITHIN BLACKPOOL

Overview

18.1 Flood risk considerations within NPPF are only one of a complex range of criteria which planners need to take into account when allocating development sites. There are a number of constraints from national policy guidance including restrictions on development in the green belt, sensitive countryside areas, and sites of landscape/nature conservation interest.

18.2 Blackpool, however, is a major urban area, with no strategic areas of green belt and no nationally recognised status of remaining lands in the countryside (such as National parks, Areas of Natural Beauty). In nature conservation terms there are also no internationally protected sites. Marton Mere however is a national Site of Special Scientific Interest (SSSI) and a stipulated Biological Heritage Site (BHS) where there are strict controls against development.

18.3 The intensely urban nature of the town increases the potential importance of the remaining areas of open space and attractive landscaping, and there are a number of existing sites within the Borough which are protected as important recreational assets and local sites of nature conservation interest in the existing adopted Local Plan.

18.4 Outside of these sites, however, and in strategic terms for the purpose of the site-specific flood risk assessment, the potential development sites included in this SFRA encompass:

- Undeveloped land sites within the existing urban area greater than 1 hectare.
- Redevelopment areas within the existing urban area to reflect Blackpool's current major programme of town centre, resort and inner area regeneration.
- The Marton Moss area

18.5 Against this background framework, the SFRA, which follows, is focussed on the assessment of strategic sites for future development. All new strategic levels of proposed development should only be brought forward following consideration of the recommendations within this report, and where necessary undertake additional modelling work to demonstrate the suitability of any proposed mitigation measures.

18.6 The following assessment therefore concentrates on strategic flood risk in a range of alternative sites within Blackpool's tightly constrained boundary, and limited remaining areas of land, to meet future development needs. All the potential new greenfield development sites are within Zone 1 or Zone 2.

18.7 Developers must show how they fit with the framework below and have applied the sequential test and where appropriate the exception test to justify inclusion of the site, within the considerations of this SFRA and the NPPF.

18.8 The sites can be found in Appendix 5.

Framework for Development within Flood Zone 1 - Low Risk

18.9 Minor developments that have been demonstrated to fall outside of the current known flood risk areas and have no known flood risk from other sources and do not increase the risk of flooding or the current flood risk areas can be developed without further consideration of strategic flood risk issues.

18.10 However, permitted new development must consider strategic run-off and drainage issues to ensure there are no detrimental effects to existing development.

Framework for Development within Flood Zone 2 - Low to Medium Risk

18.11 Minor developments that fall within flood zone 2 are considered to be generally suitable for development. Where essential infrastructure or critical development such as hospitals or schools are considered, alternative sites should be sought. New development should where possible be constructed above the 1% peak flood level for fluvial sources and 0.5% for tidal sources with sufficient allowance for freeboard and climate change scenarios for a period of 125 years. Proposals for new development within this zone should be accompanied by a FRA to delineate these envelopes. The FRA should also consider the effects of the new development on existing properties to ensure that it does not worsen existing flooding conditions.

Framework for Development within PPS25 Zone 3a - High Risk

18.12 Development within PPS25 flood zone 3 will not normally be allowed outside of the core areas of development.

Development within currently developed areas Flood Zone 3a

18.13 Although flood risk within Zone 3a is defined as high, this will not act as an embargo against new development. However any new development would have to take account of the condition of the existing defences protecting the area and the effects of the development on existing flood risk.

18.14 To this end significant new development within this zone should be accompanied by a detailed FRA, which should in most cases include a detailed computational model to demonstrate flood levels following a breach fall within acceptable limits. The assessment should also demonstrate the standard of existing defences. Where high standards of defence and low levels of flooding combined with low flow rates exist, development would not normally be resisted. Developers should consider flood proofing of properties, alternative uses of lower storey levels, appropriate raising of ground levels and sustainability of existing defences in their proposals. Mitigation to all development should follow the general principles for proposed risk management measures for development areas in section 21 of this SFRA.

Development within functional flood plain PPS25 Zone 3b

18.15 There are no areas within Blackpool that are considered as functional flood plains

Assessment of the Central Area (see Appendix 4)

18.16 The defined Inner Area boundary on the current Blackpool Local Plan includes all the main town centre, resort neighborhood and inner area residential neighborhoods which are the focus for future regeneration and potential redevelopment in the next 10-20 years.

18.17 No assessment is made of individual sites within this area – although it is noted almost the whole of this area is within flood zone 1 (low probability) including many of the key development sites including Talbot Gateway and Rigby Road.

Shoreline Management Plan

18.18 In order to prevent tidal inundation and coastal erosion the Council commenced a program of major sea defence and coastal protection works in 1981, with the recent works along the Central Promenade completed in 2009. These have been designed to prevent floods in a 1 in 200 year storm event.

18.19 The EA flood risk maps indicates that the whole of the central area is in Flood Zone 1, with the sea defences providing additional protection from any potential tidal inundation. At present the management policy set out in the SMP for Blackpool allows for the continued upkeep of the defences. No change is anticipated in the circumstances of Blackpool's heavily built up urban area, with the coastal defences maintained along the present promenade frontage. The remodeling and enhancements to the main central Blackpool seafront include five new headlands which effectively extend the urban promenade landscape seawards.

18.20 There have been some flooding incidents in the Central Area due to incapacity problems with the Public Sewerage System that have been aggravated by the operational philosophy of Manchester Square Pumping Station, the Coastal Transfer Main and Jameson Road Treatment Works, which are managed by United Utilities.

18.21 Redevelopment within Blackpool's Inner Areas includes the Rigby Road and Leisure Quarter sites. The impermeable surface areas of these sites however in so far as the concentration of surface water is concerned, is not likely to be radically affected as it is already mostly hard surfaced, and therefore there are no strategic flood risks associated with such regeneration to prevent development.

18.22 A flood risk assessment is required, as defined by footnote 20 on page 24 of the NPPF, which should identify and assess the risks from flooding to and from the development and demonstrate how these flood risks will be managed.

18.23 In accordance with the requirements of the Exception Test as discussed previously, an assessment of the residual risk as set out above assumes that any breach of the flood defences would potentially allow water into lands within zone 3a.

18.24 The requirements for the development of these sites and the Exception Test to be passed are that:

- a) It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risks.
- b) The development should be on developable previously developed land
- c) A flood risk assessment must demonstrate that the development will be safe without increasing flood risk.

Assessment of Sites Elsewhere within the Existing Urban Area

18.25 All sites being considered elsewhere within Blackpool for potential new development lie within either Flood Zones 1 or 2. Blackpool Council is committed to continuing to take a proactive approach incorporating, optimising and promoting SuDS, controlling discharges from watercourses and the provision of extra storage for surface water outside the sewerage network.

18.26 Consultation with United Utilities is again essential to enable Drainage Area Plan adjustments and the opportunity to reserve the relevant budgetary requirements.

18.27 Outside the Central Area there are five development sites, listed below, which are still within the existing urban area and that are included in this assessment.

Ryscar Way and Blackpool Technology Park (see Appendix 5)

Located in flood zone 1 – Low probability of flooding.

18.28 The northern area of the borough has a potential for flooding during high rainfall as this extensive catchment area discharges into the public sewer network which is entirely reliant on the operational efficiency of its discharge.

18.29 The Northern Area Culvert was installed 1960s to accommodate flows from wider potential development in northern and western areas with a lateral connection down Warren Drive to serve the north east area. Following post development capacity problems in 1980/90's, an extensive storm water storage tank was installed in parallel with the Warren Drive trunk sewer, together with a large penstock controlled storm water storage tank in Moor Park on the Northern Area Culvert, to accommodate surplus surcharge during extraordinary rainfall events and to comply with the requirements of the Coastal Waters Clean Up.

18.30 Despite this additional infrastructure two severe rainfall events, in 2000 and 2002, resulted in flooding to highways and properties but was attributable to operational failure.

18.31 Bathing Water constraints on the operating philosophy of Anchorsholme Pumping Station, the Coastal Transfer Main and Jameson Road Treatment Works managed by United Utilities together with the potential for Electrical and Mechanical failure, may still compromise storage capacities within the network and constant monitoring during severe rainfall events is essential to avoid a repetition of extensive flooding.

18.32 The capacity of the sewers for any potential development within these site areas would need to be considered in detail and appropriate mitigation measures taken.

18.33 These adjoining sites are in the North East of the borough and lay in Flood Zone 1. There are no known tidal or fluvial sources of flooding in the area or constraints on development.

Leys Nursery (see Appendix 5)

Located in flood zone 1 – Low probability of flooding

18.34 The area is towards the centre of the Borough and lies within Flood Zone 1. There are no known sources of tidal or fluvial flooding in the area or constraints on the development of this site.

Cornford Road (see Appendix 5)

Located in flood zone 1 – Low probability of flooding

18.35 This area in the south of the Borough lies within Flood Zone 1. There are no known sources of flooding or constraints on the development of this site. There is an existing surface water pumping station operated by United Utilities who should be consulted regarding any future proposals which may increase run-off to this station

Preston New Road (see Appendix 5)

Located in flood zone 1 – Low probability of flooding

18.36 This development area lies in the south east of the Borough within flood zone 1 on the EA Flood maps. There are no known sources of flooding in the area and as such there are no constraints on the development within the site.

Warren Drive (see Appendix 5)

Located partially in flood zone 2 – Medium probability of flooding

18.37 This site lies in the north of the Borough, and the current EA Flood maps show part of the site is located within Flood Zone 2, with the rest of the site defined as Flood Zone 1. While the existing defences mitigate the risk from direct tidal inundation, the continued risk from breach of the sea defences, stormwater flooding and from infrastructure failure cannot be ignored. This area is immediately adjacent to a flood susceptible infrastructure system, with two arterial infrastructures joining at the junction of North Drive and Warren Drive. The problems relate to the adjacent storage water storage tank on site and from the on-site watercourse network. Flood proofing of properties and alternative uses for ground floor rooms should be considered. Developers should seek opportunities to reduce the overall level of flood risk in the area through the layouts and forms of development and with the implementation of SuDS.

18.38 There is a risk from flooding due to ordinary watercourses by default, as many open watercourses discharge directly into public sewers. These surface water flows incur on the capacity of the public sewer system. When excessive rainfall occurs, this has the potential to cause flooding to highways, properties and land.

18.39 The lands at Warren Drive have existing planning permission for landscaped office development but also form part of a wider area allocated as 'urban greenspace' in the adopted Local Plan, where proposals for landscape renewal and enhancement will be pursued. Retention of the land as greenspace and increased planting would reduce run-off and help alleviate and further maintain adequate drainage capacity in the area.

18.40 NPPF and accompanying guidance also requires that the residual risk from a breach of the defences should be considered, with the areas within Flood Zone 2, by definition, those that would also be most susceptible to surface stormwater flooding in respect of excessive rainfall events. The risk of flooding within the area has been assessed for breaches in the coastal defences using the following assumptions:

- the seawall, which has recently being completed, will also be breached
- the breach will be able to be repaired very quickly, such as to arrest any further erosion
- no flooding mechanisms other than those used in the EA flood maps have been considered

18.41 Such a breach would allow flood water to enter the area currently shown as Flood Zone 2. Any proposed developments within these areas should have a site specific flood risk assessment taking account of the climate change allowances at the time.

Assessment of Development Sites outside of the Existing Urban Area

Mythop Road/Whyndyke Farm (see Appendix 5)

Located partially in flood zone 2 – Medium probability of flooding

18.42 The area is on the eastern fringe of the Borough and almost the whole of the site lies within flood zone 1 on EA flood maps, with a narrow area on the north east edge of the site shown in flood zone 2. There are no recorded flooding events on this site or known sources of flooding in the area. The watercourse system discharges out of the borough. Flows are co-extensive with an adjacent development area which culverts under Mythop Road and relies on its adequate maintenance. Increased surface water run off due to inevitably higher impermeability factors of development will

have to be taken into consideration together with careful evaluation of the outfall system. On-site mitigation measures and SuDS are required to control excess surface water run-off.

Marton Moss (see Appendix 5)

18.43 Marton Moss is identified in the Core Strategy as a strategic site for retention and enhancement. It proposes a 'neighbourhood planning approach' providing the community with the opportunity to directly determine the future for their area. The plan does not propose any housing on these lands unless this emerges through the neighbourhood planning process from the community, in which case it will be set out in a Neighbourhood Plan or the Local Plan Part 2: Site Allocations and Development Management Policies DPD.

18.44 The whole site is located in Flood Zone 1. Marton Moss is not a flood plain or washland, and is not at any significant risk from fluvial or tidal flooding. The main difficulty that needs to be resolved for any potential new development will be the drainage of surface water without causing flooding or pollution of the underlying aquifer or surface water (principally the Marton Mere system), and without sterilising valuable development land.

18.45 Historically, the position is:

- The southern area of Marton Moss was largely unsewered before 1930.
- In 1936 the Lennox Gate pumping station was built which subsequently reached its full capacity and was upgraded in 1995/6 in conjunction with the Coastal Waters clean up.
- In 1950/51 a land drainage system was implemented for the discharge of water for the whole of the Moss to the Eastern Interceptor at Highfield Road.
- In 1956 and 1963 first-time drainage schemes were constructed for existing and any new properties to be used in connection with viable agricultural/ horticultural holdings, with a series of Lift Pumping Stations providing discharge.
- In the 1970-1980s a scheme for the development of 32 hectares of land off Highfield Road was implemented. As the existing drainage system had insufficient capacity to accommodate the extra surface water run-off, a large storm retention tank, incorporating a separate foul pumping facility, was built to store these flows with a pumped discharge into the Eastern Interceptor in Highfield Road
- This development, together with the discharges from existing and limited permitted new properties, has resulted in the culverts and pumping stations being close to capacity and overloaded during exceptional rainfall events.
- The Council has consistently refused applications and allocated no further lands for development, with a key consideration, aside from any planning assessment of development need, being the absence of adequate drainage capacity for development. This is an issue both on site with regard to any proposed development land, and off-site with respect to the capacity of the existing sewerage network and Lennox Gate pumping station. The only recent extra demands placed on the system have been small or single house developments.

18.46 Development in the immediate vicinity of any watercourses could be susceptible to flooding and therefore building development should not be allowed within 10m of a watercourse. The level of flooding is only significant to localised problems and should not preclude wider development. Care should be taken to create SuDS during development to prevent watercourses and the receiving sewerage network from being inundated during exceptional rainfall.

19 EXISTING FLOOD DEFENCE INFRASTRUCTURE

Coastal Defence Assets

19.1 The total length of coastline within the Borough is defended from coastal erosion and tidal inundation through the use of hard defences. Section 10 discusses the defences in detail. The improvement works to date have all followed guidelines at the time of their design to allow for climate change and sea level rise with the current works allowing for a 4mm rise in sea level per year and 10% increase in wave height for the design life of 100 years. Any future designs will take into account the current precautionary sensitivity ranges at the time of design.

19.2 The Community and Environmental Services Directorate of the Council maintain the coastal defences in Blackpool. A brief description for each of the defence lengths is summarised below:

Figure 11: Blackpool's Coastal Defences

Management Unit	Zone	Life Expectancy	Description
B2.2	Starr Gate	>20	Flood Gates
B2.2	Starr Gate to Sandcastle	>30	Seabee revetment with wave return wall
B2.2	Sandcastle to Houndshill	>50	Stepped revetment with berm and wave return wall completed in the last decade
B2.3	Houndshill to Metropole	>50	Stepped revetment with berm and wave return wall completed in the last decade
B2.3	Metropole to Gynn Square	>10	Concrete apron with vertical wall and splash wall
B2.3	Gynn Square to Boating Pool	>10	Concrete apron with partially recurved wall and splash wall
B2.3	Boating Pool	>10	Concrete apron with partially recurved wall and parapet wall
B2.3	Boating Pool to Duchess Drive	>10	Concrete apron with partially recurved wall and parapet wall
B2.3	Duchess Drive to Miners Convalescence home	>10	Concrete apron with partially recurved wall and parapet wall
B2.3	Miners Convalescence home to Red Bank Road	>20	Concrete apron with partially recurved wall and parapet wall
B2.3	Red Bank Road	>20	Concrete apron with partially recurved wall and parapet wall
B2.3	Red Bank Road to Sandhurst Avenue	>20	Concrete apron with partially recurved wall and parapet wall
B2.3	Sandhurst Avenue to Tram Station	>10	Concrete apron with partially recurved wall and parapet wall
B2.4	Tram Station to Slade in Anchorsholme Park	>50	This area is currently under construction and will consist of sloped revetment with a berm and wave return wall
B2.4	Slade Anchorsholme Park to Slade south of Anchorsholme PS	>50	This area is currently under construction and will consist of

			sloped revetment with a berm and wave return wall
B2.5	Slade south of Anchorsholme PS to Buckden Close	>50	This area is currently under construction and will consist of sloped revetment with a berm and wave return wall
B2.5	Buckden Close to Authority Boundary	>50	This area is currently under construction and will consist of sloped revetment with a berm and wave return wall

Overtopping of Existing Defences

19.3 Overtopping of the existing defences has been considered and it is concluded that it is not significant in relation to breach failure. The coastal defences have been assessed within the coastal strategy as described above.

Land Drainage Assets

19.4 Land Drainage Assets in the Borough consist of both culverted and open watercourses. There are seven pumping stations within the Borough that deal with surface water. The principle ones are situated at Marton Mere, which is owned and operated by the Council, and on Progress Way at Newhall Avenue which is operated by the Council on behalf of Lancashire County Council. They are subject to Routine and Reactive Maintenance Contracts and are monitored by 24 hour telemetry systems. Two smaller stations are at Mossom Lane and Carleton Cemetery, both owned and operated by the Council. Two further surface water pumping stations are on Highfield Road and Cornford Road and are owned and operated by United Utilities and have a separate incorporated foul pumping facility.

19.5 There are a further 22 other pumping stations owned and operated by United Utilities, varying in size and criticality, which handle combined sewage which includes a considerable percentage of the Borough's surface and ground water to be passed on via the Coastal Transfer Main to a Treatment Works at Jameson Road, Fleetwood.

19.6 The Council's Land Drainage (open watercourse) assets will discharge to one or the other of the above installations and the schedules are set out in Appendix 6. Incidental watercourses attached to many building assets are not included i.e Schools, Offices etc.

20 RECOMMENDED POLICY FOR DEVELOPMENT AREAS – SEQUENTIAL TEST

20.1 Figure 12 sets out recommended policies for the development areas.

Figure 12: Recommended Policy

Area	Recommended Policy (in respect of Flood Risk issues only)
Central Area	<p>Developments of all types should be permitted in this area, which lies within Zone 1 of the EA Flood Map.</p> <p>All proposed development of 1 hectare or greater in Flood Zone 1 should be supported by a Site-Specific Flood Risk Assessment (FRA).</p>

Area	Recommended Policy (in respect of Flood Risk issues only)
	<p>Consideration to emergency warning and response including safe access routes should be given in all cases. As this area relies on flood and erosion protection consideration should be given to the policy within the Shoreline Management Plan as to the long term sustainability of the defence.</p> <p>The use of Sustainable Drainage Systems (SuDS) should be considered in conjunction with the capacity of the receiving sewers to ensure that containment during exceptional rainfall is controlled.</p>
Ryscar Way/ Blackpool Technology Park	Development of all types should be permitted within this area, which lies within Flood Zone 1. All proposed development of 1 hectare or greater in flood zone 1 should be supported by a FRA. The use of SuDS should be considered, in conjunction with the capacity of the receiving sewers, to ensure that containment during exceptional rainfall is controlled.
Leys Nursery Site	Development of all types should be allowed within this area, which lies within Flood Zone 1 All proposed development of 1 hectare or greater in Flood Zone 1 should be supported by a FRA. Consideration to SuDS and surface water runoff should be given in all cases.
Warren Drive	Parts of this site lie within Flood Zone 2 on the EA flood risk map, however the existing defences mitigate the risk from tidal inundation. A continued residual risk from a breach of the defences, surface water flooding and infrastructure failure should be considered and which may require some extra measures on finished floor levels and flood proofing. FRAs will be required to support all developments showing that a breach scenario has been considered using climate change allowance of the time. Consideration of alternative uses for ground floor rooms may be advisable. Maintenance and integration of watercourses and consideration of SuDS in conjunction with the capacities of receiving sewers and watercourses should be mandatory for areas within Flood Zone 2.
Cornford Road	There are no tidal flood issues in this site which is in Flood Zone 1, therefore there should not be any restriction on tidal flooding grounds for development of all types within this area, however the enforced maintenance and integration of peripheral watercourses is critical to avoid historical and periodic inundation of surface water. All proposed developments of 1 hectare or greater in Flood Zone 1 should be supported by a FRA. Technical Assessment of surface water runoff should be given in all cases to prevent inundation of the on-site surface water pumping station and consideration of SuDS or on-site retention must be given in all cases.
Preston New Road	There are no flood issues in this site which is in Flood Zone 1 therefore there should not be any restriction on flooding grounds for development of all types within this area. All proposed development of 1 hectare or greater in flood zone 1 should be supported by a FRA. The technical consideration of SuDS and surface water runoff should be given in all cases.
Mythop Road/Whyndyke Farm	<p>Developments of all types should be allowed within this area, with all proposed development of 1 hectare or greater in Flood Zone 1 supported by a FRA. Enforced maintenance and integration of watercourses and outfalls is mandatory. Consideration should be given to the use of SuDS in all cases, due to the potential extra surface water run off caused by increased impermeability factors.</p> <p>The increased flood risk implications for the sliver of land on the extreme north east edge of the site (within Flood Zone 2) should be mitigated against – potentially most readily by the SuDS approach, and by excluding this small area on the edge of the site from any built development.</p>
Marton Moss	Longstanding sea defences mean there are realistically no tidal flood issues on this site therefore there should not be any restriction on tidal flooding grounds for potential development within this area which is in Flood Zone 1. The main flood risk at Marton Moss

Area	Recommended Policy (in respect of Flood Risk issues only)
	relates to surface water flooding from and during exceptional rainfall events and infrastructure capacity and failure. Enforced maintenance and integration of all watercourses and outfalls should be mandatory. Consideration should be given to SuDS, due to extra surface water runoff caused by increased impermeability factors, should be given in all cases. All developments of 1 hectare or greater in Flood Zone 1 should be supported by a FRA which should demonstrate that appropriate mitigation measures are provided and that a breach scenario has been considered using climate change allowances of the time. To address the risk from Public Sewerage Network Operational Failure non-return devices to incidental connections should be considered. There are nominated items of Main River in the area which have been incorporated in the existing infrastructure.

21 APPROPRIATE RISK MANAGEMENT MEASURES

Exception Test Requirements

21.1 In areas at risk from river or sea flooding, preference should be given to locating development in Flood Zone 1. If, following the application of the Sequential Test, and consistent with wider sustainability objectives, it is not possible for development to be located in zones of lower probability of flooding, the Exception Test may be applied which provides a method of managing flood risk while still allowing necessary development to occur.

21.2 The Exception Test is only appropriate for use when there are large areas in flood zones 2 and 3, where the Sequential Test alone cannot deliver acceptable sites, but where some continuing development is necessary for wider sustainability reasons.

Residual Flood Risk

21.3 Residual flood risk at any of the proposed sites can be managed in a number of ways. It is recommended that all new developments be considered alongside existing developments in the area. This is necessary both in terms of preventing increased to existing properties and also to reduce the overall flood risk by taking opportunities to reduce flood risk for all. It is therefore proposed that the following hierarchy of measures is taken to reduce flood risk in the area:

- New development sites are constructed in areas of least risk, taking account of acceptability from national and local planning policy.
- Ensure that infrastructure designed to safeguard against flooding is in good operable condition and is inspected regularly.
- Provide a strategy and funding to maintain and improve flood protection infrastructure taking into account future trends such as climate change.
- Provide site-specific mitigation measures. All proposed strategic areas of new Greenfield development must be above the 7.0 metres contour. Any new development within zones 2 and 3 areas will require raising of development to acceptable ground levels and properties to be flood proofed against low levels of flooding.
- Focusing all development classed as “most vulnerable” in the NPPF to flood zone 1 sites.
- Provide sufficient warning and information to people at risk to allow them to take appropriate action.

- Provide sufficient planned emergency response and evacuation.

21.4 To demonstrate that appropriate mitigation measures have been taken it is anticipated that modelling work should be undertaken as part of any future development proposals taking into account this study and other relevant studies. The modelling work should inform FRA which will be required for all developments. FRAs should also be considered for sites where its development has the potential to increase the flooding risk to adjacent areas.

Mitigation Measures for Specific Sites

General comment

21.5 There are now a number of design features that can be incorporated and developers must assess the impact that the development may have on flooding or risk of flooding elsewhere. Any development proposals must prove that measures have been taken to deal with any potential flooding but causing minimum environmental effect. It is essential to ensure that new development will not be liable to, or to increase, the risk of flooding. As most of the watercourses in the Borough have limited spare capacity it must be shown that any new development is drained in accordance with the NPPF and accompanying Guidance.

21.6 Consultation with the Sewerage Undertaker (United Utilities) for adjustments to the Drainage Area Plan and forecasted budgetary requirements is essential to provide necessary improvements to the adjacent sewerage networks and ensure sufficient capacity of the receiving sewers.

21.7 New buildings, car parking areas and highways radically increase the impermeable factor of undeveloped land and reduce its capacity to absorb surface water. New developments will only be permitted where there is adequate network drainage capacity and the developer should seek to minimise the concentration of surface water run-off by the incorporation of SuDS.

21.8 Some run-off can be treated at source and involves a variety of methods such as the provision of open vegetated sections (gardens, planted areas) where surface water percolates into the ground thereby reducing run-off or, where ground conditions permit, infiltration areas / soakaways may be introduced to mimic natural drainage. Before these are considered a percolation test is required to assess the suitability of the ground and sub-strata for such installations.

21.9 By following Government guidance on development in flood risk areas the Council, acting as the LPA, are obliged to ensure that such risks are minimised. This includes measures for ensuring suitable surface water controls are incorporated to contain and control excess surface water run-off. Use of Standard Practice contained in CIRIA SuDS Manual should be referred to and adopted where required.

21.10 The following **mitigation measures** in figure 13 must be considered for each site in order for the development to proceed:

Figure 13: Mitigation measures

Area	Mitigation Measures
Central Area.	<ul style="list-style-type: none"> ▪ Any development within this area should also take into account the policy outlined in the Shoreline Management Plan and demonstrate the long-term sustainability of the site. Where appropriate developers should make contributions to the maintenance and required improvement of existing coastal defences. A FRA should be undertaken for each development in excess of 1 hectare.

	<ul style="list-style-type: none"> ▪ Any development within the minority part of the central area within the zone 3a area on the EA Flood Map should be supported by a FRA, with consideration given to the appropriate raising of threshold levels and flood proofing against flooding. ▪ Refer to General Comment
Ryscar Way/Blackpool Technology Park	<ul style="list-style-type: none"> ▪ Site-specific Flood risk assessment ▪ Refer to General Comment
Leys Nursery Site	<ul style="list-style-type: none"> ▪ Site-specific Flood risk assessment ▪ Refer to General Comment
Cornford Road	<ul style="list-style-type: none"> ▪ Site-specific Flood risk assessment ▪ Refer to General Comment
Preston New Road	<ul style="list-style-type: none"> ▪ Site-specific Flood risk assessment ▪ Refer to General Comment
Warren Drive	<ul style="list-style-type: none"> ▪ Site-specific Flood risk assessment ▪ Special consideration to extra Flood risk for network failure ▪ Refer to General Comment
Mythop Road	<ul style="list-style-type: none"> ▪ Site-specific Flood risk assessment ▪ The Mythop Road site is not currently in a Flood risk area but is undeveloped. ▪ Regular maintenance of watercourses and outfalls is essential. ▪ Refer to General Comment
Marton Moss Sites	<ul style="list-style-type: none"> ▪ All the sites located in the Marton Moss area, according to the July 2009 flood risk map, are located in flood zone 1. There are no flood risk issues at this site so developments should not be restricted in this area on flood risk grounds provided the following issues are considered in the submission: <ul style="list-style-type: none"> - A FRA should be carried out informed by modelling to support the findings. - Refer to General Comment ▪ Surface water flooding may potentially be an issue in the Marton Moss area, therefore it may be appropriate that: <ul style="list-style-type: none"> - Modelling should be undertaken to inform a FRA for any development. The model must demonstrate that developments would not increase the risk of flooding to existing properties.

APPENDIX 1 – Relevant Local Plan Policies

BLACKPOOL LOCAL PLAN: POLICY NE10 FLOOD RISK

Development in areas at risk from flooding (including tidal inundation) will only be permitted where appropriate flood alleviation measures already exist or are provided by the developer. Developments will not be permitted which would increase run-off that would overload storm drains or watercourses. Sustainable drainage systems will be used in new developments unless it can be demonstrated to the Council's satisfaction that such a scheme is impractical.

8.49 It is essential to ensure that new development will not be liable to or increase the risk of flooding. Government Guidance requires local planning authorities to adopt a risk based sequential approach to proposals for development taking account of the area liable to flooding, its likelihood and extent. In accordance with PPG25 (Development and Flood Risk) applications in areas at risk of flooding should be accompanied by an appropriate Flood risk assessment, which complies with Appendix F of PPG25.

8.50 The watercourses in Blackpool are incapable of accepting any increase in surface water and it therefore needs to be ensured that any new development is drained in accordance with the appropriate guidance. There have been longstanding drainage constraints on the Moss. In the north of the Borough, despite earlier improvements, there has been storm water flooding in residential areas.

8.51 All built development increases Flood risk by preventing water from soaking into the ground and thus increasing run off. New developments will be permitted where there is adequate drainage capacity and should seek to minimise surface water run-off. Sustainable drainage systems (SUDS) can help to reduce the impact of built development while traditional drainage techniques using underground pipes increase the rate of run-off. SUDS involve techniques which control the rate of surface water run-off as close to its source as possible, slowing the water down and allowing it to sink into the ground. Physical elements can include basins, ponds, wetlands, permeable areas and swales (very shallow channels). Consultations will be undertaken with the EA on all relevant proposals as appropriate.

8.52 To alleviate problems of seawater flooding, the Council commenced a massive programme of sea defence and coast protection works in 1981, planned for completion in 2008, covering the length of the Promenade from Anchorsholme to Starr Gate. The next section of work covers the core resort frontage area between North and South Piers. With rising sea levels and potential climate change, it will be important to ensure the maintenance and renewal of the sea defences, with much emphasis now also on improving the appearance and environmental quality of the seafront as a mainstay of the resort's tourism offer.

8.53 Flood Zones showing those areas likely to be at risk of flooding have been prepared by the EA and are to be included in a supplementary planning document.

Water Management

5.1 **Blackpool is an area of relatively flat, low-lying land that is protected from coastal erosion and tidal inundation by modern sea defences and a number of smaller inland defences. In general, risk of flooding from rivers (fluvial) and coastal waters (tidal) across the Borough is relatively low; however, there are known issues in relation to surface water flooding, the capacity of the combined sewer network and bathing water quality.**

5.2 **The risk of flooding is influenced by physical factors such as the relief of the land, but also factors such as climate change and human activities. Rising sea levels and more frequent and intense storm events are increasing the risk of flooding, particularly in a coastal location such as Blackpool. It is important that any new development is appropriately flood resilient and resistant, provides necessary protection for existing and future users, and will not increase the overall risk of flooding.**

CS9: Water Management

1. To reduce flood risk, manage the impacts of flooding and mitigate the effects of climate change, all new development must:
 - a. Be directed away from areas at risk of flooding, through the application of the Sequential Test and where necessary the Exception Test, taking account of all sources of flooding;
 - b. Incorporate appropriate mitigation and resilience measures to minimise the risk and impact of flooding from all sources;
 - c. Incorporate appropriate Sustainable Drainage Systems (SuDS) where surface water run-off will be generated;
 - d. Ensure that there is no increase in the rate of surface water run-off from the site as a result of development;
 - e. Reduce the volume of surface water run-off discharging from the existing site in to the combined sewer system by as much as is reasonably practicable;
 - f. Make efficient use of water resources; and
 - g. Not cause a deterioration of water quality.
2. Where appropriate, the retro-fitting of SuDS will be supported in locations that generate surface water run-off.

5.3 The National Planning Policy Framework and Planning Practice Guidance states new development should be directed away from areas at risk of flooding from all sources, including tidal, fluvial, surface water, sewer, groundwater flooding and reservoir failure.

5.4 The main risks of flooding in Blackpool are from surface water and capacity constraints in the sewer network. The combined sewer system handles both rainwater and sewage and can be overloaded during periods of prolonged heavy rain causing the system to discharge excess rainwater and sewage into the sea. Maintaining bathing water quality, while keeping the town safe from flooding, is a key priority for the council, who are working with other public and private sector organisations to ensure that this is the case.

5.5 The European Union's revised Bathing Water Directive (2006/7/EC) came into force in March 2006 and has the overall objective to protect public health and the environment by improving the quality of bathing waters. The revised directive has more stringent water quality standards, a stronger beach management focus and new requirements for the provision of public information. It is therefore important that any new development does not cause deterioration in water quality which could impact on the Fylde Coast bathing waters. There are eight designated bathing waters along the Fylde Coast, with half of these located off the coast of Blackpool. The Fylde Peninsula Water Management Group, established in 2011 and chaired by Blackpool Council, has developed a 10-point action plan that sets out the work that is needed to deliver long term improvements to bathing water quality across the Fylde Peninsula.

5.6 The Fylde Peninsula Water Management Group is a partnership comprising the Environment Agency, United Utilities, Blackpool Council, Wyre and Fylde Borough Councils, Lancashire County Council and Keep Britain Tidy. The partnership aims to improve coastal protection, improve the quality of the Fylde Coast's bathing waters and beaches, and reduce the risk of surface water flooding.

5.7 Further information on the Fylde Peninsula Water Management Group, bathing water quality, water supply, and surface and wastewater is provided in the Blackpool Infrastructure and Delivery Plan.

5.8 Some areas of Blackpool suffer from flash flooding when heavy storms generate high volumes of surface water that can rapidly increase the flow in a combined sewer until the volume becomes too much for the local drainage network. Combined sewer overflows act like safety valves, preventing flooding by releasing excess flows into streams, rivers or seas. These spills occur under wet conditions and can reduce the quality of bathing water. Such spills are one of a number of sources of pollution that have in the past contributed to the failure of bathing water quality standards along the Fylde Peninsula.

5.9 The number of spills can in part be mitigated by reducing hard landscaping to enable rainwater to drain naturally into the ground through the use of appropriate Sustainable Drainage Systems (SuDS) and by incorporating water efficiency measures in developments to reduce the amount of run-off and wastewater that enters the public sewerage system. SuDS are one of the most effective ways of preventing local sewers from becoming overloaded. SuDS reduce the volume and peak flow of surface water in the sewer network by allowing rain water to drain into the ground (infiltration SuDS) and delaying the flow of water using ponds, swales, green roofs and vegetation (attenuation SuDS). Design measures may also help to reduce the risk of flooding, such as the layout and form of development and the inclusion of green infrastructure which can slow the rate at which water reaches the ground through infiltration and interception.

5.10 It is envisaged that the use of SuDs on new development will become mandatory within the plan period following the commencement of Schedule 3 of the Flood & Water Management Act 2010. Blackpool Council, as Lead Local Flood Authority, will become the SuDS Approval Body and will ultimately have a responsibility for approving and adopting the surface water drainage systems on new developments.

5.11 Some areas of Blackpool also have problems with high groundwater and so it is important that new development does not increase the water table in adjacent areas by preventing drainage or by incorporating inappropriate infiltration SuDs.

5.12 To reduce the risk of flooding it is important that new development does not add more surface water to the sewer network. Where possible, developers are also encouraged to go further by taking opportunities to reduce surface water run-off rates from previously developed sites by as much as is reasonably practicable. On greenfield sites, applicants will be expected to demonstrate that the current natural discharge solution from the site is at least replicated. On previously developed sites, applicants should target a reduction of at least 30% in surface water discharge, rising to a target of 50% in critical drainage areas.

5.13 Landowners and developers should investigate every option before discharging surface water into the sewerage network, however where necessary surface water should discharge in the following order of priority:

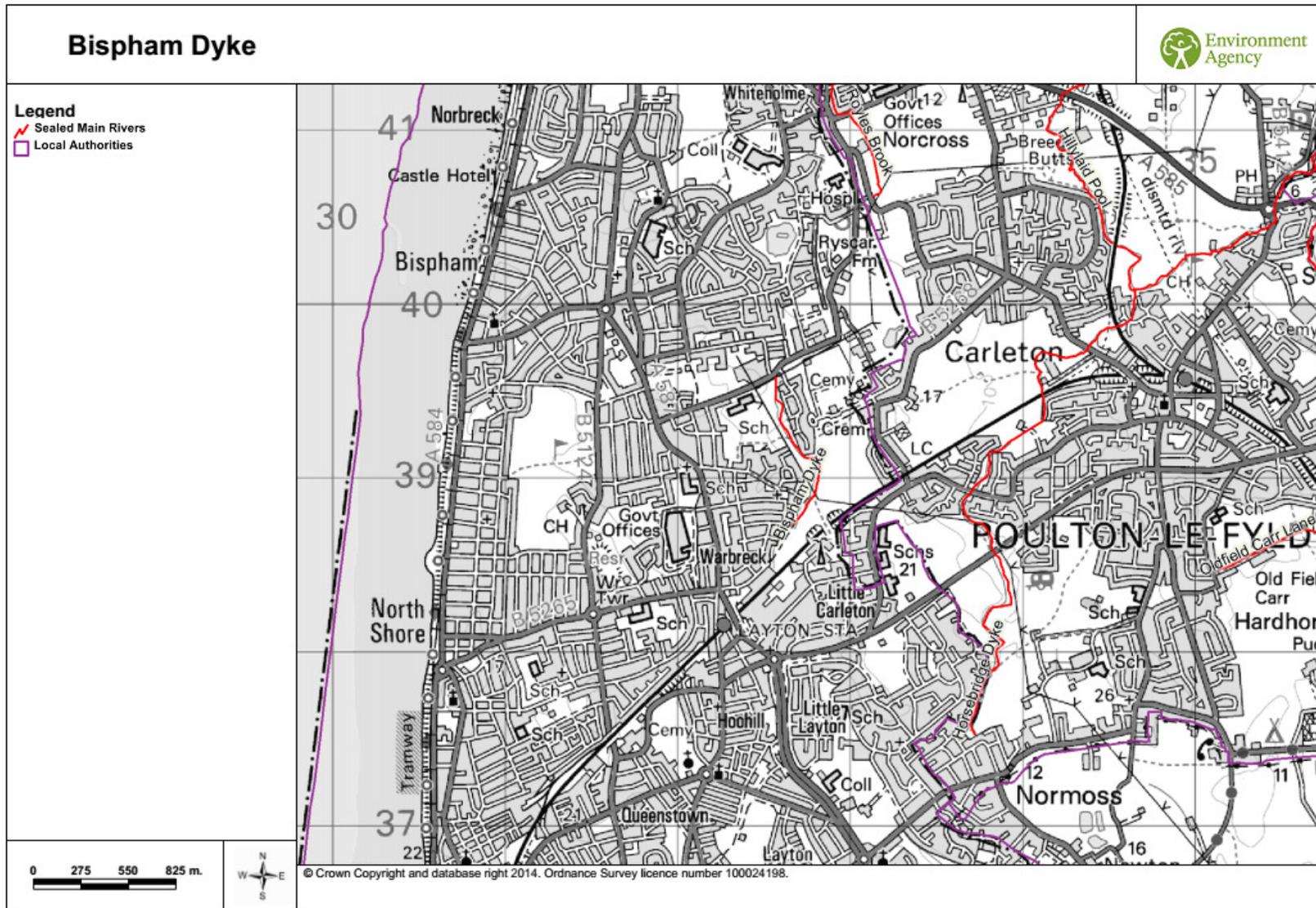
- A soakaway or some form of infiltration system (using sustainable urban drainage principles); or
- An attenuated discharge to the watercourse (a discharge to groundwater or watercourse may require consent of the Environment Agency); or
- As a last resort, an attenuated discharge to the combined sewer system.

5.14 Landowners and developers are encouraged to undertake early engagement with United Utilities and the Environment Agency to limit the impact of surface water on existing infrastructure and to most appropriately manage the impact of growth. To support applications landowners/developers should produce drainage strategies for each phase of the proposed development in agreement with the Local Planning Authority, Environment Agency and United Utilities, to ensure drainage infrastructure is delivered in a holistic and co-ordinated manner.

5.15 In addition to limiting discharges from new developments, there is also a need to reduce surface water run-off flows from existing development. Retrofitting SuDS is a priority of the Fylde Peninsula Water Management Group Action Plan, therefore measures to retrofit SuDS where appropriate will be supported by the Council.

5.16 The Council and its partners are preparing a number of strategies and plans to provide guidance on managing flood risk and the use of sustainable drainage systems, rain and grey-water storage and green infrastructure in conjunction with conventional drainage systems, to mitigate surface water run-off. This includes the Blackpool Surface Water Management Plan, Lancashire and Blackpool Flood Risk Management Strategy, and a Fylde and Blackpool Drainage Strategy.

APPENDIX 2 – Main River Locations



Main Dyke



Legend

- Sealed Main Rivers
- Local Authorities



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Moss Sluice and Wilding Lane



Legend

- Sealed Main Rivers
- Local Authorities



0 275 550 825 m.



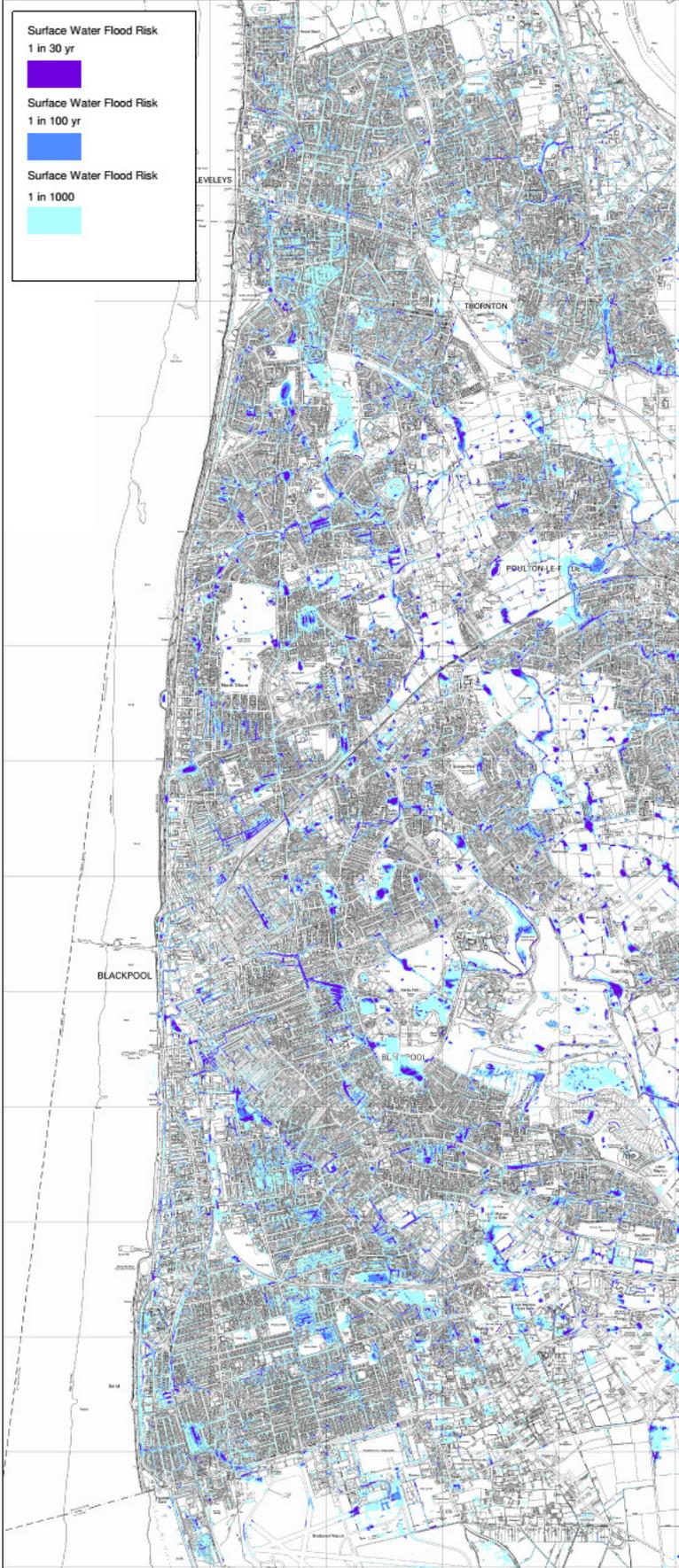
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APPENDIX 3 – EA Flood Risk Map



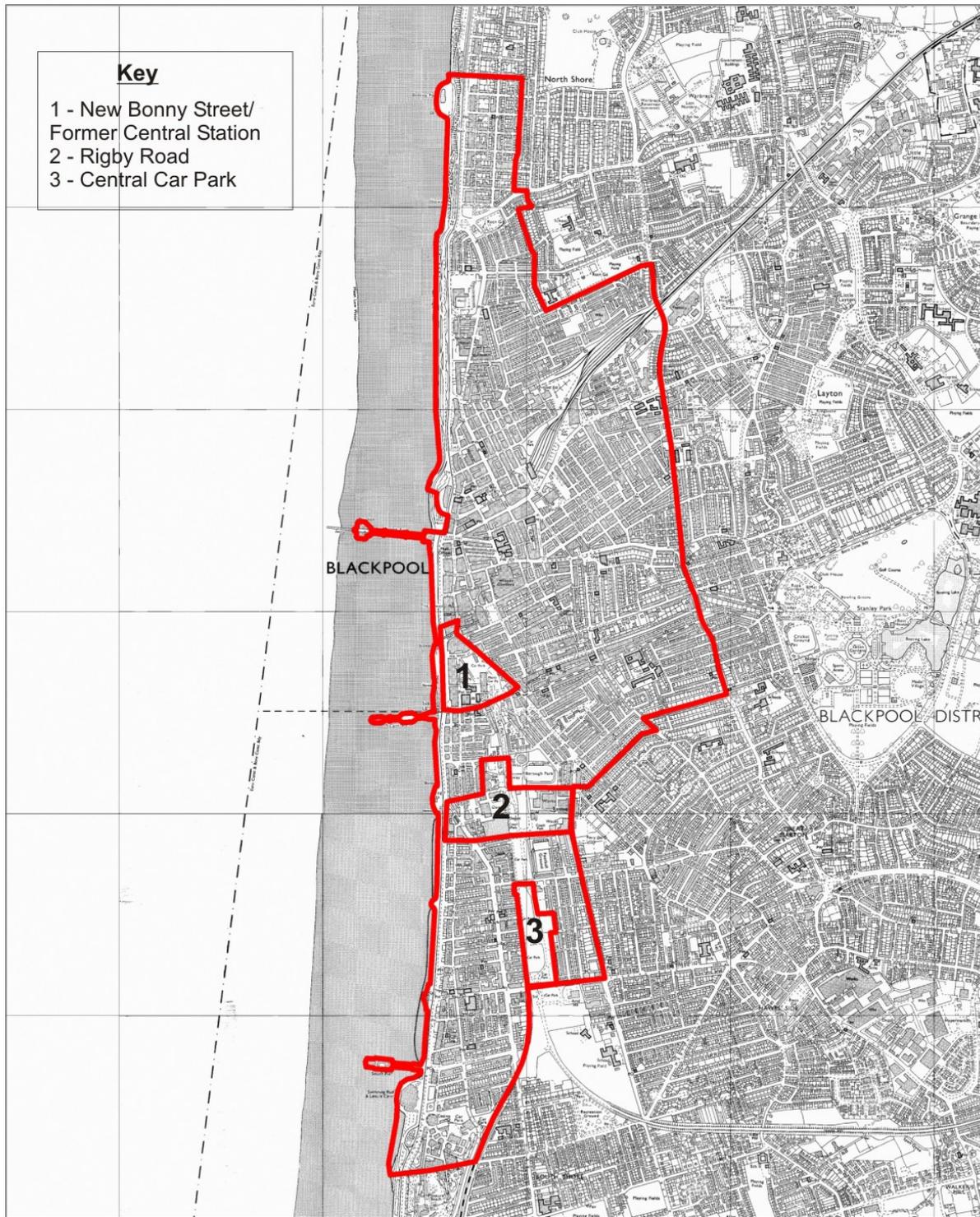
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APPENDIX 4 – Surface Water Flood Risk



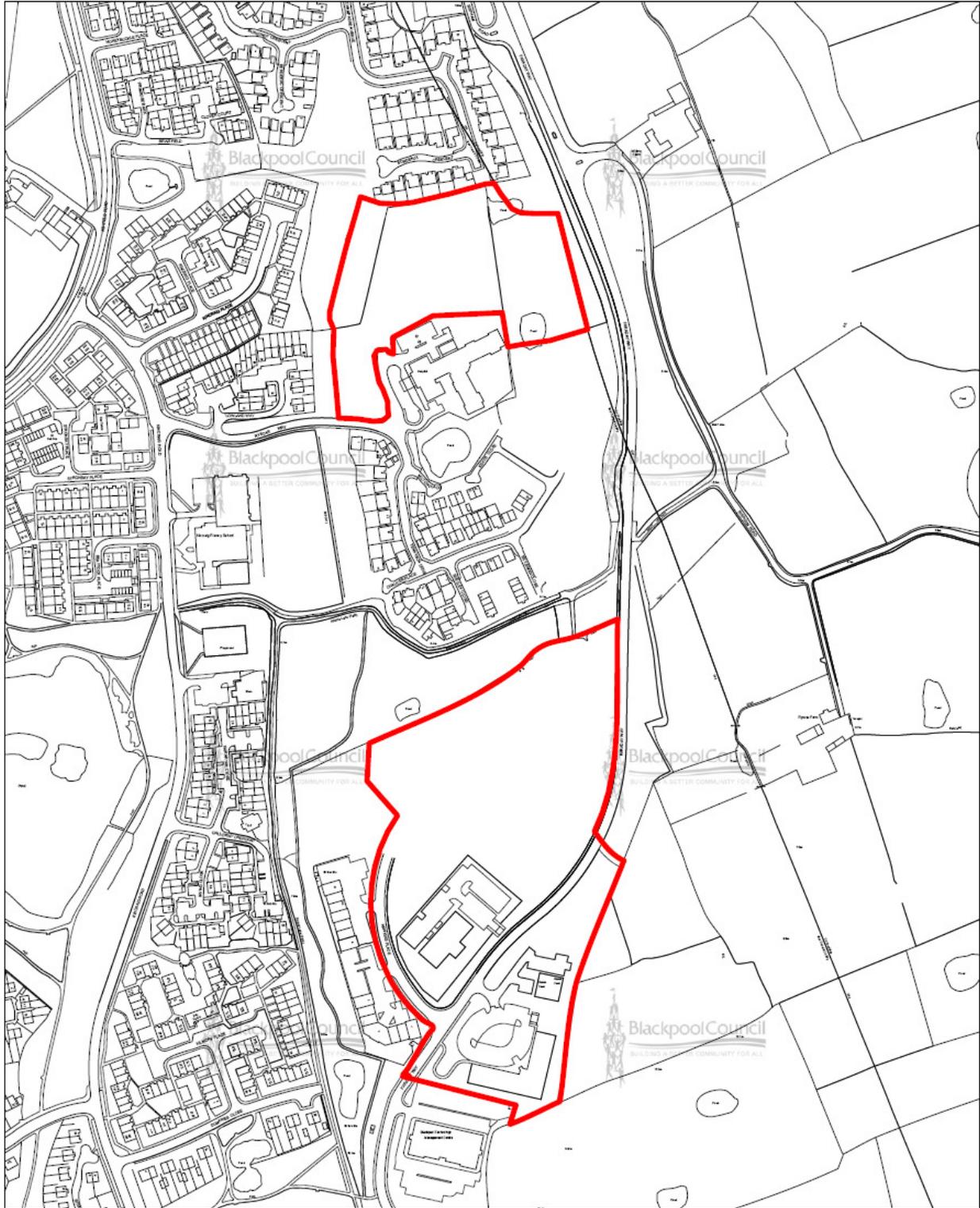
APPENDIX 5 - Potential Development Sites

Plan 1 Central Area



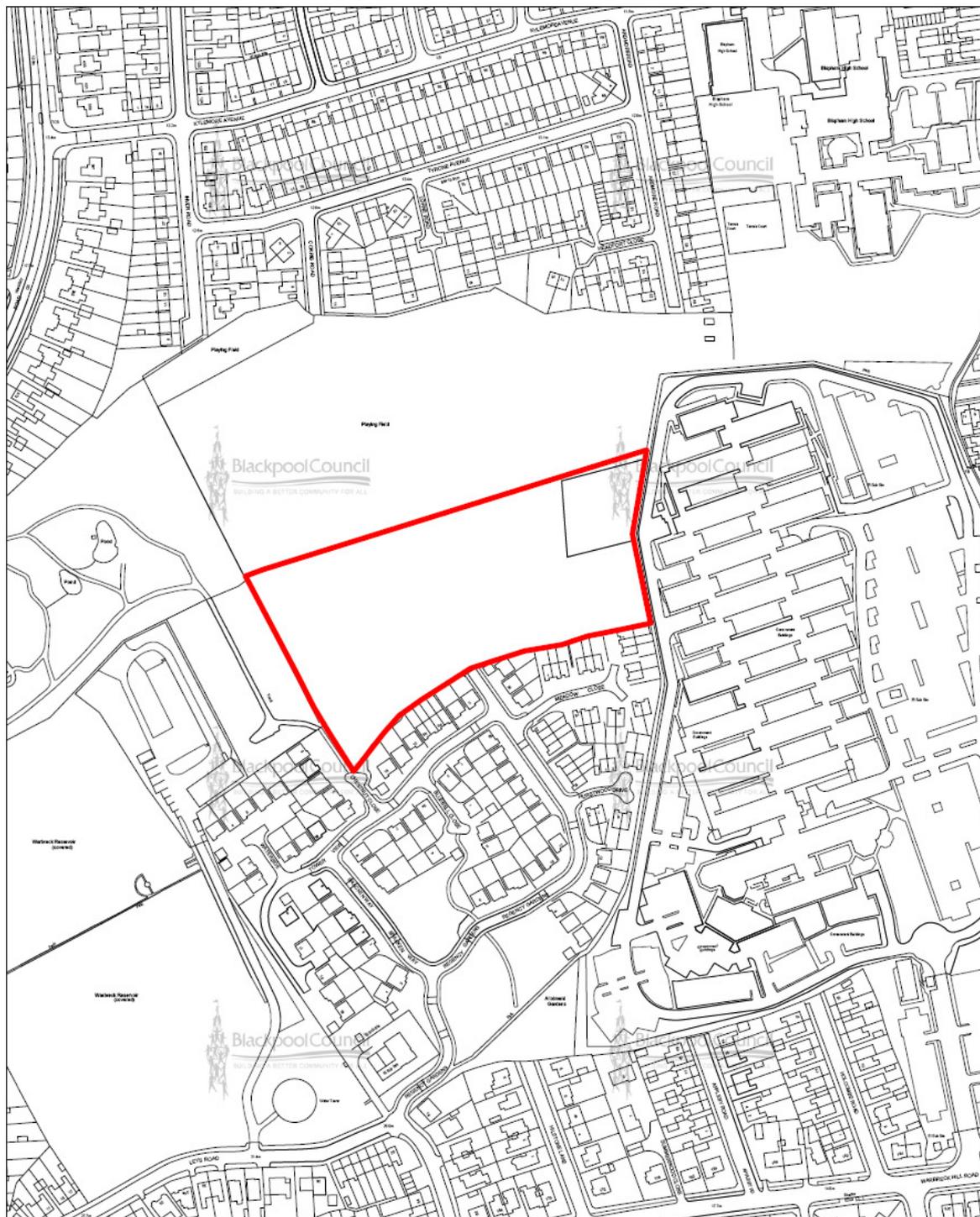
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Plan 2 Ryscar Way and Blackpool Technology Park



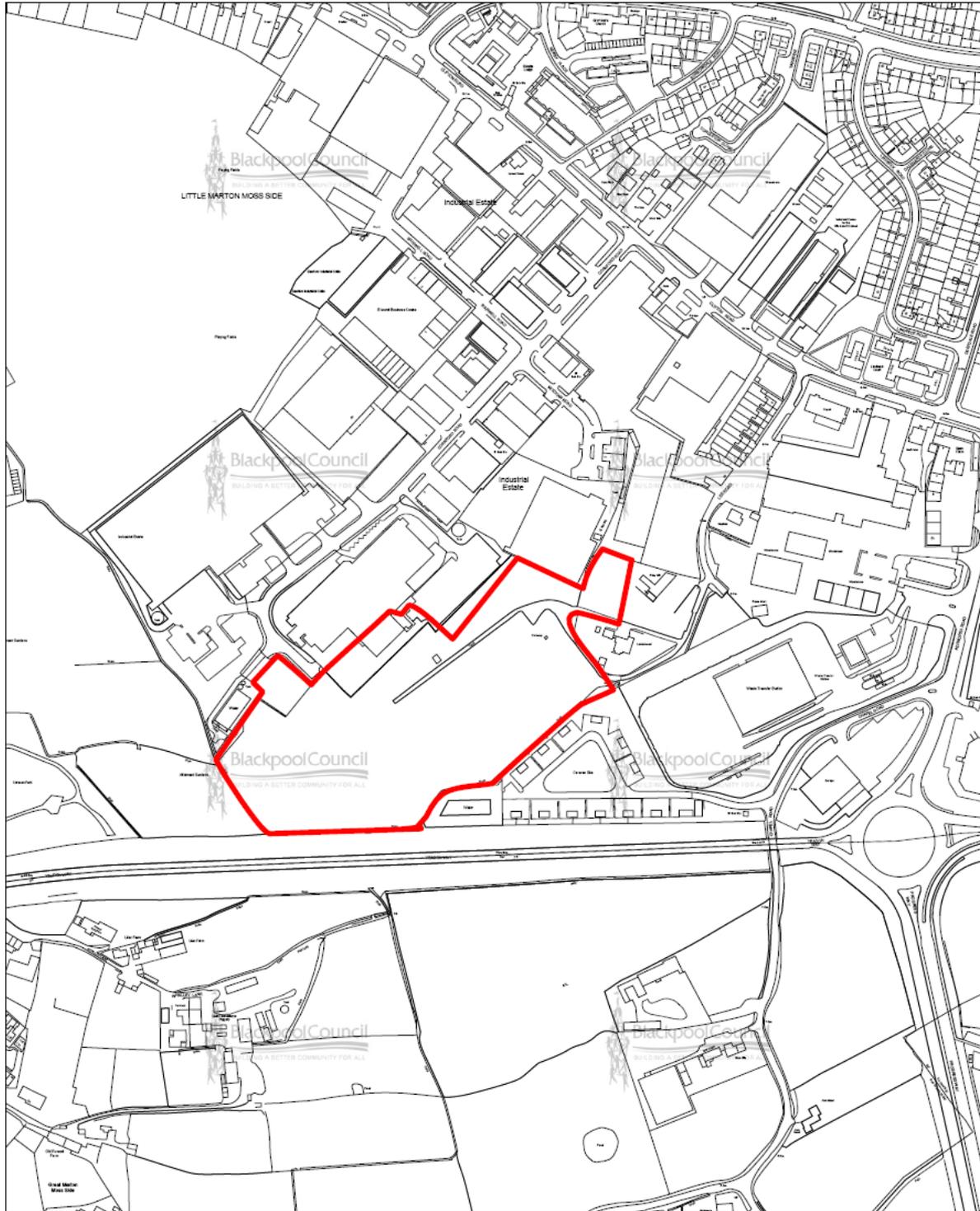
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Plan 3 Leys Nursery



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Plan 4 Cornford Road



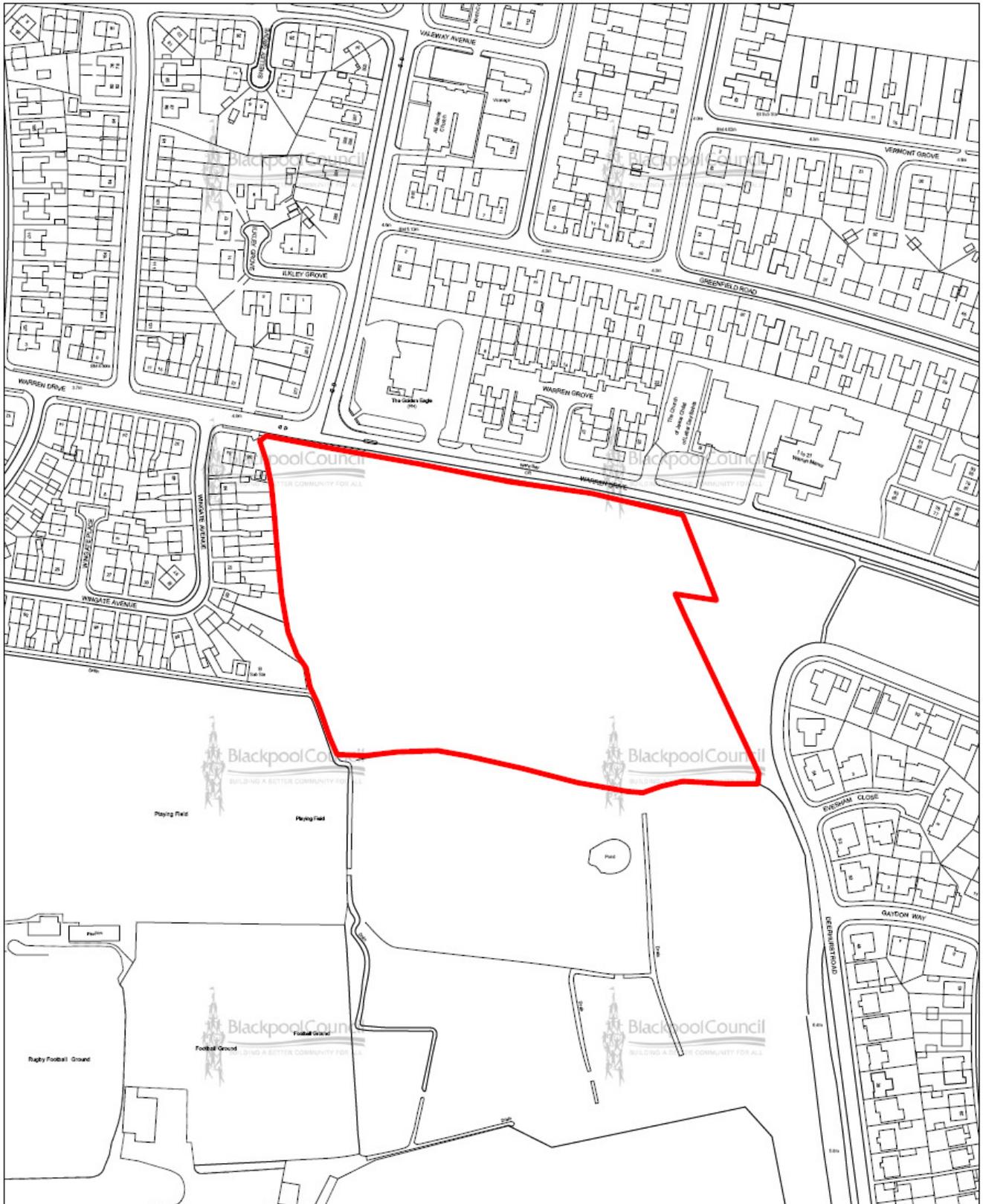
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Plan 5 Preston New Road/NS&I Site



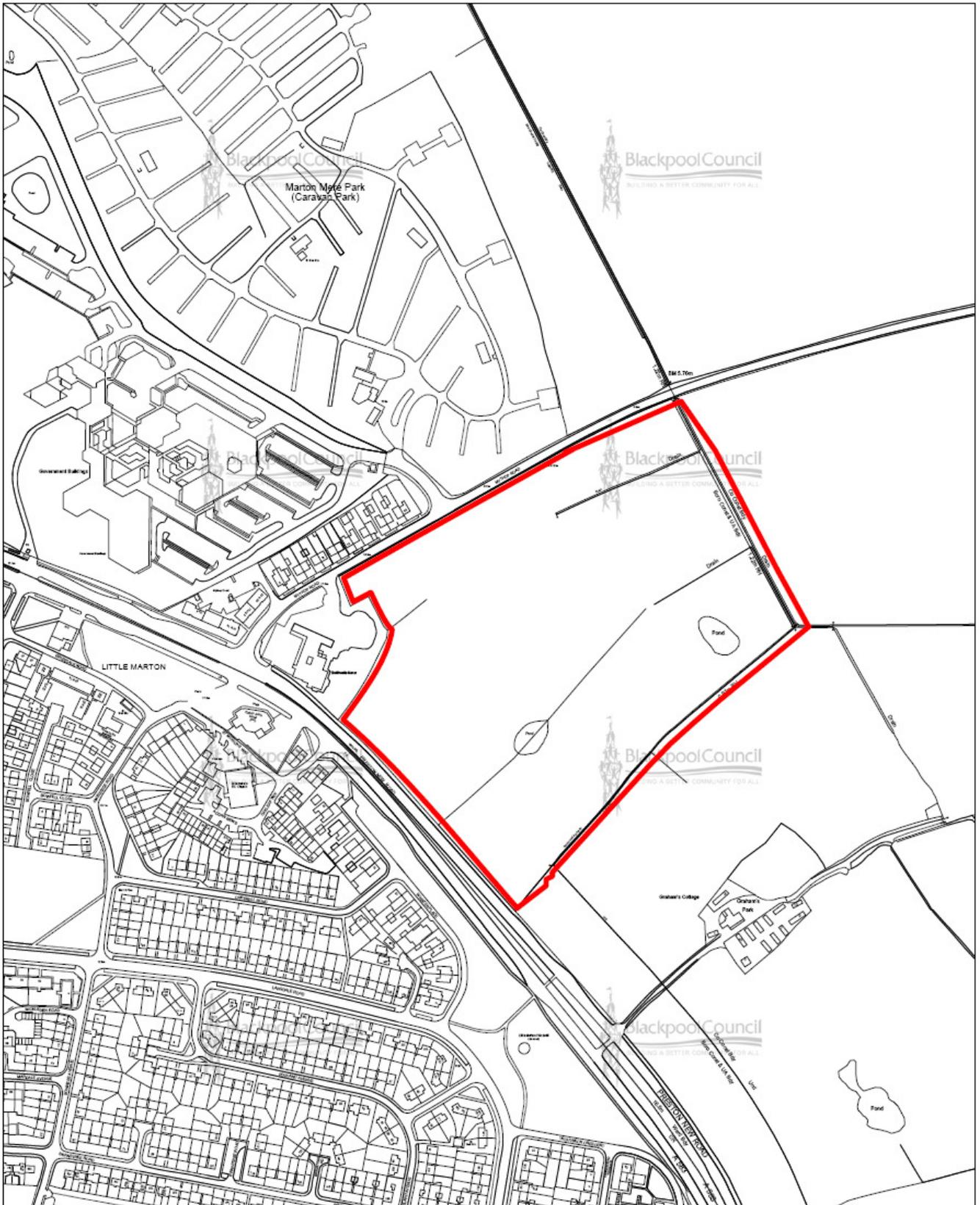
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Plan 6 Warren Drive

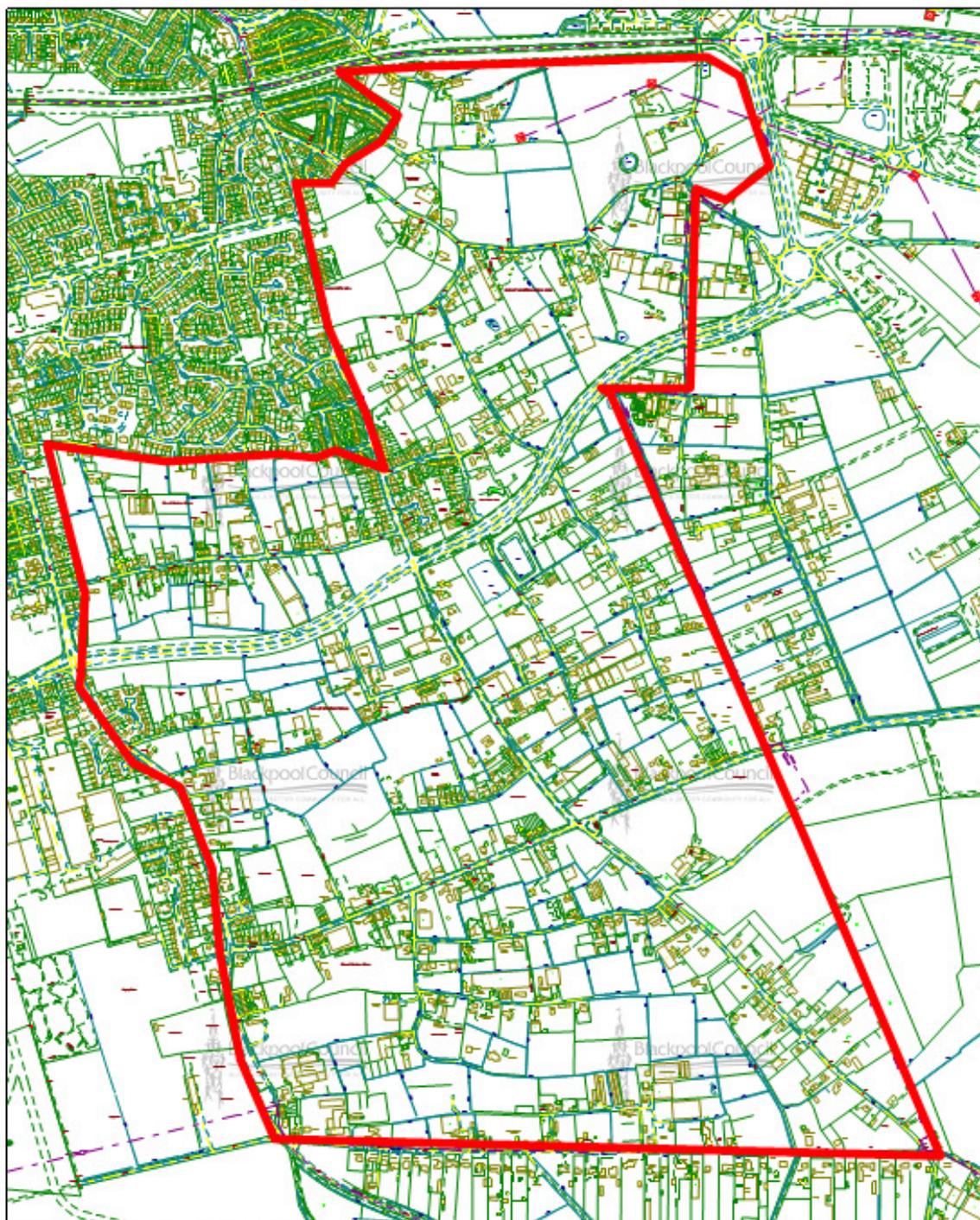


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Plan 7 Mythop Road/Whyndyke Farm



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APPENDIX 6 - Watercourse Risk Assessment Schedules

Location	Ref. No.	U/S Node Ref	D/S Node Ref	Length	Cond	Risk Assessment
Midgeland Rd (south)	H 215/01	3331 9851	3331 7951	170	2.5	Low - conn to main
Chapel Rd	H 183/01	3333 9253	3333 8251	58	4	Medium - subject to surcharge
	H 183/02	3333 6156	3333 6151	33		from main system
				91		
Stockydale Rd	H 183/03	3333 5151	3333 5051	53	4	Medium - subject to surcharge
	H 182/01	3333 5051	3333 4051	111		from main system
				164		
Midgeland Rd Nth	Devel'ped					
School Rd	H 205/01	3332 9451	3332 7051	127	3	Low - conn to main
Yeadon Way	H 170/03	3333 2451	3333 3551	120	2	Medium - must be maintained
	H 170/04	3333 3451	3333 3552	5		or adjacent land away from the
	H 170/05	3333 3553	3333 4551	176		embankments will experience
	H 170/06	3333 3554	3333 4552	136		Some variable flooding. Basic
	H 171/03	3333 4551	3333 5551	83		philosophy sound but can have
	H 171/04	3333 5551	3333 6551	78		slow run off due to slack
	H 171/05	3333 9555	3333 6551	310		gradients. Recent incidents on
Piped culvert	H 171/06	3333 6551	3333 6552	49		Whalley Lane area are indicative
	H 171/07	3333 4552	3333 5552	64		
	H 171/08	3333 5552	3333 6552	98		
	H 171/09	3333 9553	3333 6552	308		

	H 179/01	3133 8451	3133 9451	180		
	H 179/02	3133 8452	3133 9452	180		
	H 180/01	3133 9451	3233 0451	60		
	H 180/02	3233 1451	3233 0451	97		
Piped culvert	H 180/03	3233 0452	3233 0451	47		
	H 180/04	3133 9452	3233 0452	58		
	H 180/05	3233 1452	3233 0452	88		
	H 180/06	3233B1453	3233 3451	219		
	H 180/07	3233 1454	3233 3452	240		
Piped culvert	H 180/08	3233 3452	3233 3451	52		
	H 180/09	3233 3451	3233 4451	111		
	H 181/01	3233 4451	3233 6452	130		
	H 181/02	3233 5451	3233 6451	114		
	H 181/03	3233 6451	3233 6453	6		
	H 181/04	3233 6453	3233 6452	PIPE		
	H 181/05	3233 6454	3233 6452	35		
		3233 6452	TO DRAIN			
	H 181/06	3233 8451	3233 9451	160		
	H 182/02	3233 9451	3333 0451	97		
	H 182/03	3333 0451	3333 0452	MAIN		
	H 182/04	3333 1451	3333 2451	97		
	H 182/05	3333 1452	3333 3451	238		
				3488		
Mosshouse Rd (x4)	H 194/01	3332 0552	3332 0551	34		Low - must be maintained on
	H 194/02	3332 1556	3332 1555	11		piped driveways to ensure run off
	H 194/03	3332 1554	3332 1553	24		
	H 194/04	3332 2552	3332 2551	42		
				111		
Greenland School	Removed					
Robins Lane (east)	H 044/01	3339 0851	3339 1751	166		Low - must be maintained on
	H 044/02	3339 1752	3339 1751	14		piped driveways to ensure run off
				180		

Blackpool BC

**WATERCOURSE RISK
ASSESSMENT SCHEDULE -
PI**

Location	Ref.No.	U/S Node Ref	D/S Node Ref	Length	Cond	Risk Assessment
Cherry Tree Allotments	PI 171/01	3333 5653	3333 5651	89	2.5	Medium - must be maintained to
	PI 171/02	3333 5651	3333 5551	72		avoid flooding of Council Property and allotments
				161		.
Cherry Tree Allotments	PI 170/01	3333 3751	3333 3851	95	2.5	Medium - must be maintained to
	PI 170/02	3333 3851	3333 4651	170		ensure outfall for the above
	PI 170/03	3333 4651	3333 5653	7		
	PI 170/04			272		
Holyoake/Moor Park Ave	PI 061/01	3238 5551	3238 5651	67	3	High - must be maintained to
	PI 061/02	3238 6651	3238 6751	50		ensure run off from adjacent
	PI 061/03	3238 7552	3238 6751	174		Industrial Estate and avoid
	PI 061/04	3238 6751	3238 7752	71		flooding of amenity areas
	PI 061/05	3238 7751	3238 7852	56		
				418		
Moor Park Extension	PI 051/01	3239 3251	3239 3351	101	3	Low - may flood amenity area
	PI 051/02	3239 3351	3239 4451	153		
				254		
Fleetwood Rd / Carr Rd	PI 026/01	3240 2954	3240 2953	11	2.5	Medium - may flood amenity

	PI 026/02	3240 2952	3240 2951	26		Areas
	PI 026/03	3240 1951	3240 1952	16		
	PI 026/04	3240 1953	3240 2951	35		
	PI 026/05	3240 2951	3240 0851	136		
				224		
Fleetwood Rd	PI 018/09	3241 0351	3241 0452	81		Medium - may flood amenity
(Playing fields)	PI 018/10	3241 0452	3241 0451	59		Areas
	PI 017/01	3141 9451	3141 8451	180		
				320		
Stanley Park Golf Course	PI 099/01	3336 5751	3336 7551	310		High - will flood golf course,
	PI 111/01	3336 8451	3336 8452	8		parklands and amenity areas
	PI 099/02	3336 8452	3336 7551	73		
	PI 099/03	3336 7551	3336 6451	128		
	PI 111/02	3336 6451	3336 6251	306		
(piped)	PI 111/03	3336 6251	3336 6151	87		
(O/F piped)	PI 111/04	3336 6251	3336 7151	58		
	PI 111/05	3336 7251	3336 7151	48		
	PI 111/05	3336 7151	3336 6153	19		
(piped)	PI 111/07	3336 6153	3336 6152	18		
	PI 111/08	3336 6152	3336 6151	20		
	PI 111/09	3336 6151	3336 5151	180		
	PI 110/01	3336 5151	3336 4151	81		
	PI 110/02	3336 2251	3336 4151	246		
	PI 110/03	3336 4161	3336 1151	225		
				1807		

Blackpool B.C.

WATERCOURSE RISK

ASSESSMENT SCHEDULE -

Ps

Location	Ref.No.	U/S Node Ref	D/S Node Ref	Length	Cond	Risk Assessment
Staining North Dyke	Ps 125/07	3435 5951	3435 5952	63	2.5	High - a variety of open and piped
	Ps 113/01	3435 5952	3436 5051	68		lengths - the open lengths are
	Ps 113/02	3436 5051	3435 5952	36		well maintained - a blockage on
	Ps 125/02	3435 5952	3435 5954	67		any of the piped lengths will
				234		result in flooding of upstream
	Ps 112/01	3436 4051	3435 4951	36	2.5	assets including the Broadoak
	Ps 124/01	3435 4951	3435 5953	57		properties and the northern
	Ps 125/01	3435 5953	3435 5954	43		wetlands and SSI's
	Ps 125/03	3435 5954	3435 5851	73		
(piped)	Ps 125/04	3435 5851	3435 5852	54		
(piped)	Ps 125/05	3435 5852	3435 6551	286		
(piped)	Ps 125/06	3435 6551	3435 6451	55		
(piped)	Ps 137/01	3435 6451	3435 6452	15		
	Ps 137/02	3435 6452	3435 6351	112		
	Ps 137/03	3435 6351	3435 7151	275		
				1006		
Lawson Rd	Ps 134/01	3335 2351	33353351	96	2	High - flooding of allotments and
						playing fields
Lawson Rd (Crabtrees)	Ps 135/01	3335 7051	3335 8251	325	3	High - flooding of estate wetland
Ecclesgate Rd	Ps 204/01	3332 2051	3332 2052	105	2	Medium - surcharge of tributary
	Ps 204/02	3332 2052	3332 2151	95		dykes and flooding of adjacent
	Ps 204/03	3332 2151	3332 3251	117		Properties
				317		
Deerhurst Rd	Ps 018/01	3241 2451	3241 2351	92	2.5	Medium - surcharge of

						tributary
	Ps 018/02	3241 2351	3241 0452	206		dykes and flooding of adjacent
	Ps 018/03	3241 1251	3241 0353	69		amenity areas
	Ps 018/04	3241 0354	3241 0353	21		
	Ps 018/05	3241 0353	3241 0351	112		
	Ps 018/06	3241 1252	3241 0251	50		
	Ps 018/07	3241 0252	3241 0251	20		
	Ps 018/08	3241 0251	3241 0351	160		
				730		
Warren Drive		Built Up				
Whiteholme Lane	Ps 027/01	3240 8851	3240 8951	65	2	Low - within the developments
MoorPark Ave/LowMoor Rd	Ps 061/06	3238 7852	3238 7851	82	2.5	High - blockage will result in
	Ps 061/07	3238 7951	3238 8951	104		flooding to adjacent housing and
	Ps 052/01	3238 8951	3239 8052	39		amenity land.
	Ps 052/02	3239 8051	3239 8151	39		
	Ps 052/03	3239 8151	3239 5451	476		
	Ps 052/04	3239 5451	3239 5452	50		
	Ps 043/01	32395452	3239 5552	80		
				870		
Robins Lane	Ps 044/03	3339 1751	3339 2751	130	3	Medium - blockage will result in
						surcharge to tributaries
			cont			
			cont			
Robins Lane (North)	Ps 043/01	3239 9951	3239 9952	38	3.5	High - non-maintenance will
	Ps 035/01	3239 9952	3240 9051	10		result in area flooding due to
	Ps 035/02	3240 9051	3239 9953	24		surcharge onto lower or adjacent
	Ps 043/04	3239 9953	3239 9954	24		ground. Outlets

						027/08,027/11
(piped)	Ps 043/05	3239 9954	3239 8951	16		and 035/21-22 are particularly
	Ps 043/06	3239 8951	3239 8952	45		vulnerable and must be kept clear
	Ps 035/03	3239 8952	3240 8052	47		
(piped)	Ps 035/04	3240 8052	3240 8051	4		
	Ps 035/05	3240 8051	3240 7351	335		
	Ps 035/06	3240 7351	32407451	125		
	Ps 028/01	3340 0552	3240 9551	14		
	Ps 027/01	3240 9551	3240 9452	36		
	Ps 035/10	3240 9452	3240 8552	152		
	Ps 027/05	3240 8552	3240 8451	69		
	Ps 035/08	3240 8451	3240 7451	11		
(piped)	Ps 043/07	3239 9956	3239 8953	30		
	Ps 043/08	3239 8953	3239 8954	48		
	Ps 035/11	3239 8954	3240 8054	47		
(piped)	Ps 035/12	3240 8054	3240 8053	4		
	Ps 035/13	3240 8053	3240 8055	30		
(piped)	Ps 035/14	3240 8055	3240 8056	4		
	Ps 035/15	3240 8056	3240 8152	40		
(piped)	Ps 035/16	3240 8152	3240 8151	12		
	Ps 035/17	3240 8151	3240 7252	106		
(piped)	Ps 035/18	3240 7252	3240 7251	5		
	Ps 035/19	3240 7251	3240 7452	258		
	Ps 027/06	3240 7452	3240 7554	27		
	Ps 027/07	3240 7556	3240 7554	30		
	Ps 028/02	3340 0551	3240 9552	5		
	Ps 027/02	3240 9552	3240 9451	52		
	Ps 035/09	3240 9451	3240 8551	113		
	Ps 027/08	3240 8551	3240 8553	28		
	Ps 027/09	3240 8553	3240 8554	28		
	Ps 027/10	3240 8554	3240 7551	89		
	Ps 027/04	3240 7555	3240 7551	29		
(piped)	Ps 027/11	3240 7551	3240 7554	9		
(open entry to piped outlet)	Ps 027/08	3240 7554	3240 7453	15		
(piped)	Ps 035/21	3240 7453	32407454	54		

	Ps 035/22	3240 7454	3240 7401	16		
				2110		