

JOINT LANCASHIRE MINERALS & WASTE DEVELOPMENT FRAMEWORK

SUBMISSION DRAFT CORE STRATEGY

Final Sustainability Report



November 2007

FOREWORD

In November 2006 we published the Preferred Options of the Core Strategy, alongside which was a sustainability appraisal. That appraisal documented the environmental, social and economic issues which had been considered in drawing up the preferred options. Both documents were consulted on and the draft Core Strategy is the outcome of that process.

In terms of its implications for the environment, society and the economy, the draft Core Strategy has not changed significantly since the preferred options report. This report, in line with Government guidance, supplements the sustainability appraisal report by setting out the consequences of changes that have occurred, as well as explaining how representations on the preferred options have been considered.

Since the plan preparation began there have also been a number of changes which have occurred outside the plan-making process (for instance, changes in national policy, emerging plans and strategies elsewhere in Lancashire, and new information on the state of the environment). It is a role of the sustainability appraisal to ensure these matters are kept under review.

These changes are continuous, and will continue well beyond the formal plan-making timetable. Such matters are included in the 'monitoring and implementation' section, which has been updated and reviewed since the plan preparation began.

This document is arranged in 3 sections. The first provides an update to, and supplements, the Sustainability Appraisal published alongside the Preferred Options to the Core Strategy in November 2006. The second section reports on work undertaken in connection with an appropriate assessment of the Core Strategy under the provisions of the European Habitats Directive. The third section reports on the strategic flood risk assessment undertaken.

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SECTION ONE: UPDATE TO SUSTAINABILITY APPRAISAL

1. Questions and Answers

What is this document?

- 1.1 This document supplements the sustainability appraisal which we published alongside the Preferred Options for the Core Strategy in November 2006 (herein referred to as 'the 2006 SA Report'). The Government has asked us to produce this document to set out how the sustainability appraisal and consultees' opinions were taken into account in deciding the final form of the draft Core Strategy. It also sets out whether any of the changes to the plan are likely to have environmental, social or economic implications not already considered.
- 1.2 We are consulting now on the draft Core Strategy, and we recognise the consultees will want access to the environmental, social and economic implications of the draft Strategy as a whole, rather than referring back to the earlier appraisal for the Preferred Options. For this reason, we have endeavoured also to provide a concise summary of the effects (positive and negative) of the draft plan, including those dealt with in the earlier appraisal.

What is sustainability?

- 1.3 Sustainability means taking action that is needed now, without compromising the needs of future generations. This is a major driver for many of the Strategy's policies on recycling and waste reduction and on protecting our limited natural resources. In practice, however, future effects are not certain. Sustainability is therefore also about acting in the best possible knowledge of what actions we may need to take in the future. Nowhere is this better illustrated than when considering the realities of climate change.

Why do we need a sustainability appraisal?

- 1.4 The sustainability appraisal (which is required under national and European law) aims to ensure that sustainability is considered throughout the plan-making process. It also aims to ensure that the public has access to information about the effects of the plan on them, their local community and the environment. This report has been produced to provide that information.

How does the appraisal process help?

- 1.5 The appraisal assesses the potential environmental, social and economic impacts of the Strategy, and directs the Joint Authorities as to how these may be prevented. The appraisal provides a way of comparing short-term impacts against longer-term priorities. This is done by comparing proposals against the key sustainability issues for the plan area and against a set of broader sustainability objectives, both of which were set out in the earlier appraisal.

Are there any problems with the appraisal?

- 1.6 Formalising the way in which sustainability is incorporated into the plan-making process has been difficult, particularly given the changes in the planning system and in local government more generally. The identification of effects has been made more difficult because of the absence of site information and uncertainties over the environmental consequences of new waste technologies. Future revisions to the Core Strategy will need to reflect emerging expertise and best practice once the framework as a whole has been implemented.

2. Statutory Requirements

- 2.1 Although the legislation is not prescriptive about how the sustainability appraisal should be undertaken, it does set certain ‘milestones’ that should be achieved along the way. It also sets out the information that should be provided in the sustainability appraisal report.

Table 1: Required Milestones

Requirement	Where
Statutory authorities should be consulted on the scope and level of detail to be included in the sustainability appraisal:	Scoping Report (2005)
The sustainability appraisal report, together with the preferred options for the Core Strategy, should be made available for consultation to the statutory authorities and the public: A summary of responses is provided in Chapter 3.	Sustainability Appraisal of the Preferred Options for the Core Strategy (the 2006 SA Report)
A revised sustainability appraisal report should be published documenting any significant changes since the preferred options.	Section One (this report)
The authorities will issue a statement summarising how the environmental report and any opinions expressed during consultation shall be taken into account during the preparation of the plan, the reasons for choosing the plan as adopted, and the measures decided concerning monitoring of the implementation of the plan.	Section One (this report)
The plan should be assessed for potential effects upon European Wildlife Sites under the Conservation (Natural Habitats, &c) Regulations 2006	Section Two (of this report)
An assessment of the strategic flood risk implications of the draft Core Strategy should be undertaken (as specified in PPS25)	Section Three (of this report)

Table 2: Content and Scope of the Sustainability Report

The sustainability appraisal report should include the following information:

Information Regarding	Where
The relationship of the Core Strategy with other relevant plans	Chapter 8 (of this report)
The relevant aspects of the current state of the environment and the likely consequences of the Core Strategy on these	Chapter 4
The way environmental protection objectives have been taken into account by the assessment	The 2006 SA Report
The measures envisaged to prevent, reduce or offset any significantly adverse effects of implementing the plan	Chapter 8
An outline of the reasons for selecting the alternatives dealt with	Chapter 5
A description of how the assessment was undertaken, including difficulties encountered	Chapter 8
A description of measures for monitoring the plan	Chapter 8

3. Consultations

- 3.1 This is a summary of comments made during public participation on the preferred options for the Core Strategy. The bullet points following each comment explains how these have been considered in the original sustainability appraisal report or this revised appraisal report.
- 3.2 A number of comments were made about the relevance of climate change, and in particular the draft *PPS Supplement: Planning & Climate Change*.
- *The over-riding aim of the strategy is to promote more sustainable use of natural resources, and this will make a significant contribution to tackling climate change. Changing attitudes to waste management by public authorities, businesses and individuals has already been instrumental in raising awareness of the significance of climate change. The draft Core Strategy builds upon this.*
 - *We have also taken account of the impacts of climate change in terms of flood risk, water quality and sea-level rise in our appropriate assessment screening (**Section Two**) and our strategic flood risk assessment (**Section Three**).*
- 3.3 Comments were also received expressing support for the location of waste facilities within existing urban areas (in some cases as a means of protecting rural areas and the natural environment). Others also commented on the need to fully consider alternatives to road transport.
- *We recognise the level of interest in these issues. It is clear that transport issues are a significant consequence of our overall waste strategy, and in practical terms there is limited scope for reducing this. A significant reason for locating new waste facilities close to waste producing areas (either residential or industrial and commercial) is to reduce unnecessary 'waste miles'. The location of waste facilities in Lancashire will be assessed to ensure that this network is efficient as possible.*
 - *Options for alternatives to road transport are limited, primarily because of the dispersed nature of waste arisings and uncertainties about the end destination for recovered materials. Situations where the use of rail freight may be viable, particularly in relation to waste parks (Policy CS9), will be explored in the Site Allocations DPD and for individual proposals. However, this will need to take account of other priority users of the rail network. **Map 5** shows the distribution of road and rail networks against existing industrial and commercial areas.*
- 3.4 Comments were made that the Preferred Options 'key diagram' plotted broad areas of search, but did not explicitly consider these within the document itself.
- *We have taken this into account in the revised sustainability appraisal, particularly in relation to effects on international wildlife sites and the impacts of flood risk and climate change. **Chapter 5** of this report also looks at the wider sustainability context of these broad areas of search.*
- 3.5 Several respondents dealt with the importance of local wildlife sites and wider biodiversity resources. In particular, consultees stressed the importance of not only protecting these assets, but also delivering measures which reverse the wider fragmentation of the natural environment.

- *The Core Strategy has been amended to strengthen the weight afforded to the natural environment and to ensure that opportunities for environmental enhancement are delivered through the development framework. These changes are detailed in Chapter 6.*

3.6 One consultee commented on the importance of industrial archaeology in the region, particularly in relation to abandoned quarries and derelict and brownfield sites.

- *We recognise that industrial archaeology is an under valued resource in the plan area, and Policy CS1 specifically states that the “environmental and heritage value” of Lancashire’s former mineral workings will be identified and conserved. As yet we have not devised a procedure for doing this, and we envisage that this will be an outcome of the Site Specific Policies and Allocations DPD.*

3.7 Other consultees stressed the need to ensure that minerals and waste developments minimise their effects on landscape character and designated areas.

- *We recognise the importance and strength of feeling on this matter. Changes since the Preferred Options have strengthened this aspect of the Strategy, and now give priority to delivering enhancement of the landscape character. However, we continue to support the view that these issues will be most effectively considered at the site identification stage, where direct comparison between alternative sites will be possible. At this stage we will also be able to consider any specific measures that may be required in order to make a development proposal suitable.*

4. Environmental Update

- 4.1 A critical part of the appraisal is the consideration of up-to-date information on the state of the environment. This supplements the information presented in Sections 4 and 9 of the 2006 SA Report, and includes recent information on a number of key topic areas. The information focuses on issues which were raised during public participation on the preferred options.

Climate Change

- *Sea Level Rise (see Map 4): Government-forecasts for sea level rise show significant alteration or loss of saltmarsh along the Ribble Estuary and Morecambe Bay coastline as a result of modest rises in mean sea level by 2025 (approx. 9cm). More significant rises of up to 0.6m predicted by 2085 would result in less extensive loss of land (owing to local topography), but would likely cause significant coastal erosion and substantially increased risk of flooding in low-lying areas.*
- *Carbon Dioxide Emissions: Estimates of potential CO₂ savings as a result of waste management/recycling vary depending on assumptions about embodied energy requirements, material quality and end-market use. Optimistic estimates would suggest that a maximum of 425,000 tonnes of CO₂ savings could be obtained from the municipal waste stream, were all recoverable materials to be extracted and used for maximum benefit. Further work as part of the Municipal Waste Strategy review will establish better information on CO₂ savings as a result of current and future waste management. Lessons from this should enable similar information to be extended to other waste streams.*

Biodiversity

- *The form of future pressures on coastal biodiversity are highlighted in Maps 3 & 4, and emphasise the need for measures to re-establish of lost habitats and create of new habitat links in these areas. As yet, however, limited progress has been made in establishing an ecological framework for Lancashire, which would help identify opportunities for such measures.*
- *Information is being co-ordinated by the Environment Agency to identify the pressures on water resources, as part of the regions River Basin Management Plan, and will be available in late 2007/early 2008. Work to develop a green infrastructure strategy for Lancashire is also being undertaken, which will provide additional direction future environmental improvements.*

Housing Supply

- *The rate of building conversions between 2001 and 2006 averaged around 15% of the total new housing supply (or 2,700 properties). In contrast, some 19,000 new homes were built during the same period.*
- *These figures sit against a backdrop where, in 2001, there were some 30,000 vacant properties and 75,000 'unfit' dwellings*. The Elevate Pathfinder has led to significant reductions in the number of unfit dwellings (down from 52,500 properties in 2001 to 29,500 in 2006), although further opportunities exist*

to increase the reuse of existing buildings as an alternative to demolition and redevelopment.

- *The ratio of new buildings to buildings converted from existing ones has a significant impact on the demand for new building materials.*

** There may be substantial double counting between these figures.*

Heritage & Regeneration

- *In common with building conversions, heritage-led regeneration can provide opportunities to deliver new development with the existing fabric of urban centres, whilst helping to bring undervalued buildings back into use, and (potentially) reducing demand for new construction materials.*
- *The location of regeneration areas and areas of significant derelict or under-used land are displayed on Map 2. Alongside these are shown historic and industrial age urban areas as identified in the Landscape and Heritage SPG. The coincidence of these factors (particularly in East Lancashire) has a special influence on the potential for managing demand for new construction materials and co-ordinating the supply of recycled minerals.*

Transport

- *It is estimated that municipal waste collections in Lancashire currently account for 1.9 million vehicle miles (which represents 0.02% of all vehicle miles). Overall vehicle flows in Lancashire are predicted to have increased by 7.5% between 2001 and 2006.*
- *The findings of the Lancashire Rail Demand Study predict substantial rail passenger increases (doubling in some cases), largely on routes between Clitheroe and Manchester, and Blackpool and Leeds. Between 2001 and 2006, rail patronage in Lancashire increased by 17.5%.*
- *Map 1 shows rail infrastructure and facilities safeguarded by the Joint Lancashire Structure Plan. The majority of these are intended for use in public transport improvements, supporting a target to increase rail patronage by 75% by 2016. However, a number of sites for rail freight distribution are also identified.*

5. Summary of Earlier Appraisal

- 5.1 The following is a summary of the earlier appraisal, submitted alongside the Preferred Options consultation document. The 2006 SA Report is included as a supporting document to the draft Core Strategy, and this summary is intended simply to help consultees when making their response to the draft Strategy.

Sustainability Issues

- 5.2 The primary basis for the appraisal focussed on a number of key sustainability issues identified through the assessment of baseline data and a review of other plans and strategies in the plan area. Critical issues identified included:

- High levels of CO₂ emissions in the region, particularly from transport
- Significant areas of derelict and underused land, mostly in the south and east
- A large proportion of poor-quality housing with significant opportunities for conservation-led regeneration
- Limited capacity for managing industrial, commercial and construction wastes
- Significant areas of important landscapes and natural habitats, much of which is designated as of regional or local significance.
- An evolving economy moving towards high technology enterprises, with potential for developing capability in the environmental technology sector.

- 5.3 **Map 2** illustrates the distribution of poor quality housing and derelict land within the plan area, whilst **Map 3** shows the distribution of local wildlife sites and broader biodiversity resources.

Findings of the Initial Appraisal

- 5.4 The appraisal was conducted by considering how different options would contribute to achieving a set of broad sustainability objectives (set out in the earlier report) and what effects they would likely have on the key sustainability issues identified above. The key findings were:
- That moving towards higher-value mineral production by replacing a significant proportion of demand with recycled and secondary aggregates (RSA) would require stronger co-ordination with other planning authorities.
 - That enforcing prescriptive policies on the use of recycled aggregates could lead to the loss of existing vernacular building styles and would potentially increase the cost of redeveloping priority derelict areas in the short-term.
 - That, whilst alternatives to road transport should be considered, this should also take account of other development options for the infrastructure involved, including its potential for public transport initiatives.
 - That transport management plans, waste transfer stations, suitable locations for new waste facilities and opportunities for co-locating different stages of the waste treatment cycle within 'waste technology parks' would all provide ways of managing the transport demands of the new approach to waste management.
 - That environmental protection policies should help deliver development which supports environmental enhancement, rather than simply protecting existing environmental assets.
 - That rural communities should be adequately served by waste management facilities.

Principal Strengths of the Strategy

- 5.5 The Preferred Options that were then developed took many of these considerations into account. Changes which the sustainability appraisal helped to developed include:
- Provision for minerals extraction reflecting a high proportion of supply from recycled and secondary sources, with support for an expanding mineral recycling industry.
 - New provision only for high quality minerals which meet a proven and sustainable need.
 - Measures to safeguard mineral resources and former mineral workings for their economic, environmental and heritage value.
 - The provision of waste facilities within locations designed to minimise the need to transport wastes, and promoting active use by local communities.
 - Supporting the growth in environmental technologies through an adaptable waste strategy.

Potential Weaknesses of the Core Strategy

- 5.6 There are, of course, areas where the Strategy could be strengthened further. Experience of applying the development framework will be co-ordinated through our monitoring and implementation plan, and the appraisal has identified a number of aspects which this should include:
- Establishing stronger links with other plans in order to better manage the demand for minerals (e.g. by promoting more durable buildings, encouraging restoration rather demolition, and by influencing the type of materials used in new developments). This is partly achieved through the proposed Waste Minimisation SPD, and the effectiveness of this document will be monitored and reviewed as other authorities progress their local development frameworks.
 - Providing a more coherent programme for developing local markets for recycled wastes (e.g. through closer working with economic development agencies and the municipal waste management strategy). Barriers to this largely relate to the timing of the production of the Core Strategy, and opportunities to strengthen this will be explored in the implementation plan.
 - Greater community involvement, including raising community awareness of the need for new local waste facilities close to residential areas. This is currently being considered as part of the review of Lancashire's Municipal Waste Management Strategy, and this information is likely to be available during the site identification process.

Conclusions of the Appraisal

- 5.7 The appraisal puts considerable weight on the benefits of new waste management technologies, even though these often have their own environmental problems (e.g. increased transport, greater number of facilities, etc.). We have also put considerable weight on the importance of providing local community facilities, even though public awareness of the role of such facilities may not yet be entirely understanding of such an approach. Both approaches take a long-term view of sustainable resource management and inevitably rely on new lessons and emerging expertise being fully incorporated in future reviews of the Strategy.

Alternative Options

- 5.8 The *Issues & Options* consultation paper, which was published in late 2005, set out a range of alternative options for the developing Core Strategy. These were considered in the sustainability appraisal accompanying the Preferred Options document. The alternatives dealt with in these early stages are summarised below. This is derived from information originally submitted in Appendix 3 of the 2006 SA Report.

Planning for the Supply of Minerals

- ***To follow regional targets for the production of aggregate minerals***
 - *The concept of regional targets and sub-regional apportionments is well established and provides a degree of certainty, both to industry and the public.*
 - *The concept also allows other means of supply (notably recycling and secondary minerals) to be promoted through their inclusion in overall targets.*
- ***To provide minerals within strict environmental limits***
 - *Determining which aspects of the environment this option should protect is problematic (e.g. whether high-quality environments or areas suffering from severe environmental degradation).*
- ***To include building and roofing stone within targets for mineral supply***
 - *Demand for building and roofing stone are not directly comparable to aggregate minerals, in the way recycled construction materials is.*
 - *The absence of a formal framework for traditional building materials may act to lessen the importance of these materials in other aspects of land use planning.*

Mineral Recycling Targets

- ***To apply mineral recycling targets to specific types of development, or to apply general targets to the plan as a whole***
 - *Limited information is available to support specific targets, particularly given the range of specific factors influencing the appropriateness of mineral recycling for any given development.*

Safeguarding Mineral Resources

- ***To protect mineral resources from other forms of development***
 - *Mineral resources may have social and environmental value, which may equally merit protection.*
 - *What constitute viable mineral resources is limited by information on extent and quality of potential resources, as well as understanding of future extraction methods.*

- *Also important is to ensure that mineral resources are also used efficiently and not under-valued, which is supported by the concept of recycled and secondary minerals.*

Methods of Alternative Transport

- **To transfer distribution to rail or sea**
 - *Existing infrastructure is limited and may compete with other priorities for passenger and freight transport, although specific opportunities may be realised without conflict.*
 - *For waste, the overall objective is for Lancashire to be self-sufficient. The viability of using alternative modes of transport over relatively short distance are likely to be limited.*
- **To improve the efficiency of road transport**
 - *Local issues can be managed through freight quality partnerships and careful access planning, however, this does not address wider environmental problems associated with road transport.*

Waste Management Strategy

- **To have a strategy based on a range of different technologies**
 - *Different waste management technologies may enable maximum value to be extracted at different stages in the waste hierarchy, allowing businesses to respond to changing demand for processed materials.*
 - *A more diverse strategy is likely to require a larger number of facilities, with the associated impacts.*
- **Strategy focused on a limited range of waste management solution (e.g. incineration)**
 - *Waste management technologies are rapidly evolving and capacity to benefit from this may be limited by focussing on a narrow range of technologies.*

Site Identification Criteria

- **To adopt a sequential approach to using brownfield sites**
 - *There are diverse ranges of brownfield locations within Lancashire, and the effects of development may be positive or negative. Factors such as neighbouring land uses, opportunities for mitigation, etc. could be addressed through site identification criteria.*
- **To identify exclusion areas**
 - *Due to the discrete nature of minerals and waste developments, there may be little difference between using exclusion areas explicitly and providing direction in the form of site criteria.*

- *The application of exclusion areas would not necessarily address existing problems and may lead to local communities being deprived of access to certain facilities.*
- **To follow the proximity principle when planning for waste facilities**
 - *In general would promote local facilities in locations easily accessible by local communities, and major facilities in industrial locations close to particular sources of waste.*
 - *In some circumstances, would lead to development in areas already suffering from environmental degradation.*

Waste Parks

- **To allow purpose built 'waste parks' accommodating a range of waste technologies**
 - *The concept of waste parks is intended to promote investment and development in new waste technologies, which could in turn help development local markets for recovered materials.*
- **To locate facilities within existing industrial/commercial locations**
 - *In many cases, locating facilities within existing industrial and commercial areas may be more appropriate, particularly if this would minimise the transport requirements for collection waste or distributing processed materials.*

6. Changes to the Draft Core Strategy

- 6.1 A number of changes have been included in the draft Core Strategy in response to public participation on the Preferred Option and to reflect new information, which was not available earlier in the process. The following section examines the possible effects of these changes.

Table 3: Summary of Changes

Policy	Details of Changes	Issues	Comments
CS1	<i>To include specific reference to Mineral Safeguarding Areas as a means of protecting important mineral resources.</i>	<i>Procedural changes.</i>	<i>No significant effects.</i>
CS2	<i>Provision for new sources of high quality sand is reduced from 5.7m to 4.1m. Policy on brick and cement minerals amended to allow additional reserves to be released during the plan period, if it is shown that existing landbanks have fallen below 25 years.</i>	<i>Future landbanks for brick minerals would likely be located close to active quarries or one of the areas several dormant sites. A number of these are in urban settings together with existing brickworks, whilst others are close to areas of high biodiversity potential. Cement minerals are currently sourced from two quarries near Clitheroe and technological and transport issues mean this is likely to continue. Raw materials for either brick or cement cannot easily be replaced by alternative materials.</i>	<i>The reduced provision for high quality sand reflects changes since the Preferred Options were developed and is not likely to affect overall sustainability of the plan. In the case of reserves for brick manufacture it would be preferable to consider any significant changes to the available landbanks as part of the periodic review of the development framework. This would allow the merits of different options to be fully explored.</i>

Policy	Details of Changes	Issues	Comments
CS5	<p><i>Now specifically encourages alternatives to road transport, as well as safeguarding potential facilities such as rail interchanges.</i></p> <p><i>Aspects relating to landscape quality and character are strengthened by giving support to enhancement as well as conservation and protection.</i></p> <p><i>Restoration and aftercare measures are required to take account of the local landscape character.</i></p>	<p><i>Whilst alternative forms of transport (particularly rail) are preferable, the priorities of other users of the rail network are also important. This is particularly so where proposals in other plans also promote development which has better public access to the rail network.</i></p>	<p><i>Any proposals to safeguard potential facilities such as rail interchanges should consider whether there are other priorities for the same facilities.</i></p> <p><i>The additional emphasis on landscape and environmental enhancement are positive.</i></p>
CS7	<p><i>Targets have been re-written to simplify the distinction between recycling and other methods of treating wastes, whilst provision for landfill is also simplified to cover all wastes where no further value can be recovered.</i></p> <p><i>The supporting text includes a description of the facilities to be delivered through the Municipal Waste Management Strategy</i></p>	<p><i>No significant issues.</i></p>	<p><i>The changes do not affect the likely consequences of the Strategy, but are helpful for the clarity they provide.</i></p>

Policy	Details of Changes	Issues	Comments
CS8	<i>The supporting text includes revised predictions for C&D arisings, and also includes indicative figures for the number of waste management facilities likely to be required for the whole strategy, based on predicted waste arisings and treatment options.</i>	<i>The number of waste facilities ultimately required will depend on the mix of larger and smaller facilities. There is limited information to differentiate possible effects at this stage.</i>	<i>The revised C&D arisings are not expected to alter the overall effects of the Strategy. It is proposed to consider the effect different types, size, and location of facilities (e.g. fewer or more smaller facilities) has on the number of facilities required as part of the Site Allocations DPD.</i>
CS9	<i>Includes several alterations relating to the enhancement of natural heritage and to preventing increases in flood risk.</i>	<i>No significant issues.</i>	<i>The strengthened policies relating to environmental enhancement are positive, as are changes relating to flood risk.</i>

7. Conclusions

- 7.1 The changes presented above clarify or strengthen the overall objectives of the Strategy. None of the changes are deemed likely to have significant adverse effects on either the environment, local communities or the economy. We have nevertheless made several recommendations as to how some of the minor concern may be managed.
- 7.2 Three changes to the submitted draft are worthy of note: 1) the use of mineral safeguarding areas; 2) the possible need to release additional reserves for cement and brick-making during the plan period; and 3) the safeguarding of facilities for alternatives to road transport.
- 7.3 The most significant risk is in terms of how any proposals would impact upon the priorities of other development plans, and for this reason involvement with District authorities will be critical. In future, it would of course be preferable if both the MWDF and the Local Development Frameworks in the plan area were reviewed at the same time.

Broad Areas of Search

- 7.4 The *Key Diagram* illustrates the spatial dimensions of the draft Core Strategy. Policies in the Core Strategy, which direct new facilities towards existing urban areas, are shown simply as broad areas of search based on Lancashire's principal urban areas. Other policies, such as the provision for additional high quality sand, are based on more detailed surveys and the areas of search used in the Site Allocations DPD will follow those areas identified in the key diagram more closely. We have looked at both these issues in terms of flood risk and potential impacts on international wildlife sites, the findings of which are presented in Sections Two and Three.
- 7.5 However closely we have been able to identify areas of search or likely development locations, there is still considerable uncertainty about the precise location of vulnerable receptors, and because of this the appraisal has only been able to highlight areas where potential risks (e.g. to designated wildlife sites, or areas vulnerable to sea-level rise) may occur, and to ensure that the Core Strategy recognises the significance of these risks.
- 7.6 Key issues identified by the appraisal include:
- Significant flood risks in parts of Lancaster, Morecambe and Fleetwood, the severity of which will increase over the plan period.
 - Groundwater constraints, particularly in the Fylde aquifer, would significantly limit the possibility of developing sand and gravel extraction in these areas.
 - A number of quarries for brick manufacture are located either close to urban areas or to areas of high biodiversity potential.
 - Areas for habitat enhancement, green infrastructure or future flood management are not known at this point, but are likely to become available during the plan period.

8. Monitoring and Implementation

- 8.1 Elements of the appraisal dealing with the waste strategy in particular, have been affected by the uncertainties around environmental and operational effects of many of the new technologies. Similar uncertainties exist surrounding the effects of promoting greater use of recycled construction materials. In due course, practical experience and new expertise will remove some of these difficulties. The following section is intended to provide a framework for monitoring those uncertainties and for ensuring the new information is most effectively utilised.

Table 4: Monitoring Indicators

Socio-Cultural Issues		
<i>Household waste arisings vs. average household income.</i>	<i>Required to validate forecasts of waste arisings. More details provided in annual monitoring report</i>	<i>Municipal Waste Strategy target of 1% overall growth (target of 0.5% proposed).</i>
<i>Proportion of household waste recycled.</i>		<i>MWMS target of 56% by 2015.</i>
Transport Issues		
<i>Freight Quality Partnerships</i>	<i>Aim: To reduce the impacts of road freight on local communities</i>	<i>All major waste and mineral developments</i>
<i>Number of households w/o access to private transport.</i>	<i>Required as part of assessment of evolving needs of local communities in terms of access to waste facilities. Will be co-ordinated together with reviews of the municipal waste strategy.</i>	<i>Current figures: 27% higher in major urban centres and in single-parent families.</i>
<i>Number of residents within 2km of HWRCs.</i>		<i>Current figures: 32% (90% within 5km).</i>
<i>Number of residents within 400m of bring sites.</i>		<i>Information not available.</i>
<i>Level of rail patronage.</i>	<i>Aim: To monitor the efficiency of the overall waste network and continually review case for promoting alternatives to road transport.</i>	<i>10.5% growth since 2001 (2005 figures). Target of 75% above 2001 levels by 2016.</i>
<i>Number of vehicle miles required to transport waste and mineral products.</i>		<i>No target established.</i>

Economic Issues		
<i>Employment in recycling sectors.</i>	<i>Required to assess effectiveness of Strategy in supporting growth in recycling business.</i>	<i>No target established.</i>
<i>Production levels of building and roofing stone.</i>	<i>Required to address information gap in the local production of buildings stone and roofing tiles.</i>	<i>No target established.</i>
Environmental Issues		
<i>Area of new priority habitats included as part of development proposals.</i>	<i>Required to assess the effectiveness of qualitative policies within the Core Strategy.</i>	
<i>Neighbourhood Cleanliness.</i>	<i>Required to assess whether the provision of local community facilities is effective, and whether waste management facilities are operating according to good practice.</i>	<i>Information currently based on satisfaction surveys. Lowest levels of satisfaction in Blackburn and Rossendale.</i>
Housing and Built Environmental Issues		
<i>Number of poor-quality housing.</i>		<i>Figures in 2004 stood at 68,200 or 10.8% of housing stock, significantly above national average.</i>
<i>Number of vacant buildings.</i>		<i>31,300 (2001) 26,400 (2005).</i>
<i>Number of building conversions to residential.</i>	<i>Required to continue to assess contribution of other plans to reducing the need for new construction material (see information in Section 4.0).</i>	<i>Approximately 12% of total new housing supply per year.</i>
<i>Number of listed buildings at risk.</i>		<i>30 Grade I and II* (2005).</i>
<i>Number of urban regeneration schemes.</i>		<i>Non-quantifiable information.</i>
<i>Number of new developments on brownfield sites.</i>		<i>57% between 2001-2005</i>

Implementation

- 8.2 Planning has a vital role in shaping more sustainable communities. To achieve this, planning will need to work collaboratively with other functions of local government, and the functions of our partner organisations. In addition, planning authorities will need to working closely with industry and developers, and strengthening the way we engage with communities. The Government has reinforced this view in its recent white paper, *Planning for a Sustainable Future*.

- 8.3 In some cases these links are clear – for example, the relationship between our municipal waste strategy and the MWDF. In other areas, this new role for planning is relatively untried – for instance, in delivering the objectives of community strategies or building stronger links with economic strategies.
- 8.4 The original appraisal devoted considerable attention to this matter. Four areas were identified where the minerals and waste development framework would need to be co-ordinated with other programmes and delivery mechanisms. These are listed below.

Plans, Strategies and Partnerships relevant to the Core Strategy

Waste minimisation in communities and by industry and commerce

- *Municipal Waste Strategy*
- *Lancashire Economic Partnership (Climate Change Strategy)*

Promoting the use of recycled and secondary aggregates

- *Elevate (Constructing the Future Programme)*

Programmes to mitigate the effects of disused quarries

- *Remade, Wildlife Trusts, Aggregates Levy Sustainability Fund*
- *Green Infrastructure Strategy for Lancashire*

The contribution of waste management sites to green infrastructure

- *Green Infrastructure Strategy*
- *Community Strategies (Local Strategic Partnerships)*

SECTION TWO: APPROPRIATE ASSESSMENT

9. Screening for likely significant effects on European wildlife sites

- 9.1 As a requirement under the EU Habitats Directive, we have considered whether the Core Strategy would be likely to have any adverse effects on important 'European' wildlife sites.

What is a European wildlife site?

- 9.2 European wildlife sites are so called because of their statutory designation under European law, and include such areas as Morecambe Bay, Martin Mere and the Bowland Fells. They are sites which have special conservation interest, either because of their habitats or for the important bird populations they support. Sites designated for their habitats are known as SACs and sites designated for their bird populations are called SPAs. Wetland and marine sites may also be designated as 'Ramsar' sites, which in Lancashire cover broadly the same area as the wetland SPAs. A full list of sites in and around Lancashire is given in Table 5.

How and why have we assessed the Core Strategy?

- 9.3 Whilst the Core Strategy does not identify particular sites, it does establish the broad strategy for waste and mineral developments across the plan area. The primary purpose of this screening assessment is to ensure that the Strategy does not inadvertently promote development that would have an adverse effect on European wildlife sites in the area, or would conflict with other measures (policies, regulatory controls, or other plans and programmes) designed to protect such sites. The following process has been used to undertake this screening assessment:
1. Information on the sensitivity and vulnerability of features of interest in European sites has been collected in order to ascertain the type of impacts that may have an adverse effect (Table 5). Such information is most readily available for marine sites, whereas only very general information may be available for other sites. This has some bearing on the assessment.
 2. Proposed policies have been studied to identify effects that might, considering the sensitivity and vulnerability of the European sites, be regarded as significant. These are documented in Table 6.
 3. Information on potential, in-combination effects with other plans and programmes have been identified. These are identified in Table 7.
 4. Information from stages one – three have been considered to determine whether any of the potential effects identified would be likely to occur. This process is documented in Table 8.
- 9.4 At this level (i.e. where broad areas for development, rather than specific locations, are identified), we have considered whether it would be possible to accommodate development without harm. The test in this case is whether areas for development

are sufficiently broad as to offer acceptable locations, even though there may be other locations where potential effects would be unacceptable. In such cases, we have assumed that general environmental protection policies (CS5 and 9) would direct development away from potentially harmful locations and provide adequate avoidance for those strategic policies, without possibility of conflict.

Table 5: Summary of actions and processes capable of affecting designated features

Ribble & Alt Estuaries SPA/Morecambe Bay SPA/cSAC (both Ramsar sites)
<p>Intertidal sand and mudflats are vulnerable to direct extraction of sand and gravel and to increased nutrient loading (which can lead to growth of algal blooms reducing overall food supply). Physical damage can also occur through sedimentation (e.g. from surface run-off) or through erosion (e.g. from boating activities or selective extraction). Eelgrass beds are particularly vulnerable to nutrient enrichment.</p> <p>Saltmarsh is sensitive to oil contamination and the accumulation of toxins, and susceptible to physical damage such as erosion. Direct loss of saltmarsh or intertidal habitats may have an impact on bird populations.</p> <p>Waterfowl are sensitive to noise and visual disturbance near to feeding and roosting areas, and flocks may move to less favourable areas if constantly disrupted. Food availability (which may be affected by increased organic or nutrient loading) can also have a significant effect on the diversity and viability of bird populations.</p>
Bowland Fells SPA
<p>Heathland and blanket bog are sensitive to animal stock levels, moorland burning, and water catchment management. Raptor populations for which the site is designated are also vulnerable to persecution and rely on on-going protection. The site is situated within the Forest of Bowland AONB, which affords surrounding areas a degree of protection from certain development pressures.</p> <p>The site is isolated from any major areas of development and its upland topography make it invulnerable to water pollution from downstream activities. There are few public roads intersecting the site, and none are used as major routes for commercial or freight vehicles.</p>

South Pennine Moors SAC

Maintenance of upland habitats relies primarily on appropriate grazing and burning regimes. Bog habitats, in particular, have suffered from de-vegetation and erosion due to overgrazing, burning and recreational pressures. Atmospheric pollution has also contributed to the decline of Sphagnum mosses, which are critical to habitat regeneration.

Less than 5% of the 65,000ha site falls within Lancashire, although the site lies in close proximity to a number of major centres of population in East Lancashire, and large numbers of people use the area for recreational activities.

Leighton Moss SPA (Ramsar site)

Reed bed habitats are vulnerable to changes in water quality and levels, which are actively maintained and susceptible to saline intrusion resulting from infrequent overtopping of coastal defences. Water supply is spring fed and may become polluted by other activities in the wider catchment, including agricultural pollution from land immediately adjacent to the site. However, the catchment is relatively small, sparsely populated and under little pressure for new development.

North Pennine Dales Meadows SAC

The meadow grasslands for which the site is designated are dependant on traditional agricultural management, including hay-cutting and minimal use of agrochemicals. Six percent of the designated area falls within Lancashire, in the form of small, discrete sites, located around the village of Slaidburn. There is little pressure for development in the vicinity of these sites.

Martin Mere SPA (Ramsar site)

The 120ha site supports substantial populations of breeding and migratory wildfowl, which make use of the areas open waters, marsh and wet grasslands. The refuge lies 2km north-west of Burscough and is a major visitor attraction.

The site is vulnerable to declining water levels caused by abstraction for agriculture, and to nutrient enrichment from surrounding farms and inadequate sewage treatment. Added to the significant natural contribution from the large bird populations, these factors result in the site having very poor water quality. This creates a risk of disease among important bird populations, although no significant outbreaks have been recorded.

Morecambe Bay Pavements SAC

The Morecambe Bay Pavements form discrete sites around Arnside and Silverdale, and extending north into Cumbria. Declining cattle grazing and coppice management have reduced the interest in some woodland and grassland sites and resulted in problems of scrub encroachment. The limestone pavements have historically suffered from extraction for decorative building stone, and protection orders now cover all pavements in the area.

The Lancashire sites fall within the Arnside and Silverdale AONB.

Other sites falling within 15km of the plan area

Craven Limestone Complex SAC
River Kent SAC
Ingleborough Complex SAC
Rochdale Canal SAC
Manchester Mosses SAC

Roudsea Wood & Mosses SAC
Mersey Estuary SPA
Sefton Coast SAC
North Pennine Moors SAC & SPA
Witherslack Mosses SAC

Table 6: Details of possible effects presented by the Core Strategy

Policy	Potential effects of the policy
<p>CS1: Ensures mineral resources are utilised efficiently, and that future resources are protected from sterilisation.</p>	<p><u>No physical effects predicted.</u></p>
<p>CS2: Promotes the use of secondary and recycled materials from construction and demolition. Provides for a network of fixed and temporary facilities to process such materials.</p>	<p>Dust, sediments and noise may arise through the processing of construction and demolition wastes.</p>
<p>CS3: Establishes provision for mineral extraction, including 4.1mt of sand from new developments. Other resources will be met through existing permissions and a minimal range of new sites.</p>	<p><u>No physical effects predicted.</u></p>
<p>CS4: Establishes intention to identify sites or areas for the extraction of high quality sand. Locations would be informed by sand and gravel resource study (translated into 'areas of search for future extraction' on the key diagram).</p>	<p>Some resources are in low lying areas and would be hydrologically connected to coastal wildlife sites, with risk of increasing sediment release in heavy rainfall and flood conditions.</p>
<p>CS5: Encourages alternatives to road transport of minerals. <u>Also details environmental considerations to be adhered to in identifying suitable development locations.</u></p>	<p>Use of maritime wharfs may increase disturbance to coastal wildlife sites due to noise and visual intrusion and to increased water-bourn traffic.</p>

Policy	Potential effects of the policy
<p>CS6: Promotes waste minimisation and establishes broad targets reducing for waste growth.</p>	<p><u>No physical effects predicted.</u></p>
<p>CS7: Establishes priority for waste technologies which maximise re-use and recycling, and requires waste recycling and handling facilities to accompany all new developments.</p>	<p>Facilities accompanying other forms of development may result in increased litter, noise, and transport disturbance, although these are likely to be minor.</p>
<p>CS8: Establishes need for a network of major waste facilities located close to principal sources of waste, and to develop criteria for considering smaller facilities, which are expressed as ‘broad areas of search based on main waste producing areas’ on the key diagram.</p>	<p>Risks of water contamination, air pollution, and dust would normally be low from modern waste facilities. Such risks would increase where development locations are susceptible to flooding.</p>
<p>CS9: Gives priority to local waste facilities close to residential and community areas; to industrial/commercial areas for larger facilities; and to a limited number of ‘waste technology parks’. <u>Also details environmental considerations to be adhered to in identifying suitable development locations.</u></p>	<p>Would direct development to some urban areas close to European wildlife sites.</p>

Table 7: Description of potential effects from other plans and programmes

Plan/Programme	Possible in-combination effects
Local Development Frameworks	<p>There are a diverse range of policies established in existing and emerging plans which influence future development across Lancashire and the NW region. A number of specific proposals which may be influenced by the Core Strategy are detailed below:</p> <ul style="list-style-type: none"> • <i>The regeneration of central Morecambe and Blackpool as visitor destinations is promoted by the Lancaster District and Blackpool LDFs, respectively. This will give rise to two factors: 1) significant demolition and redevelopment, which would be affected by policies on construction and demolition waste; and 2) waste arisings associated with hotels, restaurants and entertainment venues, which are likely to require both new facilities both on-site and in surrounding areas.</i> • <i>The development of south Heysham for environmental/recycling technologies and port-related activities is promoted by the Lancaster District LDF. Overall effects on the adjacent SPA/cSAC may be enhanced by policies in the Core Strategy supporting the use of Heysham port for the transport of minerals. Assessment of the LDF concludes that locations in south Heysham could be found in which potential effects could be managed to acceptable levels, and proposals in the LDF for new woodlands and other important habitats are also likely to minimise potential effects.</i> • <i>Wholesale redevelopment of land on the west bank of the Wyre estuary at Thornton and Fleetwood is proposed as part of the Wyre LDF, for which a separate assessment has concluded that effects of construction could be managed by timing activities to periods when bird populations are least vulnerable.</i> • <i>Emerging development plans for Pendle, Burnley and Rossendale promote redevelopment concentrated within existing urban centres, supporting work being undertaken on housing market renewal.</i>

Plan/Programme	Possible in-combination effects
Neighbouring Minerals & Waste Development Frameworks	<p>Neighbouring Development Frameworks, including the <u>Merseyside Joint Waste DPD</u> and the <u>Greater Manchester Joint Waste DPD</u>, address similar issues in relation to strategic and community waste facilities.</p> <ul style="list-style-type: none"> <i>The need for waste facilities in Southport (which is adjacent to the Ribble and Alt Estuaries SPA) and in Pennine cities such as Bradford and Halifax (which lie east of the South Pennine Moors SPA) would be likely experience similar issues to those identified in this report.</i>
Municipal Waste	<p>The <u>Lancashire Municipal Waste Management Strategy</u> provides an operational framework for managing municipal waste in Lancashire, Blackpool and Blackburn-with-Darwen. The Strategy includes provision for nine new waste processing facilities and transfer stations across Lancashire, including three waste technology parks. Permission has been granted for these facilities.</p> <ul style="list-style-type: none"> <i>There is a close relationship between the JLMWDF and the Waste Strategy, and there are unlikely to be ‘in-combination’ effects which are not already considered in the policies of the Core Strategy.</i>
General Issues	<p>Climate change and sea-level rise. Sea-level rise is a particular concern for most of the coastal areas in Lancashire and is especially relevant to the Morecambe Bay SAC and the Ribble & Alt Estuaries SPA. As well as representing a significant flood risk problem, such changes would result in the loss of substantial areas of tidal habitats (particularly saltmarsh).</p> <p>The proximity of development areas to important wildlife sites. Within the plan area, Morecambe Bay, the Ribble & Alt Estuaries, and the South Pennine Moors are sites most affected by pressures from existing urban development. These are also areas identified for significant future development, and the Regional Assembly’s assessment of the RSS has highlighted the potential water resource and quality impacts on these European sites. The Assembly intends to undertake a more detailed regional assessment looking at these issues.</p>

Table 8: Summary of Assessment

Potential Risks	Sites Potentially Affected*	Residual Risks
<p><u>Increasing dust, sediment and noise result from processing on-site construction and demolition waste in urban areas.</u></p> <ul style="list-style-type: none"> • Policies relating to construction and demolition waste may exacerbate the disturbance of wildfowl in-combination with overall levels of redevelopment within coastal towns. • Effects of material processing may increase the risk of sediment run-off from construction sites. • Dust arisings may have adverse effect on flora within wildlife sites. 	<ul style="list-style-type: none"> • Morecambe Bay • Ribble & Alt Estuaries • South Pennine Moors 	<p>Equipment such as mobile crushers would add to the overall disturbance resulting from construction and demolition works. The severity of these impacts would depend on the proximity of activities to sensitive populations, which may occupy areas outside of designated areas, as well as within.</p> <p>As with other construction activities, potential effects may be minimised by considering the timing of activities in relation to sensitive wildlife, by screening off working areas, and by other measures such as dust suppression. Additionally, the majority of locations would be within existing developed areas where the effects of increased disturbance are likely to be less than in undeveloped locations.</p> <p>Potential effects are likely to be minor. Protection against these effects is provided by Policies CS5 and CS9.</p>
<p><u>Adverse effects of sand extraction in low-lying areas hydrologically connected to the wildlife sites.</u></p> <ul style="list-style-type: none"> • Release of sediments during flood conditions. 	<ul style="list-style-type: none"> • Morecambe Bay • Ribble & Alt Estuaries 	<p>During normal operational conditions, sand and gravel quarries would not be expected to release significant levels of sediments into neighbouring water-bodies. In exceptional conditions, were the site to become inundated by flood water, normal operating procedures would be impossible and sediment release could be expected. However, because of the elevated sediments loads from other sources in such conditions, the contribution from sand and gravel workings would be minor. Significant adverse effects are not considered likely to occur.</p>

Potential Risks	Sites Potentially Affected*	Residual Risks
<p><u>Pollution from waste facilities, where facilities are susceptible to flooding.</u></p> <ul style="list-style-type: none"> • Release of pollutants and nutrient- or organic-rich water into wildlife sites from facilities in low-lying areas. 	<ul style="list-style-type: none"> • Morecambe Bay • Ribble & Alt Estuaries • Martin Mere 	<p>Although the Core Strategy identifies a need for both major and local waste facilities in urban areas adjacent to European sites, potential pathways for pollutants are only likely to be significant in areas susceptible to flooding. Within the broad areas identified by the Core Strategy, less vulnerable locations exist where the risk of flooding and surface run-off could be managed to acceptable levels. Development could be accommodated within the broad areas identified by the Core Strategy without significant harm to nearby wildlife sites.</p>
<p><u>Disturbance resulting from increased activity at Heysham dock, and other potential sites for water-borne transport.</u></p> <ul style="list-style-type: none"> • Noise and visual disturbance of important wildfowl feeding/roosting areas on mud and sandflats. • Disturbance of surface sediments as result of increased boat movements. • 	<ul style="list-style-type: none"> • Morecambe Bay 	<p>Areas around existing docks are substantially developed and nearby environments (incl. designated habitats) are likely to be adjusted to a high level of disturbance. The effects of increased boat activities are also likely to be mediated by the fact that water-borne access tends to be by deep water and away from sensitive sand and mudflats. No significant effects are predicted at locations where proposals are likely to prove commercially viable.</p>

* No significant effects are considered likely to occur in relation to the Bowland Fells SPA, Leighton Moss SPA, North Pennine Dales Meadows SAC, or Morecambe Bay Pavements SAC, which are located away from areas likely to be subject to development, and from potential pathways to sensitive features of interest.

Conclusions

- 9.5 Certain potentially significant effects have been identified. However, there is sufficient flexibility within the strategic direction provided by the Core Strategy that potentially harmful activities could be directed to areas where effects could be minimised or managed to acceptable levels. Many of these issues are adequately addressed by criteria set out in Policy CS5 and CS9. ***No outstanding risks or potential conflicts between policies have been identified in this assessment.***
- 9.6 Matters highlighted by this assessment will be carried forward to the preparation of the Site Allocations and Development Control DPDs.

SECTION THREE: STRATEGIC FLOOD RISK ASSESSMENT

10. Undertaking Strategic Flood Risk Assessment

- 10.1 The Planning System has an important role in managing the risks and disruptions caused by flooding. Although our minerals and waste development framework is unlike other development plans in that it deals with discrete developments rather than seeking to manage whole areas, these developments can be just as susceptible to flood risk. We will, in due course, assess these risks thoroughly when we considering our site allocations. Here we have considered whether any issues ought to be addressed through the Core Strategy.

How can planning help manage flood risk?

- 10.2 The Government wishes to see planning authorities take full account of flood risk in their plans and when considering planning applications. Planning can help manage flood risk in the following ways:
- *Risk Management* – helping to reduce the risks to people and property, either by controlling the impact new development (e.g. through sustainable drainage systems) or by reducing the vulnerability of development through its design and operation.
 - *Adaptation* – by taking account of climate change and sea level rise when identifying and designing new developments.
 - *Integration* – developing plans which support other flood management plans, including catchment and shoreline management plans.
 - *Appraisal* – by considering flood risk during the plan development, where options can be explored which would not be available later.
 - *Environmental protection* – taking full account of opportunities to protect the environment from the adverse effects of development and climate change.

What are the Government's policies?

- 10.3 The Government continues to support the principle that all development should be directed towards areas of lowest flood risk (this is known as the *sequential approach*). However, *PPS25* also recognises that different development types may be more or less susceptible to flood risk.
- 10.4 Considering how the vulnerability of a development should be addressed in the site identification process, the Government has provided the following advice:
- Developments requiring hazardous substances consent are highly vulnerable and should be located away from areas of flood risk.
 - Landfill sites and facilities for hazardous waste are also vulnerable and may only be located in areas of high risk (Flood Zone 3), where there is an overriding need for development in such a locations, rather than simply an absence of alternatives.
 - Other waste facilities and mineral workings (except sand and gravel sites) are less vulnerable and may be located in areas of higher risk, subject to the sequential approach determining that no alternative locations are available.

- Sand and gravel operations are often water compatible and may be located even in areas of the highest risk, although such development would need to demonstrate benefits in terms of flood risk reduction.

How have we considered flood risk in the Core Strategy?

10.5 Clearly it is not possible to fully consider flood risk before we have identified particular sites for development. However, the Core Strategy does identify the broad development needs for particular areas, and (as shown in **Map 1**) points to broad areas where we expect such development to occur. We have focused our attention on these areas, identifying the key flood risk issues that need to be considered.

How is flood risk defined?

10.6 The flood risk in a particular area is defined in terms of the likelihood of flooding. This information is provided by the Environment Agency, in the form of *indicative flood zones* (**Table 10**), which predict the risks from fluvial (river) and tidal sources. Of course, flooding can occur anywhere (and is a particular problem in urban areas, where the proportion of hard surfaces such as buildings and roads means that rainfall can accumulate very rapidly). However, these indicative flood zones provide a useful comparison of the relative risks in different locations.

Table 10: Indicative Flood Zones

<i>Flood Zone 1 'lower risk'</i>	<i>Suitable for all types of development, but authorities should seek to reduce flood risks in the area or elsewhere through the design and layout of development and the application of appropriate drainage techniques.</i>
<i>Flood Zone 2 'moderate risk'</i>	<i>Suitable for most types of development, except highly vulnerable developments. Further flood risk assessment would be required and development should aim to reduce the level of flood risk in the area.</i>
<i>Flood Zone 3 'high risk'</i>	<i>Generally only water compatible or less vulnerable developments may be suitable, and any development proposals should reduce flood risk in the area, and accommodate future flood risks. <u>However, essential infrastructure and more vulnerable development may be appropriate if the exception test is met.</u></i>

What effects will climate change have on flood risk?

10.7 Climate change is predicted to result in more frequent and potentially more intense rainstorms, accompanied by rising sea levels which would present a direct threat to low-lying coastal areas. Using the Government's predictions, sea levels in the north west are expected to rise by 8cm above existing levels by 2021. By 2055, this is expected to increase to 0.3m, and to 0.6m by 2085.

- 10.8 **Map 1** shows the extent of low-lying areas. Whilst many of these areas would continue to be defended, the possibility of storm surges and breached defences would significantly increase the flood *risk* in these areas.
- 10.9 Whilst sea-level rise is relatively simple to visualise, climate change will also result in more intense rainfall and higher peak river flows and wave heights. Although the Government has published ‘sensitivity’ values for these changes, these changes are likely to result in more severe flooding and greater risks to life and property, rather than changes in flood extent. Information is not available locally, but will emerge from the new catchment flood management plans.

What are the findings of the flood risk assessment?

- 10.10 **Map 1** shows the areas of moderate and high flood risk in Lancashire, as well as indicative locations for minerals and waste developments, as illustrated in the key diagram. This is intended to be a spatial representation of the suite of policies in the Core Strategy.

Assessment Conclusions

- *Sea-level rise and the effects of climate change will require areas of land to be set-aside to manage these risks and to mitigate the impacts this will have on important natural habitats, although where this will be required is not yet known.*
- *These areas will most likely be within Flood Zones 2 and 3 and within low-lying areas (as shown in Map 1).*
- *Waste facilities will be required in both industrial and commercial locations (for larger developments) and residential and community areas (for local waste facilities). This is set out in Policy CS9.*
- *Waste facilities are likely to be required to serve communities in these areas of higher flood risk (notably in Morecambe, Fleetwood, Lancaster and Blackpool).*
- *Detailed assessment of the flood risk (to be conducted alongside the Site Allocations DPD) will need to consider the risk of disruption to road access off site as well as the actual risk of flood to the development itself. The significance of this flooding will vary: for instance river floods may last weeks, whereas tidal flooding may only occur for one or two tide cycles.*
- *Future catchment flood management plans, shoreline management plans, river basin management plans and strategies for green infrastructure and biodiversity will set out how the impacts of climate change will be managed. These will also need to be considered in subsequent reviews of the MWDF.*
- *Sand and gravel sites may provide opportunities to manage these risks.*

How should we address these issues?

Climate Change and Sea Level Rise

- 10.11 Before coherent plans for managing these risks exist, it is important to protect areas that may be required for future flood risk reduction. The Environment Agency should

be consulted to advise whether any development proposals would take place within areas known or anticipated to be required for flood risk management (e.g. flood storage, etc.).

Non-Strategic Waste Facilities

- 10.12 Small-scale facilities are likely to be required in higher risk areas, and there would be significant problems if such facilities were not available. Nevertheless, opportunities to include sustainable drainage systems which link into assets such as green infrastructure should be maximised as part of these developments. Within the area that these developments are required, detailed flood risk assessment should also be undertaken to ensure these developments are situated in the safest location possible.

Sand and Gravel Sites

- 10.13 These may be compatible with the long-term management of sea-level rise by providing additional flood storage, controlling the local topography and creating valuable wetland habitats. The Site Allocations DPD should look to identify development locations which would maximise these opportunities. This will need to be undertaken with assistance from the Environment Agency.

Water Resources and Pollution Control

- 10.14 Abstraction constraints mean that it is unlikely to be possible to develop new sand and gravel developments within the Fylde aquifer. Pollution control during flood events will need to be fully address in any development proposals.

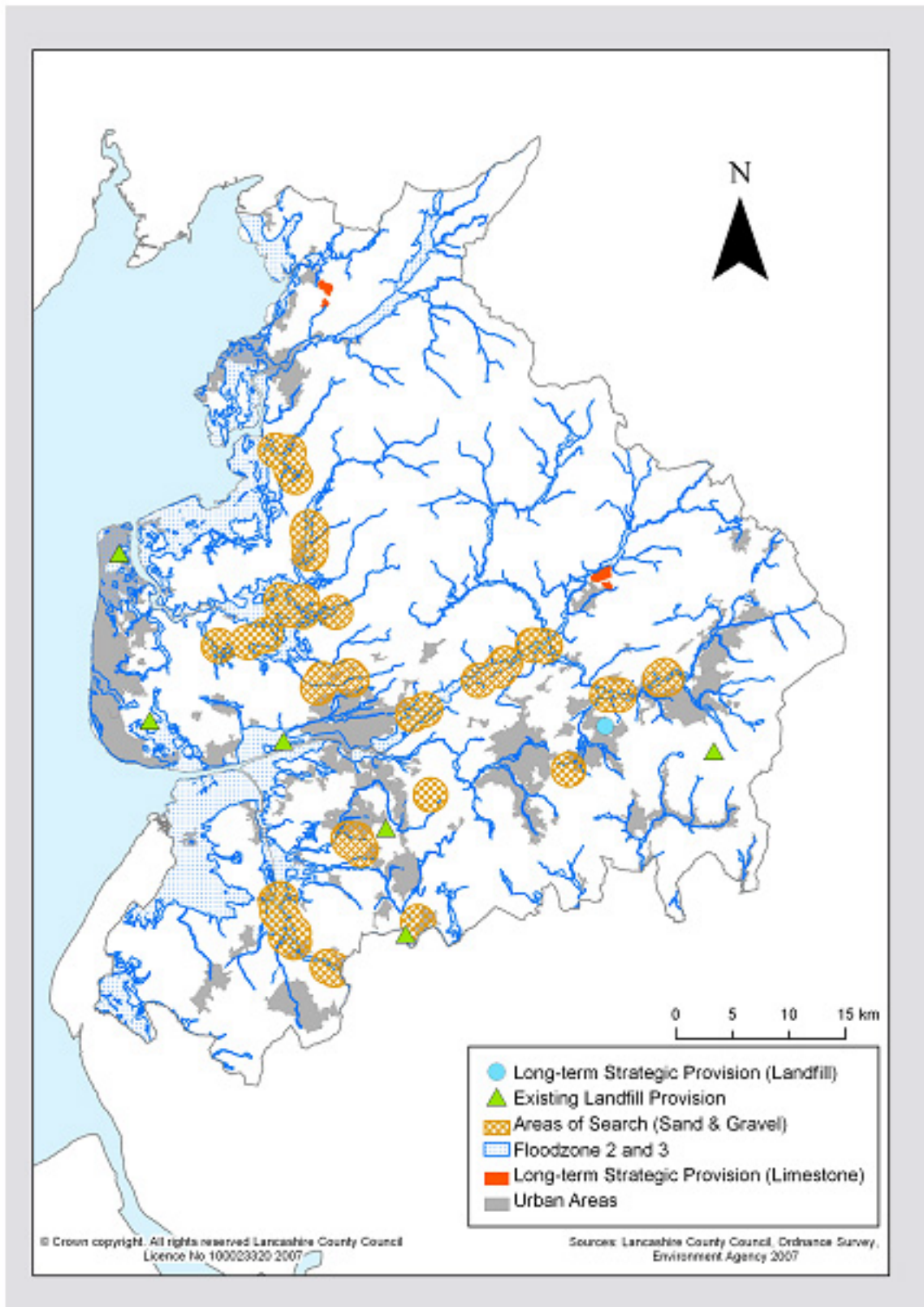
Table 11: Recommendations

<i>Sea level rise</i>	<i>Strategic waste facilities should be located outside Flood Zones 2 and 3 (higher risk areas)</i>
<i>Sand & Gravel Sites</i>	<i>Maximise opportunities to manage flood risk and sea level rise</i>
<i>Non-strategic facilities</i>	<i>Look for opportunities to reduce flood risk through sustainable drainage systems and its links with green infrastructure</i>

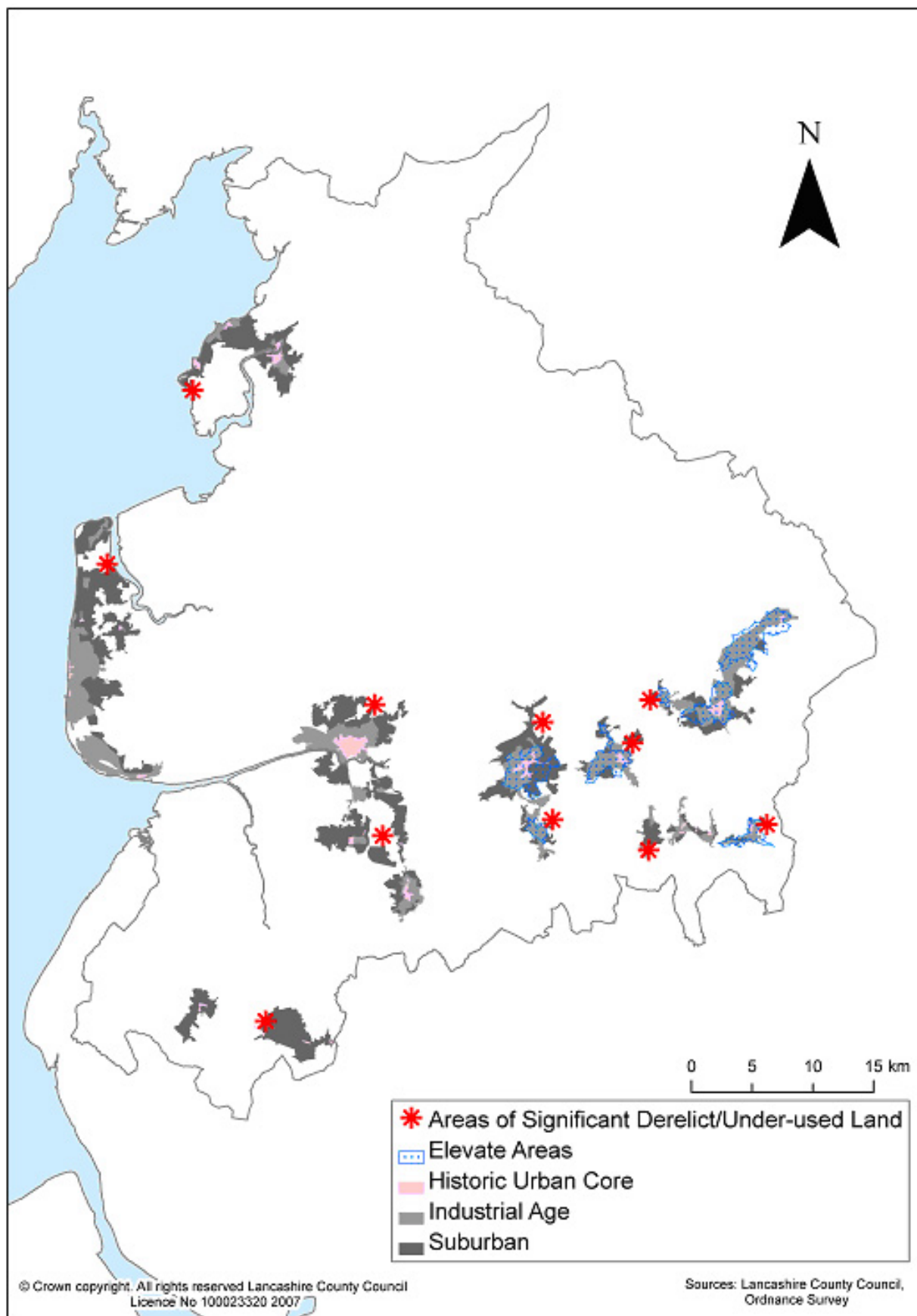
Site Allocations and Development Control DPDs

- 10.15 Many authorities have or are in the process of undertaking detailed strategic flood risk assessments for their own LDFs. The regional assembly have also committed to undertaking a regional assessment. We will use these assessments to inform our own work in preparing the site allocations DPD.

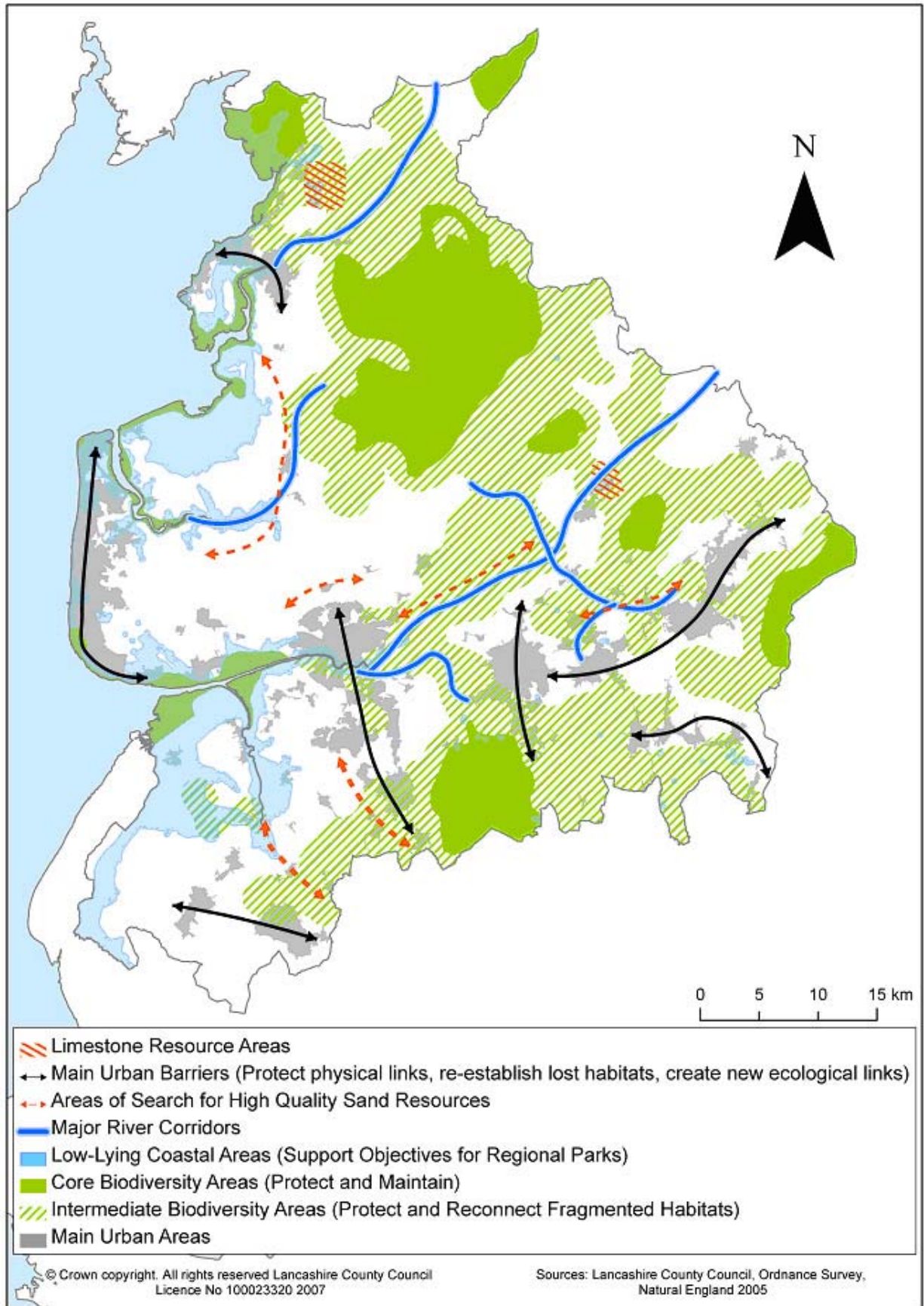
Map 1 – Flood Risk and Indicative Development Areas



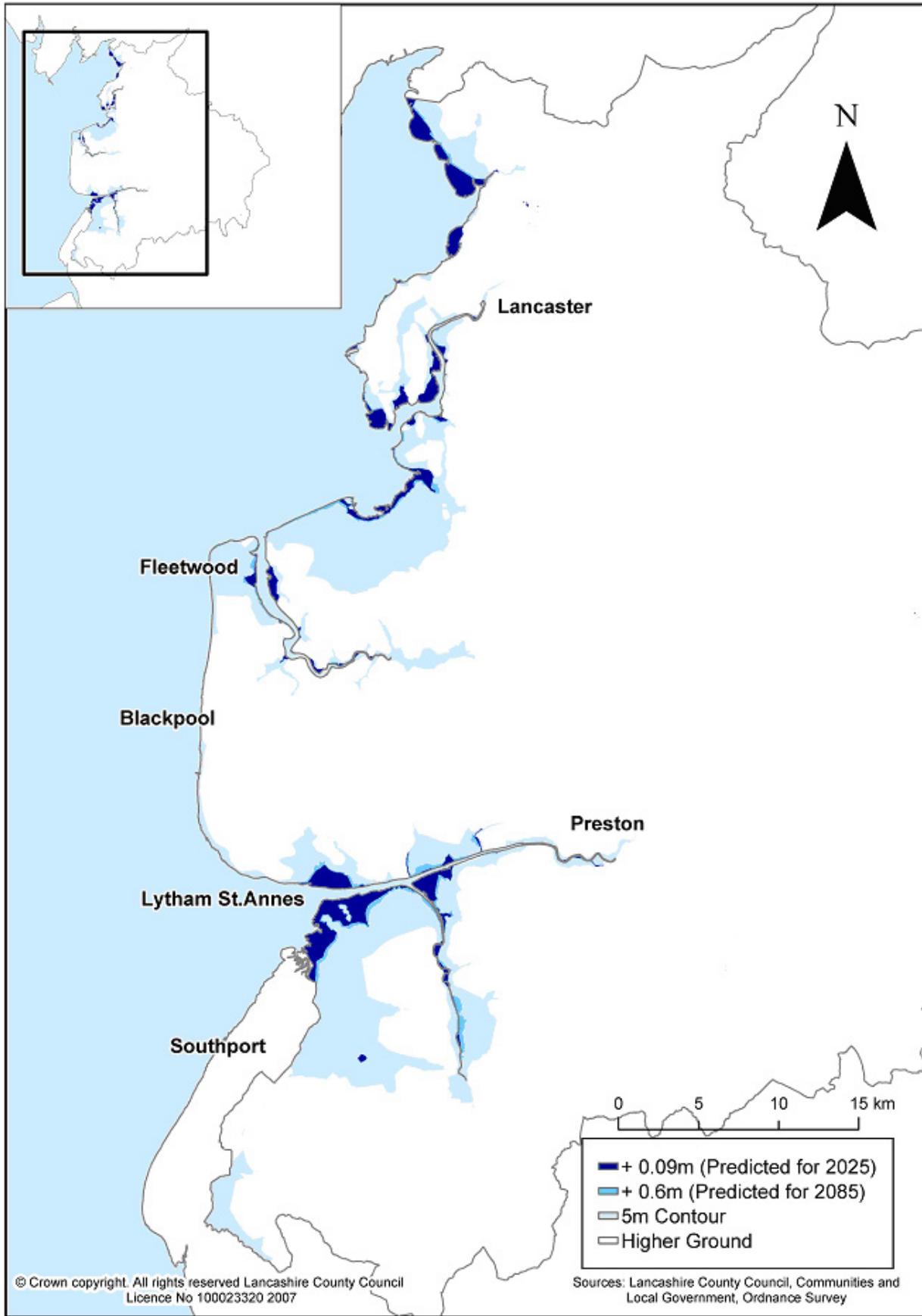
Map 2 – Urban Character, Areas of Derelict/Under-Used Land and Regeneration Areas



Map 3 – Biodiversity – Resources, Opportunities and Barriers



Map 4 – Sea-Level Rise (Forecasts)



Map 5 – Road and Rail Network

