



Blackpool and Fylde Coast Protection Strategy

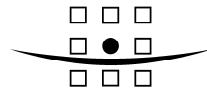
Strategic Environmental Assessment: Scoping Consultation Document

Blackpool Borough Council

January 2011

Draft Report for Client Review

9V3556

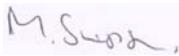
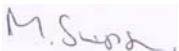


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SUMMARY

Blackpool Borough Council adopted their existing Shoreline Strategy Plan (SSP) in 1995 to manage coastal flood and erosion risk along their coastal frontage. There is no current or past SSP for the management of Fylde Borough Council's coastal frontage. Previously, a procedure of reactive management along their coastline has been undertaken, with repairs to the most urgent locations as necessary.

As a result of the major linkages and interdependences that exist between Blackpool and Fylde Borough Councils, a joint Coastal Protection Strategy is being produced to create a more holistic strategy for this part of the Fylde Coast. This updated Strategy will review the technical, economic and environmental appraisal of options, and the choice of preferred option, with the specific intent of establishing viable long-term solutions to manage coastal flood and erosion risk along this frontage.

The study area of the Blackpool and Fylde Coast Protection Strategy covers the 30km coastal frontage within the jurisdiction of Blackpool and Fylde Borough Councils, from Kingsway to Naze Point, including inland areas at risk from coastal flooding and / or erosion.

The key environmental issues within the study area that should be taken into consideration through the development of the Strategy are listed below. The list below is not in order of priority.

- Safeguarding homes and commercial and industrial assets is highly important.
- Blackpool and Lytham St. Annes are seen as key tourist destinations within Lancashire. Access to the seafront and recreational facilities provides benefit to the local population's health and supports the local tourist economy.
- Under the Bathing Water Directive, coastal water quality is good. Under the Water Framework Directive, the section of coast has moderate ecological potential. Maintaining water quality within the study area is important.
- The study area supports a diversity of flora and fauna including protected habitats and species. Many of these are located within the inter-tidal area and should be protected within the development of the Strategy.
- The main roads, railway and tram lines that run parallel to the seafront are at risk from flooding and coastal erosion. It is important that these are protected.
- The landscape character and visual amenity of the Blackpool and Fylde Strategy study area should be maintained.
- There are several listed buildings, conservation areas and registered historic parks and gardens at risk from flooding and erosion. There are also numerous finds relating to prehistoric, roman, medieval, industrial and modern, and military activity. The cultural heritage must be protected.
- Climate change predictions must be considered in the assessment of the strategic management options.
- Waste minimisation and management should be considered throughout the development of the Strategy.

The key aim of an SEA is to ensure that environmental considerations are fully integrated into our high-level decision making. The Scoping stage of the SEA involves setting the context, establishing the baseline, developing the SEA assessment criteria and consulting on the proposed scope of the SEA. The SEA assessment criteria, indicators and targets provide a means by which the environmental issues and outcomes of strategic options can be assessed.

The proposed SEA assessment criteria, indicators and targets for each of the 'scoped in' receptors are presented together with a proposed assessment matrix. These are derived from our knowledge and understanding of the study area from previous studies, consultation, and a review of already established environmental objectives.

This document presents this information so that we can consult effectively with statutory consultees, our internal specialists and other key stakeholders on the scope of the assessment and level of detail of the information that must be included.

Comments received during the consultation will be taken into account to confirm the final scope of the SEA, which will be presented in an Environmental Report (ER). The ER is the main written output of the SEA process.

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1 INTRODUCTION

1.1 Background

Coastal defences were first constructed to protect the resort of Blackpool in the 1890s, following constant severe erosion and beach lowering caused by the fact that the shoreline was unable to retreat. These defences, and those along the Fylde coastline, are of vital importance, protecting people, properties and infrastructure adjacent to the coast. They are of particular importance considering the value of Blackpool and Fylde's coastal tourism, with over ten million visitors to the area annually.

Blackpool Borough Council is currently two-thirds of the way through a 20 year coastal defence strategy which seeks to rebuild sections of the coastal defences most in need. Approximately £12m of works has been completed at South Shore and at Red Bank Road. A £62m plan is currently under way to transform the promenade between the Sandcastle Centre and North Pier. The new seawall is being built from the Sandcastle to North Pier, 3.2km in length.

Blackpool Borough Council adopted their existing Shoreline Strategy Plan (SSP) in 1995 to manage coastal flood and erosion risk along their coastal frontage. A full review of the plan was undertaken in 2000, with an economic update carried out in 2004. This Strategy is now in need of a further review to take account of the coastal defence policies developed by the recently produced North Wales and North West SMP2.

There is no current or past SSP for the management of Fylde Borough Council's coastal frontage. Previously, a procedure of reactive management along their coastline has been undertaken, with repairs to the most urgent locations as necessary.

As a result of the major linkages and interdependences that exist between Blackpool and Fylde Borough Councils, a joint SSP is being produced to create a more holistic strategy for this part of the Fylde Coast.

The updated SSP will review the technical, economic and environmental appraisal of options, and the choice of preferred option, with the specific intent of establishing a viable long-term Strategy to manage coastal flood and erosion risk for this frontage.

The Strategy's objectives are to:

1. develop a strategic approach to minimise coastal flood and erosion risk to property and other assets within the jurisdiction of Blackpool and Fylde Councils over the next 100 years;
2. investigate opportunities to enhance and improve the area's natural, cultural and amenity value; and,
3. comply with all statutory obligations arising from national and international nature conservation designations and related legislation in the area.

1.2 Purpose of this Scoping Consultation Document

Strategic Environmental Assessments (SEAs) are required for plans and programmes that fall within the requirements of EC Directive 2001/42/EC on '*the assessment of the effects of certain plans and programmes on the environment*'. The key aim of the SEA

is to ensure that environmental considerations are fully integrated into high-level decision making (in this case integrated into the preparation and implementation of the Strategy).

The Scoping stage of the SEA (defined as Stage A in **Figure 1.1**), involves setting the context, establishing the baseline, developing objectives and SEA assessment criteria, and consulting on the proposed scope of the SEA. Further detail on the tasks defined in Stage A of **Figure 1.1** is shown in **Table 1.1**.

Figure 1.1 **SEA stages and relationship between tasks (Table from Office of the Deputy Prime Minister (2005)).**

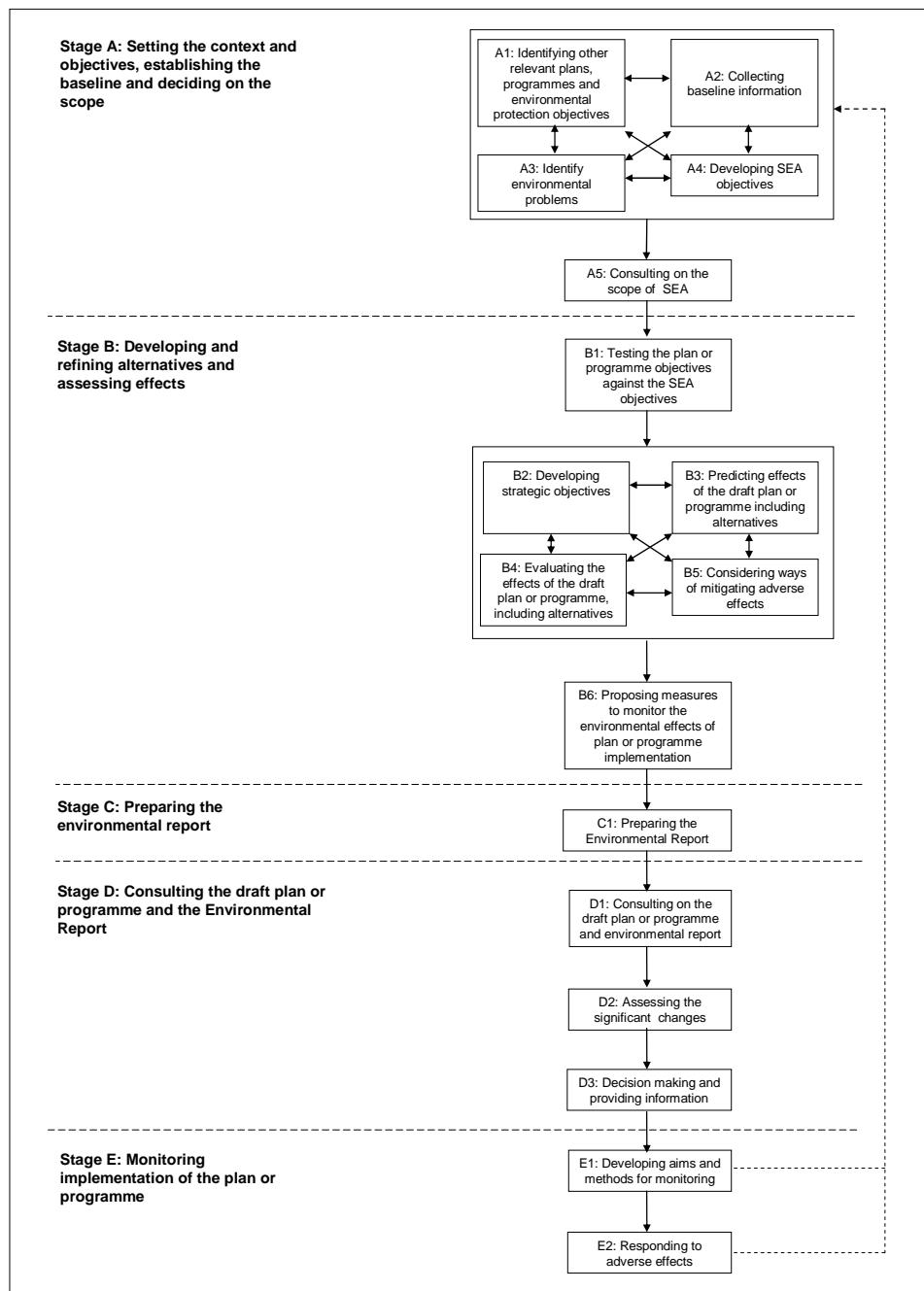


Table 1.1 Scoping stage of SEA (Table adapted from Office of the Deputy Prime Minister (2005)).

SEA stages and tasks	Purpose
Identifying other relevant plans, programmes and environmental protection objectives	To establish how the implementation of the plan or programme (in this case the Strategy) is affected or influenced by outside factors, to suggest ideas for how any constraints can be addressed, and to help to identify SEA objectives.
Collecting baseline information	To provide an evidence base for identifying environmental problems/issues, predicting effects, and identifying ongoing monitoring. This helps in the development of SEA objectives.
Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of SEA objectives, prediction of effects and monitoring.
Developing SEA objectives	To provide a means by which the environmental performance of the plan or programme (or in this case the Strategy and its associated options and alternatives) can be assessed. This focuses on the key environmental issues relevant to the study area.
Consulting on the scope of SEA	To ensure that the SEA covers the likely significant environmental effects of the plan or programme (or in this case the Strategy).

This Scoping Consultation Document presents the information described in **Table 1.1** above so that effective consultation with statutory consultees and other key stakeholders¹ can be undertaken on the scope of the assessment and level of detail of the information that must be included in the Environmental Report (ER). The ER is the main written output of the SEA process.

As detailed on **Figure 1.1**, the next stage of the SEA will be to assess potential environmental effects of strategic options and 'reasonable alternatives' to assist in the selection of a preferred strategic solution(s). That assessment, carried out iteratively in order to influence the refining of options, will be documented within the ER. The ER will be provided for wide consultation alongside the draft Strategy document.

1.3 The study area

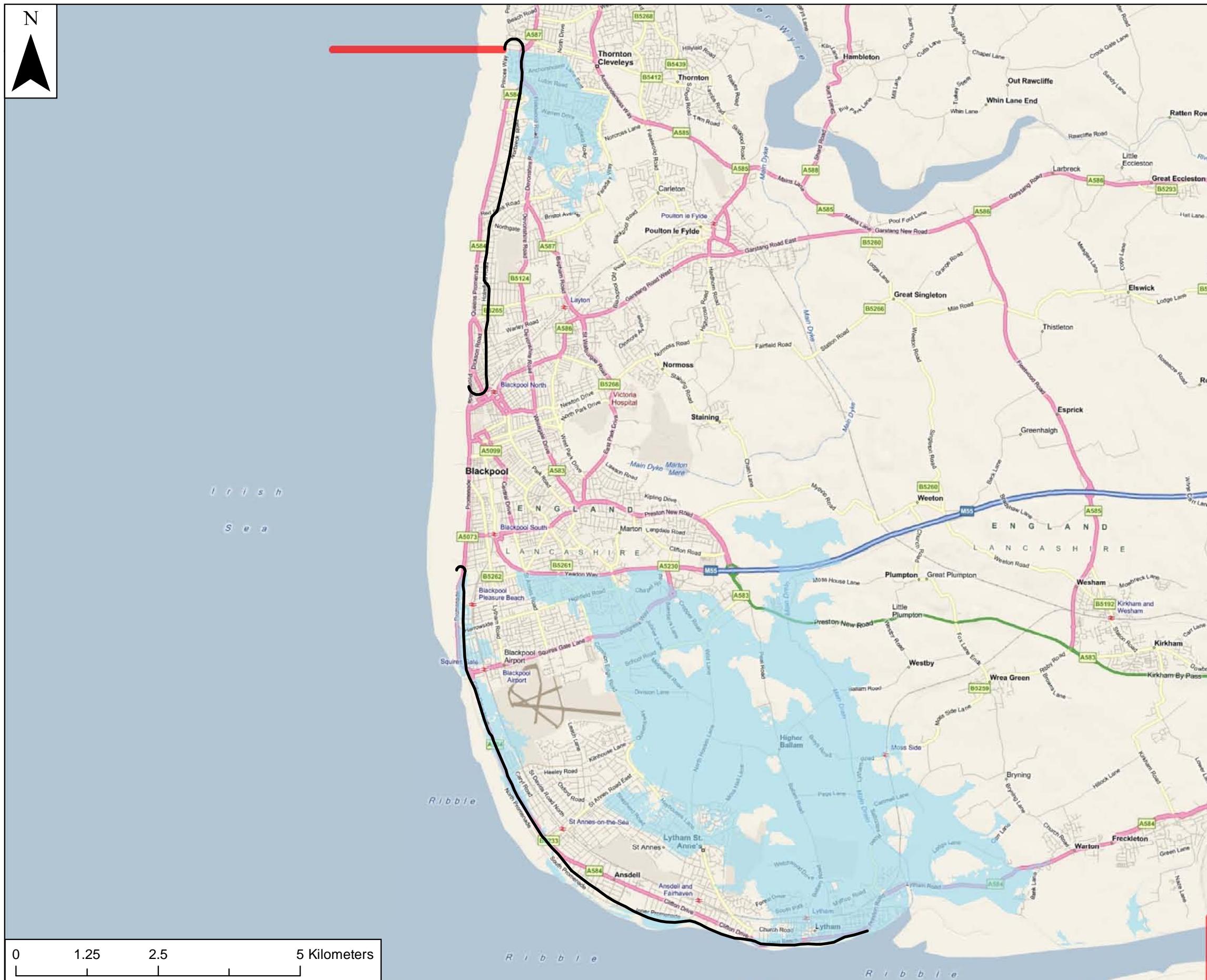
1.3.1 Overview

The study area is located on the North West coast of England, on the Fylde Coast, Lancashire, between the Ribble estuary, to the south, and Morecambe Bay, to the north. The study area extends approximately 30km, just north of Anchorholme Park, at Blackpool, to Naze Point, Fylde (see **Figure 1.2**). The entire Blackpool frontage is protected by hard defences that vary in quality from those with a low residual life expectancy of a few years, in the north, to the recently constructed defences in the centre. The Fylde frontage is protected by a mixture of hard and soft defences, comprising seawalls, natural sand dune systems and flood embankments.

¹ The SEA regulations require that as a minimum the designated consultation bodies (for England this being Natural England, English Heritage and Environment Agency) be consulted when deciding on the scope and detail of the Environmental Report. Blackpool and Fylde Borough Councils and Lancashire County Council are also formally included in this stage of the consultation.



Extent of Study Frontage



Legend

Erosion Extent 2110

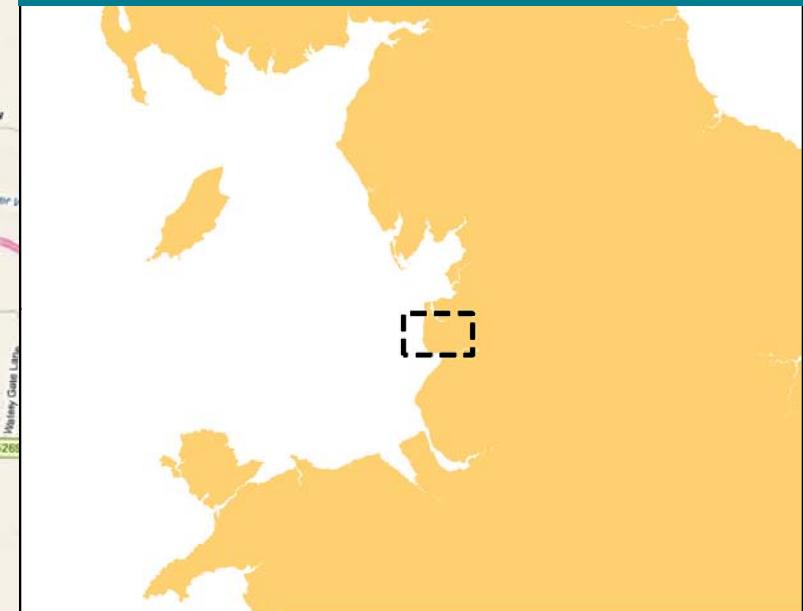
Study Frontage Boundary

Flood Extent (1:200, 2110)



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Blackpool & Fylde Joint Coastline Strategy Plan
Blackpool & Fylde Council
Scale: 1:70,000 @ A3
January 2011
Figure 1.2



The landward extent of the study area was identified using a combination of:

1. the area considered to be at risk of tidal flooding in a 1:200 year event, in 2110; and,
2. predicted coastal erosion limits up to 2110.

The coastal flooding and erosion landward extents are based on the situation with no coastal defences, as presented on **Figure 1.2**.

Although the immediate study area is confined to the coastal and landward extents described above, the SEA considers a wider study area. This is based on a reasonable 'zone of influence' and on a receptor by receptor basis depending on the extent of potential interactions and impacts associated with strategic options. For instance, there is the potential for Hold the Line (HTL) options to have implications on features beyond the immediate study area as a result of changes in coastal dynamics/processes.

2 LEGISLATION, POLICY AND GUIDANCE

2.1 Introduction

The purpose of this section is to:

- provide an inventory or reference to relevant international, national, regional and local legislation, policy and guidance;
- identify the key legislative and policy requirements for the next stage of the SEA, and potential interactions between the Strategy and other documents, to be considered during the Strategy's development; and,
- carry through these requirements into establishing SEA Assessment Criteria in **Section 4: Strategic Options**.

As a wide range of documents exist at different levels, from international to local, legislation, policy and guidance has been identified that is most relevant to the Strategy. For example, international agreements are not described where their aims are achieved by more targeted European or national legislation. These documents will either set the higher level policy which the Strategy must comply with and / or contain a significant constraint or opportunity that we must consider in its development.

It is acknowledged that much of this legislation, policy and guidance will be replaced or updated during the lifetime of the Strategy. However their overall long term visions provide the best current guide to constraints and opportunities within the study area.

2.2 International / European

The following section outlines the key International and European legislation or agreements that have the potential to interact with the Strategy.

The Water Framework Directive

The Water Framework Directive² (WFD) is designed to improve and integrate the way water bodies are managed throughout Europe. It came into force on 22 December 2000 and was transposed into UK law in 2003 in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The regulations mean that the requirements of the WFD need to be considered at all stages of the planning and development process.

The WFD sets a target of aiming to achieve at least 'good status/potential' in all water bodies by 2015. However, provided that certain conditions are satisfied, in some cases the achievement of good status/potential may be delayed until 2021 or 2027. The River Basin Management Plans (RBMPs) produced by the Environment Agency set out the objectives for meeting the WFD.

² Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

The Habitats Directive

The primary aim of the Habitats Directive³ is to promote the maintenance of biodiversity by requiring EU member states to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, introducing robust protection for those habitats and species of European importance. In applying these measures, member states are required to take account of economic, social and cultural requirements, as well as regional and local characteristics.

The Birds Directive

The Birds Directive⁴ provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each member state (in the UK, delivery is through several different statutes).

2.3 National

The following section provides a brief description of the relevant national level plans and policies that could have potential interactions with the Strategy.

Planning Policy Statements

Planning Policy Statements (PPS) and their predecessors Planning Policy Guidance Notes (PPG) are developed by the Government in collaboration with interested parties. They inform the development of local planning policies and must be taken into account in the preparation of plans. The most important documents with regards to the Strategy are:

- **PPG20: Coastal Planning**⁵ sets out the planning policy for coastal areas in England and Wales, placing a priority on conservation of the natural environment, development and risks such as flooding, erosion and land instability.
- **PPS25: Development and Flood Risk** is important as it aims to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from these areas.
- **PPS9: Biodiversity and Geological Conservation** sets out a number of key principles that should be adhered to in decision-making, including basing decisions on up-to-date environmental information, attaching appropriate weight to sites designated at a range of levels, and that decisions should aim to prevent harm to biodiversity.
- **PPS5: Planning for the Historic Environment** was released in March 2010 and replaces and combines Planning Policy Guidance 15: Planning and the

³ Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora

⁴ Council Directive 2009/147/EC on the conservation of wild birds

⁵ PPG20 has been cancelled with the exception of paragraphs 2.9, 2.10 and 3.9. A new Planning Policy Statement: Planning for a Natural and Healthy Environment was recently consulted on (to June 2010). The consultation document combines PPS9 with elements of PPS7: Sustainable Development in Rural Areas, PPS17: Planning for Open Space, Sport and Recreation, and PPG20: Coastal Planning.

Historic Environment (PPG15) and PPG16 Archaeology and Planning (PPG16). It is supported by a Practice Guide.

UK Sustainable Development Strategy

The 2005 UK Sustainable Development Strategy 'Securing the Future' updates the previous Strategy in the light of changes to UK government structures, including devolution to Scotland, Wales and Northern Ireland, a greater emphasis on delivery at regional level and the new relationship between government and local authorities. It also takes account of policies announced since 1999, in particular the 2003 Energy White Paper that sets a long-term goal of achieving a low carbon economy. It also takes account of the renewed international focus on sustainable development following the World Summit on Sustainable Development in Johannesburg in 2002 and the Millennium Development Goals.

The Strategy has five main principles: living within environmental limits, ensuring a strong, healthy and just society, achieving a sustainable economy, promoting good governance and using sound science responsibly.

Climate Change Act

The Climate Change Act 2008 makes the UK the first country in the world to have a legally binding long-term framework to tackle climate change. This Act provides a legal framework for ensuring that Government meets its commitments to tackle climate change. It requires that the UK's emissions are reduced by at least 80% by 2050, compared to 1990 levels, and introduces legally binding carbon budgets, which will set a ceiling on the levels of greenhouse gases that can be emitted into the atmosphere. It also sets the legal framework for adaptation policy in the UK.

The Act also establishes the Committee on Climate Change (CCC) as an independent body to advise and monitor government activity; an Adaptation Sub-Committee (ASC) advises the CCC on climate risks in the UK. The ASC will provide expert advice and scrutiny through that Committee to ensure that the Government's programme for adaptation enables the UK to prepare effectively for the impacts of climate change.

2.4

Regional plans

The following section provides a brief description of the relevant regional level plans and policies that could have potential interactions with the Strategy.

Catchment Flood Management Plans

Catchment Flood Management Plans (CFMPs) provide an overview of the flood risk across river catchments. They recommend methods for managing those risks now and over the next 50-100 years. CFMPs consider all types of inland flooding, from rivers, ground water, surface water and tidal flooding.

Blackpool and Fylde fall within the boundary of the Ribble CFMP (Environment Agency, 2009a). The CFMP is divided into 10 Sub-areas, two of which fall within the study area, as:

- **Sub-area 8: Lower Ribble and Fylde Streams.** In the west of the area parts of Warton are at flood risk from Wrea Brook, and isolated properties along the

floodplain of Main Drain. This risk is associated with rivers that discharge into the Ribble estuary, and the effect that rising sea levels will have on the ability of these watercourses to fully discharge during storm events. The CFMP is proposing Policy 4 for this Sub-area, which is classified as “*Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change.*” Proposed actions to implement this policy include:

- promoting land use / management projects by landowners to benefit flood risk, via Higher Level Stewardships (HLSs); and,
- schedule maintenance of existing flood defences to ensure they retain their standard of protection.

- **Sub-area 10: Blackpool & Lytham St Annes.** The CFMP identifies flood risk as predominately in Lytham St Annes, resulting from the impact of sea level rise and the ability of Liggard Brook to discharge into the Ribble estuary. The risk of flooding from rivers in Blackpool is very low, with the main risk in the town associated with coastal flooding from the sea. This aspect is not considered as part of this plan and is instead addressed in the SMP. The CFMP is proposing Policy 5 for this Sub-area which is classified as “*Areas of moderate to high flood risk where we can generally take further action to reduce flood risk.*” Proposed actions to implement this policy include:

- investigating the causes of flooding in the Lytham St Annes / Fylde area;
- produce Strategic Flood Risk Assessments (SFRAs); and,
- investigate the causes of surface and sewer flooding in Blackpool and Lytham St Annes.

River Basin Management Plans

The North West River Basin Management Plan (RBMP) was published in December 2009 following approval by the Secretary of State (Environment Agency, 2009b). The plan focuses on the protection, improvement and sustainable use of the water environment. The plan has been prepared under the WFD that requires all countries throughout the European Union to manage the water environment to consistent standards. Further information on the objectives of the North West RBMP can be found in **Section 5.5.2**.

Shoreline Management Plan 2 (SMP2)

The SMP aims to identify the best ways to manage flood and erosion risk to people and the developed, historic and natural environment, and to identify opportunities where shoreline managers can work with others to make improvements. The SMP does not set policy for anything other than coastal defence management.

The Strategy frontage is covered by Sub-Cell 11b of the North West and North Wales SMP2 (Halcrow Group Ltd., 2010), which is divided into:

1. The Ribble Estuary; and,
2. St Annes to Rossall Point.

This Sub-Cell is further divided into a series of policy units, units 1.14 to 1.21 and 2.1 to 2.5, each with an individual policy. The policies are presented over three epochs (0 to

20 years; 20 to 50 years; and, 50 to 100 years) to enable realistic and sustainable management of the coastline. Four key policies are considered within the SMP:

- **Hold the Line (HTL)** - this option involves fixing the shoreline position by the provision or maintenance of coastal defences.
- **Advance the Line (ATL)** - this involves building new defences seaward of the original defences and is limited to areas where significant land reclamation is being considered.
- **No Active Intervention (NAI)** - a decision not to invest in providing or maintaining defences.
- **Managed Realignment (MR)** - allowing the shoreline to move backwards, with management to control / limit the extent of landward retreat.

The preferred policies for the Strategy area are predominately HTL, by maintaining the existing defences throughout all three epochs of the SMP. Exceptions include Policy Unit 1.14 *Naze Point to Warton Bank*, which is NAI throughout all three epochs, and Policy Unit 2.1 *St Annes (northern boundary) to Squires Gate*, which is MR for the first epoch, by managing the dunes and determining the requirements for a second line of defences set back by Clifton Drive North. The policy changes to HTL for the second and third epochs.

Catchment Abstraction Management Strategies (CAMS)

Catchment Abstraction Management Strategies (CAMS) are produced by the Environment Agency to indicate the balance of abstraction and river health on a catchment basis. They set out how water abstraction will be managed until 2014. It outlines where water is available, and also, if relevant, where it is necessary to reduce current rates of abstraction. These plans consider abstraction of surface water in terms of Water Management Units (WMU) and ground water in terms of Groundwater Management Units (GWMU). The water resources within the study area are covered by the integrated CAM for the Ribble (Environment Agency, 2007). Further information on the status of the abstractions in the CAM area can be found in **Section 5.5.6**.

North West of England Plan - Regional Spatial Strategy

In May 2010, the new Coalition Government announced and implemented a number of changes that affect the way local authorities plan for future growth, particularly the revocation of Regional Spatial Strategies (RSSs). The North West of England Plan (RS2010) was revoked on 6 July 2010.

Future North West: Our Shared Priorities was published for consultation in August 2010, with a final version due to be published in late 2010. It provides a high level statement of strategic priorities and framework for activity over the next 20 years, based upon the work previously undertaken to support the development of the RS2010. Future North West covers four themes on which the development of the framework is based:

- Theme 1: Low carbon, climate change and resource efficiency;
- Theme 2: Competitive advantage and distinctiveness;
- Theme 3: Release potential and tackle poverty; and,
- Theme 4: Housing and infrastructure.

Future North West identifies the development of Blackpool into a modern, twenty-first century resort and national visitor destination as an essential part in developing the North West's competitive advantage and distinctiveness (Northwest Regional Development Agency, 2010).

The North West Regional Coastal Strategy

The North West Regional Coastal Strategy 2008 - 2032 (North West Coastal Forum, 2008) is designed as a non-statutory resource for all involved in policy, planning and management of the North West's coast. Consultation on the Strategy was undertaken towards the end of 2008; however, the Strategy has yet to be finalised.

The Strategy outlines six key outcomes that comprise its building blocks, each with a series of priorities for action, as:

1. well-integrated planning and management of the coastal zone including achieving coherence between adjacent terrestrial and marine spatial plans;
2. the economic potential of the North West coast achieved in ways which safeguard, enhance, restore and sustainably use our natural and cultural assets;
3. improved well being of coastal communities;
4. improved recreational opportunities and visitor experience;
5. a high quality natural and built coastal environment able to adapt to climate and other change; and,
6. raised appreciation of the coast, its value and its needs.

The Strategy identifies the regeneration of Blackpool as essential in achieving the economic potential of the North West coast. Blackpool and Lytham are recognised as key tourism and recreational locations.

2.5

Local plans

The following section provides a brief description of the relevant local level plans and policies that could have potential interactions with the Strategy.

Lancashire Local Area Agreement

The Local Area Agreement (LAA) is an agreement between Lancashire County Council and its partners and central government on how priorities for Lancashire will be measured and about how much improvement will be made over the next three years from 2008 to 2011. The agreement identifies five key priorities as fundamental to the achievement to meeting the aspirations of the County, as (The Lancashire Partnership, 2010):

1. the economy;
2. health and wellbeing;
3. education, training and skills;
4. environment; and,
5. community safety.

Lancashire Joint Structure Plan

On 31 March 2005, Lancashire County Council, Blackburn with Darwen Borough Council and Blackpool Borough Council (the Joint Structure Plan Authorities) adopted the Joint Lancashire Structure Plan 2001 - 2016. The Plan aims to secure the efficient and effective use of land in the interest of the public. It sets out strategic policies and proposals for the development, use and conservation of land in Lancashire and for the management of traffic. It established the amount and general location of development for meeting the future needs of Lancashire's population while protecting and enhancing Lancashire's fine assets.

Lancashire Minerals and Waste Local Plan

The Lancashire Minerals and Waste Local Plan (LMWLP) 2006 came into operation on 28 December 2001. It is a joint plan of Lancashire County Council, Blackburn with Darwen Borough Council and Blackpool Borough Council.

Following the Government's decision to reform the planning system the LMWLP will eventually be replaced by a Minerals and Waste Development Framework. This process is ongoing and so far consists of the following stages (Lancashire County Council, 2011a):

- a number of policies were saved beyond 2007, the remainder have expired and can no longer be applied in the development management process. These are listed in the Addendum to the LWMLP; and,
- a number of these saved policies were subsequently superseded by the policies of the Core Strategy.

The Core Strategy was adopted in 2009 and covers the period up to 2021. It sets the vision and direction (the amounts, broad locations and priorities) for future mineral extraction and waste management. This will guide the more specific locations for any new quarries and waste facilities required, including sites for recycling and composting facilities, treatment plants, and any possible new landfill sites in the future (Lancaster County Council, 2009).

A sand extraction area is located on Salter's Bank, St Annes foreshore, 750m seaward of the sand dunes. Access to the site is from a compound and storage area at Clifton Drive, St. Annes (Lancashire County Council, 2011b).

Lancashire Economic Strategy and Sub-regional Action Plan

This Strategy is designed to improve Lancashire's economic competitiveness and performance by developing its key economic assets and opportunities within a clearly defined spatial framework. The Strategy provides a coherent framework to deliver the Regional Economic Strategy⁶ (RES) in Lancashire and supports the implementation of the Central Lancashire City Region Development Programme, part of the Government's Northern Way Initiative⁷. The Lancashire Economic Strategy identifies six strategic headline economic priorities for the sub-region, which include the development of

⁶ The RES is the blueprint for the economic development of England's Northwest. It is the foundation for everything that the NWDA does. The current RES was launched in March 2006.

⁷ The Northern Way is an initiative, that brings together partners across North of England to work together to improve the economic performance of the North, and re-balance the UK's economy.

Blackpool into a 21st century resort destination and the strategic importance of tourism and rural development (Lancashire Economic Partnership, 2007).

Lancashire Local Transport Plan

Lancashire County Council has published a draft Local Transport Plan Strategy for consultation, which identifies challenges, lists transport goals and sets priorities for the next ten year period. This strategy, when finalised, along with Implementation Plans will form the Local Transport Plan for Lancashire, covering the period 2011 to 2021 (Lancashire County Council, 2010).

In order to improve Blackpool and Fylde's economic growth and regeneration, the plan proposes to (Lancashire County Council, 2010):

- promote sustainable travel options to important visitor destinations;
- work with district councils to deliver adequate parking to allow access to services and ensure that it is priced and managed to support strong retail economies within our towns and cities whilst ensuring that public transport is a viable alternative for many journeys;
- develop bus stations and interchanges where these can be a catalyst to town centre regeneration;
- improve access to Blackpool Airport;
- capacity improvements as a result of the electrification of key rail routes such as the Blackpool to Manchester line; and,
- reduce congestion and delay and increase road capacity, improve highway links and junctions to support the regeneration of town centres and other places which will be key drivers of economic growth (for example, universities).

Furthermore the M55 Hub (Fylde) is a focus for the economic aspirations and which will be the focus for the activities described above.

Lancashire Climate Change Strategy

The Lancashire Climate Change Strategy 2009 to 2020, sets out the long-term vision that Lancashire is "*low carbon and well adapted by 2020*". Lancashire is aiming to reduce its carbon dioxide emissions by at least 30% (relative to 1990). This Strategy was adopted in February 2009.

The Strategy acknowledges that the implications of climate change on the marine environment and coastal structures should be assessed, and that there are consequences of sea level rise and a need to understand coastal realignment. The Strategy also identifies sea level rise and increased coastal risk from storm surges as having a negative affect on (The Lancashire Climate Change Partnership, 2009a):

- commercial developments (some include housing & leisure);
- housing developments;
- transportation projects;
- tourism & leisure; and,

- quality of place.

Critical actions identified in the associated action plan includes the reduction of carbon dioxide emissions by 30% and the inclusion of other greenhouse gases, monitoring of existing actions, assessing gaps in delivery and development of new actions to achieve tighter targets, and to develop an understanding of UK climate projections scenarios and to identify impacts for Lancashire (The Lancashire Climate Change Partnership, 2009b).

Lancashire Green Infrastructure Strategy

The Lancashire Economic Partnership is working with a range of partners in Lancashire and the North West to develop a Green Infrastructure (GI) Framework to fully develop the potential of this key Lancashire asset.

The Strategy is based upon a clear understanding of GI and its potential to contribute to social and economic regeneration whilst simultaneously creating an improved natural environment in urban and rural settings based upon investment in the creation and maintenance of high quality, networked, multifunctional green spaces and green assets (ECOTEC, 2007).

Lancashire Rights of Way Improvements Plan

The Lancashire Rights of Way Improvement Plan (ROWIP) 2005 has been produced to meet the requirements of the Countryside and Rights of Way (CROW) Act 2000. The ROWIP assesses the extent to which right of way meet the present and likely future needs of the public, the opportunities provided by rights of way for exercise and other forms of open air recreation and enjoyment, and the accessibility of rights of way to blind and partially sighted persons and others with mobility problems (Lancashire Countryside Service, 2005a).

Lancashire Biodiversity Action Plan

The UK Biodiversity Action Plan (BAP) describes the biological resources of the UK and provides detailed plans for conservation of these resources at national and devolved levels. Action plans for the most threatened species and habitats have been set out to aid recovery. Lancashire's local BAP (LBAP) sets out the action plans for key species and habitats encountered in Lancashire. Further information on the habitats and species included in Lancashire's LBAP and which are relevant to the study area can be found in **Section 5.3.2**.

Fylde Coast Multi-Area Agreement

The Fylde Coast Multi-Area Agreement (MAA) covers the functional economic area of the Fylde Coast, i.e. the local authority Borough of Blackpool and the Districts of Fylde and Wyre, within the County of Lancashire. The area stretches from Lytham in the South to Pilling in the North and the Forest of Bowland moorlands in the East (Blackpool Borough Council, 2009a).

Supporting a sub-regional planning framework, the Fylde Coast MAA Partnership has an agreement with government that seeks to align key aspects of policy and harness the Fylde Coast's assets to facilitate delivery of a coordinated programme of capital investment. The MAA means the three local authorities will be able to work together more effectively to tackle social, economic, development and other issues and drive

economic regeneration across the Fylde Coast as a whole (Blackpool Borough Council, 2010).

Blackpool Borough Council Local Plan and developing Local Development Framework

The Blackpool Local Plan (adopted in 2006) sets out the Council's current policies and proposals for the manner in which land, buildings and infrastructure should be developed within an individual district. The plan is applicable for all developments within 2001 to 2016.

The Local Development Framework provides the new planning policy framework for the consideration of planning applications. It consists of a collection of planning policy documents which are being prepared to replace the current adopted Blackpool Local Plan. The Council is currently working on the main strategic development plan document, the Blackpool Core Strategy, which sets out its key strategic development proposals and policies for Blackpool's development and growth to 2026. The Blackpool Core Strategy preferred option was approved for Public Consultation in March 2010 (Blackpool Borough Council, 2010).

The Blackpool Core Strategy seeks to coordinate with the Core Strategies of Wyre and Fylde Councils due to the major links and inter-dependencies, including economic, development, transport, and wider interests across the Fylde Sub-Region. Key issues which need to be addressed by the Blackpool Core Strategy include (Blackpool Borough Council, 2010):

- sustaining a more all year round offer and providing new high quality attractions and accommodation to revitalise the visitor economy;
- addressing poor quality by making better places and spaces;
- managing change to balance the requirement for new development with environmental and climate change impacts; and,
- making a better connected Blackpool with easy access and an integrated and sustainable pedestrian and transport network.

Blackpool's Sustainable Community Strategy

Blackpool's Sustainable Community Strategy 2008 - 2028 was produced by the Local Strategic Partnership, which brings together a wide range of organisations from the public, private, voluntary and community sectors, pooling resources and expertise to work together to improve Blackpool. The Strategy has four goals (Blackpool Strategic Partnership, 2008):

1. improve Blackpool's economic prosperity;
2. develop a safe, clean and pleasant place to live, work and visit;
3. improve skill levels and educational achievement; and,
4. improve the health and wellbeing of the population.

Blackpool Local Area Agreement

The refreshed LAA for 2009 reflects the changing context of regeneration in Blackpool. The LAA is the delivery mechanism for the short term activities in Blackpool's

Sustainable Community Strategy described previously. The LAA's four themes aligns with the goals of the Community Strategy and provides the strategic framework to drive forward the programme of improvement in both economic prosperity and improved quality of life in the town.

Blackpool Master Plan

Blackpool's Master Plan, launched in 2003, aims to deliver economic, physical and social regeneration for the benefit of local residents and visitors alike. The Master Plan covers a 200-hectare area, including Blackpool's sea front, airport, and many residential neighbourhoods. The Master Plan is focused on creating both a world-class, year-round entertainment destination and a place with balanced and healthy neighbourhoods that is also the retail, business, civic and cultural centre for the Fylde Coast sub-region (Blackpool Borough Council, 2006).

A Strategy for Blackpool's Visitor Economy 2006/2010

This document outlines the key issues and strategic actions aimed at re-establishing the full potential of the visitor economy in and around Blackpool by building on existing work and guiding all local, regional and national stakeholders in a joint effort to rebuild a sustainable visitor economy in Blackpool. The key objectives of the strategy are to (Blackpool Borough Council, 2006):

- identify 'Blackpool 2010' as a year of special celebration;
- improve collaboration, coordination and communication across all sectors with a specific focus on achieving high calibre destination management;
- implement a system of reporting within the Council that maximises coordination of the work being done in different departments and creates greater synergy to contribute to improvements within the visitor economy;
- establish and maintain a public relations resource that is capable of co-ordinating all media contact in relation to Blackpool for the benefit of all stakeholders;
- analyse the 'self-perception' research across Blackpool and compare to regional and national research to establish a base from which the town is able to improve levels of self-respect and self-confidence; and,
- celebrate excellence, raise standards to lift quality and agree that mediocrity is no longer good enough.

Fylde Borough Local Plan (as altered) (October 2005) and developing Local Development Framework

The Fylde Borough Local Plan (as altered) (Oct 2005) is an amalgamation of two documents:

- the Fylde Borough Local Plan 1996 - 2006 (adopted in May 2003); and,
- the Fylde Borough Local Plan Alterations Review 2004 - 2016 (adopted in October 2005).

The plan enables planning issues and, in particular, the specific policies and proposals being advanced by the Council to be brought before the general public. Furthermore, the plan provides firm guidance in relation to where new development will take place,

thus informing the development industry and private individuals on how development proposals, be they large or small, are likely to be viewed by the Council, which areas will be developed and which areas will be protected from development. The aims of the plan are as follows (Fylde Borough Council, 2005):

- to maintain and improve the quality of the environment throughout the Borough, having primary regard to sustainability objectives;
- to maintain and improve opportunities for employment and to maintain improve and diversify the economic base for the Borough;
- to maintain and develop the attractions and facilities of the Borough for tourism and recreation;
- to meet the requirement for housing in a way that will best serve all sections of the community;
- to maintain and improve the transport system in ways which are sustainable and which will reduce the overall environmental impact of transport;
- to maintain and improve opportunities for shopping and related services throughout the Borough; and,
- to facilitate the development of social and community facilities.

The Local Development Framework provides the new planning policy framework for the consideration of planning applications. It consists of a collection of planning policy documents which are being prepared to replace the current adopted Fylde Local Plan as altered. The Core Strategy will be the key planning policy document within the Local Development Framework (the new system of Local Plans).

The Council is currently working on the Core Strategy, which sets out its key strategic development proposals and policies for Fylde's development and growth. It will establish a long term vision for the Borough in terms of how it should develop over future years. It will also include a number of Strategic policies on topics which will seek to achieve the vision. Topics will include: distribution of employment and housing land, tourism, environmental issues, retail development, sport and recreation (Fylde Borough Council, 2011).

Fylde Borough Council Regeneration Framework

This document is a regeneration vision for the Borough, drawing together the various regeneration projects and proposals known at the time of writing, September 2010, whilst also allowing individuals, community groups or town and parish councils to propose new schemes for consideration. It is intended that the document is refreshed at regular intervals to allow for delivered schemes to be removed and new schemes to be included. The current document lists 12 regeneration projects. Those related to the Fylde coastline include (Fylde Borough Council, 2010):

- St Annes Town Centre;
- St Annes Seafront & Promenade;
- Fairhaven Lake; and,
- Lytham.

Fylde Economic Development Strategy

The Fylde Economic Development Strategy covers the period 2008 - 2021. The Strategy includes an action plan which covers the initial period of 2008 - 2012. The document identifies Fylde's important contribution to the Central Lancashire economy as deriving from regionally significant business sectors, namely the Aerospace facility at Warton and the nuclear processing plant at Springfield, and also from the growth of orientated sectors such as computer and business services. This is in addition to its traditionally strong sectors of tourism and the visitor economy. Attractive coastlines and estuarine environments and resorts, such as Lytham St. Annes, are important to the borough's tourism and visitor economy. The Action Plan includes the following actions (GVA Grimley, 2008):

- establish a multi-sector Lytham St Annes resort partnership;
- invest in high quality public realm and gateway features along Squires Gate in order to raise the profile and setting of the airport;
- lobby for improved service frequency, station reception facilities and promotion of the South Fylde service as a convenient alternative to the car; and,
- development of a link road from the M55 to facilitate better connections for business.

The Fylde Sustainable Communities Strategy

The Fylde Sustainable Community Strategy covers the period 2008 - 2018 and was developed by Fylde's Local Strategic Partnership. This partnership brings together organisations from the public, private, community, voluntary and faith sectors. The strategy aims to develop a stronger focus on integrating social, economic and environmental issues, whilst tackling the longer term and global impacts of the community. Key Themes that run throughout the Strategy are (Fylde Borough Council, 2008):

- community cohesion;
- equality & diversity (gender, sexual orientation, age, disability, race and religion); and,
- improving quality of life for residents.

Lytham St. Annes 2020 Vision

This document sets out a broad vision for the potential 'development' of the coastal town of Lytham St. Annes as integral and important elements of the visitor experience of the North West region.

This document looks 10 years ahead towards 2020; however, within this broader, longer term vision, its primary purpose is to look ahead to 2012, as a first milestone to address potential actions that will provide a quality destination setting for The Open Golf Championship. In addition to 2012, as an event, the document makes reference to the strategic role the coastal zone of the Borough will play in the development of the Fylde Coast MAA. The document presents a number of key projects that would be delivered by 2020 and has the clear focus of positioning Lytham St. Annes as the jewel of the North West coast. These are (Fylde Borough Council, 2009):

1. the development of the St. Annes Resort Area;

2. the creation of a Lytham Master Plan;
3. the creation of a Fairhaven Master Plan;
4. the development of the Ribble Coast and Wetlands and related key sites;
5. connecting Infrastructure - improvements to enhanced road, rail and air connections and public transport; and,
6. supporting new development opportunities and understanding issues.

3 CONSULTATION

3.1 Consultation to date

In order to inform the selection of the short list of options, as presented in **Section 4**, initial stakeholder consultation has been carried out to identify the key issues, constraints and opportunities along the study area's frontage. The list of stakeholders consulted can be found in **Appendix A**.

The responses received were collated into three categories: issues, constraints and opportunities, and applied one of eight themes depending on the nature of the response received, as:

Theme		Theme	
E	Environmental	HA	Hard Asset
C	Commercial	I	Impactor
H	Heritage	R	Recreational
Co	Community	M	Management

In addition, each issue was determined as to whether it related to coastal flood or erosion defence; whilst all three categories were assessed to determine whether they had the potential to affect the development of the Strategy's options. The collated consultation responses can be found in **Appendix B**.

Of the responses received, 34 issues were identified of which the majority were related to the environment and specifically to the Fylde sand dunes. Other issues related to the current condition of the Fylde seawall, wind-blown sand and climate change.

Of the constraints identified, the majority related to landscape, nature and heritage value, specifically to the Fylde frontage. Additional constraints related to the availability of funding for beach management schemes and the level of engagement and understanding of local communities and stakeholders.

Twenty seven opportunities were recorded, of which the majority related to recreational opportunities, specifically in relation to increasing visitor appeal and accessibility. Other opportunities include the enhancement of the natural environment, allowing the Fylde sand dunes to develop so as to reduce the effects of wind-blown sand.

3.2 Scoping consultation

The consultation on this scoping document will allow for feedback from consultees on the SEA assessment criteria and the potential indicators that will be used to test them; thus the assessment criteria may be subject to change before the more detailed stage of the SEA is carried out.

4 STRATEGY OPTIONS

4.1 Introduction

In line with guidance provided by the Environment Agency's National Environment Assessment Service⁸ (NEAS), this Scoping Consultation Document has been issued together with the Strategy's short list of options. This approach allows for simultaneous consultation on the short list of options and Scoping Consultation Document. Furthermore, this approach allows for a better understanding of the potential environmental effects that could arise from the options that have been identified, thus providing additional information for the development of the SEA objectives. It is understood that this is an iterative process and consultation on this Scoping Consultation Document will feedback into the future development of the options.

In order to facilitate the identification of options for the future management of the Blackpool and Fylde frontage, the coastline has been divided into three Units, which have been divided further into Sub-Units, as described below and presented in **Figure 4.1:**

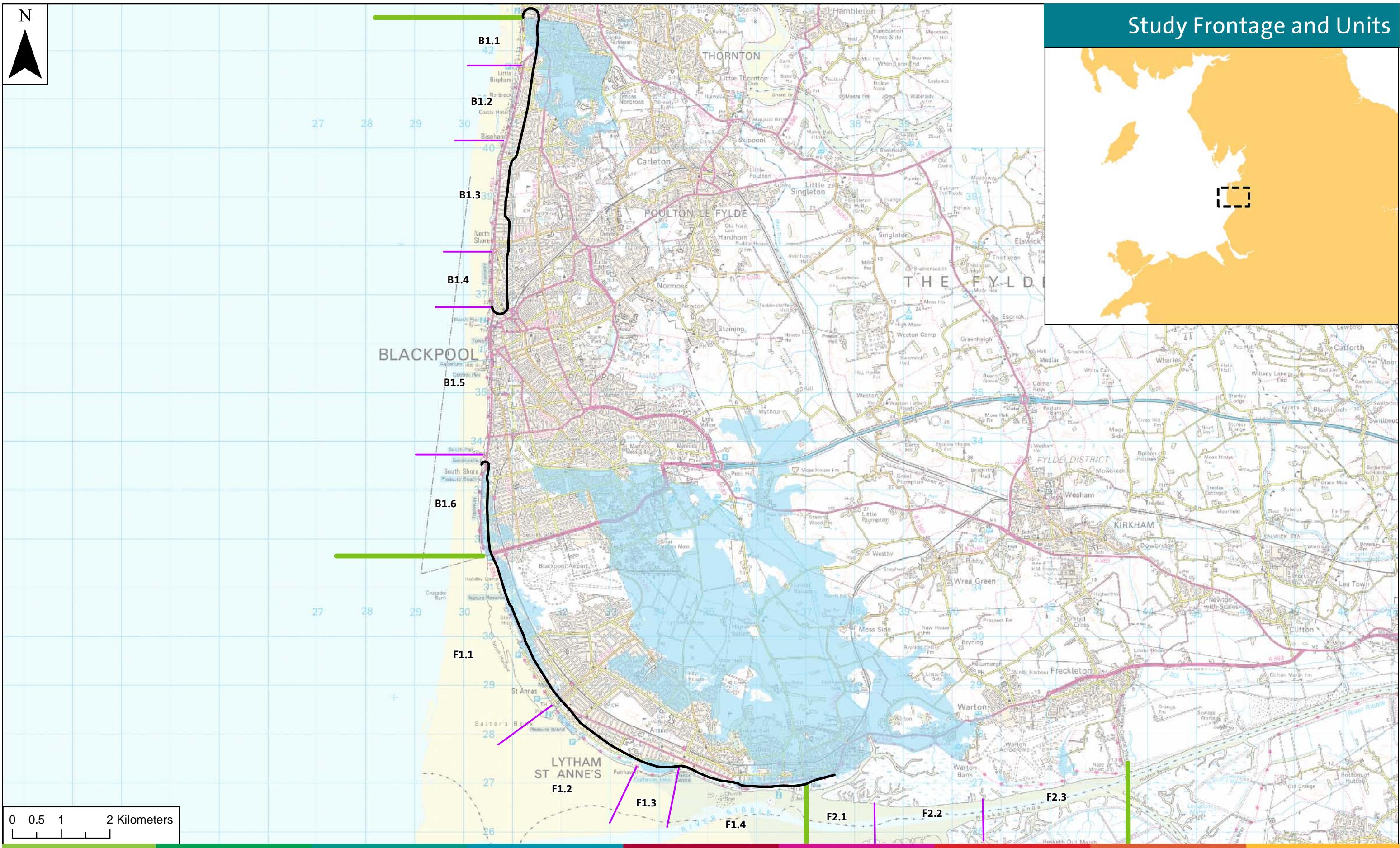
- Unit B1 - Kingsway to Squires Gate:
 - Sub-Unit B1.1 - Kingsway to Little Bispham
 - Sub-Unit B1.2 - Little Bispham to Bispham
 - Sub-Unit B1.3 - Bispham to Gynn Square Station
 - Sub-Unit B1.4 - Gynn Square Station to Cocker Street Station
 - Sub-Unit B1.5 - Cocker Street Station to South Pier
 - Sub-Unit B1.6 - South Pier to Squires Gate
- Unit F1 - Squires Gate to Lytham Windmill:
 - Sub-Unit F1.1 - Squires Gate to St Annes Pier
 - Sub-Unit F1.2 - St Annes Pier to Fairhaven Lake
 - Sub-Unit F1.3 - Fairhaven Lake to Granny's Bay
 - Sub-Unit F1.4 - Granny's Bay to Lytham Windmill
- Unit F2 - Lytham Windmill to Naze Point:
 - Sub-Unit F2.1 - Lytham Windmill to Dock Bridge
 - Sub-Unit F2.2 - Dock Bridge to Warton Aerodrome
 - Sub-Unit F2.3 - Warton Aerodrome to Naze Point

Strategic options have been developed for the entire Unit; whilst the short list of options has been developed at the Sub-Unit level. The short list of options has been identified from an initial long list through an iterative process of technical and economic appraisals, and a high level screening of the options potential effects on the natural, social and historic environments. This process was further informed by the initial stakeholder consultation exercise.

⁸ NEAS are part of integrated project teams that develop long term flood risk and coastal management strategies and building schemes to implement these strategic solutions. Their specific role is to assess and manage the major environmental risks and opportunities involved in these strategies and schemes.



Study Frontage and Units



Legend

- Erosion Extent 2110
- Flood Extent (1:200, 2110)
- Unit Markers
- Sub Unit Markers



Blackpool & Fylde Joint Coastline Strategy Plan
Blackpool & Fylde Council
Scale: 1:70,000 @ A3
January 2011
Figure 4.1

4.2 Short list of options

The short list of options for the future management of the Blackpool and Fylde frontage is summarised below and described in detail in **Appendix C**.

4.2.1 Unit B1 - Kingsway to Squires Gate

Strategic options for this Unit

1. Do Nothing;
2. Continue and improve the existing defences;
3. Beach management using control structures, i.e.:
 - shore connected; and/or,
 - offshore breakwaters.
4. Beach nourishment;
5. Combination of options 3 and 4; and,
6. Beach management focussed at the tourism centre of Blackpool.

Short list of options for each Sub-Unit

- Sub-Unit B1.1
 1. Continue Cleveleys stepped concrete revetment with promenade and set back flood wall; and,
 2. Break out existing structure, promenade and flood wall and replace with new concrete flood wall and promenade with stepped concrete revetment toe protection.
- Sub-Unit B1.2
 1. Minor repairs to concrete structure and construction of stepped concrete revetment toe protection;
 2. Break out the majority of the existing structure and replace with new walls and stepped concrete revetment toe protection or a stepped concrete revetment; and,
 3. Replace the entire structure with a wall at the toe of the cliff, fronted by a wide promenade and sloped/stepped revetment.
- Sub-Units B1.3 and B1.4
 1. Minor repairs to the seawall and inclusion of stepped concrete revetment toe protection;
 2. Minor repairs to the seawall and inclusion of rock promontories at the Boating Lake and Pavilion, combined with beach nourishment; and,
 3. Beach management using nearshore structures to emphasise the headland and to influence and benefit management of adjacent Sub-Units.
- Sub-Unit B1.5
 1. Beach nourishment in-front of the new defences.

- Sub-Unit B1.6
 1. Beach nourishment in-combination with the options described below;
 2. Beach management using nearshore breakwater; and,
 3. Fishtail breakwater at Squires Gate to provide a smoother transition to the dunes.

4.2.2 Unit F1 - Squires Gate to Lytham Windmill

Strategic Options for the Unit

1. Do Nothing;
2. Continue and improve dune management;
3. Enhancement / reinforcement of dune system locally; and,
4. Beach management and nourishment.

Short list of options for each Sub-Unit

- Sub-Unit F1.1
 1. Dune management; and,
 2. Linked management with Sub-Unit B1.6.
- Sub-Unit F1.2
 1. Replacement of existing defences and blockwork revetment with new seawall and sloped/stepped revetment;
 2. Replacement of existing defences with stepped revetment, wide promenade and set back flood wall;
 3. Beach management using control structures (e.g. groynes) at either end of the Sub-Unit, especially at the southern end of Pleasure Island;
 4. Local protection and beach nourishment at the southern end of Pleasure Island; and,
 5. Dune management.
- Sub-Unit F1.3
 1. Complete replacement of the structure in-line with the development of a Fairhaven Master Plan for the frontage and adjacent land use; and,
 2. Beach management using control structures (e.g. groynes) either end of the Fairhaven Lake.
- Sub-Unit F1.4
 1. Localised improvement of bank protection at junction with Fairhaven Lake;
 2. Replace existing revetment with concrete sloped/stepped revetment with a wide promenade and set back wall; and,
 3. Relocation of Lifeboat Station.

4.2.3 Unit F2 - Lytham Windmill to Naze Point

Strategic Options for this Unit

1. Do Nothing;
2. Continue and improve the existing defences; and,
3. Modify defences to take into account sea level rise.

Short list of options for each sub-unit

- Sub-Unit F2.1 and F2.2
 1. Defend along existing line.
- Sub-Unit F2.3
 1. Do Nothing

5 ENVIRONMENTAL BASELINE

5.1 Introduction

The following sections summarise the baseline conditions for the environmental receptors in terms of features, characteristics and key issues relevant to the Strategy in order to influence strategic level decision making.

The baseline allows the environmental effects of strategic options to be considered at the next stages of the SEA process and fully integrated into option selection. The baseline also plays a vital role in identifying key features and issues for consideration in the development of SEA assessment criteria, potential indicators and potential targets (detailed in **Section 6.1**). The scope we have outlined below will be finalised following consultation with statutory and other agencies, and will set the framework for the SEA.

The scoping process that has been undertaken enables environmental factors to be either scoped in or out of the SEA. Issues scoped out of future stages of the SEA are discussed in **Section 5.10**.

5.2 Population and human health

5.2.1 Local community and economy

Fylde Coast

The Fylde Coast includes the coastlines of Fylde, Blackpool and Wyre. It contributes £3.9bn to the economy of Lancashire, employing 140,000 people. A decline in both employment and Gross Value Added (GVA) between 1990 and 2005 masks a structure which displays a very strong base of potential growth going forward, based on aerospace, nuclear fuel manufacturing and the growth of the airport, alongside which is the important role of Blackpool and Lytham St. Annes for coastal tourism (Lancashire Economic Partnership, 2007).

Blackpool

Blackpool, situated approximately central along the Fylde Coast, is the third-largest settlement in North West England, after Manchester and Liverpool. It supports a resident population of around 140,000, making it the most densely populated Borough in the North West.

Blackpool has a workforce of around 84,000 economically active people (59.1% of the population), which is below the regional and national average (see **Table 5.1**), with an economy that is underpinned by tourism and the service sector. Small businesses predominate with only around 70 companies employing more than 70 people each (Blackpool Strategic Partnership, 2009).

Within the Lower-layer Super Output Areas⁹ (LSOAs) of Blackpool, 39 are within the most deprived 10% of England and of these, 17 are within the 3% most deprived in

⁹ A “Lower-layer Super Output Areas (LSOA)” is a small, standardised geographical division, created by the Office for National Statistics, for collecting and dissemination of local area statistics. 94 LSOAs make-up the Blackpool Council administrative area.

England. Many of the most deprived areas are along the coastal front in Blackpool (Blackpool County Council, 2009b). Other statistics for Blackpool are presented in **Table 5.1** and show a higher than regional and national average of unemployed people and of poor health indicators.

Table 5.1 Population statistics for the study area.

	Population		% Population of working age 16-64M/59F	% People aged 16-74: Economically active: Unemployed	% People with a limiting long-term illness	% General health: Not good
Date	2001	2009***	2009***	2001	2001	2001
Blackpool	142,283*	140,000	59.1	4.16*	25.43*	13.85*
Fylde	73,217**	76,100	56.9	1.97**	21.29**	10.49**
Regional (North West of England)	6,729,764*	6,897,900	61.5	3.63*	20.72*	10.95*
England	49,138,831*	51,809,700	61.2	3.35*	17.93*	9.03*

*Data taken from Office for National Statistics (2010a)

**Data taken from Office for National Statistics (2010b)

***Data taken from Office for National Statistics (2010c)

Fylde

Fylde is situated between Blackpool and Preston. There is a diverse mix of geography in Fylde with coastal areas, market towns, shopping areas and open countryside. It is nationally known for its golf courses and attracts many visitors to its wetlands. Fylde supports a population of 76,100 (see **Table 5.1**), which is estimated to increase to 89,000 by 2028 (Fylde Borough Council, 2008).

The main sources of employment in Fylde are BAe Systems at Warton; Westinghouse (Springfields) at Salwick near Clifton; Axa and Aegon Financial Services at Lytham; various government offices at St. Annes; the Blackpool and Fylde Industrial Estate at the western end of the M55, including ITSA and Fox's Biscuits at Wesham. As a large proportion of the Borough is rural in character, comprising of high to medium quality (Grades 2 and 3) agricultural land, farming operations are abundant. These range from market gardening and intensive animal rearing to cereal production and dairy farming (Fylde Borough Council, 2008).

The Overall Index of Multiple Deprivation, the Government's ranking used to determine the most deprived areas of the country based on indicators including income, employment, health, education, training, housing and access to services, puts Fylde at 240 out of 354 Districts for deprivation nationally (1 being the most disadvantaged local authority). This puts it in the least deprived 40% of Districts (Fylde Borough Council, 2008). Other statistics for Fylde are presented in **Table 5.1** and show a much lower than regional and national average of unemployed people and a higher than regional and national average of poor health indicators.

5.2.2 Key tourism and recreation features

Blackpool and the coast around Fylde is a major seaside resort in the North West. The communities along the coast provide the foundation to the tourism industry. In 2008,

employee jobs linked to the visitor economy in Blackpool were approximately 24,000 and in Fylde approximately 3,000 (Lancashire County Council, 2011c). In the same year, tourism in Blackpool and Fylde provided £1,073 million and £217 million of revenue respectively (Lancashire County Council, 2011). Key tourism attractions within the Strategy area are presented in **Table 5.2**.

Table 5.2 Key tourism attractions within the Strategy area.

Attraction	Description
Blackpool North, Central and South Pier Amusement Parades	Arcade at the front of the pier, providing the latest gaming machines and attractions.
Blackpool Tower	A tower on the sea front, built over 100 years ago. It includes a number of attractions inside and views can also be taken in from the top of the tower.
Blackpool Pleasure Beach	A theme park on the sea front which covers 42 acres with a number of classic and modern roller attractions.
Blackpool Sea Life Centre	Educational centre, providing encounters with underwater creatures.
Blackpool Casino	Casino on the coast side of the promenade.
Blackpool trams and illuminations	The trams were the first objects in Blackpool to be illuminated in celebration of the Diamond Jubilee of Queen Victoria.
Golf Clubs, including: Fairhaven Golf Club; Royal Lytham St Annes; and, St Annes Old Links.	Established in 1895, Fairhaven Golf Club is listed as 'The Best 10 Open Championship' qualifying courses and 'Great Britain & Irelands Best 10 Opening Holes' (Visit Lancashire, 2010). Royal Lytham St Annes has hosted the Open Tournament 10 times and is set to hold the games again in 2012.
St Annes Pier	Restaurants, shops and arcades, providing a range of activities.
Fairhaven Lake	Fairhaven Lake sits between Lytham and St Annes and is one of the resort's most popular attractions. Motor boats, canoes, rowing boats, kayaks and pedalos are available for hire. Other facilities here include a café, skate park, 14 tennis courts, bowling greens (crown and flat), and the RSPB Discovery Centre.
Lytham	Lytham was established a thousand years ago by a Benedictine Monastic Cell, until Lytham lands were purchased by the Clifton family in 1606. The family were responsible for much of what can be seen today: the draining of the moss, the first lifeboat house and the "green sward" on the estuary.
Lytham Hall	Lytham Hall is a grade I listed 18 th century manor house. The Hall is situated in 80 acres of mature parkland, and was built for Thomas Clifton by John Carr of York between 1752 and 1764.
Lytham Lifeboat and Windmill	There has been a lifeboat at Lytham since 1851. The present lifeboat house, next to the fisherman's jetty was built in 1961. The old lifeboat house adjacent to the windmill was built in 1860 and is now a museum.
The Ribble Estuary	The Ribble estuary is Britain's third most important for waders and holds national and international designations for nature conservation. Large flocks of waders can be seen along the shore. The sea wall at Fairhaven Lake provides a good viewpoint at high tide.

The Lancashire Coastal Way is a 137 mile footpath that follows the coastline from Cumbria to Merseyside, making it the longest in Britain, and builds upon the existing Lancashire Coastal Way. The route is continuous and serves cyclists, walkers and riders. The path runs along the entire Strategy frontage, only deviating from the coastline to circumvent the saltmarsh at Warton Bank (Lancashire Countryside Service, 2005b).

5.2.3 Material assets and critical infrastructure

Material Assets

The study area includes 17 schools, 9 hospitals, one fire and police station, and one RNLI and coast guard station. There are also a number of tourism and recreational assets within the study area, as described in **Table 5.2** above.

Critical Infrastructure

Critical infrastructure within the study area includes the M55, which links Blackpool to the M6, and A-roads (A5230, A5099 and A5073) that connect the M55 to the Blackpool coast. The A584 forms the main coastal road linking the coastal settlements from Preston to Anchorholme Park. In addition, rail services also connect the coastal settlements the rest of the UK via Preston.

The tramway that runs through Blackpool follows the coast from Squires Gate to Anchorholme Park, where it travels inland around the park and continues north to Fleetwood. The tramway provides a critical transportation service for tourists.

There are also a number of sub-stations and pumping stations within the study area.

Some of the key material assets and critical infrastructure are presented in **Figures D1a** and **D1b** in **Appendix D**.

5.3 Biodiversity, flora and fauna

Due to the developed nature of the Fylde Coast, the majority of the study area has less natural habitat interest than elsewhere along the North West England coastline; however, areas immediately adjacent to the urban area of Lytham St Annes have significantly more habitat value. In terms of conservation interest, the main designation within the study area is the Lytham St. Annes Dunes Site of Special Scientific Interest (SSSI) and those immediately adjacent to the study area, including the Ribble and Alt Estuaries Special Protection Area (SPA) and Ramsar site, and the Ribble Estuary SSSI and National Nature Reserve (NNR). There are also a number of locally designated sites, including a Local Nature Reserve (LNR) and Biological Heritage Sites (BHSs) both within and immediately adjacent to the study area.

The more distant sites that will be considered within this assessment are Morecambe Bay Special Area of Conservation (SAC), SPA and Ramsar site, Lune Deep possible SAC (pSAC), Shell Flat candidate SAC (cSAC) and the Wyre Estuary SSSI to the north of the study area, as well as the designated sand dunes of the Sefton Coast SAC and SSSI to the south.

In addition to the above, the Ribble estuary and Morecambe Bay have been identified as Important Bird Areas (IBAs). This is a global initiative, where sites are selected because of the bird numbers and species complements they hold. IBAs are particularly important for species that congregate in large numbers, such as wintering and passage waterbirds and breeding seabirds. Many sites have also been identified for species of global and European/EU conservation concern.

Likely significant effects on the international designated sites (SPA, SAC and Ramsar sites) will also be considered within a separate Habitats Regulations Assessment, which will accompany the Strategy and whose findings will be incorporated in to the SEA.

5.3.1 Designated sites

Table 5.3 details the designated sites to be considered as part of the SEA (either because they fall directly within the study area and/or may potentially be impacted by the strategic options). The locations of the designated sites are presented in **Figures D2a and D2b in Appendix D**.

Table 5.3 Designated sites for nature conservation relevant to the Strategy.

Site Name	Designation	Importance	Distance from Strategy's Frontage (km)
Liverpool Bay	SPA	International	0
Morecambe Bay	SAC / SPA / Ramsar	International	5
Lune Deep	pSAC	International	7.5
Shell Flat	cSAC	International	7.5
Ribble and Alt Estuaries	SPA / Ramsar	International	0
Sefton Coast	SAC	International	9
Wyre Estuary	SSSI	National	5
Ribble Estuary	SSSI	National	0
Lytham St Annes Dunes	SSSI	National	0
Sefton Coast	SSSI	National	9
Ribble Estuary	NNR	Local	0
Lytham St. Annes	LNR	Local	0
Queen's Promenade Coastal Grassland	BHS	Local	0
Lytham Hall Woods	BHS	Local	0
Lytham Moss Copses	BHS	Local	0
Westby Clay Pit	BHS	Local	0
St. Annes Old Links Golf Course and Blackpool South Railway Line	BHS	Local	0
River Ribble, Lower Tidal Section	BHS	Local	0
Warton Brows	BHS	Local	0
Freckleton Naze	BHS	Local	0
Lytham Foreshore Dunes and Saltmarsh	BHS	Local	0

Liverpool Bay SPA

Liverpool Bay SPA is located adjacent to the entire length of the Strategy's study frontage. Liverpool Bay is one of the most important sea areas around the UK for populations of wintering seabirds, particularly common scoter and red throated diver, which arrive in large numbers in the autumn from their breeding sites in Northern Europe and sub-Arctic areas. The total area of the proposed Liverpool Bay SPA is approximately 170,292.94ha (Natural England, 2010a).

Morecambe Bay SAC / SPA / Ramsar site

Morecambe Bay is located to the north of the Strategy's frontage and covers an area of over 37,000ha, representing the largest continuous intertidal area in Britain. The bay

comprises the estuaries of five rivers, with areas of intertidal mud and sandflats, associated saltmarshes, shingle beaches and other coastal habitats. Morecambe Bay is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns (JNCC, 1996). The Morecambe Bay SAC and SPA designations form a European Marine Site (EMS) under the *Natura 2000* network of European protected areas. Existing coastal processes link these sites to the study area and therefore they cannot be scoped out at this stage of the assessment.

Lune Deep pSAC

Lune Deep pSAC is located to the north of the Strategy's frontage and was identified by Natural England as one of the best examples of the range and diversity of reef in the UK for protection under the Habitats Directive. The Lune Deep pSAC comprises a rocky reef, about 33 percent of the site (307ha), on its northern edge and Lune Deep channel to the south. Lune Deep channel is an enclosed deep hole at the entrance of Morecambe Bay, produced through scouring which distinguishes the pSAC from other glacial reefs in existing SACs in the same Regional Sea (which are glacial deposits). Lune Deep pSAC supports mixed turf communities over a cobble/rock substrate, which provide habitat for hydroids, sponges and bryozoans. The reef is a contrast to the surrounding muddy habitat (Natural England, 2010b). Existing coastal processes link this site to the study area and therefore it cannot be scoped out at this stage of the assessment.

Shell Flat cSAC

Shell Flat cSAC is located to the west of the Strategy's frontage northern extent. The area is characterised by a large sandbank feature (Shell Flat), covering 8,892ha, at the mouth of Morecambe Bay surrounded by shallower areas to the north and south. The Shell Flat feature is an example of a Banner Bank whereas the other sandbank features described above are associated with estuaries or the sandbank complexes associated with headlands (Natural England, 2010c).

In terms of the biological community, a site specific survey identified species typical of sandy substrates; bivalve molluscs such as *Nucula nitidosa*, *Abra alba* and *Fabulina fabula* the bristle worms *Magelona johnstoni*, *Glycera alba* and *Magelona filiformis* were found in all grab samples. The site supported a generally low diversity of species, with the greatest numbers of benthic infauna to the south and east of the sandbank (Natural England, 2010c).

Ribble and Alt Estuaries SPA / Ramsar site

The Ribble and Alt Estuaries SPA and Ramsar site comprises two estuaries of which the Ribble estuary is by far the larger and located immediately adjacent to the Strategy's frontage, from Squires Gate to Naze Point.

The site consists of extensive sand- and mud-flats and, particularly in the Ribble estuary, large areas of saltmarsh. There are also areas of coastal grazing marsh located behind the sea embankments. The intertidal flats are rich in invertebrates, on which waders and some of the wildfowl feed. The highest densities of feeding birds are on the muddier substrates of the Ribble, though sandy shores throughout are also used. The saltmarshes and coastal grazing marshes support high densities of grazing and

seed-eating wildfowl and these, together with the intertidal sand- and mud-flats, are used as high-tide roosts. Important populations of waterbirds occur in winter, including swans, geese, ducks and waders. The SPA is also of major importance during the spring and autumn migration periods, especially for wader populations moving along the west coast of Britain. The larger expanses of saltmarsh and areas of coastal grazing marsh support breeding birds during the summer, including large concentrations of gulls and terns (JNCC, 2001). In addition to the important bird assemblages that the site supports, natterjack toads (*Bufo calamita*) are also a designated feature of the Ramsar site (JNCC, 1995).

Sefton Coast SAC / SSSI

The Sefton Coast sites are located approximately 9km to the south of the Strategy's frontage, extending over 20km between Southport and Crosby. The sites are of interest for intertidal mud and sandflats, embryonic shifting dunes, mobile dunes, dunes with creeping willow (*Salix arenaria*), humid dune slacks, fixed dunes, dune grasslands and dune heath. Small areas of saltmarsh are also present (JNCC, 2001). Existing coastal processes link these sites to the study area and therefore they cannot be scoped out at this stage of the assessment.

Wyre Estuary SSSI

The Wyre Estuary SSSI is located approximately 5km to the north of the Strategy's frontage. The site supports the largest area of ungrazed saltmarsh in North West England. The transitions from low to upper marsh are well developed and there are extensive transitions to freshwater swamp communities above the high water mark.

The estuary is also of national importance for wintering and passage black-tailed godwit (*Limosa limosa*), wintering turnstone (*Arenaria interpres*) and for wintering teal (*Anas crecca*) in times of hard weather (Natural England, 1995). Existing coastal processes link the site to the study area and therefore it cannot be scoped out at this stage of the assessment.

Ribble Estuary SSSI / NNR

The Ribble Estuary SSSI is situated between Southport and Lytham St. Annes, extending inland to Longton. The primary nature conservation interest in the estuary is the populations of birds that utilise the range of habitats throughout the year. It has extensive intertidal sand-silt flats with one of the largest areas of grazed greenmarsh in Britain and includes small areas of recently reclaimed saltmarsh (Natural England, 1984).

NNRs represent many of the finest wildlife and geological sites in the country. The Ribble Estuary NNR occupies over half of the total area of the Ribble estuary, including extensive areas of mud- and sandflats and almost the entire saltmarsh habitat. The main area of saltmarsh is grazed by over 700 cattle from April to September, forming one of the largest single herds of cattle in the UK. Wildfowling also takes place on much of the reserve and improved management of this activity has contributed to the increase in number of birds visiting the site.

Lytham St. Annes Dunes SSSI / LNR

Lytham St. Annes dunes are located between Blackpool and St. Annes on the Fylde Coast. At Starr Hills the dunes reach their maximum width and are important as the best example of a calcareous dune system remaining in Lancashire. In spite of past sand extraction, seasonal pressures from holidaymakers and the small size of the dune system, it still shows classic features of dune formation and ecological succession including the widest range of foredune, yellow dune, dune grassland, acid dune grassland, dune scrub and dune slack habitats found anywhere along the Fylde Coast (Natural England, undated).

Blackpool and Fylde BHSs

BHSs are the most important non-statutory wildlife sites in Lancashire. They contain valuable habitats such as ancient woodland, species-rich grassland and bogs. Many provide a refuge for rare and threatened plants and animals. Biological Heritage Sites form an irreplaceable part of our environment and are a major part of the strategy to conserve the biological richness of Lancashire. There are 12 BHSs within the study area.

5.3.2 BAP habitats and species

Lancashire County Council's LBAP is developed and implemented by several organisations including Lancashire County Council and the Wildlife Trust. Identification of areas through the LBAP ensures sites receive appropriate management to deliver biodiversity objectives. The Lancashire LBAP habitats and species relevant to the study area are presented in **Table 5.4**.

Table 5.4 LBAP habitats and species relevant to the study area (BARS, 2010).

Habitats	Species
Arable farm land	Bats (order Chiroptera)
Broadleaved and mixed woodland	Bird-eye primrose (<i>Primula farinosa</i>)
Saltmarsh and estuarine rivers	Black-tailed godwit (<i>Limosa limosa</i>)
Sand dune	Great crested newt (<i>Triturus cristatus</i>)
Golf courses	Lapwing (<i>Vanellus vanellus</i>)
Rivers and streams	Skylark (<i>Alauda arvensis</i>)
	Twite (<i>Carduelis flavirostris</i>)

5.3.3 Fish and fisheries

The coastal waters surrounding the study area are a spawning ground for mackerel (*Scomber scombrus*), sandeels (family *Ammodytidae*), whiting (*Merlangius merlangus*), sole (*Solea solea*), plaice (*Pleuronectes platessa*), cod (*Gadus morhua*) and sprat (*Sprattus sprattus*). They are also a nursery ground for cod, tope shark (*Galeorhinus galeus*), herring (*Clupea harengus*), anglerfish (*Lophius piscatorius*), plaice, sandeels, spotted ray (*Raja montagui*), sole, thornback ray (*Raja clavata*) and whiting. In addition, sea trout (*Salmo trutta*) and salmon (*Salmo salar*) migrate through the estuary to spawn further upstream. The Ribble estuary is also a mussel production area (Class C)¹⁰ (Elaine Young, Marine Management Organisation, pers. comm. December 2010).

¹⁰ where bivalve molluscs must be relayed (for a minimum of 2 months) to meet Class A or B, or be heat treated.

Within the Blackpool and Fylde area there are over 100 shore-launched boats for angling. In addition, there are approximately 20 boats netting for shrimps and prawns; however, this activity is mostly domestic.

5.3.4 Data gaps / uncertainties

Detailed ecological data for the study area (for example, biological records data) have not been obtained to date for the Strategy. No surveys are proposed since this level of detail is not considered appropriate to a strategic assessment.

5.4 Air and climatic factors

5.4.1 Air quality

Local authorities in the UK have statutory duties for managing local air quality under Part IV of the Environment Act 1995 (HMSO, 1995). The Act required the preparation of a national Air Quality Strategy (AQS) which set air quality standards and objectives for specified pollutants. The Act also outlined measures to be taken by local planning authorities (LPAs) in relation to meeting these standards and objectives (the Local Air Quality Management (LAQM) system). If a local authority finds any places where the objectives are not likely to be achieved, it must declare the area an Air Quality Management Area (AQMA).

Blackpool Borough Council has declared an AQMA for nitrogen dioxide (NO_2) which encompasses parts of the town centre, extending along Talbot Road to the seafront and Dickson Road to its junction with Pleasant Street (Defra, 2010). Fylde Borough Council has not declared any AQMAs.

5.4.2 Climate

The most recent UK Climate Projections, 2009, (UKCP09), provided through the UK Climate Impacts Programme (UKCIP), is the latest and most comprehensive package of information on the potential future climate for the UK. The predicted changes for key climate variables for North West England are presented in **Table 5.5**.

Table 5.5 Summary of changes for key climate variables under the medium emissions scenario for the 2050s (UKCP09, 2011).

Climate variable	Probability level (%)		
	10	50	90
Annual mean temperature ($^{\circ}\text{C}$)	1.4	2.3	3.3
Winter mean temperature ($^{\circ}\text{C}$)	1.1	1.9	3.0
Summer mean temperature ($^{\circ}\text{C}$)	1.2	2.6	4.1
Annual mean precipitation (%)	-6	0	6
Winter mean precipitation (%)	+3	+13	+26
Summer mean precipitation (%)	-36	-18	+1

Table 5.5 shows that annual and seasonal temperatures are predicted to rise, with a central estimate increase in annual mean temperature of 2.3°C , which is very unlikely to be less than 1.4°C and is very unlikely to be more than 3.3°C . Rainfall patterns are more uncertain as indicated by their wider ranges. The central estimate of change (50%

probability level) indicates that summer precipitation will decrease, whilst winter precipitation will increase. The overall annual change is predicted to be zero at the 50% probability level.

Defra guidance (2006) show that the North West may rise at 0.8mm per year and sea levels may rise at increasing net rates from 2.5mm per year (present day to 2025) up to 13mm per year (years 2085-2115).

As well as considering and helping adapt to the effects of climate change, flood and coastal erosion options can have different levels of contribution to greenhouse gas ('carbon') emissions. While no quantitative mechanism exists for assessing the contributions of strategic schemes to the causes of climate change, a qualitative assessment of the carbon implications of the strategic options will be undertaken to help inform the preferred approach.

5.5 Water

5.5.1 Bathing beaches

The objective of the Bathing Waters Directive (76/160/EEC) is to protect public health and the environment from faecal pollution in areas designated as bathing waters. Designated bathing waters require regular water quality monitoring, carried out by the Environment Agency, throughout the bathing season (15th May to 30th September) to ascertain whether they meet mandatory or guideline standards. Guideline standards are 20 times stricter than the mandatory standard. Meeting the guideline standard is one of the main criteria for the award of European blue flag status.

There are seven areas designated as bathing waters within the study area; their current status and locations are presented in **Table 5.6** and **Figure D3** in **Appendix D**, respectively. Over the last ten years, these bathing waters, on average, have reached 'good' status for the year.

Table 5.6 Bathing water standards for areas designated as bathing water within the study area, August 2010 (Environment Agency, 2009c).

Designated Bathing Area	Bathing Water Standard	Key
Cleveleys	Good	Excellent - meets guideline standards; Good - meets mandatory standards; Poor - meets the required standards; Closed - closed during the bathing season.
Bispham	Good	
Blackpool North	Closed	
Blackpool Central	Good	
Blackpool	Good	
St. Annes North	Poor	
St Annes	Poor	

5.5.2 Water Framework Directive

Specific mitigation measures are set for water bodies that have been designated as heavily modified in order to achieve the Environmental Objectives of the WFD (see **Section 2.2**). These are listed within the Programme of Measures for the North West RBMP. These measures are intended to mitigate impacts that have been, or are being,

caused by human activity, such as flood and coastal defence works, with the aim of enhancing and restoring the quality of the existing environment.

There are nine WFD waterbodies within the study area which are detailed within the North West RBMP (Environment Agency, 2009b). Some of the key features of these are summarised in **Table 5.7** below, with their locations presented in **Figure D3** in **Appendix D**.

Morphological changes such as flood protection have been identified within the North West RBMP as potentially being an issue / risk to the environment which needs to be managed in order to achieve the objectives set. The SEA process will ensure that options within the strategy do no compromise achieving the objectives set within the RBMP.

Table 5.7 WFD waterbodies within the study area (Environment Agency, 2009b).

Water body category	Water body name	Water body ID	Hydromorphological designation	Current overall status / potential	Status objective
Coastal	Mersey Mouth	GB641211630001	Heavily modified	Moderate	Good by 2027
Estuarine	Ribble	GB531207112400	Heavily modified	Moderate	Good by 2027
Groundwater	West Lancashire Quaternary Sand and Gravel Aquifers	GB41202G912700	N/A	Good	Good by 2015
Groundwater	Fylde Permo-Triassic Sandstone Aquifers	GB41201G100500	N/A	Poor	Good by 2027
River	Liggard Brook	GB112071065650	Heavily modified	Moderate	Good by 2027
River	Wrea Brook	GB112071065680	Heavily modified	Moderate	Good by 2027
River	Pool Stream	GB112071065660	Not Designated	Moderate	Good by 2027
River	T Ribble/Savick Bk/SF Drains	GB112071065670	Heavily modified	Moderate	Good by 2027
River	Ribble Link (Savick Brook, River Ribble, River Douglas)	GB71210217	Artificial	Moderate	Good by 2027

5.5.3 Designated shellfish waters

The aim of the EC Shellfish Waters Directive (2006/113/EEC) is to protect or improve shellfish waters in order to support shellfish life and growth, therefore contributing to the high quality of shellfish products directly edible by man. It sets physical, chemical and microbiological water quality requirements that designated shellfish waters must either comply with ('mandatory' standards) or endeavour to meet ('guideline' standards). The outer estuary of the Ribble is designated as a shellfish water to protect its mussel fishery.

5.5.4 Riverine surface water quality

Of the five watercourses within the study area, as described in **Table 5.7**, only Wrea Brook is classed as a main river by the Environment Agency and therefore monitored for water quality. Water quality results for 2009 showed high levels of phosphates and moderate levels of nitrates (Environment Agency, 2009d).

5.5.5 Groundwater quality

The Environment Agency has classified the bedrock underlying the study area as 'Secondary B', which are predominantly lower permeability layers that may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers (Environment Agency, 2010b). Three are also patches of Secondary A superficial deposits within the study area, the largest of which is located under Lytham St. Annes. These are generally aquifers formerly classified as minor aquifers.

To the south east of the study area, there is an area of bedrock classed as a 'Principal' aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

There is a Groundwater Source Protection Zone (GSPZ) that commences at Naze Point, at the eastern extent of the study area, and which extends to the east and north. There are three zones to the GSPZ, total catchment¹¹, outer¹² and inner¹³ zones, with the total catchment zone adjacent to the study area. The outer and inner zones of the GSPZ are north of Preston, approximately 10km distant from the frontage (Environment Agency, 2009e).

The zones are used in conjunction with the Environment Agency's Groundwater Protection Policy to set up pollution prevention measures in areas which are at a higher risk, and to monitor the activities of potential polluters nearby.

The bedrock aquifers and GSPZ are illustrated on **Figure D3 in Appendix D**.

5.5.6 Licensed abstractions and discharge consents

The study area is covered by the integrated CAM for the Ribble (Environment Agency, 2007). Within this CAM, the study area falls within the Lower Ribble policy area, which covers a narrow strip of land from Cleveleys to just south of Blackpool where it extends south and east to the Ribble estuary and Hurst Green, respectively. The CAM classifies the current status of the water resources for the Lower Ribble as 'water available', which

¹¹ Defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source.

¹² Defined by a 400 day travel time from a point below the water table. This zone has a minimum radius of 250 or 500 metres around the source, depending on the size of the abstraction.

¹³ Defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50 metres.

means that water is likely to be available at all flows including low flows; however, restrictions may apply. The abstraction strategy is to allow further licensing to move towards 'no water available'.

Many watercourses that flow through Preston, such as Savick Brook and Eaves Brook, suffer from urban pollution. There are a number of unsatisfactory intermittent discharges such as combined sewer overflows (CSOs) (Environment Agency, 2007).

There are currently 39 CSOs in Preston that do not comply with relevant legislation. These overflows spill into watercourses during rainstorms and cause water quality issues in the River Ribble and the coastal region stretching from Southport to Blackpool. United Utilities has produced a Ribble estuary and coastal water environment improvement scheme to rectify this issue (United Utilities, 2011).

5.6 Landscape and seascape

5.6.1 National character areas

The study area is within the Lancashire and Amounderness Plain National Character Area (Natural England, 2011). These areas are designated by Natural England for sharing similar characteristics. Some of the most significant landscape features, within these character areas and of relevance to the study area, include:

- the saltmarshes at the head of the estuary;
- remnants of lowland mires and mosses;
- the main urban settlement concentrated in the planned Victorian coastal resorts and inland towns; and,
- extensive drainage systems of raised ditches and dykes.

5.6.2 Local character assessment

A Landscape Character Assessment (LCA) of Lancashire was carried out in 2000 (Lancashire County Council, 2000). The local landscape areas and types that are within the study area are presented in **Table 5.8**.

Table 5.8 Lancashire landscape character areas and types within the study area (Lancashire County Council, 2000).

Local Character Area	Local Character Type	Description
15 Coastal Plain	15d The Fylde	An area of undulating farmland which is naturally poorly drained. Field ponds are a particular characteristic of the area and provide important wildlife habitats.
16 Mosslands	16b South Fylde Mosses	Lytham Moss, on the eastern edges of Lytham St Annes is influenced by the proximity of the urban areas. Pylons running from east to west across the landscape to Blackpool dominate the horizon, with trees providing a backdrop and sense of scale in the landscape. Lytham Hall is also an important, established landscape feature as the landscaped grounds contain many trees.

Local Character Area	Local Character Type	Description
18 Open Coastal Marsh	18a Ribble Marshes	Extensive area of coastal marsh in the sheltered estuary of the River Ribble. The area is managed as a National Nature Reserve and large numbers of visiting birds are attracted by the standing water.
19 Coastal Dunes	19a Fylde Coast Dunes	The coastal dunes occur between the sea and either farmland or urban areas. They comprise small area of a once extensive system. The dunes are located in open and exposed sites.
Urban	Industrial Age	No description
	Suburban	

The landscape character areas described in **Table 5.8** will be assessed against the proposed options to reduce their potential to impact on the local landscape character.

5.6.3 Seascape character assessment

Seascape character will also be considered. Although this has not yet been characterised, guidance sets out a clear methodology for undertaking seascape characterisation and for subsequent evaluation process.

There are no areas designated as Area of Outstanding Natural Beauty (AONB) within the study area.

5.6.4 Visual amenity

The Zone of Theoretical Visibility from where any proposed projects/schemes might be visible would need to be established. Within this area there would be views of the proposals from a number of publicly accessible and private locations. It is likely that most of the views to the proposed works are from close to or on the coastline. The main visual receptors are likely to comprise:

- promenades and beaches,
- the coastal path,
- coastal gardens,
- the piers; and,
- hotels and houses along the sea front.

There would also be views from the sea and it will need to be agreed whether visual effects on sea-based receptors should be assessed.

5.7 Historic environment

5.7.1 Historic Assets

There are a high number of Listed Buildings present within the study area, mainly concentrated in Lytham St. Annes and around the three piers in Blackpool (see **Figures D4a and D4b in Appendix D**). The Grade I and Grade II* Listed Buildings in or close to the study area are in **Table 5.9**.

Table 5.9 Grade I and Grade II* Listed Buildings within or close to the strategy area.

Listed Building	Location	Grade
Blackpool Tower	Blackpool	I
Lytham Hall	St Annes	I
Church of the Sacred Heart	Talbot Road	II*
Fairhaven United Reformed Church	St Annes	II*
Church of St. John	St Annes	II*

Between August 2007 and September 2009 a desk based rapid coastal zone assessment was carried out to identify the threat posed to heritage assets on the North West coast by rising sea level and consequential coastal erosion. The assessment identified the following archaeological features at risk along the study area's frontage (Archaeological Research Services Ltd., 2009):

- three prehistoric sites;
- three Roman sites;
- seven post-Medieval sites;
- 17 industrial and modern sites; and,
- numerous war time sites.

The Historic Environment Record (HER) records other nationally important features which are not designated. The data from the HER has not been collected at this stage in the environmental assessment, this data will be considered at the design stages of the schemes which arise from the Strategy.

There are no scheduled ancient monuments (SAMs) within the study area.

5.7.2 Conservation Areas

Conservation Areas are designated for their special architectural and historic interest. Any work within these areas requires consent from the Local Authority. There are eight Conservation Areas within or very close to the study area (see **Figures D4a and D4b in Appendix D**). The Conservation Areas in the study area are:

- Blackpool town centre;
- Lytham;
- Porritt Houses, Lytham;
- Ashton Gardens, Lytham;
- Lytham Avenues;
- St Annes Road East;
- St Annes on Sea; and,
- Promenade Gardens, Lytham St. Annes.

5.7.3 Registered historic parks and gardens

Registered historic parks and gardens are of national importance. As part of the planning process, the impact of any development on registered parks and gardens is considered by a local authority. There are three registered parks and garden of historic interest within the study area (see **Figure D4b in Appendix D**):

- Lytham Hall;
- Promenade gardens, Lytham St. Annes; and,
- Aston Gardens, Lytham St. Annes.

5.8 Soil

5.8.1 Coastal geology

The coastline of the Fylde Coast is predominantly cut into glacial sediments. The underlying solid geology dates predominantly from the Triassic era. The whole coastal zone from Fleetwood to Crosby is underlain by Keuper Marl which forms the sub-drift floor of the whole Ribble estuary west of Preston. Within this division the rock falls into a sub-division of Mercia Mudstones of which the predominant varieties are Singleton and Kirkham mudstone.

Glacial deposits overly these strata were deposited over the last 10,000 years following the last ice age. These comprise upper and lower boulder clays separated by sand and gravel deposits in the central section, with wind blown sand deposits at either end (Blackpool Borough Council, 1993).

There are glacial sand layers underlying the boulder clay, up to 30m, in the central sections (Shoreline Management Partnership, 1999). All the cliff sections are now artificially defended by sea walls.

To the north and south of Blackpool, postglacial alluvial deposits dominate. These are supplemented by material eroded from the boulder clay to the south and river gravels, sands and silts to the north (Halcrow, 2002).

There is significant geological interest in the area with two designated sites, Lytham Coastal Changes SSSI and Lytham St. Annes Dunes Geological Heritage Site (GHS) (see **Figure D2b in Appendix D**).

Lytham Coastal Changes SSSI

Lytham Coastal Changes consists of four separate locations within the town of Lytham St Annes. The geological interest is preserved in sediments beneath the top soil and sand dunes of the area, and provides a record of sea-level changes which occurred during the Holocene (Natural England, 1999).

Lytham St. Annes Dunes GHS

Lytham St. Annes Dunes comprises the sand dunes from Squires Gate to Clifton Drive North car park, including the dunes at Starr Hills. These dunes are deemed to be the only relatively 'natural' dune system remaining in Lancashire, as other dune systems located within the County are small and 'squeezed' (UKRIGS, 1999).

5.8.2 Land use

The Agricultural Land Classification (ALC) provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system. It helps underpin the principles of sustainable development.

The principal physical factors influencing agricultural production are climate, site and soil. These factors, together with interactions between them, form the basis for classifying land into one of five grades; Grade 1 land being of excellent quality and Grade 5 land of very poor quality.

The area along the coast in the study area is predominately urban, whilst the section of the study area behind Lytham St. Annes and within the flood zone is classified as mostly Grade 2, with a smaller areas of Grades 3 and 4 also present (see **Figure D5** in **Appendix D**).

5.8.3 Coastal processes

The Strategy's frontage has been substantially modified by human intervention. Land reclamation along Blackpool has resulted in much of the frontage being artificially maintained seaward of its natural position. Coastal defences were first constructed to protect the resort of Blackpool in the 1890s, following constant severe erosion and beach lowering as the shoreline was unable to retreat.

Coastal processes are considered to control and influence the strategy frontage by governing a range of reactionary processes, for example sediment transport pathways, erosion and accretion trends and tidal inundation.

Waves and water levels

Offshore of the Fylde Coast, currents are generally west to east on the flood tide and vice versa on the ebb. Further inshore these currents adjust to north/south, flowing northwards on the flood tide and southwards on the ebb (Bowden, 1980).

There are residual circulatory currents offshore which are linked with the Ribble estuary to the south and Morecambe Bay to the north, with the flow diverging offshore of the Blackpool frontage. It is recognised that these flows are stronger in the north in comparison to those in the south of the frontage.

Modelling of the inshore wave conditions off the south-western corner of the Fylde Coast was carried out by HR Wallingford (2001) as part of a study into the 'Effects of Sand Extraction in the Fylde Foreshore'. Based upon the results, an inshore wave rose for offshore of Lytham St Annes was produced, as illustrated in **Figure 5.1**.

The figure shows that the highest waves are generated in the Irish Sea by the action of westerly winds and those generated by north-westerly winds being far smaller.

Tides within the Irish Sea are semi-diurnal. The nearest points where predicted water levels are available are described in **Table 5.10**.

Table 5.10 Predicted water levels relevant to study area.

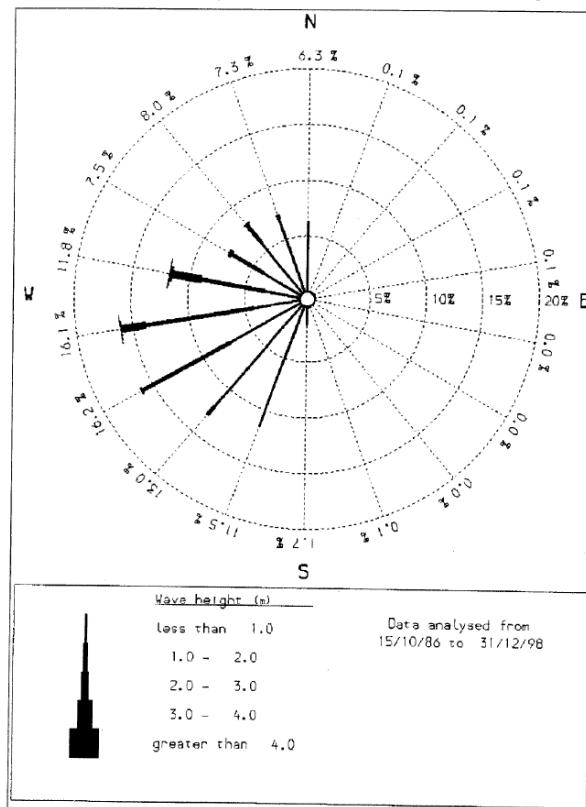
Tidal Level	Blackpool (mOD)	Ribble Bar (mOD)	Preston (mOD)	Southport (mOD)
Highest Astronomical Tide (HAT)	5.10	5.36	5.45	-
Mean High Water Spring (MHWS)	4.00	4.42	4.40	5.1
Mean High Water Neap (MHWN)	2.10	2.64	2.40	2.2
Mean Tide Level (MTL)	0.02	0.31	1.30	-
Mean Low Water Neap (MHWN)	-2.10	-2.03	-0.80	-
Mean Low Water Spring (MLWS)	-3.90	-3.81	-0.80	-
Lowest Astronomical Tide (LAT)	-4.89	-4.79	-0.80	-

Based upon the water levels presented in **Table 5.10**, it is clear that there is an increasing gradient in high water levels from Blackpool in the north to the Ribble estuary in the south; however, there is little change in the low water levels.

Sediment transport and erosion rates

The Cell Eleven Tidal and Sediment Transport Study (CETaSS) Phase 2 (ii) (Halcrow, 2010) has undertaken extensive modelling of the regional sediment transport pathways and specifically assessed the behaviour of the Ribble estuary. The offshore sediment transport is directed onshore from Formby Point to Central Blackpool. To the north of Blackpool the offshore transport is more shore parallel and in a northerly direction towards Morecambe Bay.

Figure 5.1 Inshore wave rose for Lytham St. Annes (HR Wallingford, 2001).



A divergence in tidal flow is recognised to exist offshore of Blackpool; however the littoral drift divide has been identified to be located to the south. The drift divide is located between Squire's Gate and Lytham St Annes, based on the point at which net littoral transport rates change from northerly to southerly in direction.

To the south of the divide there is a net transfer of sediment into the Ribble estuary mouth, while to the north there is net transport along the coast towards Fleetwood. The potential rate southwards towards the Ribble estuary was calculated to be 168,000m³/yr, however modelling of the estuary suggested it may be as little as 10,000m³/yr.

The results from the modelling also indicated a negative sediment budget towards Cleveleys. The explanation is thought to be the lack of sediment supply from the south due to the long history of coastal protection at the Blackpool frontage and the increased northerly transport of material.

The Ribble estuary was identified as a weak sediment sink, as the estuary is relatively full of sediment. It is likely to be able to accumulate more sediment with future sea level rise. The main source of sandy sediment for the estuary is the bed of the Irish Sea, while the finer sediment comes from the suspension load of the Irish Sea.

There is a general transport of sediment from offshore into the estuary, estimated to be 250,000m³/yr under present day conditions, rising to 260,000m³/yr under a climate change scenario with a 0.5m rise in sea level. Within the estuary, annual transport rates indicate that there is net transfer of sediment towards the mouth from within the estuary downstream of Warton Aerodrome.

5.8.4 Contaminated Land

Within the study area there are two active land fill sites; one at Cropper Road, North East of Blackpool airport and the other at Midgeland Farm to the East of the airport. The landfill class of these sites is currently unknown. There are also 24 historic landfill sites within the study area (Environment Agency, 2010c). Historic landfills are locations where there are records of waste being received to be buried, however they are now closed or covered. The majority of the historic landfill sites are set back from the coast line, apart from three sites at Lytham which are on the coast side of the A584.

5.9 Interactions between receptors

A benefit of SEA is that it provides the opportunity to identify and propose measures to avoid or mitigate cumulative effects (interactions and in-combination) at a high level; such effects are less predictable or manageable at a project level. Therefore the following will be considered during the next stages of the SEA:

- relevant information that is not limited to the study area boundary;
- potential effects on a local (Plan sub-unit), plan area and wider study area scale;
- any receptors that either now or in the future (based on known trends) will potentially interact; and,
- relevant policies, actions or developments included in other plans or programmes that may occur in the same timeframe or location as those being proposed in the Strategy.

5.10 Receptors scoped out

The main aim of the scoping stage is to identify those key environmental receptors which need further consideration at the next stage of the SEA, as they may potentially be affected by the strategic options, and to set out the framework for that assessment. As a result of the known baseline, and an understanding of the strategic options that are to be considered, and other information to date, we propose the scope of the further stages of the SEA is as shown in **Table 5.11** below. Those receptors we suggest are scoped out of the detailed assessment are not considered in the setting of draft SEA objectives (for use in the detailed assessment stage of the SEA, and described in **Section 6**).

Table 5.11 Receptors proposed to be scoped in and out of the detailed assessment.

Receptor	Sub section	Scoped in (Y/N)	Reason
Population and human health	Local community and economy	Y	The risk of flooding and coastal erosion has significant implications on communities within the study area in terms of stress, disruption, and impacts on local amenity and recreational facilities. The material assets, transport links and other infrastructure in these settlements are key to their survival. The strategic options may have significant impacts on these.
	Key tourism and recreation features		
	Material assets and critical infrastructure		
Biodiversity, flora and fauna	Designated sites	Y	The strategic options may directly or indirectly impact on habitats and associated species as a result of land loss, disturbance and damage or, for example, from altered coastal processes.
	BAP habitats and species		
	Fish and fisheries		
Air and climate factors	Air quality	N	There may be localised and temporary changes in air quality during any construction activities; however, these are unlikely to lead to significant changes to air quality within the study area. The strategic options will not affect air quality during operation.
	Climate	Y	The short listed options have taken account of the predicted effects of climate change, such as sea level rise and increased storminess. Options will be considered in relation to their potential to contribute to lower (whole life) carbon delivery of the Plan's objectives.
Water	Bathing beaches	Y	The strategic options have the potential to affect water quality and water resources, for example, by changing patterns of water flow (ground and surface water), currents and sediment flow.
	Water Framework Directive		
	Designated shellfish waters		
	Riverine surface water quality		
	Groundwater quality		
	Licensed abstractions and discharge consents		

Receptor	Sub section	Scoped in (Y/N)	Reason
Landscape and seascape	National character areas	Y	The strategic options have the potential to impact on landscape / seascape character and visual amenity whether through a changed coastline as a result of doing nothing or altered landscape through construction of defences.
	Local character assessment		
	Seascape character assessment		
	Visual amenity		
Historic environment	Historic assets	Y	The strategic options may impact on the rich heritage of the area with known and potentially unknown archaeological and historic features.
	Conservation areas		
	Registered parks and gardens		
Soil	Coastal geology	N	Construction of the strategic options could adversely affect soil quality but these issues can be addressed at project level.
	Contaminated land		
	Land use		
	Coastal processes	Y	The strategic options have the potential to affect coastal processes in the study area.

6 SEA ASSESSMENT CRITERIA, INDICATORS AND TARGETS

6.1 Assessment Criteria

Through a review and description of the environmental issues and sensitivities associated with the Strategy study area, environmental 'assessment criteria' have been developed. The assessment criteria allow the identification, measurement and comparison of the potential environmental effects associated with the different coastal flood and erosion risk management options that have been identified. These assessment criteria will help to guide the detailed assessment and focus on the important environmental issues identified in the development of the Strategy at this stage (see **Section 5**). The Assessment Criteria are set out in **Table 6.1**.

The assessment criteria do not limit the SEA's ability to identify effects beyond the receptors identified during scoping. This is important as further receptors may be identified during consultation with key stakeholders or after the technical assessment.

If considered appropriate, the assessment criteria are accompanied by indicators and targets:

- indicators are used to provide a consistent description of a specific environmental issue. Where possible, indicators will use quantitative environmental information. Where this is not possible, simple qualitative 'Yes' or 'No' answers are used;
- targets set a desired outcome and are used to compare options. A number of existing environmental targets have been identified during our review of legislation, guidance and plans (see **Section 2**). Relevant targets taken from such plans and policies will be used to form the basis of our targets associated with our assessment criteria.

Consultation on this Scoping Consultation Document will provide feedback from key stakeholders on the SEA assessment criteria, and potential indicators and targets. The assessment criteria recorded in this document will be updated post consultation, and used at the options appraisal stage of the SEA. The proposed options considered in the development of the Strategy will not necessarily meet all of the SEA assessment criteria and where conflicts arise; mitigation measures will need to be considered.

Table 6.1 SEA assessment criteria, potential Indicators and targets.

Receptors	Assessment Criteria	Potential Indicators	Potential Targets
Population and human health	<ul style="list-style-type: none"> • Will the option contribute to the development of the local community and economy? • Will the option avoid or minimise the risk of flooding and coastal erosion to people and property? • Does it change the flood or erosion risk to key services, utilities or transport infrastructure? • Does it contribute to the enhancement of local recreation and tourism facilities? • Does the option contribute to the wider amenity value of the frontage? 	<ul style="list-style-type: none"> • Number of identified regeneration objectives supported. • Number of properties protected/affected under strategic options. • Communications links, utilities and transport infrastructure routes. • Number and area of local recreation and amenity facilities protected/affected under strategic options. • % of most deprived super output areas protected/affected under strategic options. • Qualitative assessment of contribution to amenity value. 	<ul style="list-style-type: none"> • No conflict with development and regeneration objectives within relevant adopted plans. • No loss of amenity or recreational facilities; enhancement where possible. • No disruption or loss of use of services. • Maintain and promote recreation and tourism and resort potential, in accordance with the existing and emerging Master Plans.
Biodiversity, flora and fauna	<ul style="list-style-type: none"> • Does it change the structure and function of a designated site or provide opportunities for enhancement of habitat and species within it? • Does it change the extent of a designated site? • Does it change the extent or condition of Lancashire BAP habitat and/or protect international and nationally protected species and their habitats? • Does the option significantly affect undesignated terrestrial and aquatic ecological features? 	<ul style="list-style-type: none"> • Favourable Condition Status of SACs, SPAs, Ramsar sites and SSSIs. • Preservation of key features of NNR, LNR, BHSs and Important Bird Areas. • National and Lancashire BAP objectives and targets. • Habitats supporting protected species populations. • Favorable condition of species associated with SAC, SPA, Ramsar site and SSSI designations. • Consideration of potential impacts on undesignated areas (based on professional judgment). 	<ul style="list-style-type: none"> • Be compliant with the Habitats Regulations. • Make a positive contribution to a national target of restoring to favourable condition 24,000ha of SSSIs or unfavourable but recovering condition by 2010 and beyond where influenced by our own operations. • Be compliant with the Habitats Regulations and Wildlife and Countryside Act (1981) and CRoW (2000). • Contribute to enhancement of Lancashire BAP habitats and species. • Contribute to the national target for creation of 800ha of BAP habitat to achieve UK target by 2015. • No adverse effect to terrestrial and aquatic ecosystems.
Air and climatic factors	<ul style="list-style-type: none"> • Does it contribute to the causes of climate change? 	<ul style="list-style-type: none"> • Carbon Footprint 	<ul style="list-style-type: none"> • Minimise energy consumption or embodied carbon. • Contribute to the reduction in greenhouse gas emissions targets set out in the Lancashire Climate Change Strategy and Blackpool's Carbon Management Plan.

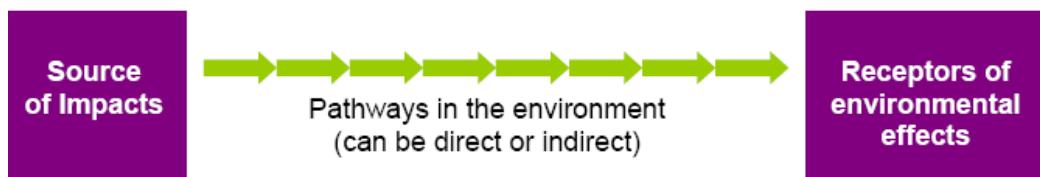
Receptors	Assessment Criteria	Potential Indicators	Potential Targets
Water	<ul style="list-style-type: none"> • Is it likely to change the general quality assessment grades of surface, ground and coastal water quality? • Does it change potable and/or non-potable abstraction resources or disrupt aquifer continuity? 	<ul style="list-style-type: none"> • Surface water quality. • Ground water quality. • Coastal water quality. • Estuarine water quality. • Abstraction status of the Lower Ribble policy area. • Water quality of water resources. 	<ul style="list-style-type: none"> • No changes that will cause failure of any of the identified water bodies to meet surface water Good Ecological Status or Potential, or result in a deterioration of the water body's Ecological Status or Potential. • No reduction in the status of the Lower Ribble policy area within the study area.
Landscape and seascape	<ul style="list-style-type: none"> • Will the option avoid adverse effects on and, where appropriate, enhance landscape character? • Will the option avoid adverse effects on and, where appropriate, enhance seascape character? • Does the option contribute to the visual (and other) amenity value of the frontage? 	<ul style="list-style-type: none"> • Lancashire Landscape Character. • Visual amenity for seafront properties, beach and piers. 	<ul style="list-style-type: none"> • No adverse effect to existing landscape character and visual amenity. • Enhancement of landscapes and improvement of existing visual amenity. • Compliance with the European Landscape Convention principles.
Historic environment	<ul style="list-style-type: none"> • Does it change the condition of Listed Buildings, Conservation Areas, Registered Parks and Gardens within the study area? • Does it change the condition of known archaeological sites and/or the ability to investigate unknown buried archaeology? 	<ul style="list-style-type: none"> • Percentage of designated (e.g. listed buildings) cultural heritage features within the study area at risk from strategic options. • Area of Conservation Area/Registered Park and Garden affected by strategic options. • Qualitative assessment of potential impacts upon additional undesignated and/or unknown historic features. 	<ul style="list-style-type: none"> • No detrimental effects to designated heritage assets. • No adverse effects on historic landscape character or area.
Soil	<ul style="list-style-type: none"> • Is it likely to avoid changes in coastal process that may adversely affect important social, economic and environmental assets? 	<ul style="list-style-type: none"> • Significant change in physical and sedimentary processes including wave climate, water levels, tidal currents, sediment transport and erosion/accretion. 	<ul style="list-style-type: none"> • No significant and / or adverse change in physical and sedimentary processes

7 SEA METHODOLOGY

7.1 Impact prediction

For any particular environmental receptor, impact prediction estimates the change from a baseline resulting from implementation of a particular policy, using a source-pathway-receptor approach (refer to **Figure 7.1** below).

Figure 7.1 The Source-Pathway-Receptor approach as applied in this SEA.



The SEA Directive requires that nature of the impact be considered (i.e. impact magnitude, whether beneficial or adverse, permanent or temporary, short /medium or long term) and also that indirect, synergistic and cumulative impacts be considered.

Assessments will be undertaken using professional judgement and broad consultation together with extensive use of a range of datasets.

7.2 Impact significance

The SEA Directive requires that predicted impacts are evaluated for significance to facilitate targeting of mitigation and monitoring measures. One measure of impact significance is as the product of impact magnitude and receptor sensitivity. These issues are introduced below.

7.2.1 Magnitude of the impact

This is the scale of change which the impact may cause compared to the baseline and how this change relates to accepted thresholds and standards. In determining the magnitude of the predicted effect, we consider the following questions:

- Is the effect permanent/temporary?
- Is the effect positive/negative?
- Is the effect probable/improbable?
- Is the effect frequent/rare?
- Is the effect direct/indirect?
- Is the effect secondary?
- Will there be secondary, cumulative, and/or synergistic effects? (see **Section 7.2.3**).

7.2.2 Sensitivity of the receptor

This is a measure of the adaptability and resilience of an environmental parameter to an identified impact. The sensitivity of the receptor is determined using expert judgement and through knowledge of the key issues involved as identified in **Section 5**.

7.2.3 Assessing secondary, cumulative and synergistic effects

Many environmental issues result from the accumulation of multiple small and often indirect effects, for example changes in landscape as a result of flood defence works along the coastline. These effects are difficult to address on a project level through EIA unlike at an SEA level where they are more effectively identified and managed. These effects are defined below (adapted from Office for Deputy Prime Minister, 2006):

- Secondary or indirect effects - Effects that are not a direct result of the strategic options, but occur away from the original effect or as a result of a complex pathway.
- Cumulative effects - These can arise where several developments each have insignificant effects but together have a significant effect, or where several individual effects of the strategic options (e.g. noise and visual) have a combined effect.

We will integrate the assessment of these effects into the main assessment, and the ER will also explicitly refer to the cumulative effects which are identified as potentially occurring ‘in combination’ with those other plans and programmes identified in **Section 2**.

7.2.4 Overall significance

The considerations above are brought together into an overall impact assessment. We will carry out an assessment for each objective, and for each ‘zone’ within the frontage. The overall results will be determined according to the magnitude:sensitivity table illustrated in **Table 7.1**.

Table 7.1 Impact significance.

		Sensitivity of Receptor			
		Negligible	Low	Medium	High
Magnitude of Impact	High	Minor + or -	Minor + or -	Major ++ or --	Major ++ or --
	Medium	Minor + or -	Minor + or -	Major ++ or --	Major ++ or --
	Low	Neutral / No effect 0	Neutral / No effect 0	Minor + or -	Minor + or -
	Negligible	Neutral / No effect 0	Neutral / No effect 0	Minor + or -	Minor + or -

Table 7.2 indicates the colour coding and symbol which will be used throughout the appraisal and in the final documents.

Table 7.2 Assessment matrix colour coding and symbols.

Symbols/Colouring	Significance
++	Major beneficial effect
+	Minor beneficial effect
0	Neutral / Not significant / No effect
-	Minor adverse effect
--	Major adverse effect
/	Objective/receptor not relevant

7.2.5 Mitigation and enhancement

As defined above the SEA assessment will identify beneficial and negative impacts associated with the proposed strategic options. The iterative nature of the SEA process, and its integration with the development of the preferred option for the Strategy, means that beneficial effects can be designed into the Strategy, and adverse effects designed out. Where negative or adverse effects cannot be completed ruled out, the SEA process can help to inform appropriate mitigation measures, which will be outlined in the ER and within the Strategy, to minimise negative impacts. Even where no negative impact is anticipated, best practice mitigation measures may be recommended. We will also consider the potential for environmental enhancement opportunities.

7.3 Monitoring

When we implement the Strategy, it is possible that the following effects could occur:

- the predicted significance of an effect is inaccurate;
- mitigation and enhancement prove to be ineffective; or,
- a change occurs in the circumstances that affect the assumptions made in the assessment.

To reduce the possibility of these effects occurring, we will identify monitoring measures that will need to be undertaken when the Strategy is implemented. These measures will be documented at the scheme level using environmental reports and statements.

We will also identify existing or forthcoming monitoring or data collection programmes which might be used to review the findings of the strategy. Monitoring can also be used to address gaps in the data or uncertainty highlighted by the assessment and to provide a more comprehensive baseline when the strategy is reviewed. The monitoring process also helps to ensure that mitigation and enhancement are effective, and checks whether unforeseen impacts are occurring. The implementation and findings of the monitoring plan will be reviewed and reported as a component of the review of the strategy.

8 NEXT STEPS IN THE SEA PROCESS

8.1 Consultation

Consultation with key stakeholders will continue throughout the development of the Strategy, both formally and informally to ensure a sound and transparent decision-making process.

As stated in **Section 1.2** this document forms the first phase of the SEA and formal consultation, consulting on the initial framework to help develop the strategic options. This Scoping Consultation Document will be distributed to the following statutory and non-statutory consultees for review and comment from **21 February 2011** to **Friday 25 March 2011**.

Statutory Consultees:

Environment Agency
Natural England
English Heritage

Key Stakeholders:

Blackpool Borough Council
Fylde Borough Council
Lancashire County Council

Possible additional stakeholder - Marine Management Organisation

8.2 Scoping and Environmental Report

Comments from the consultation will be taken into account to set out the scope of the subsequent SEA, the assessment criteria and the objectives, as agreed by both internal and external statutory consultees.

The assessment framework set will enable the iterative process of assessment and appraisal which informs our identification of the preferred options for the Strategy. The assessment and evaluation stages of the SEA will be documented in the SEA Environmental Report (ER). The ER will be widely consulted upon alongside the draft Strategy. We envisage that this will be in Summer 2011.

Please send any comments on this Scoping Consultation Document to:

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GLOSSARY

Term	Definition
Adaptation	A change in the way that a feature, such as a community or a habitat, functions to fit a changed environment.
Advance the line (ATL)	Building new defences seaward of the existing defence line. This policy should be limited to those stretches of coastline where significant land reclamation is considered.
Area of Outstanding Natural Beauty (AONB)	A precious landscape whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them. AONBs were created by the legislation of the National Parks and Access to the Countryside Act of 1949.
Biodiversity	Biodiversity is a term which simply means "the variety of life on earth". This variety can be measured on at the genetic level, the species level, and at the ecosystem level.
Biodiversity Action Plan (UKBAP)	This sets out a programme for conserving the UK's biodiversity through targets for a range of specific habitats with the aim of reducing loss of biodiversity.
Climate change	Long-term change in the patterns of average weather. Its relevance to shoreline management concerns its effect on sea levels, current patterns and storminess.
Department for Food, Environment and Rural Affairs (Defra)	Government department responsible for flood management policy in England and Wales. Incorporates the former Ministry of Agriculture, Fisheries and Food.
Ecosystem	Communities of plants and animals, together with the physical characteristics of their environment (e.g. geology, soil and climate).
EU Bathing Water Directive	The aim of this directive is to protect public health and the environment from faecal pollution at bathing waters. It sets a number of microbiological and physio-chemical standards that bathing waters must either comply with ('mandatory' standards) or endeavour to meet ('guideline' standards).
EU Habitats Directive	European legislation on the conservation of habitats.
Foreshore	Zone between the high water and low water marks.
Geomorphology/ Morphology	The branch of physical geography/geology that deals with the form of the Earth, the general configuration of its surface, the distribution of the land, water, etc.
Groyne	Shore protection structure built perpendicular to the shore and designed to trap sediment.
Historic environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and deliberately planted or managed flora.
Hold The Line (HTL)	Hold the existing defence line by maintaining or changing the standard of protection.
Indicators	Used to support the appraisal of options against criteria.
Integrated	An approach that tries to takes all issues and interests into account.
Listed Building	A building or other structure officially designated as being of special architectural, historical or cultural significance.

Term	Definition
Local Development Framework (LDF)	A collection of local development documents that outlines how a local authority will manage planning in their area.
Longshore	Current moving parallel and close to the coastline
Managed Realignment (MR)	Allowing or enabling the shoreline to move, with associated management to control or limit the effect on land use and environment. This can take various forms, depending on the nature of the shoreline and the intent of management to be achieved.
Mean low water	The average of all low waters observed over a sufficiently long period (approximately 19 years).
Mitigation	Practical measures taken to offset the impact of an option on physical assets. The term mitigation has a specific meaning for particular types of physical asset: <ul style="list-style-type: none"> • For wildlife, mitigation may be any process or activity designed to avoid, reduce or remedy adverse environmental impacts of the plan. • For the historic environment, mitigation may be 'preservation by investigation' for archaeological features, or 'preservation by recording' followed by stage abandonment, demolition or re-location for Listed Buildings. There is no effective mitigation for the loss of historic landscapes.
Mudflat	Low-lying muddy land that is covered at high tide and exposed at low tide
No Active Intervention (NAI)	No investment in coastal defences or operations. It can apply to unprotected cliff frontages and to areas where investment cannot be justified, potentially resulting in natural or unmanaged realignment of the shoreline.
Objective	A desired state to be achieved in the future. An objective is set, through consultation with key parties, to encourage the resolution of an issue or range of issues.
Outfall	Man-made object designed to control the outlet of a river, drain or sewer where it discharges into a body of water.
Ramsar site	Designated under the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971. The objective of this designation is to prevent the progressive encroachment into, and the loss of, wetlands.
Registered parks and gardens	Parks and gardens registered for their historic value so they are considered in the planning process. Local planning authorities must consult English Heritage where planning applications may affect these sites.
Special Area of Conservation (SAC)	This designation aims to protect habitats or species of European importance and can include Marine Areas. SACs are designated under the EU Habitats directive (92/43EEC) and will form part of the Natura 2000 site network. All SACs are also protected as SSSIs, except those in the marine environment below mean low water (MLW).
Scheduled Monument	A statutory designation under the Ancient Monuments and Archaeological Areas Act 1979. This act, building on legislation dating back to 1882, provides for nationally important archaeological sites to be statutorily protected as scheduled monuments.

Term	Definition
Shellfish Waters Directive	Aims to protect or improve shellfish waters in order to support shellfish life and growth. It sets physical, chemical and microbiological water quality requirements that designated shellfish waters must either comply with ('mandatory' standards) or endeavour to meet ('guideline' standards).
Shoreline Management Plan	A non-statutory plan that provides a large-scale assessment of the risks associated with coastal processes and presents a policy framework to reduce these risks to people and the developed, historic and natural environment in a sustainable manner over a 100 year time period.
Special Protection Area (SPA)	A statutory designation for internationally important sites, set up to establish a network of protected areas of birds. SPAs are designated under the EU Birds directive (79/409/EEC)
Special Site of Scientific Interest (SSSI)	A statutory designation under the Wildlife and Countryside Act 1981. Notified by Natural England (formerly English Nature), representing some of the best examples of Britain's natural features including flora, fauna, and geology.
Standard of Protection (SoP)	The level of protection that a flood or erosion defence provides. This is typically expressed as the frequency of the storm that the defence is expected to withstand. For example, a defence can have a standard of protection of 1 per cent per year.
Strategic Environmental Assessment (SEA)	SEA provides a systematic appraisal of the potential environmental consequences of high-level decision-making (i.e. plans, policies and programmes). By addressing strategic level issues, SEA aids the selection of the draft options, directs individual schemes towards the most appropriate solutions and locations and helps to ensure that resulting schemes comply with legislation and other environmental requirements.
Sustainability Appraisal (SA)	A Sustainability Appraisal is as a systematic and iterative appraisal process, incorporating the requirements of the Strategic Environmental Assessment. The purpose of the Sustainability Appraisal is to appraise the social, environmental and economic effects of the strategies and policies in a Local Development Document from the outset of the preparation process.
Water Framework Directive (WFD)	A European Directive that aims to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater.

10 ABBREVIATIONS

ALC	Agricultural Land Classification
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ASC	Adaptation Sub-Committee
BAP	Biodiversity Action Plan
CCC	Committee on Climate Change
CFMP	Catchment Flood Management Plan
CROW	Countryside and Rights of Way Act 2000
cSAC	candidate SAC
CSO	Combined Sewer Overflow
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EMS	European Marine Site
ER	Environmental Report
GHS	Geological Heritage Site
GI	Green Infrastructure
GVA	Gross Value Added
GWMU	Groundwater Management Unit
HAT	Highest Astronomical Tide
HER	Historic Environment Records
HLS	Higher Level Stewardship
IBA	Important Bird Area
LAA	Local Area Agreement
LAQM	Local Air Quality Management
LAT	Lowest Astronomical Tide
LCA	Landscape Character Assessment
LMWLP	Lancashire Minerals and Waste Local Plan
LPA	Local Planning Authority
LSOA	Lower-layer Super Output Areas
MAA	Multi-Area Agreement
MHWN	Mean High Water Neap
MHWS	Mean High Water Spring
MLWN	Mean Low Water Neap
MLWS	Mean Low Water Spring
MR	Managed Realignment
MTL	Mean Tide Level

NAI	No Active Intervention
NEAS	National Environment Assessment Service
PPG	Planning Policy Guidance
PPS	Planning Policy Statements
pSAC	possible SAC
RBMP	River Basin Management Plan
RES	Regional Economic Strategy
RSS	Regional Spatial Strategy
SAC	Special Area of Conservation
SAM	Schedule Ancient Monument
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SMP	Shoreline Management Plan
SPA	Special Protection Area
SSP	Shoreline Strategy Plan
UKCIP	Climate Impacts Programme
UKCP09	UK Climate Projections 2009
WFD	Water Framework Directive
WMU	Water Management Unit

11

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APPENDIX A

List of stakeholders

Action Ribble Estuary	English Heritage
Associated British Ports	English Tourist Board
Association of British Insurers	E-ON Energy
Association of Sea Fisheries Committees	Environment Agency
BHP Petroleum Ltd	Forestry Commission
Bispham Hoteliers	Friends of the Earth
Blackpool and Fylde College	Government Office North West
Blackpool Civic Society	Highways Agency
Blackpool Transport Services	Hotel Association of Lytham St Annes
British Association for Shooting and Conservation	Joint Nature Conservation Committee
British Canoe Union	Lancashire County Archaeological Service
British Gas	Lytham and District Wildfowlers Association
British Geological Survey	Lytham St Annes Civic Society
British Marine Aggregates Producers Association	Marine Conservation Society
British Marine Federation	Marine Management Organisation
British Water Ski & Wakeboard	Maritime and Coastguard Agency
British Waterways	Ministry of Defence
BT PLC	National Association of Boat Angling Clubs
British Trust for Ornithology	National Farmers Union
Business Link North West	National Federation of Sea Anglers
Central Area Flood Risk Advisory Panel	National Grid
Campaign to Protect Rural England	National Trust
Central Council for Physical Recreation	Natural England
Centre for Ecology and Hydrology	North and Western Lancashire Chamber of Commerce
Coastnet	North West Coastal Forum
Communities and Local Government	North West Sea Fisheries Commission
Country Land and Business Association	North West Tourist Board
Defence Estates	Northwest Development Agency
Department for Environment, Food and Rural Affairs	Old Links Golf Club
Department for Culture, Media and Sport	Open Spaces Society
Department for Transport	Preston and South Ribble Tourism Association
Duchy of Lancaster	Proudman Oceanographic Laboratory

Ramblers' Association	The Estuary Friends
Ribble Coast and Wetlands Regional Park	The Wildlife Trust for Lancashire, Manchester, and North Merseyside
Royal Lifesaving Society	Tidy Britain Group
Royal Lytham and St Annes Golf Course	Trinity House London
Royal National Lifeboat Institution	UK Offshore Operators Association Ltd
Royal Yachting Association	UK Windsurfing Association
Royal Society for the Protection of Birds	United Utilities
Shellfish Association of Great Britain	Wildfowl and Wetlands Trust
Sport England	Wildlife and Countryside Link
St Annes on Sea Town Council	Wind Prospect Ltd
Sustainable Development Commission	Worldwide Fund for Nature
Sustrans	Wyre Borough Council
Tenant Farmers Association	Wyre Civic Centre
The Crown Estate	Wyre Tourism Association

APPENDIX B

Stakeholder consultation responses

Theme Key

Environmental	Hard Asset	Heritage	Recreational
Commercial	Impactor	Community	Management

No	Location	Theme	Issues	FCD issue	Affect Options
Issues					
I1	Northern Boundary to Naze Point	E	Maintaining and enhancing the biodiversity if the Fylde Coast recognising the importance of its natural environment.	No	Yes
I2	Northern Boundary to Naze Point	E	Beach litter including discarded fishing lines, nets, hooks.	No	No
I3	Northern Boundary to Naze Point	E	Key issues include bathing water quality, flood risk from the sea and from surface water (including sewers)	Yes	Yes
I4	Northern Boundary to Naze Point	Co	Impacts of climate change on communities.	Yes	Yes
I5	Northern Boundary to Naze Point	I	Impacts of climate change on the coastline.	Yes	Yes
I6	Northern Boundary to Naze Point	I	Changing exposure to waves.	Yes	Yes
I7	Northern Boundary to Naze Point	R	Beach litter including discarded fishing lines, nets, hooks.	No	No
I8	Northern Boundary to Naze Point	R	More control needed generally for artisanal fishing, ie quotas.	No	No
I9	Northern Boundary to Naze Point	R	Dog excrement, health issues.	No	No
I10	Squires Gate to St Annes	E	The sand dunes to the north of St Annes Pier receive a regular sand supply and have the conditions for new embryo dune creation on the foreshore. However due to current beach management new dunes are not able to establish across the majority of this stretch.	Yes	Yes
I11	Squires Gate to Lytham	E	The sand dunes along the Fylde frontage have become fragmented and eroded through development and recreational pressures.	Yes	Yes
I12	Squires Gate to Lytham	E	The dunes currently provide an effective sea defence however with increased storm frequencies and sea level rises the pressure on the system is like to increase.	Yes	Yes
I13	Squires Gate to Lytham	E	Development pressures affecting sand dunes.	Yes	Yes

No	Location	Theme	Issues	FCD Issue	Affect Options
I14	Squires Gate to Lytham	E	Recreational pressures (trampling, fires) affecting sand dunes.	Yes	Yes
I15	Squires Gate to Lytham	E	Climate change affecting sand dunes.	Yes	Yes
I16	Squires Gate to Lytham	E	Past management of dunes.	Yes	No
I17	Squires Gate to Lytham	E	Estuarine changes affecting sand dunes.	Yes	Yes
I18	Squires Gate to Lytham	E	Succession and scrub encroachment affecting sand dunes.	Yes	Yes
I19	Squires Gate to Lytham	E	Sand winning affecting sand dunes.	Yes	Yes
I20	Squires Gate to Lytham	E	Nitrogen deposition affecting sand dunes.	No	No
I21	Squires Gate to Lytham	Co	Windblown sand is a nuisance for residents.	No	Yes
I22	Granny's Bay to Fairhaven Road	R	The shelters on the promenade are in a state of disrepair.	No	No
I23	Granny's Bay to Land Registry	E	Changes in distribution of <i>Spartina</i> grass effecting its flood defence capacity.	Yes	Yes
I24	Granny's Bay to Land Registry	HA	The sea defence wall between Granny's Bay and the Land Registry is in a deteriorating condition and in places is breaking up.	Yes	Yes
I25	Granny's Bay to Land Registry	HA	Between Granny's Bay and the Land Registry, forest trees, e.g. sycamore, have been felled in the past but are now growing fast in that sea defence and in the process destroying the sea defence wall.	Yes	Yes
I26	Granny's Bay to Land Registry	R	Between Granny's Bay and the Land Registry, the railings too are rusting and have not been maintained for many years.	No	No
I27	Central Beach	HA	One area from the old lifeboat station to the new is starting to fall seaward.	Yes	Yes
I28	Lytham to Warton	R	Continuity of the cycle route and the physical severance caused by busy coastal roads.	No	No
I29	Lytham to Naze Point	C	The Lancashire Coastal Way causes trespass problems as people do not stay on the Coastal Way, partly as a result of inadequate signage.	No	No
I30	Lytham to Naze Point	C	Bird watchers trespassing on land.	No	No
I31	Lytham to Naze Point	C	Any enhancement which may attempt to unite the general public with the wild open space of the saltmarsh as defeats the objectives of the SSSI and SPA status of protection.	No	No
I32	Lytham to Naze Point	E	Visitors straying from coastal way leading to trampling of saltmarsh habitat.	No	No

No	Location	Theme	Issues	FCD Issue	Affect Options
I33	Lytham to Naze Point	E	Bird watchers trampling saltmarsh habitat.	No	No
I34	Lytham to Naze Point	E	Bait digging, removing of food for bird species.	No	No
I35	Lytham to Naze Point	E	Bird disturbance, interferes with feeding, energy used in escape reduces survival rates. By: Dog walkers, kite surfers, sand surfers.	No	No
Constraints					
C1	Northern Boundary to Warton	R	Traffic management in relation to the cycle route along the length from Warton to Lytham and Blackpool.		No
C2	Northern Boundary to Naze Point	Co	Engagement of relevant users and community groups.		No
C3	Northern Boundary to Naze Point	M	Local Authority budgets will be squeezed even tighter the private sector/community/voluntary sector/ need to take more ownership.		No
C4	Northern Boundary to Naze Point	M	Lack of information and expertise when decisions are being made.		No
C5	Northern Boundary to Naze Point	M	Protecting the coastline and the marine environment whilst making the best use of the area for social and economic reasons.		Yes
C6	Northern Boundary to Naze Point	M	Finding funding for areas that only flood infrequently.		No
C7	Northern Boundary to Naze Point	M	Safe evacuation routes and flood resistance/resilience should be an integral part of planning in areas such as Blackpool and Lytham.		Yes
C8	Northern Boundary to Naze Point	HA	Strong residential and business concentration along the coastline that needs to be protected.		Yes
C9	Northern Boundary to Naze Point	HA	The risk of defence failure also needs to be considered when setting floor levels.		Yes
C10	Northern Boundary to Naze Point	H	Landscape character and townscape character (e.g. conservation areas of Lytham).		Yes
C11	Northern Boundary to Naze Point	H	This section of Lancashire's coastline retains both historic structures and buried deposits of historical and archaeological interest. Most do not have statutory protection, but need to be taken into account when management decisions are being made.		Yes

No	Location	Theme	Issues	Affect Options
C12	Northern Boundary to Naze Point	C	The coastal waters are a spawning ground for mackerel, sandeels, whiting, sole, plaice, cod and sprat. They are also a nursery ground for cod, tope shark, herring, anglerfish, plaice, sandeels, spotted rays, sole, thornback rays and whiting.	Yes
C13	Northern Boundary to Naze Point	C	100+ shore-launched boats for angling. Approximately 20 men push net for shrimps and prawns but mostly domestic.	Yes
C14	Northern Boundary to Naze Point	E	Longshore scour presents technical problems for coastal management.	Yes
C15	Northern Boundary to Naze Point	I	Flood risk from surface water and the sea is a constraint to development.	Yes
C16	Northern Boundary to Naze Point	I	Floor levels of future development should have regard for extreme sea levels and wave heights, including allowances for climate change.	Yes
C17	Northern Boundary to Naze Point	I	Coastal squeeze effects of hold the line policy.	Yes
C18	Squires Gate to Lytham	E	The Fylde Sand Dunes Project has funding until October 2012 to deliver the Management Action Plan however funding for long-term management is uncertain.	No
C19	Squires Gate to Lytham	M	Potential conflicts between the amenity management of the beach and dune conservation measures, which limits the potential for the dunes to develop seaward.	Yes
C20	Squires Gate to Lytham	M	A better understanding is needed of how junctions between hard and soft sea defences are best protected.	Yes
C21	Squires Gate to Lytham	Co	Social problems exist because of a lack of understanding about how sand dunes function and a widespread dislike of windblown sand on the part residents.	No
C22	Squires Gate to Naze Point	E	The majority of the Fylde coast is designated either a Site of Special Scientific Interest, National Nature Reserve, Special Protection Area, Ramsar site, or Biological Heritage Site for its important wildlife habitat.	Yes
C23	Lytham St Annes	C	Three full time shrimp boats and 10 part time boats fishing for bass and flounder.	Yes
C24	S. Promenade car park to Naze Point	E	Coastal sand dunes, saltmarsh and vegetated shingle are all Biodiversity Action Plan Priority (BAP) habitats.	Yes
C25	Ribble Estuary	C	There are some fishing activities in the area, at the estuary is salmon and bass netting through the summer and there is stake netting on the beaches in the Southern region of the project.	Yes

No	Location	Theme	Issues		Affect Options
C26	Ribble Estuary	C	The Ribble Estuary is a mussel production area (Class C).		Yes
Opportunities					
O1	Northern Boundary to Naze Point	E	Existing habitats and designated sites should be maintained, without any impact on the coastal processes that support these habitats and sites.		Yes
O2	Northern Boundary to Naze Point	E	Enhancement opportunities arise where improved sea defences and coast protection structures can be combined with landscape and other design features to provide amenity/recreation/tourism benefits such as improved promenades, roads, tramways.		Yes
O3	Northern Boundary to Naze Point	E	Drainage/water quality improvements may also be combined with works at/near the shoreline e.g. storage/SUDS.		Yes
O4	Northern Boundary to Naze Point	M	Recognising that this work should link to the Fylde Coast Tourism Strategies and engage relevant public/private sector bodies, Link to MAA (one voice may = more grant funding).		Yes
O5	Northern Boundary to Naze Point	M	Wyre has achieved Seachange monies to enhance & develop Fleetwood's waterfront and key buildings, and event space. The shoreline strategy should incorporate this current work, and the Fylde Coast up to Fleetwood.		No
O6	Northern Boundary to Naze Point	M	Raising awareness through innovative interpretative schemes (e.g. pathway 'medallions', Morecambe - Heysham promenade).		No
O7	Northern Boundary to Naze Point	R	Significant increases in tourism and visitor numbers, especially along the Ribble Coast & Wetlands, resulting from rights of way improvement as a result of engineering works.		No
O8	Northern Boundary to Naze Point	R	Improvements in facilities/recreational activities for tourism and local residents e.g. visitor centres for the protected designations or better access to local coastal areas.		No
O9	Northern Boundary to Naze Point	R	Educational opportunities with regards to marine species, new habitat creation; e.g. outside classrooms, signage, beach activities.		No
O10	Northern Boundary to Naze Point	H	In some cases heritage-led regeneration or other opportunities will arise.		Yes
O11	Northern Boundary to Naze Point	H	Influence on local distinctiveness and sense of place.		Yes
O12	Northern Boundary to Naze Point	H	Heritage issues if considered at an appropriate and early enough stage, can normally be dealt with in the most cost-effective manner.		Yes
O13	Northern Boundary to Naze Point	HA	Concentrating limited resources on the weak points in the sea defences would have greatest impact on flooding risk.		Yes

No	Location	Theme	Issues	Affect Options
O14	Squires Gate to Lytham	E	Allow natural succession to occur in salt marsh areas to increase biodiversity, sand winning should be limited and none to be taken below surface , leave embryo dunes to develop, special protection for sand lizards and careful introduction of new dune species e.g. Natterjack toads.	Yes
O15	Squires Gate to Lytham	E	Positive management for natural coastal habitats has been highlighted in the Dunes Management Action Plan and include works such as brushwood fencing, path creation and grass planting in specific areas.	Yes
O16	Squires Gate to Lytham	E	The Dunes Project has been active with involving the local community with the management of the site and through education and events and wishes to continue this work in the future.	No
O17	Squires Gate to Lytham	R	Area improvements e.g. viewing platforms, information boards and family and disabled usage areas.	No
O18	Squires Gate to Lytham	R	Improve the quality of paths.	No
O19	Squires Gate to Lytham	R	Coastal access improvements.	Yes
O20	Squires Gate to Lytham	R	Board walks to allow visitors over the dunes without damaging them, restriction of access to allow dunes to grow out onto the beaches, assisting dune formation at weak points, changing the beach cleaning routines to assist dune growth as much as possible and taking swift action to dissuade private individuals from damaging the dunes	Yes
O21	Squires Gate to Lytham	R	Allowing maximum possible build up of sand on the beaches would reduce the likelihood of the tops of the beaches becoming muddy and would improve visitor experience.	Yes
O22	Squires Gate to Lytham	HA	Reduction of hard defences.	Yes
O23	Squires Gate to Lytham	M	Allowing healthier and wider stretches of dunes to develop would reduce wind blown sand problems.	Yes
O24	Lytham St Annes	C	The area where the shrimpers launch and store their equipment could be enhanced.	No
O25	St Annes	C	Improved fishing access in St Annes area.	No
O26	Lytham to Naze Point	E	There may be opportunities for coastal habitat creation that could create new coastal protection or flood storage opportunities.	Yes
O27	Granny's Bay to Fairhaven Road	R	Provide cycle paths on the promenade to stop the many near accidents with pedestrians.	No
O28	Granny's Bay to Fairhaven Road	R	The provision of more usable litter bins for easy depositing and collection at the appropriate positions.	No
O29	Ribble Estuary	C	Potential for renewable energy.	No

APPENDIX C

Short list of options

UNIT B1 - KINGSWAY TO SQUIRES GATE

The SMP policy for this Unit is to **HTL** along the entire frontage.

Strategic options for this Unit

1. Do Nothing;

This involves the cessation of all coastal defence activities along the frontage of this Unit, including maintenance. The timing of failure of the defences would occur according to their remaining residual life. This would result in the onset of coastal erosion and flooding to buildings and infrastructure, particularly the tram network behind the defences. The rate of erosion would increase with sea level rise.

2. Continue and improve the existing defences;

3. Beach management using control structures, i.e.:

- shore connected; and/or,
- offshore breakwaters.

These structures would likely be rock. The structures would act to retain sediment landward, owing to the protection against wave action and the subsequent settling out of sediment. This would have positive implications for adjacent Sub-Units in terms of higher beach levels, with sediment being retained between the control structures (control points). The possible use of shore connected structures would consider the performance of previous schemes of a similar nature along this frontage and incorporate lessons learned into any design.

4. Beach nourishment;

Beach management involves the import of beach material, at a grading similar to that of material already present along the frontage. The sources would need to be environmentally assessed, but one option is to recycle material deposited in large supply at the mouth of the Ribble Estuary.

5. Combination of options 3 and 4; and,

6. Beach management focussed at the tourism centre of Blackpool.

This strategic option involves maximising the amenity value of the frontage of Blackpool's central area. The option would comprise a combination of beach nourishment and beach management using control structures, likely offshore, to encourage the accretion of material along this frontage. As for Option 4 the suitability, in terms of technical and environmental aspects, would be assessed as part of this option.

Short list of options for each Sub-Unit

- Sub-Unit B1.1

The defences along this Sub-Unit are in a state of deterioration, with a residual life of the structure estimated to be five years. The options to be taken forward are:

1. Continue Cleveleys stepped concrete revetment with promenade and set back flood wall; and,

This option would involve the continuation of the recently constructed Cleveleys coastal defences. This would involve breaking out the existing structure and construction of a new stepped concrete revetment along the frontage together with a promenade with a set back wall to contain wave overtopping. Measures would be introduced at the base of the structure to minimise deterioration due to abrasion by coarse material located on

the foreshore at this frontage. Access points would be provided along this frontage both onto the foreshore and to gain access to the promenade from behind the set back wall.

2. Break out existing structure, promenade and flood wall and replace with new concrete flood wall and promenade with stepped concrete revetment toe protection.

This option involves breaking out the existing structure. The interface between the beach and promenade would be protected by the construction of a stepped concrete revetment along the frontage. A new promenade would be constructed together with a set back wall to contain wave overtopping.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable.

Options that have been rejected were those that included rock toe protection. This would reduce the foreshore area and prevent access to the beach due to issues with health and safety. In addition, any realignment of the coastal defences has been rejected. The SMP policy for this Unit is HTL; therefore, realignment options would not be consistent with the SMP.

The construction of new defences on top of, and in front of, the existing defences has been rejected as this would advance the defence line which has the potential to affect coastal processes. This would potentially increase pressure in front of the structure, through coastal squeeze, as increased storminess continually lowers levels in front of the structure, increasing the risk of undermining of the new structure over time. Advancing the line would also create an artificial headland at this location which is not consistent with the existing alignment of the coast.

Although the primary source of sediment is cross-shore (offshore to onshore sediment transport perpendicular to the coastline) there is some longshore movement of material which would possibly be interrupted to adjacent areas at Cleveleys and Sub-Unit B1.2. Although less waste would be produced by retaining the existing structure, significant quantities of imported fill material would be required.

The proposed options to be taken forward have the potential to enhance the character of this Sub-Unit and also to increase beach access; thus increasing its overall amenity value.

- Sub-Unit B1.2

The defences along this frontage have an estimated residual life of ten years. The options to be taken forward are:

1. Minor repairs to concrete structure and construction of stepped concrete revetment toe protection;

This short term measure involves local repairs to the existing structure. This would increase the residual life of the defence with the need for further works deferred to later in the strategy period. To reduce the risk of undermining a concrete revetment toe would be constructed.

2. Replace the entire structure with a wall at the toe of the cliff, fronted by a wide promenade and sloped/stepped revetment.

This option involves breaking out the majority of the existing structure. The new structure would comprise new concrete walls at the back of the promenade together with the construction of a sloped/stepped concrete revetment. The toe of the structure would be reinforced using stepped concrete toe protection.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable.

Options that have been rejected were those that included rock toe protection. This would reduce the foreshore area and prevent access to the beach due to issues with health and safety. In addition, any realignment of the coastal defences has been rejected. The SMP policy for this Unit is HTL; therefore, realignment options would not be consistent with the SMP.

The construction of new defences on top of, and in front of, the existing defences, has been rejected as this would advance the defence line which has the potential to affect coastal processes, the potential effects of which would be similar to those described for Sub-Unit B.1.

The proposed options to be taken forward have the potential to enhance the character of this Sub-Unit and also to increase beach access; thus increasing its overall amenity value.

- Sub-Units B1.3 and B1.4

New coastal defences were constructed at Red Bank Road in 2000, in the Northern section of this Sub-Unit. To the south, at the boating pond, the defences have an estimated residual life of less than ten years; consequently, the options considered are focussed at the Boating Lake area. The options to be taken forward are:

1. Minor repairs to the seawall and inclusion of stepped concrete revetment toe protection;

This short term measure would involve minor repairs to the existing defences and the inclusion of a stepped concrete revetment to counter the effects of undermining at the toe of the structure. These efforts would be concentrated around the Boating Lake, where the estimated residual life of the structure is lowest.

2. Minor repairs to the seawall and inclusion of rock promontories at the Boating Lake and Pavilion, combined with beach nourishment; and,

This option involves minor repairs to the seawall and the inclusion of rock promontories at the Boating Lake and Pavilion. Combined with beach nourishment, this option will make use of the existing promontory at the Boating Lake and enhance its potential as a control point along the frontage.

3. Beach management using nearshore structures to emphasise the headland and to influence and benefit management of adjacent Sub-Units.

This Sub-Unit can be characterised as a headland due to its advanced alignment relative to the adjacent coastline. The narrow beach in front of the structure is a result of

this advanced alignment. Consequently, this Sub-Unit acts as an important control point. To increase the effects of this control point on adjacent Sub-Units, this option aims to emphasise the development of the headland. The structure would likely be rock and located a suitable distance offshore, which would be determined at the design stage.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable.

It is likely that there will not be the economic justification to replace the defences along this Sub-Unit during the strategy period; therefore, any upgrade to the existing defences would be focussed on the frontage at the Boating Lake.

Options that have been rejected were those that included rock toe protection. This would reduce the foreshore area and prevent access to the beach due to issues with health and safety.

Nearshore structures have the potential to affect the existing coastal processes by interrupting longshore sediment transport and also by holding material provided via cross-shore delivery. The degree to which this option could affect designated sites for nature and geological conservation will determine its viability and be investigated during the SEA process.

- Sub-Unit B1.5

New defences have been recently constructed along this Sub-Unit which offer a good standard of protection throughout the strategy period. Therefore, the option proposed involves activities which support the other options being developed within this Unit. The option to be taken forward is:

1. Beach nourishment in-front of the new defences.

Justification

This Sub-Unit offers an opportunity to undertake beach nourishment activities which would support the options being proposed at adjacent Sub-Units. The options at sub-units B1.4 and B1.6 involve the enhancement of control points by developing the headlands. The beach nourishment would provide higher beach levels which would reduce the risk of undermining of the new defences and retention of the sediment would be enhanced with the development of the control points.

- Sub-Unit B1.6

This frontage is characterised by an existing 'Seabees' structure, comprising a concrete revetment and recurve seawall. The 'Seabees' refers to the concrete units on the sloped face of the revetment which act to increase the roughness therefore dissipating wave energy by wave breaking and subsequent run-up of the broken wave. This structure has an estimated residual life of 35 years however will require repairs during this period.

This Sub-Unit is characterised as a headland, which acts as an important control point along this Unit. The options to be taken forward are:

1. Repair the existing structure;

The existing structure may require repairs during the remainder of its design life. This option involves the repair of damaged sections of the concrete revetment and recurved seawall, such as the filling of voids to reduce the risk of fill material being lost due to wave action.

2. Replacement of existing structure with sloped concrete revetment and recurved seawall.

The structure has a design life of 50 years; therefore, it will require replacement within the Strategy period. This option would involve the breaking out of the existing structure and replacing it with a sloped concrete revetment with a recurred seawall.

3. Beach nourishment in-combination with the options described below;

This option requires the construction of a control structure(s) as described for Option 4 below.

4. Beach management using nearshore breakwater; and,

To maximise the potential of this Sub-Unit as a control point, a nearshore structure, which would emphasise the headland, is proposed. The structure would likely be rock and located a suitable distance offshore, which would be determined at the design stage.

5. Fishtail breakwater at Squires Gate to provide a smoother transition to the dunes.

Squires Gate is currently a harsh control point which holds the coast but is not in tune with the natural coastal shape. Without this hard structure the coastline would be dependent on the dune system behind to provide a natural line of defence. This transition is impacting on the adjacent natural dune frontage to the south. A breakwater would protect this section of coastline from wave action; therefore, encouraging the accumulation of sediment landward. This would result in a smoother coastline with increased sediment behind the breakwater providing the transition from hard to soft defence.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable. Other options that have been rejected were those that included shore connected rock structures. These would reduce the foreshore area and prevent access to the beach due to issues with health and safety.

The proposed options to develop the headland as a control point along this Sub-Unit would enhance the build-up of beach material to the north, thus providing a wider beach and a greater barrier to wave action.

Nearshore structures have the potential to affect the existing coastal processes by interrupting longshore sediment transport and also by holding material provided via cross-shore delivery. The degree to which this option could affect designated sites for nature and geological conservation will determine its viability and be investigated during the SEA process.

UNIT F1 - SQUIRES GATE TO LYTHAM WINDMILL

The SMP policy for this Unit is **Managed Realignment** (Sub-Unit F1.1, first SMP epoch only) and **Hold the Line** (remaining SMP epochs for Sub-Unit F1.1 and all other Sub-Units).

Strategic Options for the Unit

5. Do Nothing;

Do Nothing would result in the failure of the hard defences at Squires Gate, Pleasure Island and Fairhaven Lake depending on the estimated residual life of the defences. This would result in the onset of coastal erosion to properties and infrastructure behind the defences. In addition, existing dune management activities would also cease. This would increase the risk of a breach in the dunes leading to the potential flooding of properties and infrastructure.

6. Continue and improve dune management;

This option would promote dune management, as detailed in the Fylde Sand Dunes Management Action Plan (Skelcher, 2008) and further enhance and protect the dune system, where possible.

7. Enhancement / reinforcement of dune system locally; and,

8. Beach management and nourishment.

Short list of options for each Sub-Unit

- Sub-Unit F1.1

The beach levels along this Sub-Unit are relatively high and stable providing protection to the toe of the dunes. The main constraints are the harsh transition points at Squires Gate, to the north, and the car park at Star Hills to the south. The options to be taken forward are:

1. Dune management; and,

2. Linked management with Sub-Unit B1.6.

With the control point being enhanced on the adjacent Sub-Unit (B1.6), beach nourishment activities would be coordinated with the wider management along the entire Strategy frontage.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable.

The width of the dunes and limitation of seaward accretion due to man-induced activities means that the dunes are extremely vulnerable to erosion during sustained storms or from future changes in sea level or coastal dynamics. This situation is particularly acute along the entire length of the St Annes dunes from the disused yachting compound to the north of St Annes Pier. Physical breaches in the dunes, such as the access road for sand winning, are also vulnerable.

The dunes, south of coastguard station up to St Annes Pier, are narrow, which allows wind blown sand to become a problem on the adjacent North Promenade, particularly opposite Todmorden Road where dunes are absent and have been replaced by a concrete bank.

The dunes are designated as a SSSI, LNR and BHS. Any restorative work on these dunes could therefore be of national as well local importance.

- Sub-Unit F1.2

The properties along this frontage are set forward of the natural coastline and are putting pressure on the dune system, which fronts this Sub-Unit in a fairly straight alignment. The hard defences at Pleasure Island have an estimated residual life of five years. The options to be taken forward are:

1. Replacement of existing defences and blockwork revetment with new seawall and sloped/stepped revetment;

This involves breaking out the existing defence structure and replacing it with a new setback seawall and sloped/stepped concrete revetment.

2. Replacement of existing defences with stepped revetment, wide promenade and set back flood wall;

This involves breaking out the existing defence structure and replacement with stepped concrete revetment, wide promenade and set back seawall.

3. Beach management using control structures (e.g. groynes) at either end of the Sub-Unit, especially at the southern end of Pleasure Island;

This option involves constructing control points at either end of the Pleasure Island. The Pleasure Island area is a key control point which has developed since construction of the defences. This has resulted in the dune system being constrained to the north at St Annes; therefore, this option would encourage sediment accumulation and bring forward the natural defence line. This option would increase the beach width between the structures.

4. Beach management and nourishment at the southern end of Pleasure Island; and,

This involves the construction of a shore connected structure at the southern end of the Pleasure Island frontage, in addition to the beach nourishment.

5. Dune management.

This option would promote dune management in-line with the options proposed on adjacent Sub-Units.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable. Other options that have been rejected were those that included rock toe protection structures. These would reduce the foreshore area and prevent access to the beach due to issues with health and safety.

The key option along this frontage is to enhance the control point at Pleasure Island in line with other options. Development of the control point will encourage sediment accumulation thus increasing the beach width across the Sub-Unit.

The options taken forward will enhance access onto the beach and increase the overall amenity value of the area. Furthermore, the dunes are fragmented by the developments around Pleasure Island. These dunes are designated locally as a BHS. Any restorative work on these dunes could therefore be of local importance.

Nearshore structures have the potential to affect the existing coastal processes within the Ribble estuary. The degree to which this option could affect the designated sites for nature and geological conservation will determine its viability and be investigated during the SEA process.

- Sub-Unit F1.3

This sub-unit contains the artificial promontory at Fairhaven Lake. The options to be taken forward are:

1. Complete replacement of the existing structure; and,

This involves breaking out the existing defence structure and replacing it with a new setback seawall, promenade and sloped/stepped concrete revetment. Enhanced beach access would be incorporated into this option.

2. Beach management using control structures (e.g. groynes) either end of the Fairhaven Lake.

This involves the construction of shore control points to enhance beach levels in front of Fairhaven Lake.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable. Other options that have been rejected were those that included rock toe protection structures. These would reduce the foreshore area and prevent access to the beach due to issues with health and safety. Furthermore, Fairhaven Lake is a key location within the strategy in terms of its control on the alignment of the coastline. An option to enhance the toe of the structure has been rejected this does not sufficiently develop the control point.

Nearshore structures have the potential to affect the existing coastal processes within the Ribble estuary. The degree to which this option could affect the designated sites for nature and geological conservation will determine its viability and be investigated during the SEA process.

The setback wall would improve the amenity of the area by including the access to the beach and allowing unrestricted views of the beach from the promenade.

- Sub-Unit F1.4

This Sub-Unit marks the approximate boundary between the sand deposits, associated with the interface between the open coast and mouth of the Ribble estuary, and the muddy deposits encountered within. A critical point along this Sub-Unit is the transition between the hard defence at Fairhaven Lake and the dune system to the east. The options to be taken forward are:

1. Localised improvement of bank protection at junction with Fairhaven Lake and Granny's Bay;

The transition between the defences at Fairhaven Lake and the saltmarsh which fronts Granny's Bay is a critical point within this Sub-Unit. The existing defence at Granny's Bay is a small low vertical concrete wall with concrete block crest matting and rear grassed earth slope behind. The residual life of this structure is estimated to be five years. This option involves localised bank protection along the frontage of this Sub-Unit to reinforce sections which are at risk of breach.

2. Replace existing revetment along Lytham Promenade with concrete sloped/stepped revetment with a wide promenade and set back wall; and,

This involves breaking out of the existing structure and replacing with a concrete stepped revetment with a wide promenade with set back wall to contain wave overtopping.

3. Relocation of Lifeboat Station.

The existing location of the lifeboat station is not in-line with the natural alignment of the coastline; therefore, there is an opportunity to relocate the lifeboat station.

Justification

The present value Do Nothing damages due to the predicted coastal flooding and erosion for this Sub-Unit are such that this option is deemed unviable. Other options that have been rejected were those that included rock toe protection structures. These would reduce the foreshore area and prevent access to the beach due to issues with health and safety.

UNIT F2 - LYTHAM WINDMILL TO NAZE POINT

The SMP policy for this Unit is **HTL** (Sub-Units F2.1 and F2.2) and **NAI** (Sub-Unit F2.3).

Strategic Options for this Unit

4. Do Nothing;

This option would result in the defences at Lytham Dock failing, depending on their residual life (estimated to be less than ten years in most instances). The failure of these defences would result in the onset of flooding by tidal inundation, resulting in a large number of properties and agricultural land being at flood risk.

5. Continue and improve the existing defences; and,
6. Modify defences to take into account sea level rise.

Short list of options for each sub-unit

- Sub-Unit F2.1 and F2.2

These Sub-Units are characterised by high ground or existing flood defences. The defences have a low estimated residual life (less than ten years in most instances). The defences protect a very large flood area, comprising many properties and hectares of agricultural land. The option to be taken forward is:

1. Defend along existing line.

This option involves modifying the existing defences to provide an adequate standard of protection.

Justification

The present value Do Nothing damages due to the predicted coastal flooding for this Sub-Unit are such that this option is deemed unviable. The potential flood area, were the defences at F2.1 and F2.2 to fail, is substantial and would affect residential and commercial properties, designated sites for nature, geological and historic conservation, and also a large extent of Grade 2 and 3 agricultural land.

- Sub Unit F2.3

This Sub-Unit is characterised by high ground which is not a risk of flooding within this strategy period. The option to be taken forward is:

1. Do Nothing

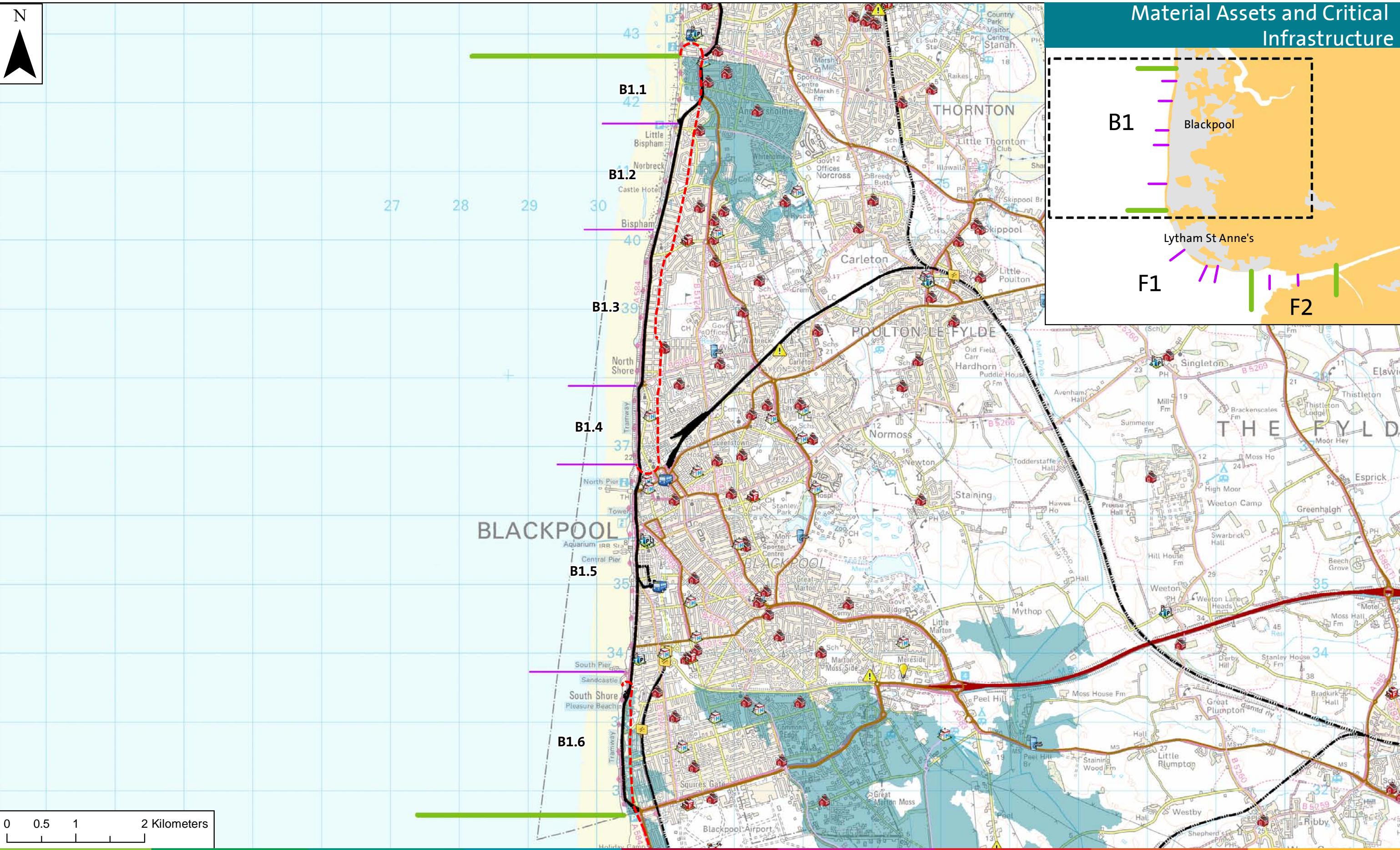
The policy as set out in the SMP for this Sub-Unit is NAI. Due to the high ground at this Sub-Unit there is negligible flood risk during this strategy period therefore the option taken forward is Do Nothing.

Justification

The Do Nothing option for F2.3 is justified both in terms of satisfying the policy of No Active Intervention and due to the high ground which results in no flood risk to properties and land at this Sub-Unit.

APPENDIX D

Figures



Legend

Erosion Extent 2110	Fire Station	Police	Unit Markers	B Road
Airport	Hospitals	Railway Station	Sub Unit Markers	A Road
Bus Station	Schools	Waste Disposal	Railway / Tram Lines	Motorway
Electricity	RNLI Station			
				Flood Extent (1:200, 2110)



BLACKPOOL

B1.5

B1.6

F1.1

LYTHAM ST ANNE'S

F1.2

F1.3

F1.4

F2.1

F2.2

F2.3

0 0.5 1 2 Kilometers

Legend

Erosion Extent 2110

Airport

Bus Station

Electricity

Fire Station

Hospitals

Schools

RNLI Station

Police

Railway Station

Squares

Water Distribution

Unit Markers

Sub Unit Markers

Railway / Tram Lines

Flood Extent (1:200, 2110)

B Road

A Road

Motorway

Material Assets and Critical Infrastructure

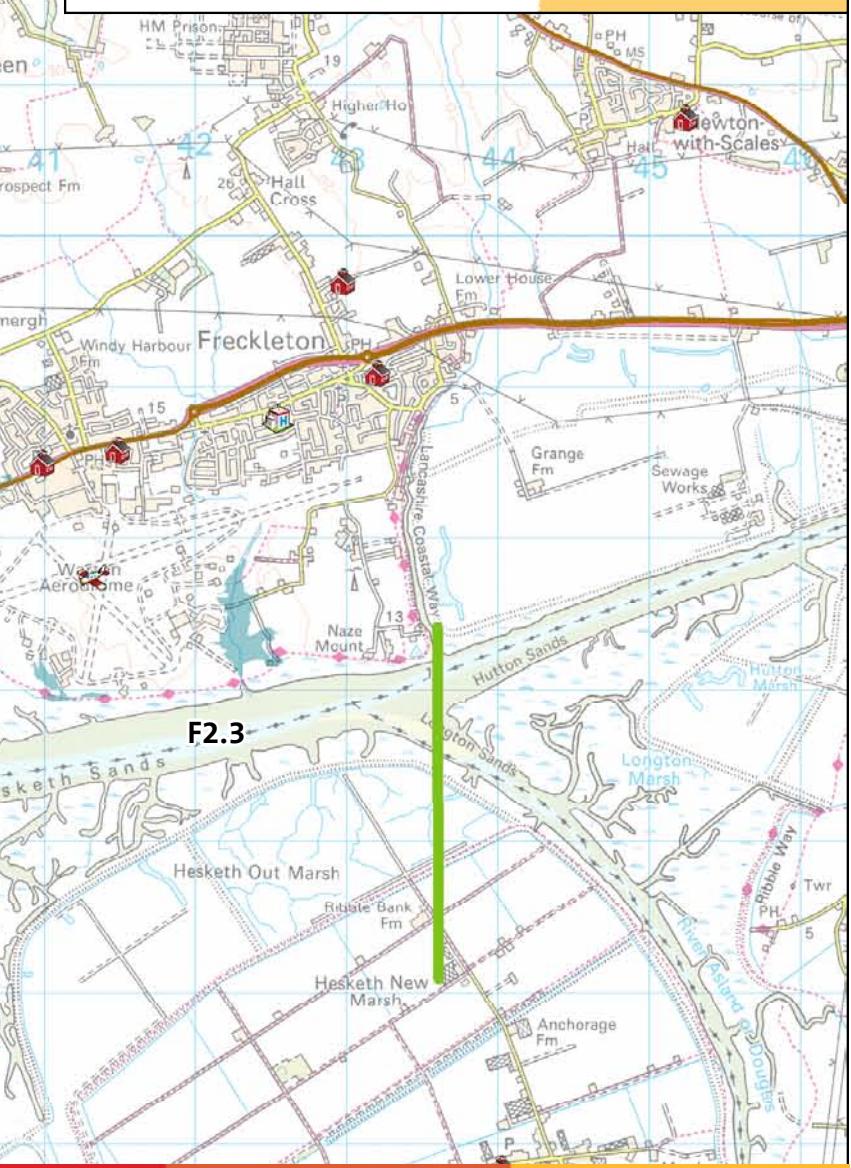
B1

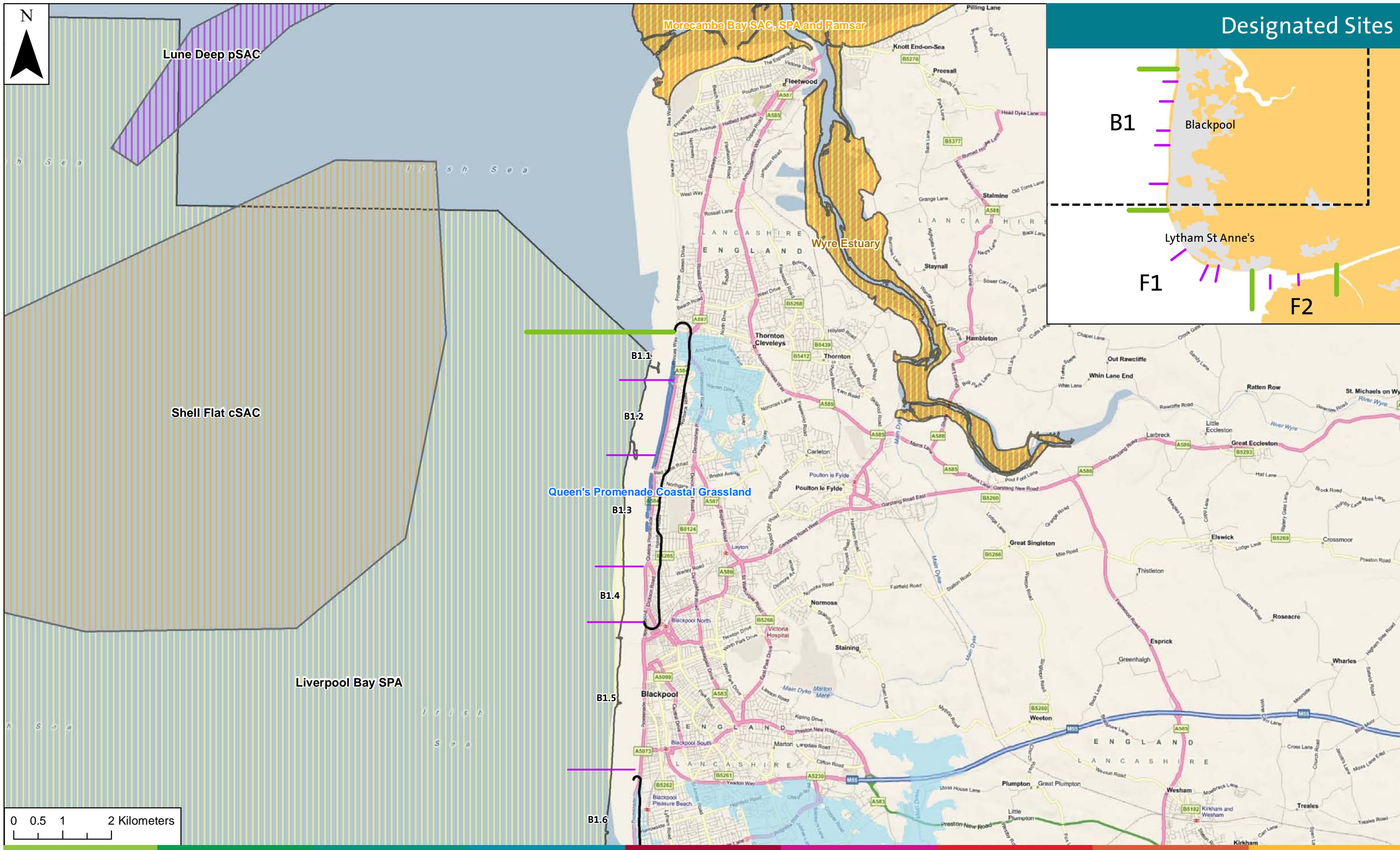
F1

Blackpool

Lytham St Anne's

F2





Legend

- The legend consists of eight entries, each with a colored square icon followed by the name of the area type:

 - Unit Markers (green)
 - National Nature Reserve (diagonal pink lines)
 - RAMSAR (orange)
 - Sub Unit Markers (purple)
 - Site of Special Scientific Interest (diagonal brown lines)
 - Lune Deep pSAC (vertical purple lines)
 - British Heritage Site (blue diamond pattern)
 - Special Protection Area (yellow vertical bars)
 - Shell Flat cSAC (vertical orange bars)

— Erosion Extent 2110

Flood Extent (1:200, 2110)



ROYAL HASKONING

Blackpool & Fylde Joint Coastline Strategy Plan

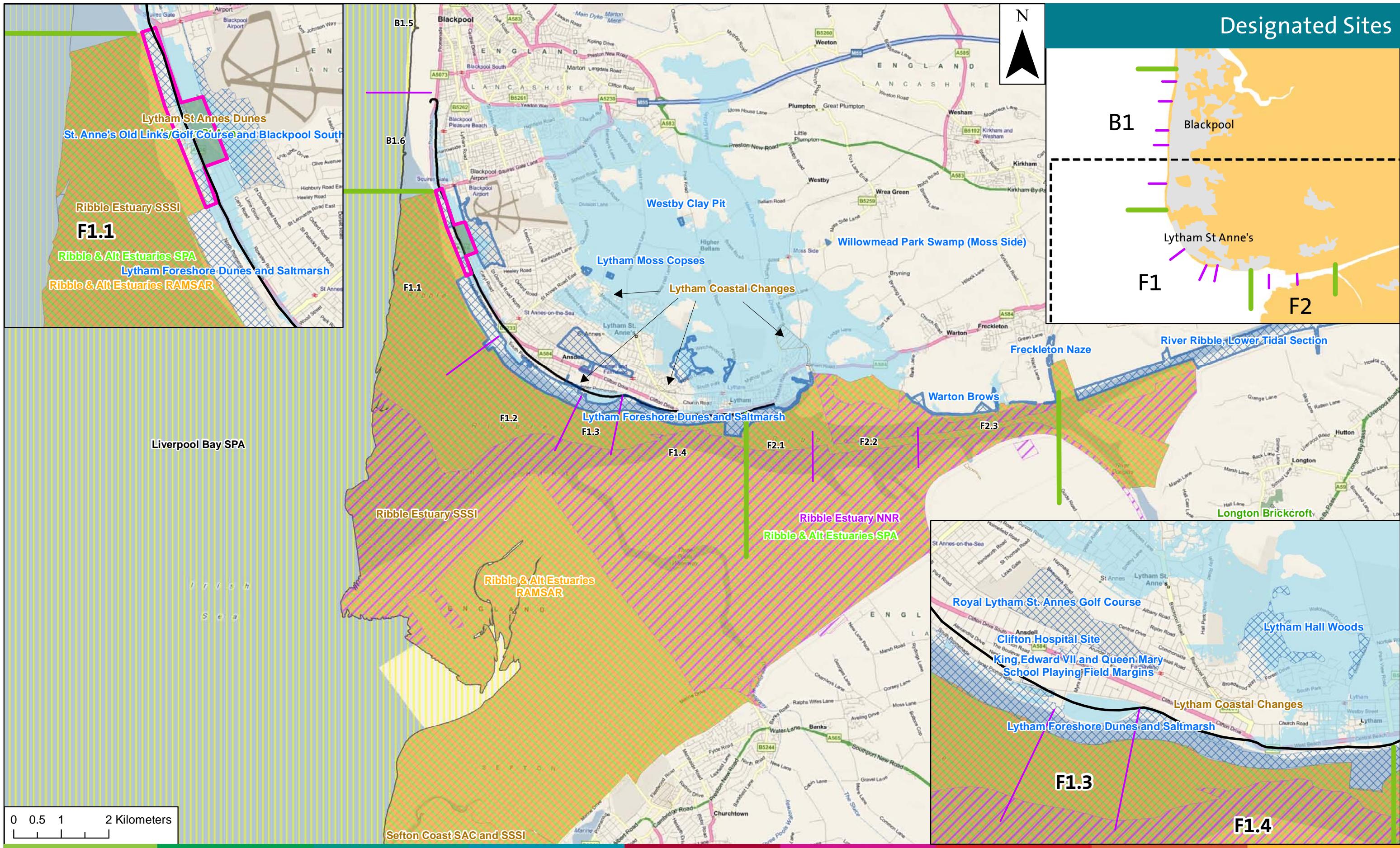
Blackpool & Fylde Council

1:70,000 @ A3

January 2011

Figure D2a

Designated Sites



Legend

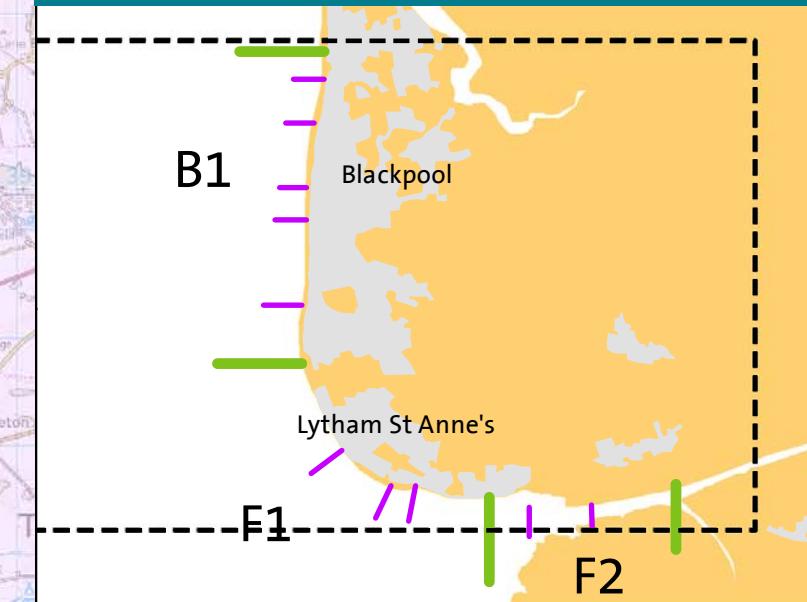
- | | | | | | | |
|--------------------------------------|--|-------------------------|--|-------------------------------------|--|----------------------------|
| Unit Markers | | British Heritage Site | | Site of Special Scientific Interest | | Erosion Extent 2110 |
| Sub Unit Markers | | Local Nature Reserve | | Special Protection Area | | Flood Extent (1:200, 2110) |
| Regionally Important Geological Site | | National Nature Reserve | | RAMSAR | | |



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Blackpool & Fylde Council
Scale: 1:70,000 @ A3
January 2011
Figure D2b



WFD Waterbodies



GB641211630001
Mersey Mouth

0 0.5 1 2 Kilometers

Legend

- Liggard Brook
- Pool Stream
- Ribble Link (Savick Brook, R.Ribble, R.Douglas)
- T Ribble/Savick Bk/SF Drains
- Wrea Brook

- Mersey Mouth
- Ribble
- Ground Water Protection Zone

- Flood Extent (1:200, 2110)
- Erosion Extent 2110
- Unit Markers
- Sub Unit Markers

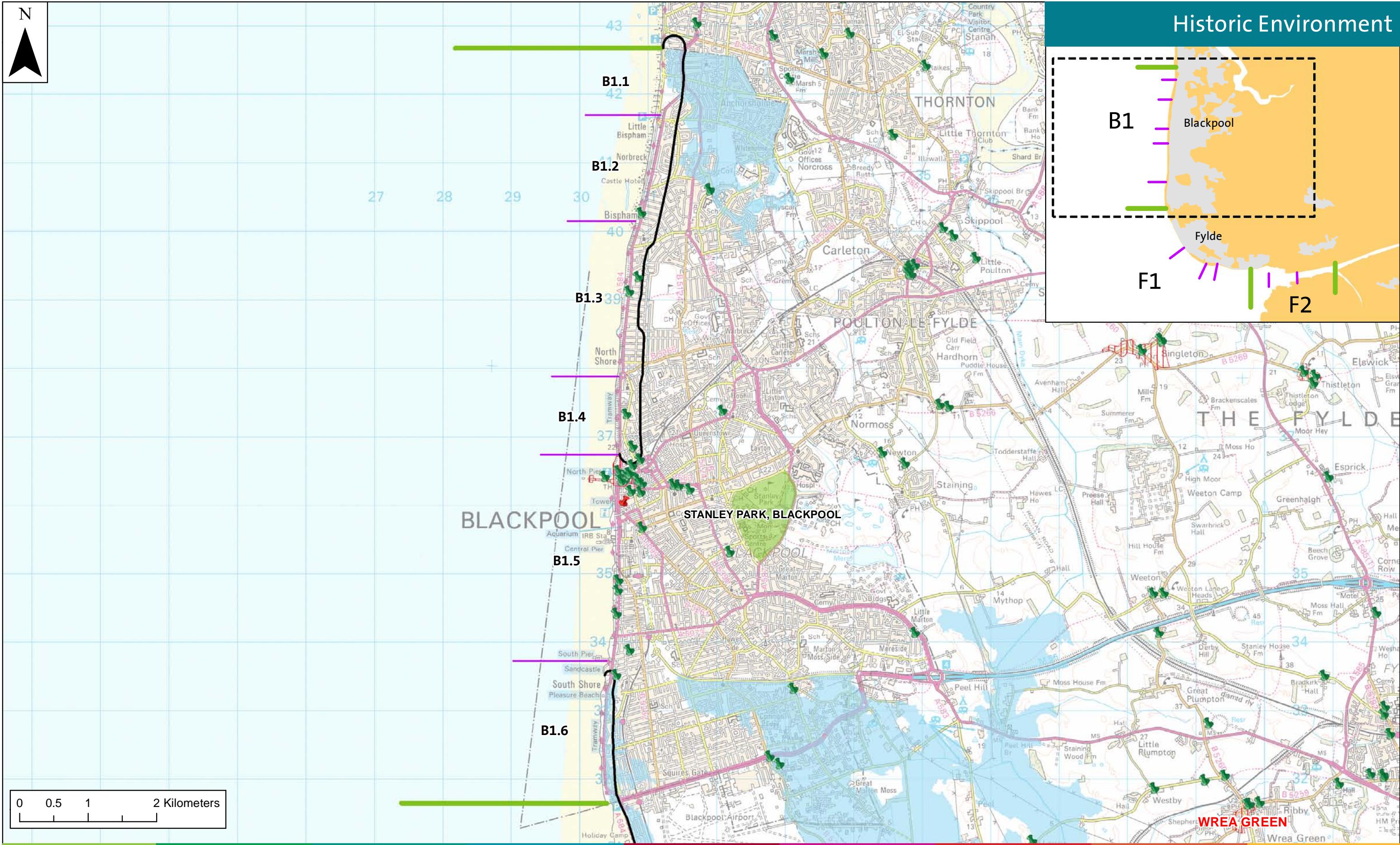
- Aquifer Bedrock Designation
 - Secondary B - West Lancashire GB1202G912700
 - Quaternary Sand and Gravel Aquifers
 - Principle - Fylde GB1201G100500
 - Permo-Triassic Sandstone Aquifers



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Blackpool & Fylde Council
Scale: 1:70,000 @ A3
January 2011
Figure D3



Historic Environment



Legend

- | | | |
|-----------------------------|------------------|----------------------------|
| Conservation Areas | Unit Markers | Flood Extent (1:200, 2110) |
| Registered Park and Gardens | Sub Unit Markers | Listed Buildings Grade I |
| | | Erosion Extent 2110 |
| | | Listed Buildings Grade II |



Fylde Joint Coastline Strategy Plan

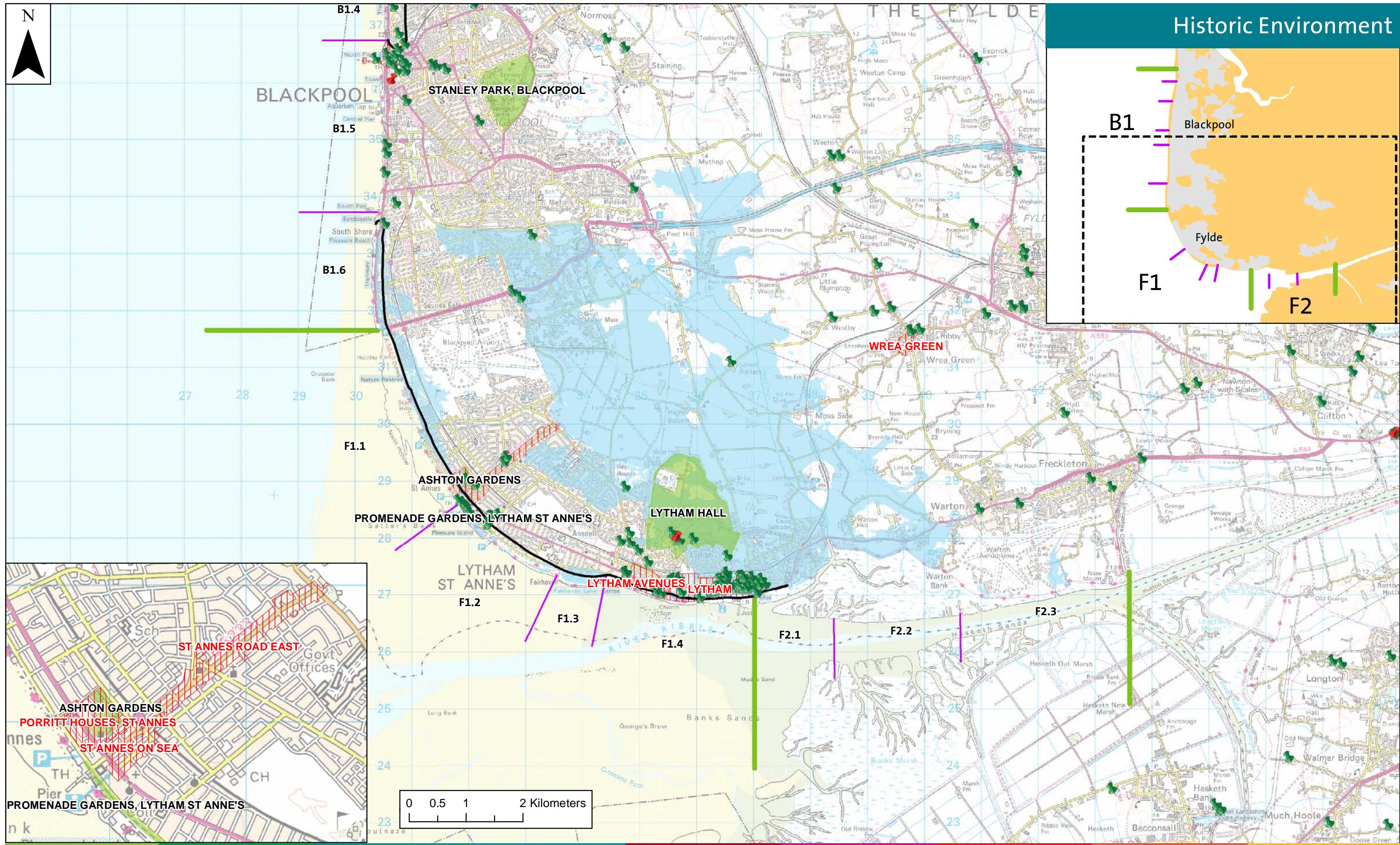
Blackpool & Fylde Council

Scale: 1:50,000 @ A3

January 2011

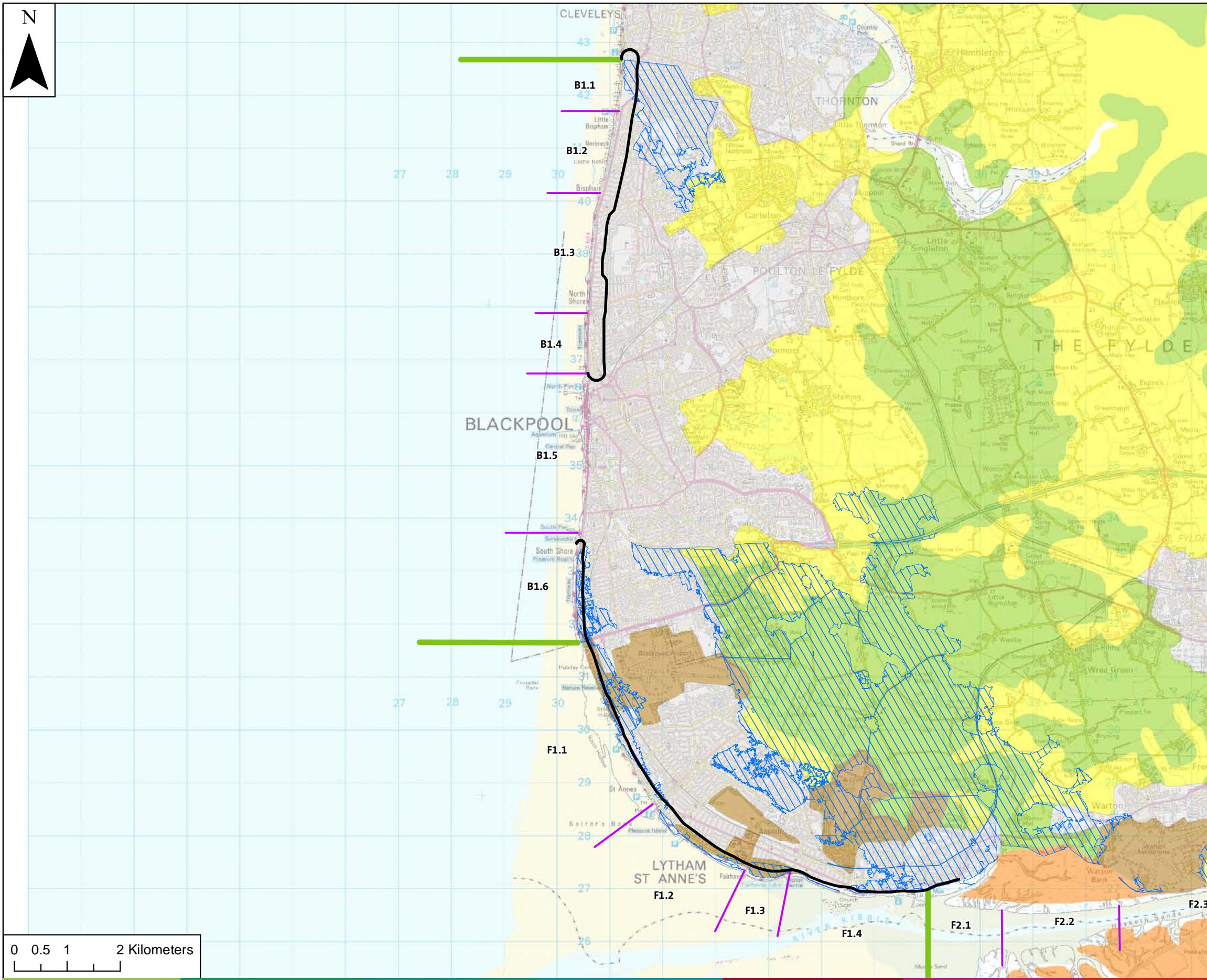
Figure D4a

Historic Environment



Legend

- | | | | |
|-----------------------------|------------------|----------------------------|---------------------------|
| Conservation Areas | Unit Markers | Flood Extent (1:200, 2110) | Listed Buildings Grade I |
| Registered Park and Gardens | Sub Unit Markers | Erosion Extent 2110 | Listed Buildings Grade II |



Legend

GRADE 1	GRADE 4
GRADE 2	GRADE 5
GRADE 3	NON AGRICULTURAL
URBAN	
Flood Extent (1:200, 2110)	
NON AGRICULTURAL	
Unit Markers	
Sub Unit Markers	
Erosion Extent 2110	

Agricultural Land Classification

