South Lakeland District Council's Core Strategy Appropriate Assessment Report

Prepared for:

South Lakeland District Council

By:

Treweek Environmental Consultants

Issue 2

Prepared by: Orlando Venn

Reviewed by: Jo Treweek

Date: 08.07.09

Disclaimer:

This report has been prepared by Treweek Environmental Consultants with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. This report is confidential to the client, and Treweek Environmental Consultants accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Treweek Environmental Consultants beforehand. Any such party relies upon the report at their own risk.

Treweek Environmental Consultants disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

SUMMARY

'Appropriate Assessment (AA)' is required under the EU Habitats Directive (92/43/EEC) for any proposed plan or project which may have a significant effect on one or more European sites and which is not necessary for the management of those sites. The purpose of AA is to determine whether or not significant effects are likely and to suggest ways in which they could be avoided.

Treweek Environmental Consultants (TEC) was appointed by South Lakeland District Council in March 2007 to undertake the Appropriate Assessment (AA) for the South Lakeland Core Strategy.

The Screening Stage of the AA was undertaken between March 2007 and March 2008. The results are documented in the Appropriate Assessment Screening Report[1] which is available on the council's website: (http://www.southlakeland.gov.uk/Default.aspx?page=2033).

Likely Significant Effects (LSEs) were identified for the following sites:

- Morecambe Bay SAC
- Morecambe Bay SPA
- Morecambe Bay Ramsar Site
- Morecambe Bay Pavements SAC
- River Kent SAC

For these sites further investigation was necessary through the stage 2 AA to test the effects of the plan on the sites' integrity and if necessary to recommend ways to avoid or mitigate against adverse effects. The AA of the Draft Core Strategy was carried out between March 2009 and June 2009.This report summarises the results of Stage 2 AA carried out to ascertain whether the Core Strategy will have an adverse effect on the sites' integrity, whether alone or in combination with other plans or projects.

It was not possible to conclude no adverse effect on site integrity for all the sites where LSEs were initially identified. In addition, a policy on "opportunities of energy and the low carbon economy", which was added to the plan following the preferred option stage, was identified as potentially having adverse effects on any of the European sites under consideration including some of the sites originally screened out.

As a result the following avoidance and mitigation measures have been proposed, consulted on and incorporated in to the plan in order to conclude the Core Strategy will not have an adverse effect on the integrity of European sites.

European sites & summary of source and effect of impact	**Mitigation added to Core Strategy**
MORECAMBE BAY SAC Increase in residents and visitors → Activities and parking on designated habitat areas→ direct damage to designated habitat	Reference to assessing the effects of increased visitor numbers, to the solutions for managing disturbance proposed in the Morecambe Bay Strategy and to the need to engage with Natural England have been added to Policy CS8.4 (Biodiversity & Geodiversity) and Policy CS8.5

[1] TEC (March 2008) Appropriate Assessment Screening of South Lakeland District Council's Core Strategy

	Coast. The Core Strategy now supports stricter mitigation measures in terms of zoning and bylaw enforcement to protect Morecombe Bay SAC through the addition of specific text in CS8.5
MORECAMBE BAY SAC & MORECAMBE BAY SPA AND RAMSAR Construction and operation of renewable energy infrastructure →Changes to water levels, turbidity, reduced water quality and immersion or destruction in habitat → decrease in extent of habitats and change in structure and function of habitats for which the sites designated	Additional added text to CS7.7 to recognise the international importance of much of the coastline and upland areas and to highlight that Projects should avoid significant adverse effects on sites of international nature conservation importance by assessment under the Habitats Regulations.
MORECAMBE BAY PAVEMENTS SAC Increase in residents and visitors →Increase in trampling and dog fouling at site on designated habitat areas→ direct damage and change in plant communities	Text has been added to CS8.3b to require developers to improve existing open space. The issue of visitor pressure on European sites and the need to assess it has been incorporated within CS8.4
RIVER KENT SAC Abstraction for the RNRLC →alteration of water levels on the River Kent→ white-clawed crayfish populations and populations of freshwater pearl mussels - affected by reduced flows both directly (changes in extent of bed and type of substrate) and indirectly (through changes in abundance of brown trout on which the mussels depend); & RNRLC → spread of signal crayfish and associated plague from the Lancaster Canal to the River Kent→100% mortality of white-clawed crayfish	Information has been added to the supporting text under CS2 to emphasise the fact that the Core Strategy does not consent to the development of the canal. and that issues including the potential adverse effects on the SAC associated with canal restoration mean that alternatives to canal restoration may need to be considered.
RIVER KENT SAC Increase in number of homes in Kendal →overloading of sewer network and WwTW→reduction in water quality oxygen deficiency and mortality of white clawed crayfish and brown trout.	Text added to policy CS2 to emphasise the fact that any further development needs to be avoided which would add flow to the sewer above bottlenecks at Kentrigg Walk and Steeles Row Burneside, until capacity issues at these locations are resolved. For general sewage capacity and the capacity of the WwTW, text added to make the need for new waste water treatment infrastructure clear until UU can demonstrate that further development can be accommodated.
MORECAMBE BAY SPA AND RAMSAR Increase in residents and visitors → increase in non physical disturbance → increase in disturbance to breeding terns & wintering, breeding and passage waterfowl and seabirds →impact on bird	Reference to assessing the effects of increased visitors, to the solutions for managing disturbance proposed in the Morecambe Bay Strategy and need to engage with Natural England have been added to Policy CS8.4 (Biodiversity & Geodiversity) and Policy CS8.5

numbers	Coast. The Core Strategy now supports stricter mitigation measures in terms of zoning and byelaw enforcement to protect Morecombe Bay SPA/Ramsar through the addition of specific text in CS8.5

Given the incorporation of the proposed mitigation measures into the Core Strategy, it is possible to conclude that the plan will not have an adverse effect on the integrity of European sites.

Although there are no legal requirements under the Habitats Directive to monitor the success of mitigation, we suggest that efforts are made to monitor the plan effects and collect further information to better inform future revisions of the Core Strategy.

CONTENTS

1 Introduction

This report presents the results of the Appropriate Assessment (AA) process for the South Lakeland Core Strategy (March 2009), undertaken to ensure that the Core Strategy complies with the requirements of the Habitats Directive by:

- establishing whether the Core Strategy would have an adverse effect on the integrity of any European sites; and
- recommending policy measures, criteria or other rules to be included within the Core Strategy which would avoid or mitigate for the adverse effects on the integrity of the European sites.

The results of the HRA have been used to inform the development of the Core Strategy and to make recommendations for amendments to avoid significant adverse effects on European Sites.

1.1 European Sites

European sites are Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). Planning Policy Statement 9, Biodiversity and Geological Conservation (PPS9) (ODPM, 2005), advises that proposed sites awaiting approval – potential SPAs (pSPAs) and candidate SACs (cSACs) should be treated in the same way as those already classified and approved.

PPS9 also recommends that Ramsar sites should be afforded the same level of consideration as SPAs and SACs, in policy if not in law. All SPAs, (non-marine) SACs and Ramsar sites overlap to some degree with Sites of Special Scientific Interest (SSSIs). AA relates specifically and exclusively to the qualifying interests of European sites and not to the broader conservation interests or requirements under other SSSIs. However, the latter should be factored into plan-making as part of the SEA / SA process and the planning authority's duty under section 28G of the Wildlife and Countryside Act 1981 to conserve and enhance SSSIs in carrying out their functions.

1.2 The requirement for Appropriate Assessment of the Core Strategy

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna – the 'Habitats Directive' – provides legal protection for habitats and species of European importance.

Schedule 1 of the Conservation (Natural Habitats, &c) (Amendment) (England and Wales) Regulations 2007 inserts a new Part IVA into the Conservation (Habitats, &c) Regulations 1994 and transposes into English Law the requirement to carry out Appropriate Assessment for land use plans. Article 85B of the Conservation (Natural Habitats, &c) (Amendment) Regulations 2007 sets out that "the plan-making authority for that plan shall, before the plan is given effect, make an appropriate assessment for the implications for the site in view of that site's conservation objectives".

Article 85B also sets out inter alia that "in the light of the conclusions of the assessment, and subject to regulation 85C (considerations of overriding public interest) the competent authority shall give effect to the land use plan only after having ascertained that it will not adversely affect the integrity of the European site".

1.3 The AA Process

The purpose of AA is to ensure that significant effects on European sites are avoided. The assessment is carried out solely in respect of the 'conservation objectives' for which a European site has been designated and its integrity in relation to its ability to support those objectives.

European guidance (European Commission, 2001) recommends that HRA should be undertaken in four stages:

Stage 1: Screening.

Identifying any 'likely significant effects' (LSEs) on a European site associated with the plan either alone or 'in combination' with other plans and projects.

Stage 2: Appropriate Assessment

Determining whether, in view of the sites conservation objectives, the plan (in combination with other plans and projects) could be concluded not to have an adverse effect on the integrity of the site(s).

Stage 3: Assessment of alternative solutions

Where the plan is assessed as having an adverse effect on the integrity of a site(s), there should be an examination of alternatives. Alternatives that avoid adverse effects on European sites should be considered from the earliest stage.

Stage 4: Assessment where no alternative solutions remain (the 'IROPI' test)

Compensation measures are required for any remaining adverse effects, and are permitted only where the plan would be necessary for imperative reasons of overriding public interest (IROPI). This is a difficult test which a plan is generally speaking unlikely to pass.

The assessment process can be stopped after any of these stages if it is found that the plan (revised if necessary) will not adversely affect the integrity of any European site. The end-product is a statement (this report) which concludes whether or not the plan will affect the integrity of any European site.

Figure 1 summarises the overall AA process. This report summarises the results of Stage 2.

1.4 Tasks undertaken

Preparation of this report has involved:

- A site visit to the European sites concerned and areas of sensitivities;
- Collection of data about the European sites identified through the screening stage;
- Collection of data about other likely plans and projects that could contribute to 'in combination' impacts;
- Consideration of region-wide impacts associated with the emerging North West Regional Spatial Strategy as other nationally lead initiatives
- Correspondence with Natural England, the Environment Agency, United Utilities, and various members of South Lakeland District Council.
- Collection and analysis of GIS data on location of European sites, potential locations of future development and infrastructure
- Collection of data about the impacts of various types of projects (those that could result from the core strategy) and the habitats and species represented by the

relevant European sites – for instance the impact of airport expansion on wetland birds;
- A meeting on the 31st March with South Lakeland District Council to discuss the development of the Core Strategy from the Preferred Options document;
- A meeting with South Lakeland District Council on the 26th May to discuss integration of avoidance and mitigation measures;

1.5 Consultation

Consultation has been undertaken throughout the Habitats Regulation Assessment via phone calls, emails and meetings with Natural England (as the statutory nature conservation body), the Environment Agency and United Utilities.

Issues discussed included:

- Verification of the sites being considered at Stage 2 and update on conservation objectives;
- Recent developments in background information and other plans and projects that have come to light since the screening stage;
- Early thoughts on the draft core strategy; and
- comments on issues which may affect the environmental conditions required to maintain site integrity.

Natural England and the Environment Agency's comments on the appropriate assessment findings and proposed mitigation have been included in Appendix 2.

1.6 The Structure of this Report

The contents of the report are as follows:

Chapter	Section	Summary
1 (this chapter)	Introduces the report, explains the requirement to undertaken HRA of development plans, introduces European sites and outlines the methodology used for the assessment.	
2	Identifies the European Sites where LSE were considered and for which Appropriate Assessment (Stage 2) was undertaken	
3	Presents a review of the South Lakeland Core Strategy and considers how it has changed since the Preferred Options stage.	
4	Presents a review of key issues affecting the ecological structure, function and integrity of the European sites identified in Chapter 2. Likely influences of the Core Strategy are reviewed in relation to site integrity with respect to:	
	4.1	Water quality
	4.2	Water supply and hydrology
	4.3	Introduction of invasive non native species and crayfish plague
	4.4	Disturbance or damage caused by recreation, amenity or tourism
	4.5	Damage, disturbance and environmental changes related to the development of nuclear and renewable energy

5	Considers the in combination effects of other plans and projects
6	Presents the final conclusions of the report and makes recommendations for changes that are needed to avoid or mitigate for adverse impacts on site integrity.

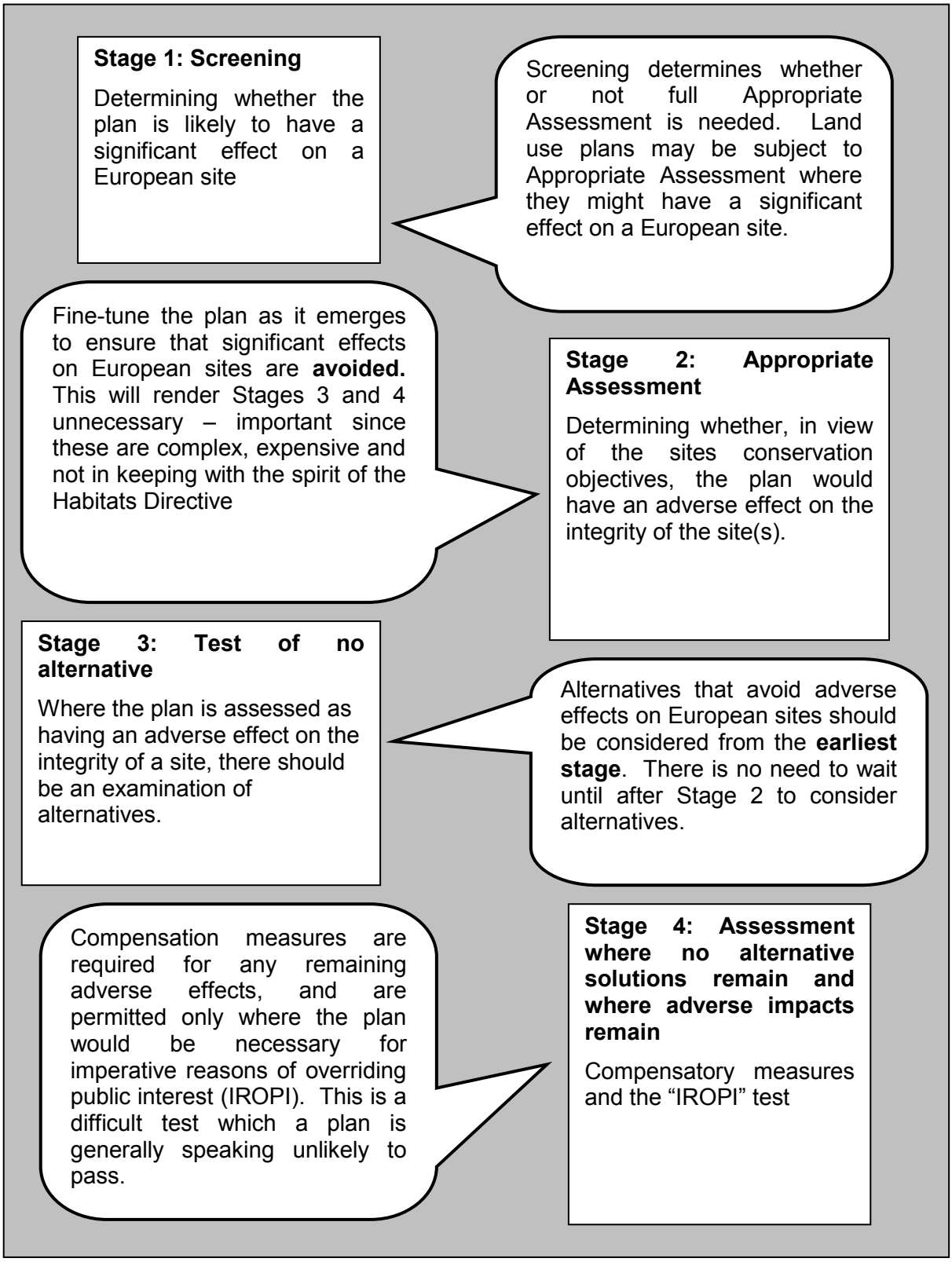

Figure 1 Stages in the Appropriate Assessment Process

2 European sites identified in the screening stage as likely to be significantly effected

Likely Significant Effects (LSEs) were identified for the following sites at the Screening Stage:

- Morecambe Bay SAC
- Morecambe Bay SPA
- Morecambe Bay Ramsar Site
- Morecambe Bay Pavements SAC
- River Kent SAC

For these sites further investigation was recommended as part of subsequent stages of the AA. The Preferred Options that represented potential sources of LSEs have been listed in table below against the potential impacts that were identified.

Table 1 Preferred Options representing potential sources of LSEs

POTENTIAL ECOLOGICAL IMPACT	PREFERRED OPTION NUMBERS	SITES POTENTIALLY AFFECTED
Reduced water quality (through increase in sewage, surface water runoff and pollution)	PO3, PO4, PO11	River Kent SAC
Reduction in water supply or levels at sites	PO11	River Kent SAC
Introduction of invasive non native species and crayfish plague	PO11	River Kent SAC
Increase in visitor pressure leading to erosion and disturbance.	PO1, PO3, PO4, PO5, PO7, PO11, PO12, PO20	Morecambe Bay SAC/ SPA/ Ramsar, Morecambe Bay Pavements SAC

The development in Kendal that was set out in PO3 and PO4 and especially from the Kendal Canal head regeneration scheme (supported in principle through PO11) was identified as having significant implications for the River Kent SAC. LSEs associated with these policies include the potential introduction of signal crayfish and associated plague from the Lancaster Canal to the River Kent, the deterioration of water quality from additional discharge and surface water runoff and changes to the flow regime.

Increase in visitor pressure both from an increase in local residents and an increase in tourism was identified as posing a risk in terms of damage to sites and disturbance to protected species at Morecambe Bay SAC/ SPA/ Ramsar and Morecambe Bay Pavements SAC. A number of policies contribute by cumulatively increasing the potential for a likely significant effect.

For the other sites assessed in the screening report no LSEs were identified, due to the fact that their conservation interest depends primarily on management at site

level, their distance from the plan area or on factors which would not be affected by the proposed Core Strategy.

The five European sites listed above have been assessed here in this report through the stage 2 AA.

3 South Lakeland Core Strategy

The Core Strategy has been developed since the publication of the Preferred Options in May 2008 taking into account the consultation responses, further engagement with stakeholders, policy direction from Government, the publication of the North West Plan, and other evidence including the Sustainability Appraisal and Appropriate Assessment Screening Report.

The document has been restructured, simplified and made more spatially specific. It is difficult to directly compare the two documents because of the restructuring, but the key issues, housing numbers and broad settlement hierarchy remain the same.

The broad settlement hierarchy includes a network of Principal, Key and Local Service Centres (LSCs). In terms of the breakdown of development levels, the Core Strategy now proposes less development in Kendal, Milnthorpe and Kirkby Lonsdale (20%, 5% and 5% of the Regional Spatial Strategy housing requirement respectively), with a slight increase in the Local Service Centres and smaller rural villages and settlements. The housing numbers are being delivered as group targets for the LSCs and other smaller settlements so it is difficult to understand exact development targets at this level but it also allows greater flexibility at the consent stage to consider specific local constraints.

No new local service centres are proposed. The only change is the removal of Heversham / Leasgill on the basis of an absence of a local shop.

The Core Strategy Development Plan Document is now primarily structured around:

- The Spatial Strategy – Chapter 2.
- Area Visions and Strategies – Chapter 3
- Core Policies – Chapter 4

The Spatial Strategy has been adapted from PO9 of the Preferred Options document and provides the overriding sustainable development principles and framework. CS1.2 which sets out the development strategy has been adapted from PO1 (locational strategy), PO2 (Rural Areas) and PO3 (Distribution of development).

In the area visions and strategies, the core strategy sets out a plan on the basis of 4 broad spatial areas - Kendal, Rural Kendal, Cartmel Peninsula, Ulverston and Furness. This groups together PO 4 – 8 (which covered affordable housing, employment land, town centres and retail strategy, green infrastructure and transport) and makes these policies more spatially specific to these 4 geographical areas. The area strategies were already included as part of the core strategy in the Preferred Options document but by integrating PO 4- 8 within them, the Local authority has sought to simplify the document and provide a better understanding of how these areas function and the key issues they face.

Most site specific references have been removed, leaving the preferred directions of growth within the Service Centres to be explored through the Allocations DPD and other DPDs including the Kendal Canal Head DPD. These DPDs will require separate AA as they are progressed. The only specific sites that are still mentioned

include the Kendal Canal Head, Ulverston Canal Head and Corridor and Berner Regeneration Site in Grange.

The Plan's Core Policies cover many of the issues that were outlined in the Preferred Options core policies. Table 2 sets out the core policies that were originally included in the Preferred Options document and where these are found in the new draft Core Strategy. In addition, the core policy section introduces some new policies which were not assessed during the screening stage which need to be examined.

Table 3 examines the implications of these new policies and the European sites that may be affected.

Table 2 Numbering of equivalent core policies within the Core Strategy.

Preferred Options Core Policies	**Equivalent Core Strategy policies in the Core Strategy**
Gypsy and Travellers (PO18)	Housing to meet local need (cs6) Policies: CS6.5 Gypsy and Travellers and Travelling Showpeople
Travelling Showpeople (PO19)	Housing to meet local need (cs6) Policies: CS6.5 Gypsy and Travellers and Travelling Showpeople
Tourism (PO20)	Jobs skills and regeneration (cs7) Policies: CS7.6 Tourism Development
Education and Skills Development (PO21)	Jobs skills and regeneration (cs7) Policies: CS7.3 education and skills
Community Wellbeing (PO22)	Health and wellbeing (cs9) Policies: CS9.1 Social And Community Infrastructure
Built Heritage (PO23)	Quality environment (cs8) Policies: CS8.6 Historic Environment
Sustainable Energy (PO24)	Quality environment (cs8) Policies: CS8.7 Sustainable Construction, Energy Efficiency And Renewable Energy

Table 3. New Policies that need to be assessed:

Preferred Option – Number and summary of text	Main emphasis of policy and hazards to European sites	European sites that may be adversely affected and why
CS7.7 Opportunities Of Energy And The Low Carbon Economy	Aims to support the opportunities of energy and the low carbon economy through three main strands, nuclear, renewables, energy efficiency. The nuclear element considers working with partners outside the district in development and distribution of new development. This does not set the framework for new reactors inside the district and permission and locations are outside the remit of this plan therefore the potential huge risk of adverse effects to all of the European sites in and around Cumbria if there was a nuclear accident have not been considered here. Support for the industry might mean that new transmission lines might be sighted within the borough although no specific locations and details are given. The specific support for tidal and wind projects might lead to LSE. The details of projects are unknown and impacts vary widely depending on mode and location. Proposals for energy efficiency are generally likely to be beneficial reducing the demand for energy to be generated and distributed through large scale infrastructure.	A barrage is likely to cause a range of significant adverse effects with Morecambe Bay SAC, SPA and Ramsar being the primary sites likely to be affected. Adverse effects many be caused by changes to water levels, turbidity, reduced water quality, land take and disturbance. Offshore wind projects may affect the qualifying birds' species of these sites causing inter alia disturbance, disruption of flight paths and feeding areas and mortality. In addition, the following sites which were originally screened out may be affected by large coastal and marine renewable infrastructure projects depending on the scale and location of the projects: Duddon Estuary SPA and Ramsar; and Leighton Moss SPA and Ramsar. There may also be applications for wind turbines on upland sites such as Morecambe Bay Pavements SAC and construction would cause direct damage to habitats. The location or mode of transmission lines may lead to habitat loss and damage from construction or lead to mortality of birds from collision. Depending upon location and mode any of the

Preferred Option – Number and summary of text	Main emphasis of policy and hazards to European sites	European sites that may be adversely affected and why
		sites within South Lakeland might be adversely affected. Proposals for any location will need to be tested against Policy CS8.4 (Biodiversity and Geodiversify) and assessed under the Habitats Regulations should there be a potential to affect a European site. The planning permission and development control process will provide for this. The issues regarding nuclear and renewables energy generation and the sites potentially effected are considered further in section 4.5
CS8.3b Quantity Of Open Space, Sport And Recreation (Partly Derived From Green Infrastructure Po7)	To provide sufficient open space, sport and recreation provision. An important policy which is more likely to act as mitigation by providing alternative recreational space (to European sites) rather than adversely effecting European sites. The provision of new open space as specified near development will contribute to reducing the recreational pressure on sites such as Morecambe Bay Pavements SAC which lie close to settlements	Mitigation type policy. No sites identified as being adversely affected.
CS8.4 Biodiversity & Geodiversity (Partly Derived From Green Infrastructure PO7)	Mitigation type policy with sequential approach to protect European sites.	None
CS8.5 Coast	Mitigation type policy which aims to protect the coast and associated landscape and biodiversity and its functional and	None

Preferred Option – Number and summary of text	Main emphasis of policy and hazards to European sites	European sites that may be adversely affected and why
	stop inappropriate development	
CS8.8 Development And Flood Risk	Mitigation type policy that aims to direct development away from flood areas, to include SUDS and therefore pose less risk to affecting watercourses, levels and water quality	None
CS8.9 Minerals And Waste	The minerals and waste management industries can have a range of impacts relating to their activities including land take, air pollution, noise, disturbance (including from transport to/from scheme) and water pollution from runoff. However this policy does not set out either quantities or locations of facilities needed. But simply adds criteria that impact from development in these industries needs to be reduced.	Although it does not go into specifics with regard to European sites this mitigation is provided through Policy CS8.4. This policy does not force modes or locations of development that would affect European sites or make the existing situation as set out under Cumbria County Council Minerals and Waste Development Framework any worse from the perspective of the European sites. It is likely that future proposals for new waste or minerals sites will in some cases need HRAs and the planning permission and development control process will provide for this.

The Core Strategy does not contain any significant changes in approach. As mentioned above the key issues, housing numbers and broad settlement hierarchy remain the same. The Core Strategy aims to grow the economy in a sustainable way, provide housing to meet local need, protecting and enhancing the quality of the environment, improve the accessibility of services and protect health and wellbeing.

However the restructuring of the document means that some analysis is required to understand which aspects of the Core Strategy are likely to have significant effect based on the analysis of issues affecting sites in the AA screening stage and therefore where mitigation is needed. Table 4 examines the issues highlighted at the screening stage and the responsible Preferred Options and where these impacts may be generated through the core strategy policies.

As there have been no major changes in approach and as the other sites tested at the screening stage were screened out due to the fact that their conservation interest

depends primarily on management at site level or because their distance from the plan area or on factors which would not be affected by the proposed Core Strategy we have left them screening out from further assessment. The only exception to this relates to potential future impacts due to construction and operation of renewable energy infrastructure projects. This issue and all the sites potentially affected are discussed in section 4.5.

Table 4. Comparison of Preferred Option policies and Core Strategy policies which have a likely significant effect

Potential Ecological impact	Sites potentially affected	Preferred option numbers identified as potentially causing impact in the AA screening report	Comparable Core Strategy policies where possible impact remains
Reduced water quality (through increase in sewage, surface water runoff and pollution)	River Kent SAC	PO3, PO4, PO11 Development in Kendal set out in PO3 and PO4 and especially from the Kendal Canal head regeneration many have implications on water quality. The capacity of the WWTW needs to be investigated	The development levels in Kendal are set out in policy CS1.2 and CS2. The percentage of new development in Kendal has been reduced from 40% to 30%. Redevelopment of canal now mentioned in the supporting text to CS2, in the vision for 2025, and the policy CS2
Reduction in water supply or levels at sites	River Kent SAC	PO11 Potential abstraction from River Kent to feed the Kendal Canal Head if it is regenerated. Question is whether there is water available for abstraction without impacting the SAC.	Redevelopment of canal now mentioned in the supporting text to CS2, in the vision for 2025, and the policy CS2. Although the regeneration of the former Kendal Canal Head Area will be delivered through the preparation of an Area Action Plan
Introduction of invasive non native species and crayfish plague	River Kent SAC	PO11 If the northern reaches of the Lancaster Canal are restored to connect to the Kendal Canal Head area this may lead to a spread of signal crayfish and crayfish plague. This typically results in 100% mortality of white clawed crayfish.	Redevelopment of canal now mentioned in the supporting text to CS2, in the vision for 2025, and the policy CS2. Although the regeneration of the former Kendal Canal Head Area will be delivered through the preparation of an Area Action Plan
Increase in visitor pressure leading to erosion and disturbance.	Morecambe Bay SAC/ SPA/ Ramsar, Morecambe Bay Pavements SAC	PO1, PO3, PO4, PO5, PO7, PO11, PO12, PO20 The increase in visitor pressure both from an increase in local residents and an increase in tourism poses risks in terms of damage to sites and disturbance to protected species at these sites. All these policies may contribute cumulatively adding to this pressure	CS1.2, CS2, CS3, CS4 are comparable with PO1, PO3, PO4, PO11 and PO12. These policies set out the spatial strategy and area visions and will increase the number of local residents. PO5 (sustainable economy) and PO7 (green infrastructure) are now set out through CS7.1 (meeting the employment requirement), CS7.2 (type of employment land required and sectoral split), CS7.6 (tourism development) and CS8.1 (green infrastructure)

4 Impacts and effects on sites

4.1 Reduced water quality (through increase in sewage, surface water runoff and pollution)

The EA identified in the screening stage that increases in housing in Kendal may put pressure on the existing sewage network and wastewater treatment works in Kendal. There was little information on the capacity of the network and where the pinch points were so this issue and the LSE on the River Kent SAC were highlighted for further examination in the Stage 2 AA.

As the Core Strategy plans for an additional 3080 homes to be built in Kendal over the period 2003 -2025 this issue and possible adverse effects on the River Kent SAC need proper consideration and if necessary mitigation measures added to avoid impacts.

The River Kent SAC is designated for Annex II species (white Clawed Crayfish) and has present other Annex II species (Freshwater pearl mussel & Bullhead) which are vulnerable to changes in water quality. The River Kent flows through Kendal and the designated parts include the upper tributaries as well as the section that follows through and downstream of Kendal.

The sewage treatment works are located to the South of Kendal, see Figure 1. The EA has set out their concerns regarding sewage capacity and new development in and around Kendal through an email[2]. This highlights two areas where there are sewer capacity issues. These are at Kentrigg Walk and at Steeles Row, Burneside, see Figure 1. In addition the EA has concerns about the capacity of the Waste Water Treatment Works.

The overall capacity problem at Kentrigg Walk is being addressed by United Utilities (UU) at the moment, but it is unclear if it will be resolved. The sewer at Kentrigg Walk has become narrowed due to deposits and UU are taking action to remove them, but there is uncertainty as to how significant these deposits are in affecting the overall capacity of the sewer and their removal may or may not resolve the problem. If the deposit removal is not successful it is unclear how the problem will be rectified. The length of time then taken to rectify the problem will depend on the nature and scale of the works required which is currently unknown.

The problem at Steeles Row, Burneside is the lack of capacity in the current system. The problem is of such a scale that significant investment is likely to be required to resolve it. UU have stated that "*any investment in this area would have to be aligned to an appropriate driver and obviously how urgent it was compared with other problems. It is not possible to state whether or not this problem would attract funding in AMP5 or future AMP's*"[3].

With regard to the general sewer capacity and the capacity of the Wastewater Treatment Works (WwTW) the EA has stated that UU should be requested to demonstrate whether or not they can ensure a satisfactory standard of sewerage and sewage treatment capacity is provided to accommodate further development.

UU have commented that new development should consider the application of separate systems, sustainable drainage systems, sewer repositioning to a more suitable point, Local Authority Surface Water Management Plans and liaison with

[2] EA (2009) Email correspondence regarding network capacity at Kendal and Burneside

[3] UU (2009) Email correspondence RE: Waste water treatment and network capacity at Kendal

Network as to connections points, but have not confirmed the limit of capacity of future development.

A lack of sewage capacity in all these locations may increase the incidence of sewage discharge to the River Kent and by reducing water quality and dissolved oxygen levels have an adverse affect on the species for which the River Kent SAC is designated.

Measures are needed within the core strategy to avoid or mitigate against these adverse effects.

Until the problems at Kentrigg Walk and Steeles Row Burneside are resolved the core strategy needs to set out that there should be:

- No further development above these sewer bottlenecks that adds additional flow to the sewer above these bottlenecks.

For the general sewage capacity and the capacity of the WwTW, until UU can demonstrate that further development can be accommodated the Core Strategy should:

- Make clear the need for new waste-water treatment infrastructure;
- Emphasise the need for development to incorporate separate systems, sustainable drainage systems, sewer requisitioning to a more suitable point; and
- Emphasise the timing implications associated with the provision of new resource infrastructure, and consequent implications for the phasing of new housing and other development

The EA encourages a strategic approach to future development so as to ensure a satisfactory standard of sewerage and sewage treatment capacity is provided. A water cycle study/ Local Authority Surface Water Management Plan would help resolve these issues and identify future bottlenecks which may cause problems for development.

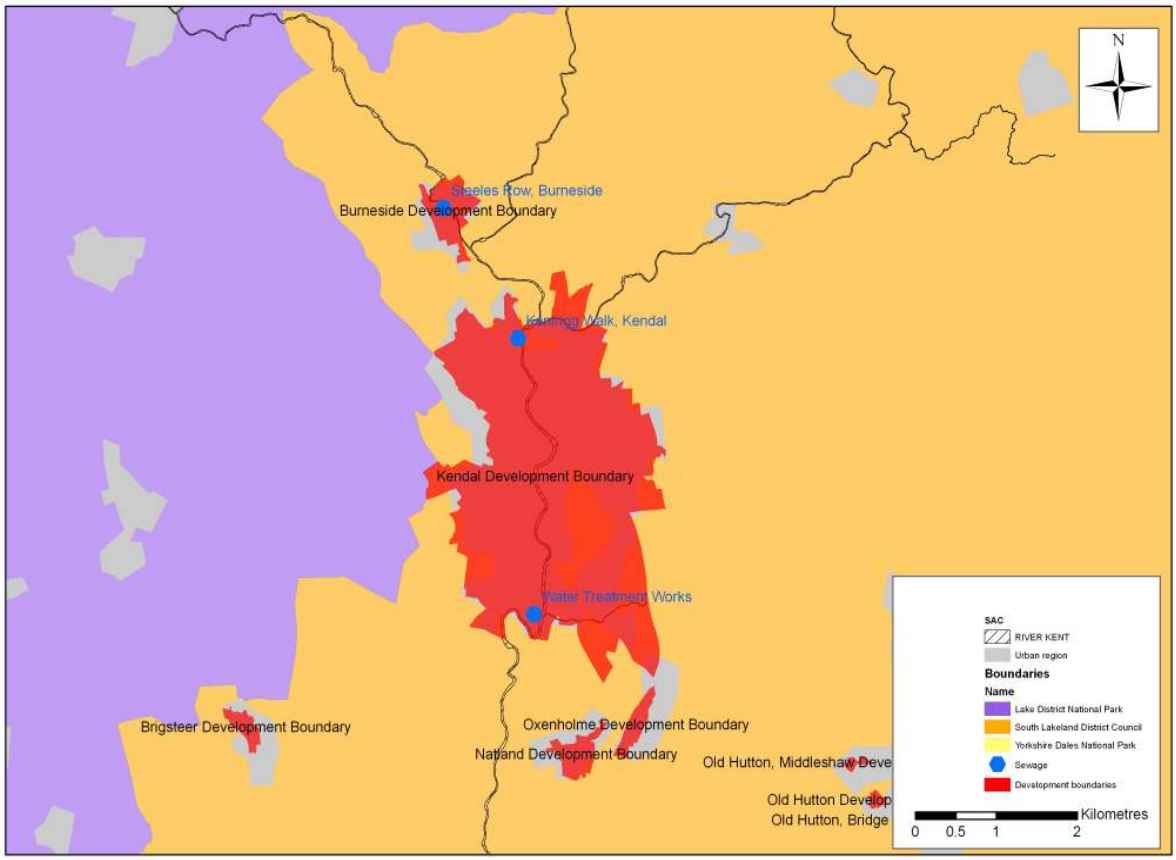

Figure 1. Location of Wastewater Treatment Works and sewage network pinch points

4.2 Alteration in water supply or levels on the River Kent

This issue was also screened in for likely significant effects on the River Kent SAC. Two issues were of concern, the levels of development in Kendal and the source of water to supply this and the affect of abstraction from the River Kent to feed a regenerated Canal Head. These are considered in turn.

Kendal receives its water from Haweswater and Thirlmere Reservoirs so an increase in homes in Kendal will not lead to an increase in abstraction from the River Kent to feed domestic demand. The water goes to Watchgate treatment plant north of Kendal before coming down into the town. These reservoirs also supply Manchester and other areas.

The regeneration of the Kendal Canal Head and the possible 'Restoration of the Northern Reaches of the Lancaster Canal' (RNRLC) is being developed through a separate development plan document, the Kendal Canal Head Area Action Plan[4]. The preferred options report was published in April 2008 and consultation is still ongoing on the plan and accompanying appropriate assessment between, SDLC, British Waterways, Natural England and the Environment Agency.

Numerous issues identified in the AA are still under discussion. These relate to the effects of the RNRLC, including the effects of abstraction and discharge on water flow. This issue is being assessed and explored further amongst Consultees and tested in the production of the AAP. As the council have included a 'No Canal' Option

[4] Kendal Canal Head Area Action Plan. Preferred Options Report (April 2008).

within the Kendal Canal Head AAP, the inclusion of the regeneration within the Core strategy document does not necessarily provide the framework for the development the RNRLC. Adverse effects on the River Kent SAC are not definite, as the AA of the AAP shows that the regeneration of the Canal Head will not have an adverse effect on the integrity of the River Kent SAC if it takes place without the development of the canal. In other words, these adverse effects can be avoided if the Canal itself is not restored.

It is appropriate that the detail of the AAP is being tested in its development through an AA. However to remove ambiguity concerning the extent to which the Core Strategy might provide prior consent for the canal restoration, the text and policy under CS2 that refers to regeneration of this area should refer simply to the regeneration of the 'Kendal Canal Head area' and not the restoration of the canal itself.

This amendment needs to be made as an avoidance measure to ensure that the Core Strategy does not provide the development framework for a project that may have an adverse effect on a European site.

4.3 Introduction of invasive non native species and crayfish plague

As discussed in section 4.2 the regeneration of the Kendal Canal Head and the possible restoration of the Northern Reaches of the Lancaster Canal (RNRLC) are being developed through a separate development plan document, the Kendal Canal Head Area Action Plan[5].

The Kendal Canal Head AAP AA states that "Hydrological connectivity of the canal with the River Kent SAC could result in the introduction of invasive alien species, changes in river flows and water quality due to abstraction and discharge". It states that the transfer of non-native American Signal Crayfish and the crayfish plague will resulting in decline of white clawed crayfish populations and that outbreaks of crayfish plague typically result in 100% mortality.

The mitigation proposed in the AAP to tackle this issue is that "the AAP should include an alternative to the canal restoration that could be implemented if the ecological integrity of the River Kent SAC is found to be adversely affected by the canal restoration and the adverse effects cannot be mitigated".

To remove the ambiguity that the Core Strategy is providing the development framework for the canal restoration, the text and policy under CS2 that refers to regeneration of this area should refer simply to the regeneration of the 'Kendal Canal Head area' and not the restoration of the canal.

4.4 Increase in visitor pressure leading to damage and disturbance.

The screening report and consultation with Natural England identified risks in terms of damage to sites and disturbance to protected species at Morecambe Bay Pavements SAC, Morecambe Bay SAC, SPA and Ramsar site due to an increase in visitor pressure, both from an increase in local residents and an increase in tourism.

4.4.1 Morecambe Bay SPA and Ramsar

Natural England considers that the increase in numbers of visitors is unlikely to have a significant adverse effect in areas where disturbance is already is problem. For

[5] Kendal Canal Head Area Action Plan. Preferred Options Report (April 2008).

example, at Grange over Sands, the increase in numbers on the promenade will not result in a corresponding increase in disturbance on the estuary. More remote areas providing roosts for waterfowl and seabirds are more vulnerable to an increase in numbers and frequency of visitors. Two vulnerable spots of particular note which were identified by Natural England include Humphry Head Point and the coastline between Bardsea and Baycliff.

Figure 2 shows the location of Humphry Head and the location of nearby settlements and percentage increase in housing planned for these areas.

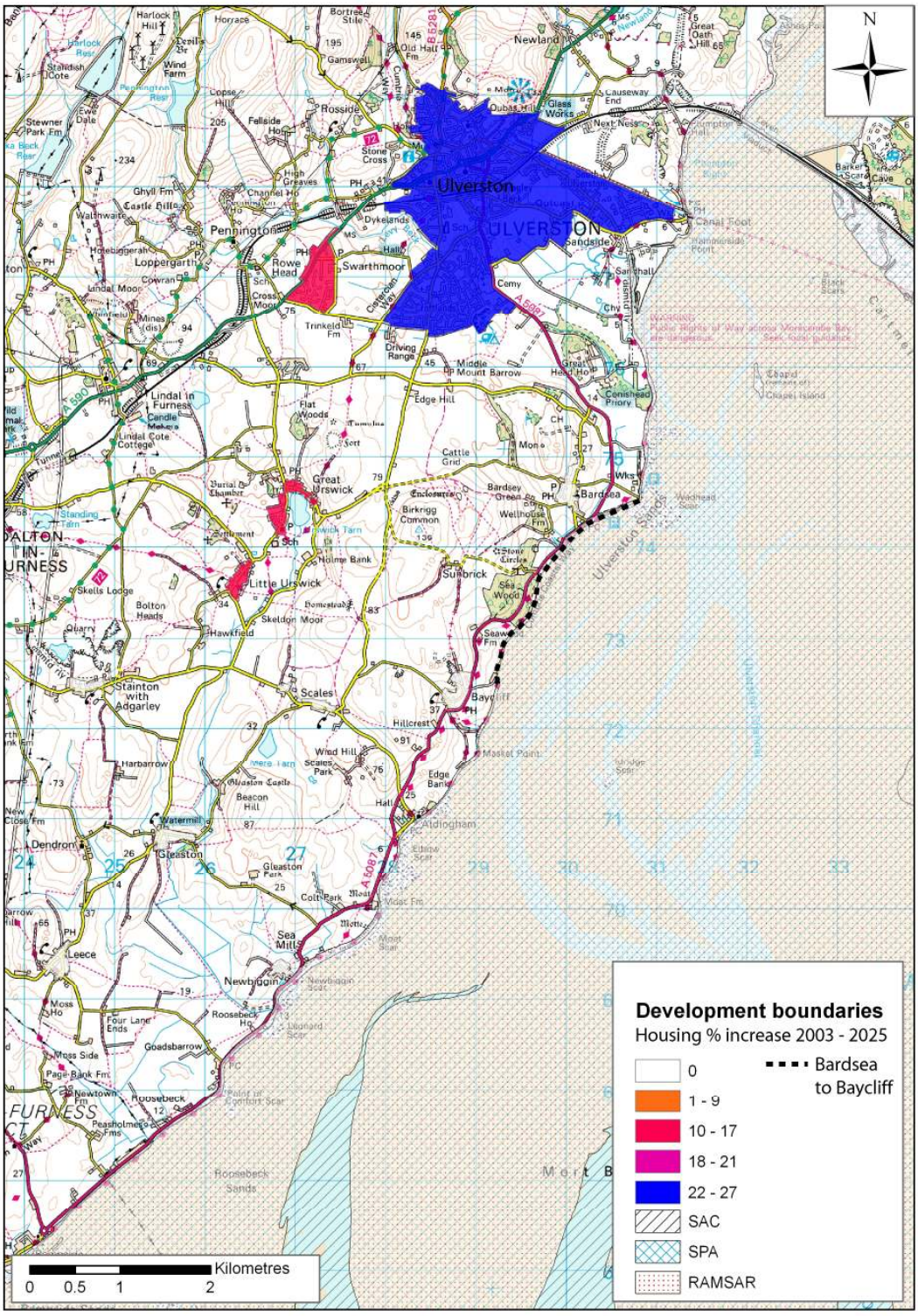

Figure 3 shows the locations of the coastline between Bardsea and Baycliff and the location and scale of development nearby.

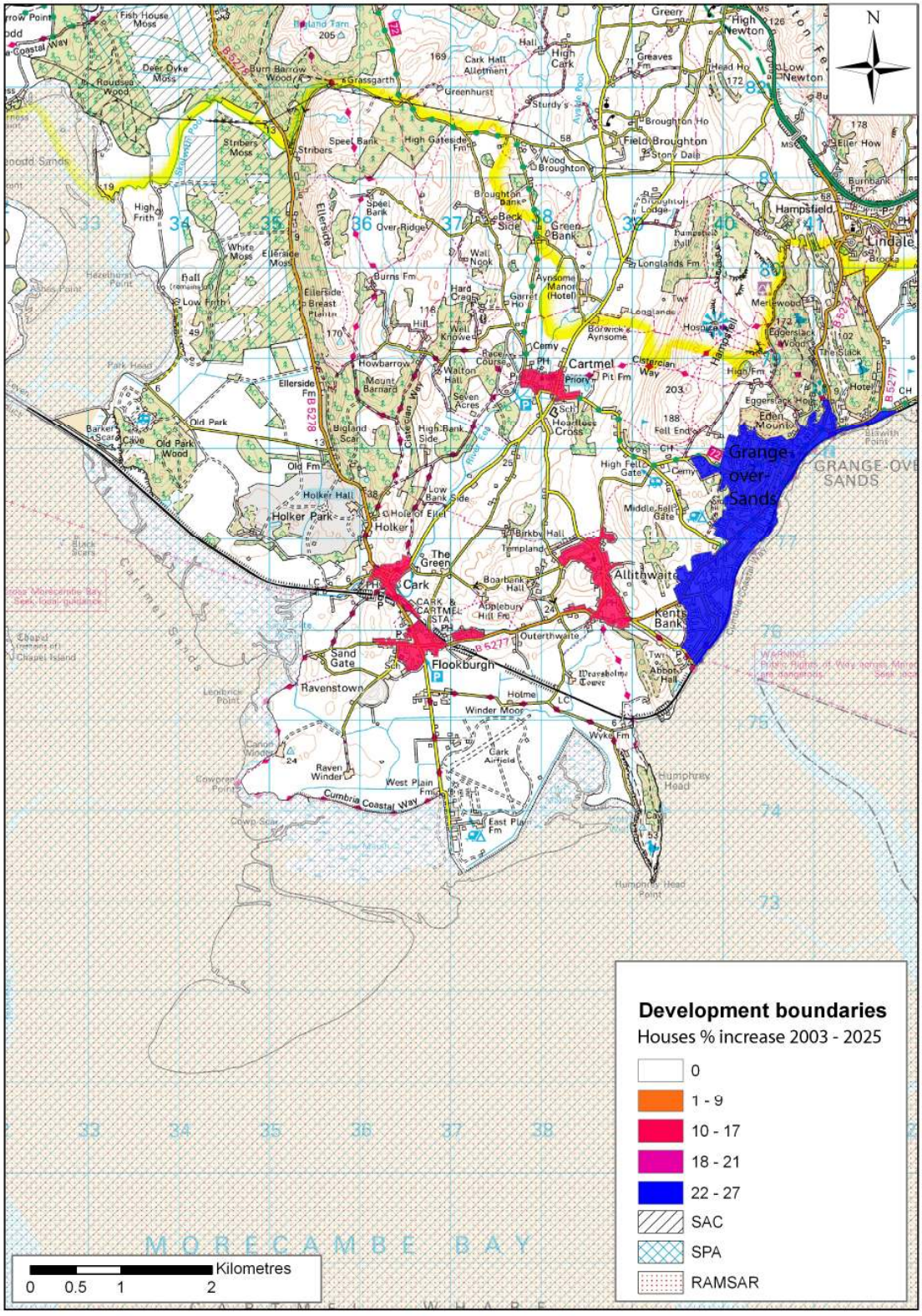

Figure 2. Location of settlements and planned increase on the Cartmel Peninsula

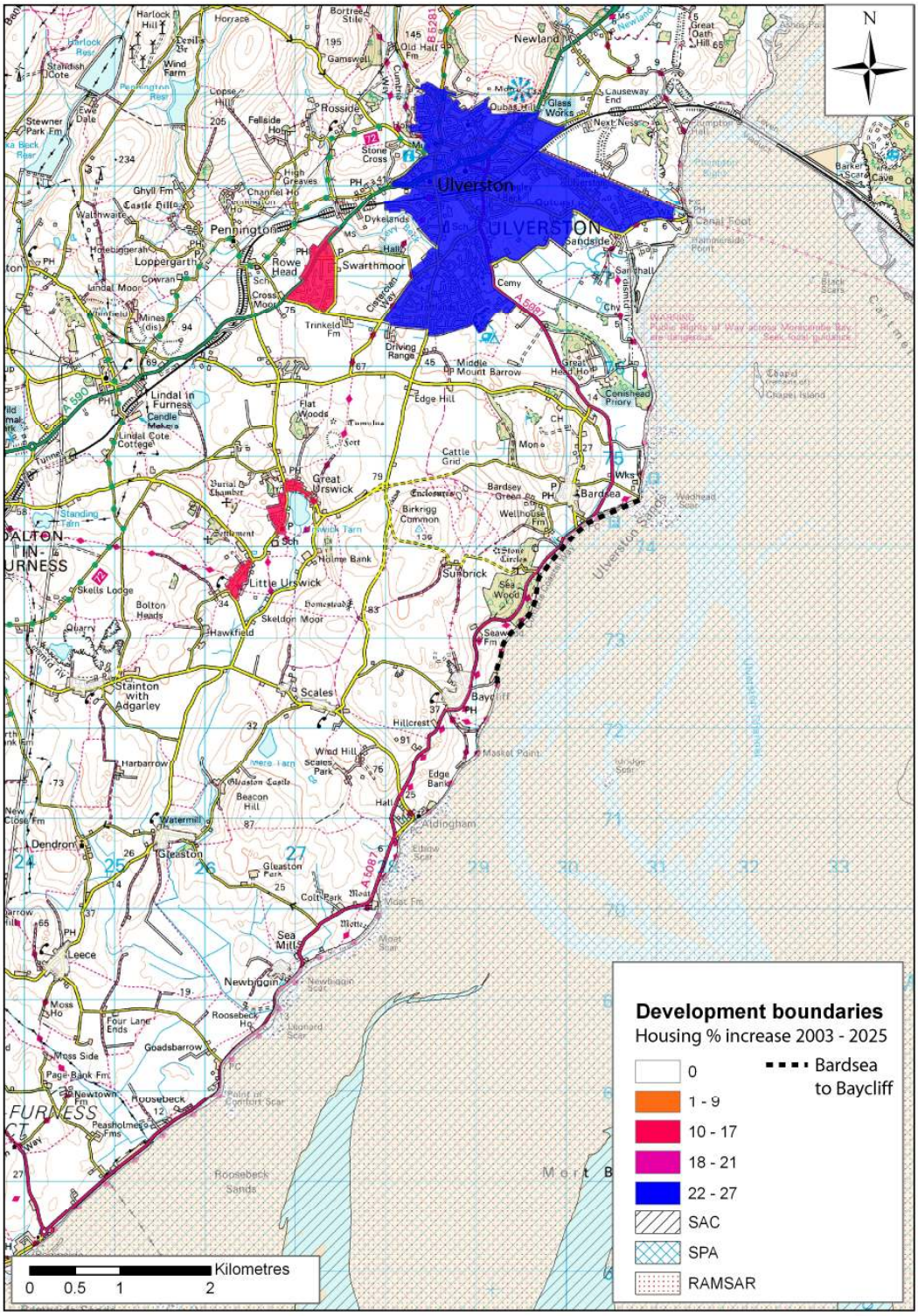

Figure 3 the locations of the coastline between Bardsea and Baycliff and the location and scale of development nearby.

The Regulations 33 Advice for Morecambe Bay European Marine Site[6] identifies that Sandwich Terns (*Sterna sandvicensis)* are currently exposed to high or medium levels of non physical disturbance (visual and noise) and that this is particularly the case around shingle habitats. As Sandwich Terns are highly sensitive to non physical disturbance such as recreational activity the Regulation 33 advice is that this species is **highly vulnerable**[7] to increases in this type of disturbance.

The internationally important assemblage of waterfowl and seabirds and internationally important populations of regularly occurring migratory species have also been assessed as being **highly vulnerable** to increases in this type of disturbance and this assessment has been made with regard to a wide range of habitat types including intertidal mudflat and sandflat communities, intertidal and subtidal boulder and cobble skear communities, saltmarsh communities and coastal lagoon communities which are found over the extent of the estuary.

Disturbance can cause birds to spend energy flying away and to lose feeding time while relocating to different feeding areas. If disturbance in one area causes more birds to congregate in another, less disturbed area, then the increased bird densities in the new area may intensify competition for food. If the high bird densities last long enough, prey may deplete, further reducing birds' energy. Over time, this can have a substantial impact on bird numbers. Disturbance can also cause nesting birds to leave their nests, with effects on their eggs and hatchlings.

The implication of recreational disturbance to ducks, waders and other estuarine birds, has been the focus of a range of studies. Some of the principles of these studies are cited in the North West Plan AA[8]. It states that the studies show, for instance, that:

- *Numerous small disturbances may have a greater impact than fewer larger disturbances:* result of a study of oystercatchers in the Exe Estuary (West *et al*., 2002).
- *Birds are affected more by people with dogs than by people alone, with birds flushing more readily, more frequently, at greater distances and for longer.* Dogs resemble predators and may range quickly across a wide area if not on lead. These are the results of a literature review relating to heathland birds (Underhill-Day, 2005), and a three year study of wetland birds at the Stour and Orwell SPA (Ravenscroft, 2005).
- *Different types of recreational activities cause different types of impacts.* A three year study of wetland birds at the Stour and Orwell SPA found that bait digging caused disturbance of the largest proportion of birds in the study area. However walkers and dogs however were the most regular source of disturbance. Cyclists and joggers caused some disturbance. Walkers (with or without dogs) and yachts caused equal amounts of disturbance. Sailing vessels and power craft caused roughly equal amounts of disturbance. Gun shots caused the largest mean response but were infrequent (Ravenscroft, 2005).
- *Some species are more prone to disturbance than others (Woodfield and Langston, 2004).* For instance, of six wetland bird species studied at the Stour

[6] Morecambe Bay European marine site. English Nature's advice given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994. Issued 14 January 2000

[7] 'vulnerability' within Reg 33 advice has been defined as exposure of a habitat, community or individual (or individual colony) of a species to an external factor to which it is sensitive (Hiscock, 1996).

[8] Scott Wilson et al (2007) Appropriate Assessment of the Draft North West Plan. Final Report

and Orwell SPA, redshank were most sensitive to disturbance, then dunlin, shelduck, oystercatchers, wigeon and finally curlew. On average, about 40% of redshank were displaced by a given disturbance event, compared with about 20% of curlew (Ravenscroft, 2005). A study of birds at Mont Saint Michel bay (France) also showed that dunlins, oystercatchers and knots reacted to recreational disturbance more than curlew and grey plover (Eybert *et al*., 2003).

- *When feeding conditions are hardest (in winter, at the highest tides), disturbance is most likely to threaten birds.* A study of oystercatchers in France showed that the birds could be disturbed up to 1.0–1.5 times per hour before their fitness was reduced in winters with good feeding conditions, but only up to 0.2–0.5 times per hour when feeding conditions were poor (Goss-Custard *et al*., 2006). A study of oystercatchers in the Exe Estuary led to similar findings (West *et al*., 2002).
- *Birds' sensitivity to disturbance could be related to the habitats of the species:* Ravenscroft (2005) postulated that redshank are more easily disturbed than curlew because "redshank are upper and mid-shore feeders whereas curlew tend to feed at low tide along the tideline". The French researchers postulated that curlew and grey plover are less affected by localised disturbance as they have a more varied diet and feed in smaller groups dispersed over the tidal flat and salt marsh (Eybert *et al*., 2003).
- *The most easily disturbed species are not necessarily those that will suffer the greatest impacts.* In some cases, the most easily disturbed birds simply move to other feeding sites, whilst others may remain and suffer greater impacts on their population (Gill *et al*., 2001).

Some of these principles may be used in planning management strategies to deal with disturbance associated with increases in the numbers enjoyed and undertaking recreational around the European Marine site.

The Core Strategy proposes additional development in the following settlements within a 1Km and 5km radius of the Morecambe Bay SPA & Ramsar:

Table 5. Settlements within 1km and 5 km of the Morecambe Bay European marine site which will receive additional development under the Core Strategy

Morecombe Bay SPA 5Km buffer
Allithwaite (inc Cartmel), Ulverston, Greenodd and Penney Bridge, Arnisde, Great and Little Urswick, Flookburgh (inc Cark), Swarthmoor, Holme, Milnthorpe, Levens, Storth & Sandside, Grange-over-Sands
Morecombe Bay SPA 1Km
Allithwaite (inc Cartmel), Ulverston, Greenodd and Penney Bridge, Arnisde, Milnthorpe, Storth & Sandside, Grange-over-Sands
Morecombe Bay Ramsar 5Km
Allithwaite (inc Cartmel), Ulverston, Greenodd and Penney Bridge, Arnisde, Great and Little Urswick, Flookburgh (inc Cark), Swarthmoor, Holme, Milnthorpe, Levens, Storth & Sandside, Grange-over-Sands
Morecombe Bay Ramsar 1Km
Allithwaite (inc Cartmel), Ulverston, Greenodd and Penney Bridge, Arnisde, Milnthorpe, Storth & Sandside, Grange-over-Sands

In addition, the Core Strategy recognises the importance of tourism to the local economy and promotes an expansion of tourism through Policy CS7.6

Without extensive questionnaires and survey work it is impossible to predict how many of the new residents and new tourists will visit the Morecambe Bay coastline, where they will go and what sort of activities they might partake in and so the nature and level of impact and the scale of the effect on the populations of internationally important species of birds that use the Morecambe Bay European marine site.

Other AA studies in the North West region have also identified issues regarding non physical disturbance but been unable to quantify the change in disturbance expected and the resultant effect on the integrity of European sites.

The North West plan AA identified that recreational disturbance was likely to be a problem affecting the Morecambe Bay SPA and Ramsar as it hosts sensitive bird populations and is already subject to disturbance from bait digging, fishing, dredging, dog-walking and horse-riding.

In addition this site is likely to be affected 'in combination' by:

- Marine and Coastal Access Bill which aims to secure a long distance route ("the English coastal route") and land for open-air recreation accessible to the public around the coast of England;
- The Cumbria Economic Strategy which supports development of new tourist attractions that have the potential to extend the reach of tourism across the County and the development of Cumbria as the 'Adventure Capital' of the UK;
- the 2700 new homes planned for Barrow-in-Furness;
- the 5500 new homes in Fylde;
- The Regeneration of waterfront Barrow. which is seen as a priority; and
- The policies within the North West Plan which advocates tourism development adjacent to National parks and AONBs – this applies to this site

Therefore, despite the lack of quantitative evidence on the degree to which visitor numbers and their associated impacts will rise given the vulnerability of bird species and populations to non physical disturbance it is difficult to conclude that the additional homes (and presumably the increase in local population) plus increase in tourists will not adversely effect the integrity of the SPA, Ramsar.

It will be impossible to altogether avoid additional recreational impacts through changes to the Core Strategy, unless no additional housing is permitted, and no support is given to outdoor recreation. Neither is acceptable nationally. As such, the best the core strategy can do is mitigate for recreational impacts.

Possible mitigation measures are access management, habitat management and provision of alternative recreational space. Mitigation measures are discussed below in section 4.4.4.

4.4.2 Morecambe Bay SAC

The core problem identified by Natural England is from illegal vehicle use on the foreshore. This is particularly prevalent on the coast road (A5087) from near Bardsea to Baycliff. One section of the road runs adjacent to the foreshore and allows unrestricted access and parking. Damage to the foreshore here may directly affect the features of the SAC.

This outcome is not directly related to the vision and policy of the core strategy and there is unlikely to be any clear correlation between illegal off road vehicle use and

increase in local residents. However, there is the opportunity for the Core Strategy to promote better access management and protection of features of the SAC at risk. The new coast policy (CS8.5) does this to large extent as it aims to "To conserve and enhance maritime influenced, marine and littoral biodiversity and protect wildlife habitats" and "To support the strategy for the management / protection of the shoreline". Access management and avoiding illegal activities on the foreshore could be highlighted in the Core Strategy as an issue to be dealt with through this forthcoming strategy.

4.4.3 Morecambe Bay Pavements SAC

One component area of Morecambe Bay Pavements SAC, the Scout and Cunswick Scars SSSI, is located 2 km west of Kendal and runs almost 5 km in a north-south direction. The effect of daily visitors from Kendal and also from visitors from further afield to this beautiful vantage point is evident. This is resulting in localised erosion from trampling and nutrient pollution from dog faeces and urine. This decreases in intensity as you move away from the main parking area off the Underbarrow road.

Whether the core strategy will significantly add to this impact and whether the effect will adversely affect the integrity of the Natura 2000 site is debatable but seems unlikely for two reasons.

Firstly, the Natura 2000 Standard Data Form[9] updated in 2001 and completed in 2005 makes no reference to the vulnerabilities of the site to visitor damage and points to the decline of traditional management practices as the main issue to be addressed. The Scout and Cunswick SSSI which lies over the same extent as this part of the SAC, and has been notified for many of the same reasons as the SAC[10], has been marked[11] as %99.64 as area 'favourable' or 'unfavourable recovering'. Unit 4, 5 and 8 which are closest to the parking area have been marked as 'favourable or unfavourable recovering'. The condition assessment points to past agricultural improvements or lacking of grazing as contributing to the unfavourable condition and that the new management agreements should restore the site to a favourable condition. Only unit 1 was assessed as unfavourable declining this is for reasons of decline water quality likely to be linked to game management and shading by overhanging trees.

Secondly, whether the 21% in housing increase by 2025 will lead to an increase in visitors to this site depends on a number of factors including the location of the housing, whether these people have cars for access, and dogs which incentivise them to go up there each day, and whether they have other good alternatives for recreation and dog walking.

Although Morecambe Bay Pavements SAC may not be adversely affected in the short term, it could be affected by the Core Strategy and other in combination pressures in the future and the possibility of effects manifesting themselves in the

---

[9] Natura 2000 Standard Data Form. Morecambe Bay Pavements.

[10] Annex I habitats that are a primary reason for selection of this component of the site or that are present as a qualifying feature and that are also reasons for notification of the SSSI include; European dry heaths, Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), *Tilio-Acerion* forests of slopes, screes and ravines, *Taxus baccata* woods of the British Isles, Calcareous fens with Cladium mariscus and species of the Caricion davallianae

[11] SSSI condition summary 01 April 2009. Sourced on the 15th May from: http://www.sssi.naturalengland.org.uk/special/sssi/reportAction.cfm?report=sdrt18&category=S&reference=1001960

long term must be considered under European Commission guidance (2000)[12]. The Core Strategy should take steps to ensure it mitigates for any contribution it might make. In addition, the measures to achieve this help support the Council's Biodiversity Duty under the Natural Environment and Rural Communities Act 2006 which require it to take steps to restore and enhance biodiversity.

4.4.4 Mitigation measures

It is not possible to conclude that the Core Strategy in combination will not have an adverse effect on these sites and given existing concerns about recreational pressures on these sensitive parts of the European sites the Core Strategy should try to mitigate recreational impacts and play an active part in trying to improve the situation into the future.

Possible mitigation measures are access management, habitat management and provision of alternative recreational space. Certain recommendations to achieve this could include the following:

- The plan should emphasis that the Council should work in partnership with Natural England and Morecambe Bay Partnership in the delivery of its duties and development of other strategies;
- Developer contributions could be focused towards biodiversity enhancements;
- Restrictions on parking and vehicle access in sensitive areas; and
- Open space provision

This is in part achieved through the following policies:

- CS8.3b (Quantity Of Open Space, Sport And Recreation) which aims to provide sufficient open space, sport and recreation provision near development;
- CS8.4 Biodiversity & Geodiversity which requires that all development proposals should maximise opportunities for restoration, enhancement and connection of natural habitats; and
- CS8.5 (Coast) which aims to conserve and enhance maritime influenced, marine and littoral biodiversity and protect wildlife habitats to ensure that the areas maritime natural resources are managed in a sustainable way.

In addition, the Core Strategy should make reference to the Morecambe Bay Strategy and the solutions to managing disturbance which are recommended there as these have been developed by a wide range of stakeholders. These solutions should be considered as measures that might be considered as planning conditions when granting permissions for developments in and around the Morecambe Bay European site. Natural England needs to be involved in these discussions and delivery on the ground.

The capacity of European sites to receive an increase in visitors without a corresponding increase in level of impact needs to be examined. The text to CS8.4 should make reference to this issue as a problem that requires attention by future development proposals.

[12] European Commission (2000) Managing Natura 2000 Sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

4.5 Nuclear and renewable energy

Policy 8.7 'Sustainable Construction, Energy Efficiency and Renewable Energy' updates the Preferred Options document by introducing a policy which supports nuclear and renewable energy generation.

Nuclear

The first part of the policy commits to working in partnership with the neighbouring authorities and bodies to consider future development of new reactors at sites adjacent to Sellafield and the necessary connections to the electricity network. These developments could potentially result in impacts on a wide range of European sites in Cumbria and beyond. However, the Core Strategy does not provide consent for these projects and South Lakeland District Council will not be the authority to approve the projects. This policy simply supports the principle set out in national policy[13] and does not provide a useful opportunity to test the viability of the potential development.

The Government is undertaking a process (called the Strategic Siting Assessment) to identify sites which are suitable or potentially suitable for the deployment of new nuclear power stations by the end of 2025 which includes assessing the sites using set criteria. These sites will be included in a National Policy Statement (NPS) which will be published in 2010. Developers will still need to apply for consent to build on these sites under the planning regime.

So far the Department of Energy and Climate Change (DECC) has published a list of nominated sites to be considered for the building of new nuclear power reactors. Three of eleven potential sites are located in Copeland District at:

- Sellafield - nominated by the Nuclear Decommissioning Authority (NDA)
- Kirksanton - nominated by RWE npower
- Braystones - nominated by RWE npower.

This plan (NPS) and the subsequent projects should be subject to Appropriate Assessment if there is a likely significant effect on European sites. The development of these sites has not been tested through the Regional Spatial Strategy (RSS) process so there is no record of assessment against the Habitat Regulations there.

Renewables:

The second part of the policy supports the case for tidal energy, wind projects and micro generation including ground and air source heat pumps and 'where appropriate' solar, wind, hydro and wood fuel boilers. Notwithstanding their potential positive effect on air quality by replacement of power stations fuelled by fossil fuels, renewable energies can have adverse ecological impacts.

The AA of the NW RSS[14] and the AA of Liverpool Core Strategy[15] both set out a number of concerns regarding the scale of renewable energy projects (particularly wind and tidal) planned for this region and others and the uncertainty regarding the

[13] In January 2008 the Government decided that nuclear should have a role to play in the UK's future energy mix along side other low carbon energy sources and that it would take active steps to facilitate the construction of new nuclear power stations.

[14] Levett Therivel, Scott Wilson & Treweek Environmental (2007) Appropriate Assessment of the Draft North West Plan Final Report

[15] Levett-Therivel and Treweek Environmental Consultants (2007) Appropriate Assessment of the Liverpool Core Strategy

effects, particularly 'in combination', based on the limited information that is currently available.

In South Lakeland, renewables and in particular large tidal and wind projects, may have adverse effects on European sites. Not just the five European sites that were screening in during stage 1 of the assessment but also other European sites. Duddon Estuary SPA and Ramsar and Leighton Moss SPA and Ramsar are sites which rely on the maintenance of inter tidal and estuarine habitats in a favourable condition and sites where loss of extent of habitat and disturbance from noise and/or visual activities would be likely to be a problem. The construction of wind turbines in upland sites such as Morecambe Bay Pavements SAC may cause direct damage to habitat extent.

All Regions are currently supporting renewable energy in their RSSs, in line with the aspirations of the UK government. In the North West region there are already a significant number of energy projects that are operational, under construction, with planning permission, or under consideration. These include one operational offshore wind farm in the North West (Barrow wind farm, off Walney Island), one under construction (Burbo Banks off Crosby), one approved (Ormonde, off Walney) and four submitted for approval. Clearly this all has potential to lead to in combination effects as the numbers of operational turbines increase in number.

Acknowledging that PPG22 sets out that "Regional Planning Bodies and Local Planning Authorities should not create buffer zones around internationally or nationally designated areas and apply policies to these zones that prevent the development of renewable energy projects", and that the policy does not identify scale, location or detail of projects a stronger recognition of the risk to European sites needs to be included in or around the policy. This is line with the findings of the North West Plan AA which suggested than in the absence of a clear understanding of the capacity of the North West to accommodate renewables without impact on European sites the international importance of much of the coastline and all of the major estuaries of the Region for nature conservation should inform choice of location for marine energy schemes and projects should avoid significant adverse effects on sites of international nature conservation importance by assessment under the Habitats Regulations.

The Adopted North West plan in the policy on renewables sets out the following criteria '*should be taken into account but should not be used to rule out or place constraints on the development of all, or specific types of, renewable energy technologies'* and includes *inter alia*:

i). The effect of development on nature conservation features, biodiversity and geodiversity, including sites, habitats and species, and which avoid significant adverse effects on sites of international nature conservation importance by assessment under the Habitats Regulations;

Due to the lack of detail provided in this policy and the lack of understanding of capacity to site renewable energy projects in South Lakeland without adverse effects on European sites the Core Strategy should adopt something similar to this effect to guide future decisions.

A clear caveat such as this would provide protection not just for the sites examined in the impact tables but also for all the European sites in and round South Lakeland, so we have not re-tested the effects of this policy and the associated mitigation that has been suggested on each and every site.

The difficult tests will come in the development of the Allocations of Land DPD as policy CS7.7 identifies that this is where sites will be identified. This will be a

significant issue as the main areas of search for wind and marine renewables are likely to overlap with sensitive European sites.

5 Other plans and projects

The information collected here seeks to update rather than repeat the analysis of other plans and programmes undertaken at the screening stage. Although this chapter follows the discussion of impacts and effects on sites the information was collected simultaneously and informed this analysis and the writing of section 4. The information below provides further detail on what was considered and their corresponding impacts.

The sensitivities of sites and the likely significant effects of the core strategy have been used in the identification and examination of other plans and projects at this stage to consider whether exposure to additional pressures will result in adverse effects. The analysis has been used to complete the impact tables included in the appendices.

In addition, in line with guidance on in combination effects in AA[16] the authors have considered:

- The totality of all the effects of the plan policies, for example, all the policies contributing to additional non physical disturbance at sites; and
- The effects of other forthcoming DPDs, for example the Site Allocation DPD and the Kendal AAP DPD.

Water Quality in the River Kent

The plans and projects identified in the following tables were identified as potentially influencing water quality in the River Kent.

Plan or Project	Likely causes of impact and effect
Kendal Canal Head AAP	The AAP currently contains as an option the Phase 1 Restoration of the Northern Reaches of the Lancaster canal. Hydrological connectivity of the canal with the River Kent SAC could result in the introduction of invasive alien species, changes in river flows and water quality due to abstraction and discharge. Work by Ove Arup & Partners Ltd on the water quality and hydraulic assessment '*concludes that considering the volume of water discharged back to the river and subsequent mixing, and the slight reduction of the quality of the canal water; the reduction of water quality in the River Kent is predicted to be negligible*'[17]. However, the methodology and results are still to be agreed from the Environment Agency
The Kent Catchment Area Management Strategy (updated July 2007)	An action of the CAMS is to establish a sustainable operating regime for the canal to meet the needs of the canal and the wider environment. The CAMS currently states that the majority of the River Kent has a 'water available' status, however under the Habitats Directive, abstraction licences are under current review, and these statuses may alter. The Review of Consent process

[16] RSPB (2007) Appropriate Assessment of Spatial Plans in England. A guide to why, when and how to do it.

[17] Ove Arup & Partners Ltd (2009) Letter regarding the EA's response to Kendal Canal Head Area Action Plan Phase 1 Restoration of the Northern Reaches of the Lancaster Canal, Draft Appropriate Assessment under the Habitat Regulations

	operated by the Environment Agency should help ensure the abstractions and discharges consented do not adversely affect the integrity of the Kent River SAC.
River Kent K-village site and Beezon Road site	Developments for residential, retail, offices and parking. Both K-Village and Beezon Road development are currently being built. Planning conditions have required the provision of separate surface water drainage scheme and strict measures to ensure that the River Kent, a site of Special Scientific Interest and a Special Area of Conservation, in particular, is protected from pollutants and contaminants. Pollution Prevention Guidelines are being strictly applied. The construction here on brownfield land may improve the water quality and volume control of discharges that were previously associated with the development here.

Change in water supply or levels on the River Kent

Plan or Project	Likely causes of impact and effect
Kendal Canal Head AAP	The Phase 1 RNRLC may cause changes in river flows and water quality due to abstraction and discharge. Changes in river flows and water quality could result in the decline of Ranunculion fluitantis and Callitricho-Batrachion vegetation, white-clawed crayfish, bullhead and freshwater pearl mussel. The EA have stated that the water resources modelling carried out for the Draft Appropriate Assessment of the Kendal Canal Head AAP and Phase 1 RNRLC is insufficient and further work is needed to established the effects[18]. There is a potential increase in volume of surface water discharged to the River Kent SAC because of an increase in hard surfaces. However, the AAP encourages the use of SUDS and the area is already developed so there is an opportunity here for a potential improvement.
Other abstractions	There are a number of other agricultural and private abstractions from the Kent which are licensed by the Environment Agency. There is no reason to expect that the demand from these will increase significantly in the future and the Review of Consents (RoC) process operated by the Environment Agency should help ensure the abstractions and discharges consented do not adversely affect the integrity of the Kent River SAC.

Introduction of invasive non native species and crayfish plague

Plan or Project	Likely causes of impact and effect
Kendal Canal Head AAP	The primary concern for introduction of non native species and crayfish plague as through RNRLC which may or not may come forward as part of the Kendal Canal Head AAP. Whichever way this is brought forward it carries the risk of transfer of non-native American Signal Crayfish and the crayfish plague resulting in

[18] Environment Agency (2008) letter to Ove Arup & Partners Ltd regarding the Draft AA of the Kendal Canal Head AAP and Phase 1 RNRLC.

	decline of whiteclawed crayfish populations. Outbreaks of crayfish plague typically result in 100% mortality.
Other activities	Unlawful behaviour by any individuals and accidental introduction is always a risk. The public have been known to introduce fish and signal crayfish to waterbodies. Results could be catastrophic for the European site as outbreaks of crayfish plague typically result in 100% mortality.

Increase in recreational pressure leading to damage and disturbance.

Plan or Project	Likely causes of impact and effect
The Countryside and Rights of Way Act 2000 (CRoW Act)	The Countryside and Rights of Way Act 2000 (CRoW Act) has increased people's access to 'mountain, moor, heath or down and registered common land' which has also meant increased access for many upland European sites. It also allowed the Secretary of State to apply the Act to coastal land, 'coastal land' meaning 1. the foreshore and 2. land adjacent to the foreshore. See below.
Draft Marine Bill	The Marine and Coastal Access Bill completed its Committee stage on 21 April 2009. It started Report stage on 5 May 2009. Part 9 of the Bill places a duty on the Secretary of State and Natural England to secure a long distance route ("the English coastal route") and land available for open-air recreation accessible to the public around the coast of England. This improved access, together with the marketing to promote the tourist offer, is likely to lead to increased numbers of people accessing previously remote parts of the coast and increase levels of non physical disturbance.
NW Plan RSS to 2021	The Plan was assessed as likely to increase recreational use of European sites as a general consequence of increased housing in the region and as a result of specific policies that encourage and/or facilitate recreational use of the countryside. The appropriate assessment recommended mitigation that required minor changes to relevant policies to emphasise that: Green infrastructure should include the identification and management of new areas of open space, rather than just more intensive use of existing areas of open space; and that A prerequisite of policies on tourism development and the visitor economy is the protection of the integrity of sites of international importance. The appropriate assessment concluded that with the mitigation in place to deal with the disturbance associated with recreation and other sources of disturbance it was possible to conclude that there will be no adverse impacts on the integrity of European sites as a consequence of recreation. However, this partly depends on how the policies are implementation locally and this issue will need to be revised in future revisions.
Cumbria Economic Strategy	Supports development of new tourist attractions that have the potential to extend the reach of tourism across the County and the development of Cumbria as the 'Adventure Capital' of the UK.

	The aim of key actions is to improve the attractiveness of Cumbria as a destination for businesses, residents and tourists. Development of Key Infrastructure such as east – west roads links will enable more people to access more isolated areas quicker. Depending on how and where these actions are taken forward there may be LSE from both non physical and physical disturbance.
Morecambe Bay Strategy	The Strategy has been prepared by local authorities and English Nature working with local people and organisations. The purpose of the Strategy is to improve the way that the Bay is managed by: • promoting integrated management by encouraging statutory bodies to work together and to consider the management of the Bay as a whole; • promoting a new management framework that will bring users and regulators together to discuss and resolve issues at a local level. It aims *inter alia* for promoting the environmentally sustainable use of the coast; and for management of the coast to be oriented towards coastal features so it should be largely beneficial by trying to manage different users and their associated impacts. It contains recommendations to try and resolve the conflicts between recreation and tourism and impacts on the Bay's environment to try and ensure the success of both. Solutions to manage conflicts where they exists include voluntary solutions and Statutory actions. Some voluntary solutions that are relevant to the protection of the nature conservation interests include: • Zoning of sites to avoid interference between conflicting activities • Codes of conduct to prevent impinging activities adversely affecting each other. • Signposts that indicate which activities are appropriate at a particular site can solve many problems before they arise. Statutory actions proposed include the creation and implementation of byelaws or other regulations by statutory bodies.
Other Plans & projects causing non recreational disturbance and damage	Morecambe Bay SAC, SPA and Ramsar is also affected by other activities that cause damage and disturbance and that may in combination effect the integrity of the site. This includes fishing, shipping, wind turbines, off-shore exploration and production, and dredging.

Nuclear and renewable energy

Plan or Project	**Likely causes of impact and effect**
Regional Spatial Strategies around England	All Regions are currently supporting renewable energy in their RSSs, in line with the aspirations of the UK government. There are clear possibilities of in combination impacts with onshore

	wind farm proposals in the North East, and Yorkshire and Humber Regions. Proposals for wind turbines and/or a barrage across the Severn Estuary would also have impacts on estuarine birds within the UK.
Cumbria Economic Strategy	Sets out actions for *inter alia*: Development of nuclear facilities in Cumbria including future development of at least 2 new reactors at sites adjacent to Sellafield and development of facilities in Barrow to take part in the new reactor building programme for the UK fleet; and Developing the case for tidal energy through projects such as the Bridge across Morecambe Bay and Solway Energy Gateway· And support for wind projects, giving more priority to large off-shore sites. The strategy has not been assessed against the requirements of the Habitats Directive. These projects may have LSE but this issue is not considered.
Wind farm projects	There are already a significant number of energy projects in the North West, operational, under construction, with planning permission, or under consideration. These include one operational offshore wind farm in the North West (Barrow wind farm, off Walney Island), one under construction (Burbo Banks off Crosby), one approved (Ormonde, off Walney) and four submitted for approval. There are currently 20 onshore wind farms operational in the North West, with one under construction and four approved[19].
Bridge across the Bay	Plans to build a 12-mile bridge linking Barrow in Furness in Cumbria and Heysham in north Lancashire across Morecambe Bay have been discussed in recent years. The plan also includes associated hydro-electric turbines to harness tide movements and a string of offshore wind turbines.

[19] Levett Therivel, Scott Wilson & Treweek Environmental (2007) Appropriate Assessment of the Draft North West Plan Final Report

6 Conclusions and recommendations

6.1 Effect on sites' integrity

It is not possible to conclude that there will not be an adverse effect on the ecological integrity of the 5 European sites where likely significant effects were identified at the screening stage of this Appropriate Assessment. The European sites and the reasons for the conclusions reached are summarised in Table 6.

Table 6 conclusions on AEOI on European sites.

European Site	Reasons for concluding whether there will be an Adverse Effect On Integrity (AEOI)	Aspects of the plan where impacts generated (along and/or in combination)
Morecambe Bay SAC	AEOI due to possible impact from large renewable infrastructure projects which may lead to short, medium an long term effects on the Annex I habitats for which site is designated through construction and operation. Negative effects are possible from changes to water levels, turbidity, reduced water quality and reduction in habitat extent. In addition it is not possible to conclude there will not be an AEOI on habitats from the increase in residents and tourism promoted by the plan leading to: 1. increasing visitor numbers to the site or 2. increasing numbers of cars. 'In combination' damage possible with other pressures.	Policy CS7.7 'Sustainable Construction, Energy Efficiency and Renewable Energy'. The delivery of new housing, economic growth and promotion of the tourism industry. This relates to much of the plan but in particular: CS1.2, CS2, CS3, CS4, CS7.6 (tourism development) and CS8.1
Morecambe Bay Pavements SAC	Site is reliant on low nutrient input and appropriate land management to maintain calcareous grassland and *Juniperus communis* habitat in favourable condition. Although current impacts of erosion from trampling and dog fouling are currently quite localised that it is impossible to say with certainly how many of the new residents will use the site on a regular basis and how this translates to impact on the site. A 21% increase in homes in Kendal by 2026 may result in increased visitors at the site and Scout Scar in particular. Mitigation should be taken to minimise this risk and so that the plan activity contributes to improving conditions at this European site and securing its viability in the long term.	The range of policies that increase total number of residents in the locality and encourage the promotion of tourism. In particular the development levels in Kendal are set out in policy CS1.2 and CS2.
River Kent SAC	AEOI has been concluded for a range of issues that may act alone or in combination. These include the possible adverse effects related to the RNRLC (abstraction and discharge affecting water levels and quality and introduction of non native invasive species) and in addition sewage treatment and network capacity	The development levels in Kendal are set out in policy CS1.2 and CS2. Redevelopment of canal now mentioned in the supporting text to CS2, in the vision for 2025, and the policy CS2

	issues.	
Morecambe Bay SPA	AEOI has been concluded. The primary reason for this is the possible impact from large renewable infrastructure projects which may through construction and operation lead to short, medium and long term effects on the *Sterna sandvicensis* (Sandwich Tern) internationally important assemblage of waterfowl and seabirds and migratory species. Negative effects are possible from a range of impacts including changes to water levels, turbidity, reduced water quality and reduction in habitat extent. In addition an increase in numbers and frequency of visitors may increase levels of disturbance around the site especially in what are currently more remote locations. Breeding terns & wintering, breeding and passage waterfowl and seabirds are vulnerable to disturbance from noise and/or physical activities.	Policy CS7.7 'Sustainable Construction, Energy Efficiency and Renewable Energy'. The delivery of new housing, economic growth and promotion of the tourism industry. This relates to much of the plan but in particular: CS1.2, CS2, CS3, CS4, CS7.6 (tourism development) and CS8.1
Morecambe Bay Ramsar	AEOI has been concluded. The primary reason for this is the possible impact from large renewable infrastructure projects which may through construction and operation lead to short, medium and long term effects on the internationally and nationally important assemblage of waterfowl and seabirds and migratory species. Negative effects are possible from a range of impacts including changes to water levels, turbidity, reduced water quality and reduction in habitat extent. An increase in numbers and frequency of visitors may increase levels of disturbance around the site especially in what are currently more remote locations. Breeding terns & wintering, breeding and passage waterfowl and seabirds are vulnerable to disturbance from noise and/or physical activities.	Policy CS7.7 'Sustainable Construction, Energy Efficiency and Renewable Energy'. The delivery of new housing, economic growth and promotion of the tourism industry. This relates to much of the plan but in particular: CS1.2, CS2, CS3, CS4, CS7.6 (tourism development) and CS8.1

In addition to the sites identified in Table 6 one policy could affect any of the European sites in and around South Lakeland: Policy CS7.7 (Opportunities of Energy and the Low Carbon Economy). Those additional sites which may be at particular risk include the Duddon Estuary SPA and Ramsar and the Leighton Moss SPA and Ramsar. Because of the policy's generic nature it does not allow for specific and detailed identification and analysis of source of impact, pathways and effects. The general type of impacts and adverse effects are likely to be those that would affect the Morecambe Bay SPA and Ramsar as discussed in section 4.5. The policy's

generic nature does not allow for a more detailed analysis and therefore we have not considered it useful to include an impact matrix for further sites which would replicate this information. The mitigation to deal with the possible adverse outcomes of this policy must be sufficient to cover all European sites for the plan to proceed without moving to Stage 3 under the Habitats Directive "alternatives". The mitigation is discussed below.

6.2 Recommendations for avoidance and mitigation

Avoidance and mitigation measures have been suggested for each site under the impact tables in Appendix 2. These mitigation measures are repeated in Table 9. The factors considered in their development are discussed here.

A number of difficulties arose when designing mitigation to adequately address the problems highlighted above. These related to:

- The remit of the planning process and what could effectively be delivered and implemented through a core Strategy;
- The level at which key decisions have or will be made and the responsibility for delivering mitigation.

In many cases there is limited scope for the Core Strategy to effectively avoid and mitigate the problem without going against government policy.

To try and tackle these problems reference has been made both to EC guidance and other AA guidance and the mitigation being proposed for other AA of spatial plans in England. The guidance from the EC and others is quoted below.

European Commission (EC) guidance is contained in two main documents. "Managing Natura 2000 Sites" (European Commission 2000) defines mitigation as being "*measures aimed at minimising or even cancelling the negative impact of a plan or project, during or after its completion*" and indicates a range of measures that mitigation can cover.

The EC document "Assessment of Plans and Projects significantly affecting Natura 2000 sites" (EC 2001) is the second main EC document on appropriate assessment, and contains more detailed advice on mitigation, indicating that it should be considered in accordance with the hierarchy of preferred options and tasks set out in the following table.

Table 7 hierarchy of mitigation options[20]

Approach to mitigation	Preference
Avoid impacts at source	Highest
Reduce impacts at source	↑
Abate impacts on site	↑
Abate impacts at receptor	Lowest

Table 8. Suggested tasks for designing mitigation measures[21]

Tasks to be completed to assess mitigation measures:

[20] EC (2001) Assessment of Plans and Projects significantly affecting Natura 2000 sites

[21] EC (2001) Assessment of Plans and Projects significantly affecting Natura 2000 sites

1. List each of the measures to be introduced (e.g. noise bunds, tree planting)
2. Explain how the measures will avoid the adverse impacts on the site
3. Explain how the measures will reduce the adverse impacts on the site
For each of the listed mitigation measures:
1. Provide evidence of how they will be secured and implemented and by whom;
2. Provide evidence of the degree of confidence in their likely success;
3. Provide a timescale, relative to the project or plan, when they will be implemented;
4. Provide evidence of how the measures will be monitored, and, should mitigation failure be identified, how that failure will be rectified.

The Scott Wilson *et al.,* guidance (2006) "Appropriate Assessment of plans reflects the European guidance (EC 2001) on mitigation, and indicates that mitigation will take a range of forms depending on the feature of interest affected. The guidance stresses that ideally mitigation measures should not merely defer the responsibility for mitigation to project level, and warns that in fact using such an approach might not be legal, as it may not allow the local authority to conclude that the plan has no adverse effects.

Table 9 has been used to try and ensure these questions regarding deliverability, responsibility and success are answered. This has been used for discussions with Natural England to confirm that as the statutory nature conservation body they are confident that the plan goes far enough in the protection of European sites. Natural England's comments on the assessment and mitigation proposed have been included in Appendix 2.

6.3 Mitigation incorporated into the plan

Version 1 of this document (Draft) was used to enable Natural England and the Environment Agency to comment and to enable discussions on amendments to the plan with South Lakeland District Council. Following discussions South Lakeland District Council have adopted all the measures as suggested to mitigate against adverse effects identified. The list of mitigation measures incorporated has been added within Table 9 and under each site assessment in Appendix 2.

6.4 Final conclusions

This Appropriate Assessment Report constitutes a record of the appropriate assessment required by Regulation 85B of the Conservation (Natural Habitats, &c.) (Amendment) regulations 2007, undertaken by South Lakeland District Council in respect of the South Lakeland Core Strategy, in accordance with the Habitats Directive (Council Directive 92/43/EEC).

Following the incorporation of mitigation measures into the Core Strategy the plan can be deemed not have an adverse effect on the integrity of European sites.

However, for much of the mitigation effective delivery is dependant on other factors and parties other than the Core Strategy and South Lakeland District Council. The final column in Table 9 considers how mitigation should be implemented and failure addressed.

Although there is no legal requirement under the Habitats Directive to monitor the effects of the plan and success of mitigation, we suggest the following is needed to better inform the AA of future revisions of the strategy.

- Information on visitor numbers and activities, and on enforcement of byelaws and zoning of areas to protect Morecombe Bay SAC/ SPA/ Ramsar – Natural England and the Morecambe Bay Partnership may be in the best position to collect this information.
- Information on planning application for energy projects and accompanying environmental assessments and appropriate assessments – South Lakeland District Council should collect information on applications in and around South Lakeland to help inform future assessments under the Habitats Regulations; and
- Information on improvements to sewage network and the Kendal WwTW – the Environment Agency and United Utilities already collate this information and should be able to provide this for future assessments.

Under the SEA Directive (2001/42/EC) local planning authorities (LPAs) are required to monitor the significant effects of implementation of the plan. LPAs are also required to produce an Annual Monitoring Report (AMR) to assess progress in implementation of the Core Strategy. We recommend that the South Lakeland District Council discusses with Natural England the inclusion of "significant effect indicators" in the AMR to monitor the change in pressures on sites that have in examined in this report and are in part associated with the development proposed in the plan. Better knowledge of impact pressures (for example; visitor numbers, and types of activity) as well the condition of sites would enable a more quantifiable assessment of future revisions.

The appropriate assessment carried out for the Core Strategy DPD does not preclude the need for consideration of other DPDs and projects against the requirements of the Habitats Directive. However, the process has been successful in dealing with issues that are appropriately managed through the Core Strategy and it has met with the requirements of the Habitats Regulations through modification to policy as necessary.

Table 9. Avoidance and mitigation measures

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
MORECAMBE BAY SAC Increase in residents and visitors → Activities and parking on designated habitat areas→ direct damage to designated habitat	Recommended Mitigation delivered to a degree through CS8.3b (Quantity Of Open Space, Sport And Recreation), CS8.4 Biodiversity & Geodiversity and CS8.5 (Coast). Access to the beach and foreshore needs to be controlled to prevent damage to habitats and disturbance. The Morecambe Bay Strategy and the solutions to managing disturbance which are recommended there (e.g. zoning of activities) need to be referenced. The recommendations here could form the basis for discussion with developers on what is needed to increase handling capacity at sites without adverse effects. For example, better interpretation should be provided to encourage visitors to understand the special features of the protected sites. Responsible recreational use should be encouraged through positive information provision. Natural England need to be involved in these discussions and delivery on the ground. Included within the Core Strategy: Reference to assessing the effects of increased visitors, solutions to managing disturbance proposed in the Morecambe Bay Strategy and need to engage with Natural England have been added to Policy CS8.4 (Biodiversity & Geodiversity) and Policy CS8.5 Coast. The Core Strategy now	These measures are types of mitigation that seek to reduce future pressure and protection site. Does not eliminate the likelihood of any effects.	The Council will be instrumental in the delivery of the open space targets. Whether other measures are successful in reducing damage to site depends on a wide range of factors and different parties. Making addition money available through planning conditions for biodiversity enhancement or protection is the first step. Its effectiveness depends on the involvement of the Morecambe Bay Partnership, local people and Natural England.	Difficult to assess the degree to which these mitigation measures will manage or neutralise the increased impact related to more visitors at the site. Creating addition (or alternative) open space is likely to be achieved but its effectiveness in reducing pressure at the site is uncertain. The effect to which visitors continue to damage the site should be noted as part of the monitoring carried out by Natural England. If evidence suggested that the Core Strategy was responsible in part for adverse effects, at the most extreme the delivery of further housing growth may have to be challenged in future revisions. This goes against national policy so it is more likely that stricter more effective mitigation in terms of zoning and byelaws will be needed to be enforced. Natural England may be the organisation to bring

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
	supports stricter mitigation measures in terms of zoning and byelaw enforcement to protect Morecombe Bay SAC through the addition of specific text in CS8.5			forward these byelaws but discussions would need to take place between the responsible authority (SLDC) and Natural England how the Core Strategy should support such measures.
MORECAMBE BAY SAC Construction and operation of renewable energy infrastructure →Changes to water levels, turbidity, reduced water quality and immersion or destruction in habitat → decrease in extent of habitats and change in structure and function of habitats for which the sites designated	Recommended: Add additional text to CS7.7 to recognise the international importance of much of the coastline and upland areas and to highlight that Projects should avoid significant adverse effects on sites of international nature conservation importance by assessment under the Habitats Regulations. Included within the Core Strategy: Suggested text added to CS7.7.	Down the line' caveat which seeks to avoid adverse effects which are currently unknown in detail.	Puts all the emphasis on the developer to produce schemes that do not have an adverse effect or meet the requirements of Article 6.4.	Ideally this will be successful. However this really only repeats national policy. The key decision regarding the support for renewable energy in this area has been made at the national level and regional level and the capacity to which this area can support this infrastructure without adverse effects still needs to be tested. Outcomes from planning permissions should feedback into future revisions of the plan to provide a better certainty of where and what isn't acceptable.
MORECAMBE BAY PAVEMENTS SAC Increase in residents and visitors →Increase in trampling and dog fouling at site on designated habitat areas→ direct	Recommended: Possible mitigation measures are access management, habitat management and provision of alternative recreational space. CS8.3b should help to reduce an increase in daily numbers to the site by providing locally accessible	It will be impossible to altogether avoid additional recreational impacts through changes to the Core Strategy, unless 1. no additional housing is	The Council will be instrumental in the delivery of the open space targets. Whether other measures are successful in	This is not a significant issue at present. Delivery of alternative open space and policies on biodiversity enhancement, along with appropriate management may be effective in avoiding future impacts. This issue and site

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
damage and change in plant communities	open space for new and existing residents. In addition, some of the money from developer contributions should be allocated to improving existing open space (including at European sites) where maintenance and improvements are needed. This could be added to policy CS8.3b or policy CS8.4. Access management possibilities could include fencing to close of parts of the site. Habitat management might include surfacing and maintenance of paths. Provision of sites and dog bins to encourage walkers to remove dog faeces would help. All these measures are difficult to deliver with certainty through the Core Strategy but the issue should be highlighted. Included within the Core Strategy: Text has been added to CS8.3b to require developers to improve existing open space. The issue of visitor pressure on European sites and the need to assess it has been incorporated within CS8.4	permitted, and 2. no support is given to outdoor recreation. Neither is acceptable nationally. As such, the best the core strategy can do is mitigate recreational impacts.	reducing damage to site depends on a wide range of factors and different parties. Making addition money available through planning conditions for biodiversity enhancement or protection is the first step. Its effectiveness depends on the involvement of the Morecambe Bay Partnership, local people and Natural England.	should be reconsidered in any future revisions on the Core Strategy
RIVER KENT SAC Abstraction for the RNRLC →alteration of water levels on the River Kent→ white-clawed crayfish populations	Recommended: Remove the ambiguity that the Core Strategy is providing consent for the canal restoration, the text under CS2 that refers to regeneration of this area should refer simply to the regeneration of the	Potentially avoidance. As details of the Kent Canal Head still being decided by AAP development, it's	This issue is being decided and implemented by the South Lakeland District council	Success for Core Strategy likely To be decided through AA of AAP.

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
and populations of freshwater pearl mussels - affected by reduced flows both directly (changes in extent of bed and type of substrate) and indirectly (through changes in brown trout on which the mussels depend);	'Kendal Canal Head area' and not the restoration of the canal. If support for the RNRLC is removed from the Core Strategy and only the regeneration of the area backed then is issue and all the alternatives can be appropriately tested through the AAP. Included within the Core Strategy: Suitable information added to supporting text under CS2 to make clear that the Core Strategy does not consent the development of the canal, that further work is need through the AAP and that issues including the adverse effects on the SAC mean that alternatives to canal restoration may need to be brought forward.	logical to ask: "could the CS policy be implemented through this AAP without a significant impact on European sites?		
RIVER KENT SAC Increase in number of homes in Kendal →overloading of sewer network and WwTW→reduction in water quality leading to mortality of oxygen deficit and mortality of white clawed crayfish and brown trout	Recommended: Until the problems at Kentrigg Walk and Steeles Row Burneside are resolved the core strategy needs to set out that there should be: • No further development above these sewer bottlenecks that adds additional flow to the sewer above these bottlenecks. For the general sewage capacity and the capacity of the WwTW, until UU can demonstrate that further development can be accommodated the Core Strategy should:	Avoidance and mitigation. Phasing of development will avoid issue at pinch points. SUDS and other measures will act is mitigation to reduce further pressure on future capacity	Can be implemented and monitored by South Lakeland DC along with the Environment Agency and United Utilities	Success likely Phasing of development and comprehensive application of mitigation measures will avoid CS contributing to problem

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
	• Make clear the need for new waste-water treatment infrastructure; • Emphasise the need for development to incorporate separate systems, sustainable drainage systems, sewer requisitioning to a more suitable point; and Emphasise the timing implications associated with the provision of new resource infrastructure, and consequent implications for the phasing of new housing and other development. Included within the Core Strategy: Text added to CS2 which incorporates mitigation recommended above. Reference to requirement for SUDS and the pressure on the existing sewage network and wastewater treatment works in Kendal also included in supporting text for policy CS2.			
RIVER KENT SAC RNRLC → spread of signal crayfish and associated plague from the Lancaster Canal to the River Kent→100% mortality of white-clawed crayfish	Recommended: Remove the ambiguity that the Core Strategy is providing consent for the canal restoration, the text under CS2 that refers to regeneration of this area should refer simply to the regeneration of the 'Kendal Canal Head area' and not the restoration of the canal. If support for the RNRLC is removed from the Core	Potentially avoidance. As details of the Kent Canal Head still being decided by AAP development, logical to ask: "could the CS policy be implemented through this AAP without a	This issue is being decided and implemented by the council	Success for core strategy likely To be decided through AA of AAP.

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
	Strategy and only the regeneration of the area backed then is issue and all the alternatives can be appropriately tested through the AAP. Included within the Core Strategy: Suitable information added to supporting text under CS2 to make clear that the Core Strategy does not consent the development of the canal, that further work is need through the AAP and that issues including the adverse effects on the SAC mean that alternatives to canal restoration may need to be brought forward.	significant impact on European sites?		
MORECAMBE BAY SPA AND RAMSAR Increase in residents and visitors → increase in non physical disturbance → increase in disturbance to breeding terns & wintering, breeding and passage waterfowl and seabirds →impact on bird numbers	Recommended: Possible mitigation measures are access management, habitat management and provision of alternative recreational space. CS8.3b should help to reduce an increase in daily numbers to the site by providing locally accessible open space for new and existing residents. Core Strategy should make reference to the Morecambe Bay Strategy and the solutions to managing disturbance which are recommended there as these have been developed by a wide range of stakeholders. These solutions should be considered as measures that might be considered as planning conditions when granting permissions for developments in and around the Morecambe	These measures are types of mitigation that seek to reduce future pressure and protection site. Does not eliminate the likelihood of any effects.	The Council will be instrumental in the delivery of the open space targets. Whether other measures are successful in reducing damage to site depends on a wide range of factors and different parties. Making addition money available through planning conditions for biodiversity enhancement or	Difficult to assess the degree to which these mitigation measures will manage or neutralise the increased impact related to more visitors at the site. Creating addition (or alternative) open space is likely to be achieved but its effectiveness in reducing pressure at the site is uncertain. The sources and effects of disturbance are hard to quantify on such a large site. Stricter more effective mitigation in terms of zoning and byelaws

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
	Bay European site. Natural England need to be involved in these discussions and delivery on the ground. The capacity of European sites to receive and increase in visitors without a corresponding increase in level of impact needs to be examined. The text to CS8.4 should make reference to this issue as a problem that requires attention by all development proposals Included within the Core Strategy: Reference to assessing the effects of increased visitors, solutions to managing disturbance proposed in the Morecambe Bay Strategy and need to engage with Natural England have been added to Policy CS8.4 (Biodiversity & Geodiversity) and Policy CS8.5 Coast. The Core Strategy now supports stricter mitigation measures in terms of zoning and byelaw enforcement to protect Morecombe Bay through the addition of specific text in CS8.5		protection is the first step. Its effectiveness depends on the involvement of the Morecambe Bay Partnership, local people and Natural England.	may be needed to enforce protection of certain areas if incidents of disturbance and activities causing disturbance rise. Natural England may be the organisation to bring forward these byelaws but discussions would need to take place between the responsible authority (SLDC) and Natural England on how future revisions to the Core Strategy might support these measures.
MORECAMBE BAY SPA AND RAMSAR Development of Renewable Energy Infrastructure - Changes to	Recommended: Add additional text to CS7.7 to recognise the international importance of much of the coastline and upland areas and to highlight that	down the line' caveat which seeks to avoid adverse effects which are currently unknown in detail.	Puts all the emphasis on the developer to produce schemes that do not have an adverse effect or	Ideally this will be successful. However this really only repeats national policy. The key decision regarding the support for renewable energy in this area has

European site & summary of source and effect of impact	Mitigation measures recommended and included	Avoidance or mitigation? Will they avoid or reduce affects?	How and who will they be implemented by:	Degree of confidence in success and how any mitigation failure will be addressed
water levels, turbidity, reduced water quality, reduction in habitat extent, disturbance of roosting and feeding areas → impact on bird numbers	Projects should avoid significant adverse effects on sites of international nature conservation importance by assessment under the Habitats Regulations. Included within the Core Strategy: Suggested text added to CS7.7.		meet the requirements of Article 6.4.	been made at the national level and regional level and the capacity to which this area can support this infrastructure without adverse effects still needs to be tested. Outcomes from planning permissions should feedback into future revisions of the plan to provide a better certainty of where and what isn't acceptable.

7 Glossary

Appropriate Assessment (AA)	An assessment of the effect of a plan or project on the Natura 2000 network. The network comprises Special Protection Areas under the Birds Directive and Special Areas of Conservation under the Habitats Directive (collectively referred to as European sites)
Avoidance	Prevents impacts on European sites from happening in the first place.
Compensation	Off-site offsetting put in place where a significant impact will occur, where there is no alternative, and where the plan is deemed necessary.
Competent authority	The plan-making / decision-making authority. In relation to land use plans this are the Regional Assemblies, County Councils and Local Authorities.
Conservation Objectives	A statement of the nature conservation aspirations for a site, expressed in terms of the favourable condition required for the habitats and / or species for which the site was selected.
European sites	Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). Includes Ramsar sites in this report.
Favourable condition	Designated land is adequately conserved and is meeting its 'conservation objectives', however, there is scope for enhancement.
Habitats Directive	Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna.
Habitats Regulations	Formally known as the Conservation (Natural Habitats, & c.) Regulations 1994. These transpose the requirements of the Habitats Directive into domestic legislation.
Imperative reasons of	The Habitats Regulations require competent

overriding public interest (IROPI)	authorities to establish that there are no alternative solutions before a plan or project can be considered for imperative reasons of overriding public interest. Judgements involve an assessment of the importance of the proposal and whether it is sufficient to override the nature conservation importance of that site.
In-combination	The cumulative effects caused by the project or plan that is currently under consideration, together with the effects of any existing or proposed projects or plans.
Integrity	The integrity of a site is the coherence of its ecological structure and function, across its whole area that enables it to sustain the habitat, complex of habitats and / or the levels of populations of the species for which it was classified.
Local Development Document (LDD)	These include Development Plan Documents (which form part of the statutory development plan) and Supplementary Planning Documents (which do not form part of the statutory development plan). LDDs collectively deliver the spatial planning strategy for a local planning authority's area.
Member State	Nation state member of the EU
Mitigation	Reduces the impact on site integrity to the point where it no longer has adverse effects.
Natura 2000	A Europe-wide network of sites of international importance for nature conservation established as under the European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC; 'Habitats Directive'). This has been transposed into UK law as the Conservation (Natural Habitats &c.) Regulations (1994; 'Habitats Regulations').
Natural England	Natural England works for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; promote

	access, recreation and public well-being. Natural England was formed by bringing together English Nature, the landscape, access and recreation elements of the Countryside Agency and the environmental land management functions of the Rural Development Service.
Precautionary principle	Prudent action which avoids the possibility of irreversible environmental damage in situations where the scientific evidence is inconclusive but the potential damage could be significant.
Priority Habitat / Species	Habitats and species identified by the Habitats Directive as being of priority importance. Twenty-three of the UK's 76 habitats are highlighted as important under the Habitats Directive priority habitats.
Qualifying Interest Feature	The reasons why the European site has been recommended for designation (e.g. the endangered species that occupy the SAC; rare habitats that occur there; or threatened birds that breed or over-winter in the SPA).
Ramsar sites	Sites designated as internationally important wetland habitats under the International Convention on Wetlands of International Importance (1976) (Ramsar Convention).
Screening	The process of deciding whether or not a plan or project requires an Appropriate Assessment
Site of Special Scientific Interest (SSSI)	UK national designation identified under the Wildlife and Countryside Act (1981) as being important for wildlife and/or geology. Over half of these sites, by area, are internationally important for their wildlife, underpinning the network of Natura 2000 sites, designated as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites.
Special Area of	Site of European importance for nature conservation

Conservation (SAC)	designated under the Conservation of Natural Habitats and Wild Flora and Fauna Directive (92/43/EEC).
Special Protection Area (SPA)	Site of European importance for nature conservation designated under the Conservation of Wild Birds Directive (70/409/EEC).

8 References

Environment Agency (2008) letter to Ove Arup & Partners Ltd regarding the Draft AA of the Kendal Canal Head AAP and Phase 1 RNRLC.

EA (2009) Email correspondence regarding network capacity at Kendal and Burneside

European Commission (2000) Managing Natura 2000 Sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

European Commission (2001) Assessment of Plans and Projects significantly affecting Natura 2000 sites

Kendal Canal Head Area Action Plan. Preferred Options Report (April 2008).

Levett Therivel, Scott Wilson & Treweek Environmental (2007) Appropriate Assessment of the Draft North West Plan Final Report

Levett-Therivel and Treweek Environmental Consultants (2007) Appropriate Assessment of the Liverpool Core Strategy

Morecambe Bay European marine site. English Nature's advice given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994. Issued 14 January 2000

JNCC (2009) Natura 2000 Standard Data Forms

Ove Arup & Partners Ltd (2009) Letter regarding the EA's response to Kendal Canal Head Area Action Plan Phase 1 Restoration of the Northern Reaches of the Lancaster Canal, Draft Appropriate Assessment under the Habitat Regulations

RSPB (2007) Appropriate Assessment of Spatial Plans in England. A guide to why, when and how to do it.

Scott Wilson et al (2007) Appropriate Assessment of the Draft North West Plan. Final Report

SSSI condition summary 01 April 2009. Sourced on the 15th May from: http://www.sssi.naturalengland.org.uk/special/sssi/reportAction.cfm?report=sdrt18&category=S&reference=1001960

TEC (March 2008) Appropriate Assessment Screening of South Lakeland District Council's Core Strategy

UU (2009) Email correspondence RE: Waste water treatment and network capacity at Kendal