North Yorkshire County Council

North Yorkshire County Council

Local Flood Risk Management Strategy

Strategic Environmental Assessment

Volume III: Supporting Assessments (Consultation Draft Version)

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Business and Environmental Services

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Volume III: Contents

Appendix 5: Habitats Regulations Assessment – Likely Significant Effects Assessment

1 Introduction

Under the provisions of the Flood and Water Management Act (2010), North Yorkshire County Council (NYCC), as a Lead Local Flood Authority (LLFA), is required to produce a Local Flood Risk Management Strategy (LFRMS) in partnership with the seven district and borough councils of North Yorkshire (Harrogate, Selby, Hambleton, Ryedale, Richmondshire, Scarborough and Craven). The Local Flood Risk Management Strategy will set out how NYCC will manage flood risk from all types of flooding, including flooding from surface runoff, groundwater and ordinary watercourses, for which the County Council has a responsibility as Lead Local Flood Authority, and other types of flooding where local agents can play a supporting role to lead agencies.

A Strategic Environment Assessment (SEA) has been undertaken in relation to the LFRMS which can be viewed in Volume 1 of this Report. However, there is also a requirement under European and UK legislation to undertake a Habitats Regulations Assessment on the plan. While SEA is an iterative process that seeks to improve the environmental performance of a plan and reduce or mitigate for any deleterious environmental effects, Habitats Regulations Assessment is a test of the effect of the plan on the integrity of European Nature Conservation Sites (referred to from this point on as 'European sites')[1]. In this sense the objectives of the Habitats Regulations Assessment process undertaken in this report are simply to test whether the Local Flood Risk Management Strategy will have a significant effect on European Nature Conservation Sites and, if it does, can that effect be reduced to levels that are below a significant level.

This report assesses the likely significant effects from objectives and actions described in the LFRMS. It builds on an earlier consultation that was undertaken on the methodology of this Habitats Regulations Assessment, and puts the first stages of that methodology into effect in order to show any likely significant effects that may arise from implementation of the plan, in combination with other plans or projects. It also describes any avoidance measures or mitigation that could be pursued at an early stage and states whether an appropriate assessment under the Regulations is necessary and, if so, what its scope should be.

This report contains the following sections:

- Section 2 provides a description of the Plan being assessed, in this case the Local Flood Risk Management Strategy;

- Section 3 of this report describes the legislative context to Habitat Regulations Assessment and outlines the key stages in the assessment process and the approach that will be undertaken, consistent with the considered views of consultees that have already commented on the earlier HRA methodology report;

[1] In this report European Nature Conservation Sites, namely Special Protection Areas and Special Areas of Conservation, are considered alongside international Ramsar Wetland Sites, consistent with UK Government Policy

- Section 4 identifies and describes the European and Ramsar sites (or ‘receptors’) that may be affected by the LFRMS;

- Section 5 presents the findings of the screening assessment for likely significant effects on European Sites both alone and in combination with other plans and projects;

- Section 6 sets out the conclusions of the assessment and any mitigation and avoidance measures that could be implemented to reduce the significance of effects on European Sites.

2 Local Flood Risk Management Strategy

In 2010 The Flood and Water Management Act came into force in (England and Wales). This built upon some of the proposals set out in a suite of Government sponsored reports that were published in the wake of a series of flood events, including the Government's Water Strategy for England: 'Future Water', 'Making Space for Water' and the UK Government's response to Sir Michael Pitt's Review of the Summer 2007 floods[2].

Under the provisions of the Act, North Yorkshire County Council, as a Lead Local Flood Authority (LLFA), is required to produce a Local Flood Risk Management Strategy (LFRMS) in partnership with the seven district and borough councils of North Yorkshire (Harrogate, Selby, Hambleton, Ryedale, Richmondshire, Scarborough and Craven). The Local Flood Risk Management Strategy will set out how North Yorkshire County Council will manage flood risk from surface runoff, groundwater and ordinary watercourses and support other agencies as they manage other forms of flood risk.

The LFRMS must be consistent with the National Flood and Coastal Erosion Risk Management Strategy (FCERM) – which is applied and monitored by the Environment Agency and provides a strategy for the management of risk of flooding from the sea, main rivers and reservoirs.

The LFRMS needs to support the FCERM strategy by setting objectives and actions that are consistent with national policy. The objectives and actions must also be locally applicable and credible if stakeholders and communities are to be engaged in implementing the flood risk management activities that are set out within the LFRMS.

The LFRMS is divided into two parts, a Policy Framework document and a Strategic Action Plan. The LFRMS Policy Framework identifies six strategic objectives for managing flood risk:

- A greater role for communities in managing flood risk
- Improved knowledge and understanding of flood risk and management responsibilities within NYCC and amongst partners, stakeholders, communities and the media
- Sustainable and appropriate development utilising sustainable drainage where ever possible
- Improved knowledge of watercourse network and drainage infrastructure
- Flood risk management measures that deliver social, economic and environmental benefits
- Best use of all potential funding opportunities to deliver flood risk management measures

[2] HM Government, 2010, Flood and Water Management Act, 2010 Explanatory Notes [URL: http://www.legislation.gov.uk/ukpga/2010/29/notes/division/2]

These objectives are supported by an action plan of measures and actions that NYCC are pursuing in order to ensure effective flood risk management across North Yorkshire. The action plan will be a living document that will be regularly amended and updated to reflect the changing nature of flood risk priorities. The action plan consists of 17 actions split in to four different categories, prevention of risk, protection from risk, preparing for risk and recovery and review of risk. These 17 actions are listed an assessed for likely significant effects on Natura 2000 site in Table 7 of this report.

The LFRMS will also include the preparation of lower tier Operational Catchment Action Plans for each catchment within North Yorkshire and working with neighbouring Lead Local Flood Authorities where catchments cross into other authority areas. The timescale for completion of these catchment level plans is anticipated to be Autumn 2015.

3 Habitats Regulations Assessment Methodology and details of Consultation to Date

3.1 The Habitats Directive and the Requirement to Undertake Appropriate Assessment

The United Kingdom is subject to Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora, which is often referred to as the Habitats Directive. The principal aim of the Directive is to promote biodiversity *'by requiring Member States to take measures to maintain or restore natural habitats and wild species listed in the Annexes to the Directive at a favourable conservation status'* (JNCC, 2012a)[3]. Amongst the measures the Directive requires to achieve this is the creation of *'a coherent European ecological network of special areas of conservation'*. This network also includes Special Protection Areas (SPAs) for birds, designated under Directive 79/409/EEC ('The Birds Directive') and is termed the Natura 2000 Network.

Article 6(3) of the Directive puts in place requirements on certain plans and projects:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to ***appropriate assessment*** *of its implications for the site in view of the site's conservation objectives".*(European Commission, 1992)[4]

3.2 The Conservation of Habitats and Species Regulations, 2010 (as amended)

The Habitats Directive was transposed into UK law in 1994 as the Conservation (Natural Habitats &c) Regulations, 1994. These Regulations were amended on a number of occasions in the years following 1994 and in 2010 the Government chose to consolidate the various amendments to the Regulations via 'the Conservation of Habitats and Species Regulations, 2010'. Paragraph 61 sets out the requirements for the undertaking of appropriate assessment where a plan '*is likely to have a significant effect on a European Site or a European Offshore Marine Site (either alone or in combination with other plans or projects)'.*

The Regulations also provide clarity on what is meant by 'European Site' under Regulation 8. This includes both terrestrial and marine Special Protection Areas (SPAs), Special Areas

[3] jncc.defra.gov.uk/page-1374

[4] European Commission, 1992. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0043:EN:HTML] (accessed 09 May, 2012)

of Conservation (SACs), Sites of Community Importance (SCIs)[5] potential SACs (pSACs) and potential SPAs (pSPAs).

The Conservation of Habitats and Species (Amendment) Regulations 2012 update the 2010 Regulations. While this legislation makes significant changes to the implementation of the Birds Directive in the UK, including a requirement for competent authorities to avoid pollution or deterioration of bird habitat wherever it may occur[6], the protocols for undertaking Appropriate Assessment, at least in terms of the Local Flood Risk Management Strategy, remain the same.

What is a 'European Site'?

According to the Joint Nature Conservation Committee, which is the public body that advises the UK Government on UK-wide and international nature conservation, European sites include:

Special Areas of Conservation – *'strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annex 1 and II of the Directive (as amended)'.*

Special Protection Areas – *'strictly protected sites classified in accordance with Article 4 of the EC Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species'.*

Although not designated under European legislation **Ramsar Sites** are also considered as European sites in this assessment. These are wetlands of international importance designated under the Ramsar Convention on Wetlands that was established in Iran in 1971.

Sources: JNCC, undated. Special Areas of Conservation [URL: jncc.defra.gov.uk/default.aspx?page=23] / JNCC, undated. Special Protection Areas [URL: jncc.defra.gov.uk/default.aspx?page=162], Wetlands International, undated. Ramsar Wetland Data Gateway [URL: sedac.ciesin.columbia.edu/ramsardg/]

3.3 Consideration of Ramsar Sites and Other Sites

Unlike European sites, Ramsar sites are sites of international, rather than just European, importance, designated for wetlands. In practice in the UK most Ramsar sites also receive

[5] SCIs are sites that have been adopted by the European Commission but are not yet formally designated by the European Commission

[6] This requirement will be addressed, where it exists outside of the Natura 2000 / Ramsar network, in the accompanying Sustainability Appraisal to the Waste Core Strategy.

protection as Special Protection Areas. However, paragraph 118 of the Government's National Planning Policy Framework gives Ramsar sites and proposed Ramsar sites the same protection as European sites. The NPPF also states that pSACs[7], pSPAs[8] and 'sites identified, or required*' as compensatory measures for adverse effects on European sites'* should be given the same protection as European sites. While the Local Flood Risk Management Strategy is not a planning document, and thus not regulated by the NPPF, the NPPF is taken as reflective of wider Government policy. To address this indication of policy all Ramsar sites, where they lie in the study area (see section 4), will be considered alongside European sites, terrestrial or marine, in this assessment.

At the time of writing there are a number of Ramsar sites in the study area (see figure 4), and an additional pSPA and pSAC have also been identified (see Section 4.2 and Appendix 5.3 for further details).

As previously mentioned, for reasons of brevity, when this report refers to European sites, Ramsar sites are included in that definition.

3.4 A Staged Approach to Appropriate Assessment: Habitats Regulations Assessment

The Habitats Regulations refer to the undertaking of 'appropriate assessment' in relation to plans and projects. However, in practice many organisations have addressed the requirement to undertake appropriate assessment via a series of steps. For instance, it is necessary to first determine the extent to which plans require appropriate assessment before the assessment can practically proceed, and to do this it is necessary to assess whether significant effects on European sites are likely and to establish what the 'appropriate assessment' itself should focus on. Following this an appropriate assessment report may be drafted that considers the effects of the plan on the integrity of European sites. In some cases, where no alternative solutions can be found, it will be necessary to undertake further work to identity the extent to which a plan should proceed because of imperative reasons of overriding public interest.

Since the appropriate assessment proper is a discreet stage of a potentially multi-staged process, to avoid confusion the process as a whole is usually referred to as Habitats Regulations Assessment.

In this assessment we have divided the full Habitats Regulations Assessment Process, including appropriate assessment, into 4 key stages, as illustrated by Table 1, below. This report documents the undertaking of Stage 2 (and includes a refined version of the outcomes of Stage 1) of this Habitats Regulations Assessment Process.

Table 1: Habitats Regulations Assessment: Key Stages

[7] Possible SACs
[8] Potential SPAs

Stage 1		Progress
Pre Screening and Scoping	A. Identify whether the plan is subject to Habitats Regulations Assessment B. Identify international sites in and around the plan area C. Identify the conservation objectives and threats to site integrity of European sites D. Establish the methodology for undertaking the Assessment	Undertaken in previous scoping and methodology report and refined as a result of consultation for inclusion in this report.
Stage 2		
Screening for likely significant effect	A. Identify potential effects on European sites and the possible way in which this might affect conservation objectives B. Examine other plans and programmes that could contribute to 'in combination' effects C. Make a high level assessment of whether significant effects can be ruled out by making adaptations or adjustments to the plan.	Undertaken in this Likely Significant Effects report.
	If no effects are likely – report no significant effects *If effects are judged likely or any uncertainty exists – the precautionary principle applies - proceed to* ***Stage 3***	
Stage 3		
Assessment under Regulation 61 of the Habitat Regulations, 2010: Appropriate Assessment	Consider how the elements of the plan identified as potentially having likely significant effects 'in combination' with other plans and programmes will cause direct and indirect effects on the integrity of European sites in light of their conservation objectives (the 'Appropriate Assessment'). Consider how any effects on the integrity of a site could be avoided by changes to plan and the consideration of alternatives Develop mitigation measures (including timescale and mechanisms) Report outcomes of Appropriate Assessment including mitigation measures, consult with Natural England, the Environment Agency and wider (public) stakeholders as necessary	This will be undertaken prior to the finalisation of the LFRMS where necessary

	• *If plan will not have an adverse effect on the integrity of European sites alone or in combination with other sites (the AEoI[9] decision) proceed without further reference to Habitat Regulations* • *If effects or any uncertainty remains following the consideration of alternatives and development of mitigation measures proceed to* ***Stage 4***	
Stage 4		
Procedures where adverse effect on integrity of international site remains **(Derogations)[10]**	If impacts remain, a plan or programme can only proceed provided a series of 'sequential tests' (Habitat Directive's article 6 (4) derogation requirements) are satisfied. These are: Test 1: There must be no feasible alternative solutions to the plan or project which are less damaging to European Sites; Test 2: There must be 'imperative reasons of overriding public interest' (IROPI) for the plan or project to proceed; Test 3: All necessary compensatory measures must be secured to ensure that the overall coherence of the network of European Sites is protected.	This will be undertaken prior to adoption of the LFRMS where necessary

3.5 Source – Pathway – Receptor Approach

While Table 3 sets out the broad steps that will be undertaken in this assessment, in our initial screening / scoping report we suggested that an underlying principle of the assessment is that a '*source – pathway –receptor'* approach will be followed to establish whether significant effects will occur or are likely.

A 'source-pathway-receptor' approach is often used in environmental risk management. It is a way of developing a conceptual understanding of how environmental harm can occur.

It stands to reason that if environmental or any other form of hazard is to occur it must come from somewhere. For instance a water pollution incident wouldn't occur unless there is some

[9] 'The AEoI decision' is used in Defra's draft guidance and refers to deciding whether or not the Strategy will result in 'adverse effects on integrity'.

[10] A derogation is a provision that often features in EU legislation that allows part or all of a legal measure to be applied differently or not at all. In the case of the Habitats Directive the satisfaction of the three tests outlined in Table 1 enable plans or projects to be adopted in spite of a likely effect on European Sites.

source or causal agent for that pollution (e.g. agricultural run off or an industrial facility). This is the **source.**

Environmental hazards would not present any problems unless there were a **receptor**, or a place that would be vulnerable to damage, that would be damaged when exposed to whatever hazard originates from the source. So an already sterile water body would be unlikely to be significantly affected by a pollution incident, whereas a freshwater ecosystem that relies on high water quality may be significantly affected by water pollution. However, there may also be secondary environmental effects if the water body drains to a location which is sensitive to pollution.

If, however, a sump or interceptor collected the pollution before it entered the water body receptor then significant effects on any ecosystem would be unlikely to occur. This is because there is no **pathway** by which the hazard (pollution) can reach the receptor (the freshwater ecosystem).

Where the European sites are considered vulnerable to certain impacts those impacts can only be considered possible where there is a source for that impact and a pathway to the receptor (the European site or species associated with it).

Chapter 4 of this report focuses on the identification of receptors and the extent that they are vulnerable to external impacts, while Chapter 5 assesses likely significant effects to those receptors arising from the source (the LFRMS). In this way it will be possible to consider whether actions in the LFRMS have the potential to be sources of potential impacts and whether a pathway exists between the spatial manifestation of potential impacts and European sites.

Outcome of Consultation exercise on Scoping and Methodology report

A consultation on a scoping report for the Strategic Environmental Assessment of the LFRMS was held between 19th July 2013 and the 23rd August 2013[11]. This report included a Scoping and Methodology Report for this Habitats Regulations Assessment. Appendix 5.1 sets out the response that was received.

Overall 7 parties responded to the consultation, of which 2 referred to the HRA scope / methodology. The contents of this report have been informed by the consultation comments received. Both parties agreed that Habitats Regulations Assessment was necessary for the LFRMS.

[11] Full details of the consultation can be found in the Environmental Report produced as part of the SEA.

4 International Sites Scoped into this Assessment and Considerations in Relation to Integrity

4.1 Area of Study

The Plan Area of the LFRMS is shown at Figure 1 and covers the whole of North Yorkshire County.

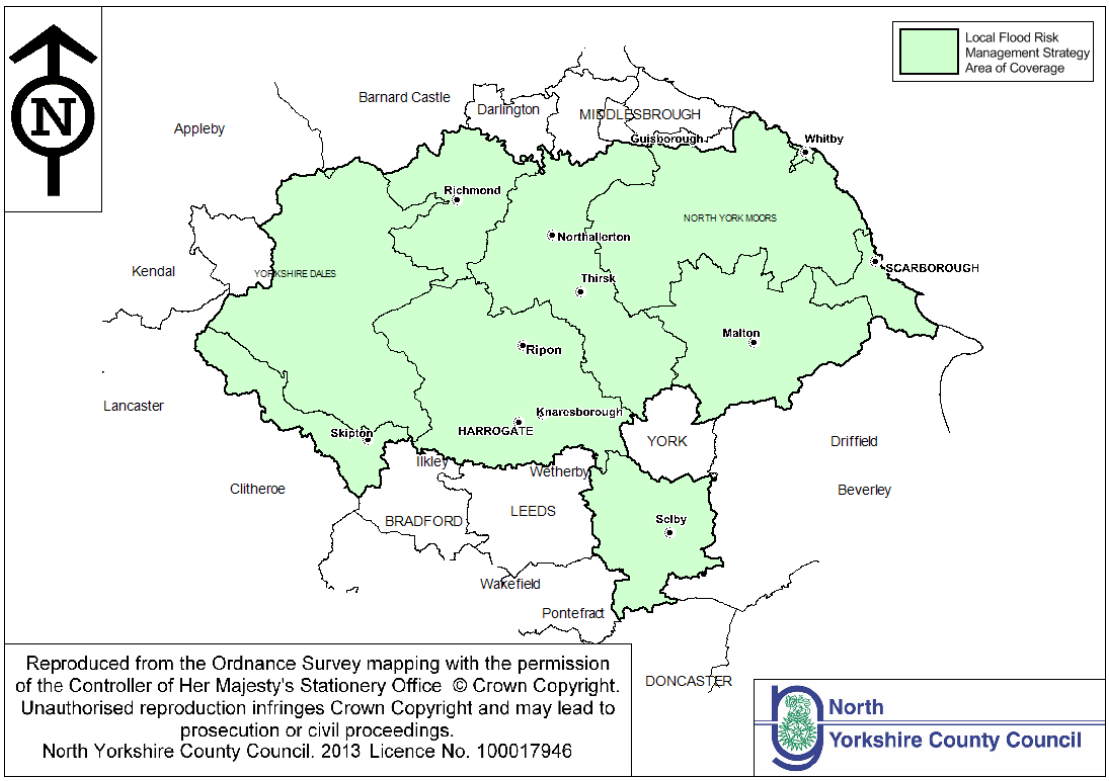

Figure 1: The County of North Yorkshire and area covered by the Local Flood Risk Management Strategy

The European sites to be considered in this assessment, together with Ramsar Sites[12] are shown in Figures 2, 3 and 4 below.

Because impacts from flood risk activity can occur beyond the administrative boundary of the county, provided there is a pathway between the source of impacts and a European / Ramsar Site, a 15km buffer has been applied to the outer boundary of the LFRMS area and the European / Ramsar Sites within that buffer are also considered. However, it should be noted that for certain impacts, longer range pathways may exist. These will be investigated on a case by case basis.

4.2 European and Ramsar Sites

[12] See section 1.2.3 for a full list of designations considered in this assessment

Figures 2 to 4 and Tables 2 to 4 List SACs, SPAs and Ramsar sites considered in this assessment.

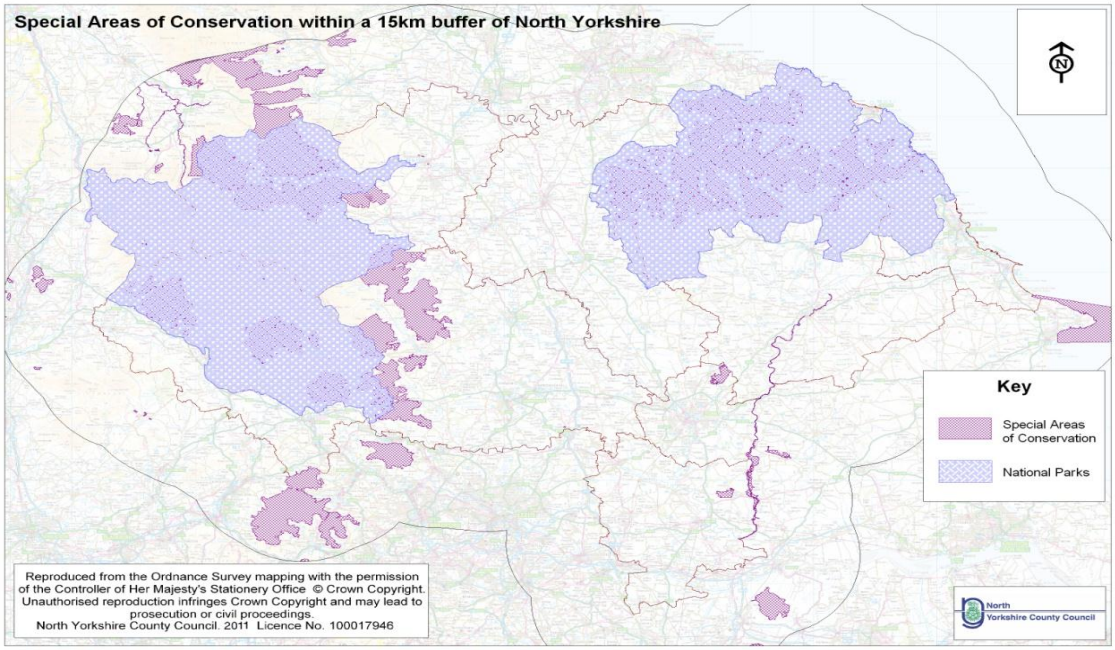

Figure 2: Special Areas of Conservation within North Yorkshire and a 15 km buffer from the Boundary

Table 2: Special Areas of Conservation within and around North Yorkshire

Designation	Sites partly or wholly within NYCC boundary	Other sites (within 15km buffer)
SAC	Arnecliff & Park Hole Woods	Asby Complex
	Beast Cliff - Whitby	Calf Hill and Cragg Woods
	Craven Limestone Complex	Hatfield Moor
	Ellers Wood and Sand Dale	Hellbeck and Swindale Woods
	Fen Bog	Humber Estuary
	Flamborough Head	Moor House - Upper Teesdale
	Ingleborough Complex	Morecambe Bay
	Kirk Deighton	Morecambe Bay Pavements
	Lower Derwent Valley	River Eden
	North Pennine Dales Meadows	Strensall Common
	North Pennine Moors	Thorne Moor
	North York Moors	
	Ox Close	
	River Derwent	

	Skipwith Common	
	South Pennine Moors	

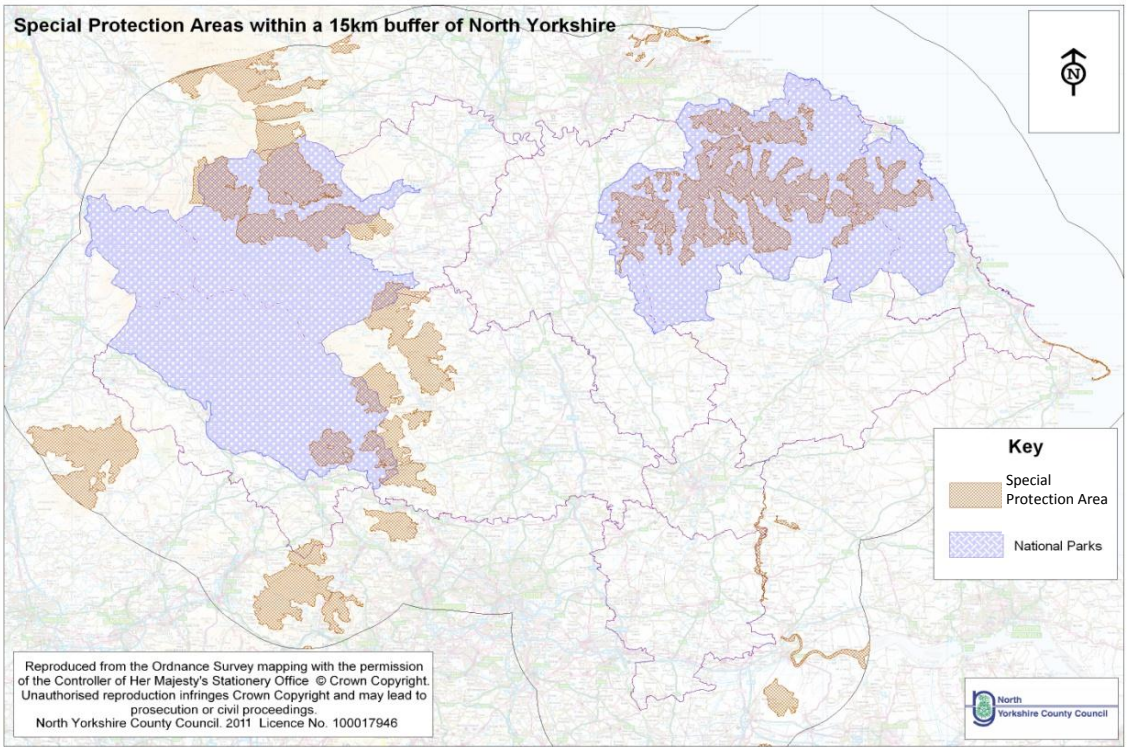

Figure 3: Special Protection Areas within North Yorkshire and a 15 km buffer from the Boundary

Table 3: Special Protection Areas within and around North Yorkshire

Designation	Sites partly or wholly within NYCC boundary	Sites within 15km Buffer
SPA	Flamborough Head & Bempton Cliffs	Bowland Fells
	Lower Derwent Valley	Humber Estuary
	North Pennine Moors	Leighton Moss
	North York Moors	Morecambe Bay
	South Pennine Moors – (Phase 2)	Teesmouth and Cleveland Coast
		Thorne and Hatfield Moors

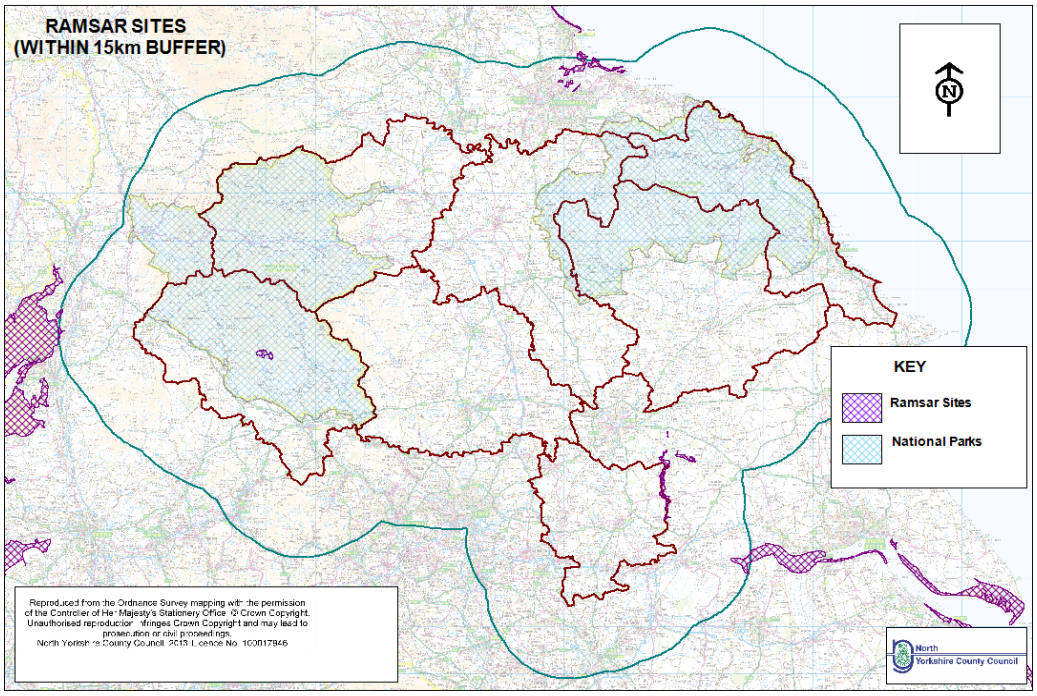

Figure 4: Ramsar sites within North Yorkshire and a 15 km buffer from the Boundary

Table 4: Ramsar sites within and around North Yorkshire

Designation	Sites partly or wholly within NYCC Boundary	Sites within 15km Buffer
RAMSAR	Lower Derwent Valley	Humber Estuary
	Malham Tarn	Morecambe Bay
		Teesmouth and Cleveland Coast

At the time of writing an additional pSPA and a pSAC have been identified. The pSPA (to be known as 'Flamborough and Filey Coast') encompasses the whole of the already designated Flamborough Head & Bempton Cliffs SPA, but includes additional land (and a marine extension out to 2km from the existing SPA) so that the site would comprise a north area and south area[13]. Similarly it is proposed that the landward boundary of the existing Flamborough Head SAC be modified to ensure that the features of the SAC remain within the site into the future. Appendix 5.3 of this report includes further information regarding these sites and their features of interest. While conservation objectives are not yet available, the sites will be considered in this assessment and the outcomes of consultation currently taking place on the scientific basis of the pSPA and pSAC will continue to be monitored.

[13] naturalengland.org.uk/ourwork/conservation/designations/spa/flamborough-fileypspaconsultation.aspx [Accessed 31/01/2014].

4.3 Identifying the Conservation Objectives and Threats to the Integrity of European / Ramsar Sites

Appendix 5.2 of this Likely Significant Effects report for the LFRMS lists the European / Ramsar sites contained within the area of study, alongside their conservation objectives and identifies some key threats to site integrity of European Sites.

In the table, alongside the name of each site within the plan area and 15km buffer, are the qualifying features of those sites. These qualifying features show the species or habitats that are recorded at the site which make it worthy of designation as a European or Ramsar site.

The third column in the table shows conservation objectives associated with that site. Conservation objectives are broad objectives that define the key aims of the designated status (SPA / SAC / Ramsar) of a site. While additional conservation objectives may exist to support other designations at the site the conservation objectives that are listed are those pertaining to sites' European / international status.

The final column displays 'key threats to site integrity'. The 'key threats to site integrity column' is a summary of information provided in the 'vulnerabilities' section of the Joint Nature Conservation Committee's Standard Data Forms for the each site as well as other data gathered from, for example 'Operations Likely Damage' lists and other Habitats Regulations Assessments[14] . This provides a summary of the processes that may cause damage to a site and prevent conservation objectives being achieved.

While many threats to site integrity listed in Appendix 5.2 are linked to a likely category of source of impacts – for instance inappropriate grazing or housing development – it is important for this assessment to consider that threats to integrity may also result from other operations that may not be listed. For instance, if inappropriate grazing levels may lead to colonisation of a grassland by scrub, causing loss of habitat, other unforeseen operations could cause a similar effect (for example deliberate planting of trees).

Using this information it is possible to begin to identify the sorts of impacts for which each individual site could be a potential receptor. So if a site is vulnerable to hydrological change, for example, it could be inferred that flood management processes that have the potential to affect hydrology could be a potential source for an impact to occur. However, whether or not that impact can occur will depend on whether a pathway exists over which the source of hydrological change can project significant impacts to a European Site vulnerable to hydrological change (the receptor) (see Chapter 3 for a description of the 'source –pathway-receptor approach used in this assessment).

[14] These include documents including: Yorkshire and Humber Assembly, 2006. Appropriate Assessment of the Draft Regional Spatial Strategy for Yorkshire and the Humber, Land Use Consultants.

5 Screening Assessment in Combination with other Plans and Projects

5.1 Potential Sources of Impacts from the LFRMS

The Local Flood Risk Management Strategy sets the strategic framework for managing flood risk across North Yorkshire through the setting of objectives for the future management of flood risk and the establishment of actions to implement these objectives. As outlined above, the LFRMS will consist of several parts including the Policy Framework, Strategic Action Plan and catchment scale action plans. As the action plan sets out the practical measures that will be delivered in order to implement the strategic objectives of the LFRMS and will direct the preparation of lower tier Operational Catchment Plans, this Likely Significant Effects screening assessment focuses on the LFRMS actions.

As the catchment level action plans will be entirely consistent with the strategic level action plan and the Environment Agency (EA) Flood Risk Management Plans (FRMPs), both of which are subject to a suite of environmental assessments including HRA, these lower tier plans will only be screened if assessment of the strategic actions shows that there is potential for significant effects to occur at the catchment action plan level.

Because the LFRMS documents are strategic documents the objectives/actions set out are unlikely to exhibit specific direct impacts on individual European and Ramsar Sites as they will not show the specific type of flood infrastructure that may be needed or its specific location. However, there exists the potential for flood management policy to steer local interventions in a direction that may result in the conservation objectives of European / Ramsar sites being compromised. Tyldesley, 2009[15] describes some of the ways in which impacts on European sites may arise at the strategic plan making stage. Table 5 below summarises the observations made by Tyldesley and makes observations of potential relevance to a Local Flood Risk Management Strategy.

Table 5: Strategic Level impacts on European sites (Categories of impact and some source material for the mechanisms by which effects may occur are adapted from text in Tyldesley, D. 2009[16])

Category of impact that could arise from a Strategic change	**How such impacts might occur**
Type of change	Theoretically a specific type of change might be proposed in a plan for flooding that might in itself have a significant effect on one or more European sites regardless of the quantum of change or the location of that change. For instance, an objective that proposes that upland areas should be managed

[15] Tyldesley, D. 2009. The Habitats Regulations Assessment of Local Development Documents Revised Draft Guidance for Natural England. Natural England, Sheffield.

[16] Tyldesley, D. 2009. The Habitats Regulations Assessment of Local Development Documents Revised Draft Guidance for Natural England. Natural England, Sheffield.

	in a different way to reduce downstream flooding might have (positive or negative) implications for upland European sites, which are concentrated in upland areas.
Quantity of change	In some cases a significant effect may occur as a result of the quantum of change that is likely to occur due to a specific objective. For instance, if a strategy would result in an uplift in the quantum of hard flood defences adjacent to rivers across the county, designated habitats at the confluence of those rivers may receive higher flows of water, affecting their integrity.
Location of change	There may be a strategic need to focus flood management in a specific area. In such cases the necessary interventions may take place close to a European Site and exhibit direct effects, or may indirectly steer other forms of development to a location so that they exhibit an effect. In the higher tiers of the LFRMS locations are not likely to be referred to, however this may become more of an issue at a flood risk management unit or community action plan scale.
Blocking of other proposals or approaches	Future alternative approaches may be blocked by policies in a strategy. For instance a non-damaging policy approach may no longer be an option if the strategy commits an area to a specific approach that may in the longer term be damaging.
Justifying damaging development	Inclusion within a strategy may give justification to interventions that would have otherwise been considered on their merits alone. This may form part of a case to justify 'imperative reasons of overriding public interest' that would allow the flood infrastructure to go ahead under various regulatory controls, whereas were a project considered in its own right a different case may need to be made. It is therefore important to ensure that only interventions that are consistent with the Habitats Regulations' requirements are included in the LFRMS.
Combined / cumulative effects	While on its own the strategy would not be likely to have significant effects, certain objectives or actions may work in combination with other plans and projects in such a way that a significant effect may occur.

5.2 In Combination Impacts: Consideration of other Plans and Projects in this Assessment

The Habitats Directive requires that all significant effects of plans and projects, whether they are alone or in combination with other plans and projects, be assessed in view of European sites conservation objectives. This means that, even where an effect of the plan is deemed not to be significant on its own, it could be significant when added to the effects of one or more other plans and projects.

By the same token, it is important that in – combination assessment remains a manageable exercise. Therefore the focus of in combination assessment in this HRA will be on plans that direct future growth or that seek to manage water resources as these plans are considered to be the key sources of potential impacts. At a project level, no Habitats Regulations Assessments of water course consents considered by North Yorkshire County Council have, to date, shown significant effects on European sites so these will not be considered further in this assessment.

All of the development plans in North Yorkshire have been reviewed to give a picture of anticipated levels of development during the plan period. Because several rivers enter and exit the city of York into North Yorkshire, York's development plan has been reviewed in addition to plans in North Yorkshire. Similarly several local plans within the 15km buffer, or functionally connected to Natura 2000 sites have been reviewed where relevant.

Many of the plans that have been reviewed during in combination assessment have had Habitats Regulations Assessments done on them. These HRA documents can be useful in ascertaining the extent to which those plans are expected to impact on European sites.

Table 6 shows the plans that will have been considered for in combination impact in this assessment.

Table 6: Plans considered 'in combination'

Name of Plan	Plan Type	Geographical Scope
River Basin Management Plan: Humber River Basin District	Water quality improvement Plan	Humber river basin district – includes most of North Yorkshire
River Basin Management Plan: Northumbria River Basin District	Water quality improvement Plan	Includes the Tees catchment in North Yorkshire
River Basin Management Plan: Northumbria River Basin District	Water quality improvement Plan	Includes Lune and Ribble catchments that are partially in North Yorkshire
River Tees Catchment Flood Management Plan	Flood management Plan	Includes Tees and tributaries in North Yorkshire
Esk and Coastal Streams Catchment Flood	Flood management Plan	Includes Esk and tributaries in North Yorkshire

Management Plan		
River Derwent Catchment Flood Management Plan	Flood management Plan	Includes Derwent and tributaries in North Yorkshire
River Ouse Catchment Flood Management Plan	Flood management Plan	Includes Ouse and tributaries in North Yorkshire
River Hull and Coastal Streams Catchment Flood Management Plan	Flood management Plan	Includes parts of River Hull catchment in North Yorkshire
River Aire Catchment Flood Management Plan	Flood management Plan	Includes parts of Aire catchment in North Yorkshire
River Don Catchment Flood Management Plan	Flood management Plan	Includes Parts of Don catchment in North Yorkshire
Lune Catchment Flood Management Plan	Flood management Plan	Includes parts of Lune catchment in North Yorkshire
Ribble Catchment Flood Management Plan	Flood management Plan	Includes parts of Ribble catchment in North Yorkshire
Richmondshire Local Plan: Core Strategy (Under preparation)	Land Use Plan	Richmondshire District
Scarborough Borough Council Local Plan (Under Preparation)	Land Use Plan	Scarborough Borough
Hambleton Core Strategy, Allocations DPD and Development Policies DPD (Adopted)	Land Use Plan	Hambleton District
Selby Core Strategy (Adopted) and Selby Site Allocations Development Plan DPD (Under Preparation)	Land Use Plan	Selby District
The Ryedale Plan (Local Plan Strategy (adopted) Local Plan Sites (under preparation))	Land Use Plan	Ryedale District
Harrogate District Core Strategy (Adopted) and Sites and Policies DPD (Under Preparation)	Land Use Plan	Harrogate District
Craven Core Strategy (Under Preparation)	Land Use Plan	Craven District
Yorkshire Dales Local Plan (Under Preparation)	Land Use Plan	Yorkshire Dales National Park
North York Moors National Park Core Strategy and Development Policies DPD	Land Use Plan	North York Moors

(Adopted)		
York Local Plan (Under Preparation)	Land Use Plan	City of York
North East Lincolnshire Local Plan (Under Preparation)	Land Use Plan	North East Lincolnshire
North Lincolnshire Core Strategy (Adopted)	Land Use Plan	North Lincolnshire
East Riding Local Plan (Under Preparation)	Land Use Plan	East Riding
Hull Local Plan (Under Preparation)	Land Use Plan	Hull
Humber Flood Risk Management Strategy	Flood management plan	Humber Estuary
Minerals and Waste Joint Plan (Under Preparation)	Land Use Plan	North Yorkshire, York and the North York Moors

5.3 Recording the Results of the Screening Assessment

All strategic actions have been screened for their likely impacts alone or in combination with European and Ramsar Sites. The results of this screening exercise are shown in Table 7 below. Potential effects resulting from each action are also categorised as follows, following Tyldesley, 2009:

-No negative effect: these are elements of the strategy that would have no negative effect on any European Site;

-No significant negative effect: these are elements of the strategy that could have an effect, but the likelihood is there would be no significant negative effect on a European Site either alone or in combination with other plans or projects. This category of effects includes trivial and '*de minimus*'[17] impacts;

-Likely significant effect alone: these elements of the strategy will require full appropriate assessment unless the strategy can be modified in a way that reduces the effect to no significant negative effect or no negative effect;

-Likely to have a significant effect in combination: as with the above category, elements of the strategy categorised in this way will be subject to appropriate assessment unless the effect made by the strategy alone can be reduced to no significant negative effect or no negative effect.

[17] Insignificant, negligible or of minor importance

Uncertain: this is where it is not possible to make a judgement on the likelihood of significant effects occurring. These impacts will require further investigation via an appropriate assessment if they cannot be clarified.

Table 7: Screening of LFRMS Actions

European Sites Considered (all sites in North Yorkshire and 15 km buffer)	**Key Threats to Site Integrity** (see Appendix 5.2 of this report)					
Action	**Possible impact of action on European Site (sources / pathways)**	**Which European Sites could be affected (receptors)**	**Is the impact significant**	**Other plans and projects which might act in combination**	**Risk of a significant in combination effect**	**References/ notes**
1. Collate and analyse data on predicted and actual surface water flooding based on most recently EA modelling data	None – the action relates to information collation and analysis rather than specific physical interventions.	This action relates to information provision only and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
2. Develop standards, guidance and processes required to implement Schedule 3 of FWMA (SuDS and SABs)	None- The action relates to the development of standards, guidance and processes. The setting up of a SAB and the marrying up of the regulatory environment with local planning guidance are purely about creating the correct procedural / administrative environment to allow SUDS to occur. Given that SUDS are generally considered beneficial to the environment, particularly if they are correctly implemented, no negative impacts on the environment are predicted.	This action relates to the development of processes required to implement Schedule 3 of the FWMA rather than interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
3. Provide input to Local Plans and respond to requests for input on planning consultations	None – the action relates to information provision rather than physical interventions.	This action relates to information provision only and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
4. Develop and implement a prioritised programme of flood alleviation projects	The implementation of flood alleviation schemes has the potential to impact upon Natura 2000 sites where the scheme is located within or in close proximity to a site. The Environment Agency is the competent authority for main rivers therefore any requirement to conduct appropriate assessment on flood management measures on main rivers would rest with them. However, it is possible that impacts such as	Any European site where flooding is a problem within the site or in close proximity and where flood alleviation projects are proposed.	Uncertain. The location and the nature of the schemes to be implemented are not yet known, therefore significant impacts on Natura 2000 sites cannot be ruled out.	Catchment Flood Management Plans	Uncertain	Ultimately if schemes are progressed that may have likely significant effects the responsibility for project level assessment would rest with the competent authority. However, if supporting work to such schemes involves changes to ordinary

European Sites Considered (all sites in North Yorkshire and 15 km buffer)	**Key Threats to Site Integrity** (see Appendix 5.2 of this report)					
Action	**Possible impact of action on European Site (sources / pathways)**	**Which European Sites could be affected (receptors)**	**Is the impact significant**	**Other plans and projects which might act in combination**	**Risk of a significant in combination effect**	**References/ notes**
	changes to the rate of flow and disturbance could occur if project level Habitats Regulations Assessment is not conducted where river management interfaces with Natura 2000 sites. Where ordinary watercourses interface with Natura 2000 sites there is the potential for disturbance to sites, hydrological changes and loss of habitat as the result of flood alleviation projects.					watercourses the LLFA should either ensure that such work is scoped in to the HRA being progressed for works on the 'main river' or be prepared to undertake their own in combination assessment with the main scheme.
5. Develop and maintain a Prioritisation Tool as a fair and equitable method of allocating limited budgets and resources for investigations and works	None – the action relates to the development of a prioritisation process. This process will not make it any more or less likely that Natura 2000 sites will be impacted.	This action relates to the prioritisation process only and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
6. Develop a protocol and process for the recording and monitoring of assets implicated in significant local flood risk	None – the action relates to the recording of information and monitoring of assets rather than specific physical interventions.	This action relates to information collation only and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
7. Create Operational Catchment Plans – providing a high level assessment of flood risk and risk management actions/measures for each catchment within NYCC authority area	Operational Catchment Plans will be consistent with the strategic LFRMS (assessed in this report) and Environment Agency Flood Risk Management Plans. Therefore, they are only thought to be likely to instigate environmental effects in the same way as the LFRMS as a whole exhibits such effects, only at a more local scale. Of course these Operational Catchment Plans will set a framework for	Any European site where flooding is a problem within the site or in close proximity and where flood alleviation projects are proposed.	Uncertain: Only in as much as the impacts identified elsewhere in this LFRMS are considered significant. If such impacts can be mitigated at the LFRMS level, then, provided such mitigation follows through to catchment scale plans, any effect would be cancelled out.		Uncertain: While it is possible that Operational Catchment Plans could act in combination, as suggested previously they are a function of the parent LFRMS. Therefore, if the project level impacts can be negated at the LFRMS stage, and that mitigation cascades to the	

European Sites Considered (all sites in North Yorkshire and 15 km buffer)	**Key Threats to Site Integrity** (see Appendix 5.2 of this report)					
Action	**Possible impact of action on European Site (sources / pathways)**	**Which European Sites could be affected (receptors)**	**Is the impact significant**	**Other plans and projects which might act in combination**	**Risk of a significant in combination effect**	**References/ notes**
	as yet unknown projects. However we have considered these projects in the assessment of action 4 (see above for the consideration of these effects).				Operational Catchment Plans, then in combination effects would not occur. If they can't, in combination effects may be possible.	
8. Work with neighbouring LLFAs to Create/provide input to Operational Catchment Plans for those catchments which cross into other authority areas – providing a high level assessment of flood risk and risk management actions as appropriate	As Action 7 above.	Any European site where flooding is a problem within the site or in close proximity and where flood alleviation projects are proposed.	Uncertain: As action 7 above.		Uncertain: As action 7 above.	
9. Provide support and updates to the Local Resilience Forum Response Plans	None – the action relates to information provision rather than specific physical interventions	This action relates to information provision only and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
10. Develop a Flood Risk Management Toolkit of practical measures that can be used to support local communities to manage flood risk	None – the action relates to the development of a flood management toolkit rather than specific physical interventions	This action relates to the development of a flood management toolkit. The implementation of the toolkit is considered below. Therefore it has been screened out from the assessment.				
11. Develop a programme of rollout of the Flood Risk Management Toolkit to communities across the authority area	As the contents of the flood risk management toolkit are currently unknown, significant impacts upon Natura 2000 sites cannot be ruled out at this stage. Should the toolkit encourage communities to make physical interventions such as changes to land management techniques in order to reduce flooding, the effects of such interventions would need to be considered further to ensure that no significant impacts upon Natura 2000 sites would	Any site with a pathway to areas where community intervention may take place.	Uncertain: The contents of the flood risk management toolkit are not currently known and therefore significant impacts on Natura 2000 sites cannot be ruled out.	Catchment Flood Management Plans	Uncertain	

European Sites Considered (all sites in North Yorkshire and 15 km buffer)	**Key Threats to Site Integrity** (see Appendix 5.2 of this report)					
Action	**Possible impact of action on European Site (sources / pathways)**	**Which European Sites could be affected (receptors)**	**Is the impact significant**	**Other plans and projects which might act in combination**	**Risk of a significant in combination effect**	**References/ notes**
	result.					
12. Support Schools and other educational facilities to increase public awareness of flood anticipation, preparation and resilience	None – the action relates to information provision rather than physical interventions	This action relates to information provision only and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
13. Improve and maintain the LLFA Flood Risk Management web pages with the NYCC website – with relevant information and links to partner organisations	None – the action relates to information provision rather than physical interventions	This action relates to information provision only and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
14. Develop a monitoring and warning system for Ground water flood risk in key appropriate sites across the county	None- the action relates to information collection/provision rather than physical interventions	This action relates to information collection/provision and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
15. Develop clear protocols and processes for the assessment and investigation of flooding incidents	None – the action relates to investigation of flooding incidents rather than physical interventions	This action relates to the investigation of flooding incidents and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
16. Embed the protocols and processes for the assessment and investigation of flooding incidents within the authority	None – the action relates to investigation of flooding incidents rather than physical interventions	This action relates to the investigation of flooding incidents and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
17. Develop data capture protocols and processes for capture and strategic analysis of flood incident data – including gather of information from other RMAs where appropriate	None – the action relates to data capture rather than physical interventions	This action relates to data capture and does not direct interventions that would affect Natura 2000 sites. Therefore it has been screened out from the assessment.				
Outcome of SEA of actions						
Can the actions be changed to avoid significant effects? Do residual effects remain?	Four actions (4, 7, 8, and 11) have been identified as having the potential to impact upon a Natura 2000 site. It is uncertain at this stage whether this impact would be significant due to uncertainty regarding the scope and location of the measures that actions 4 and 11 would implement (flood alleviation schemes, toolkits etc.). In the case of actions 7 and 8 (Operational Catchment Plans) the potential for impacts is caused by the uncertainty identified at the strategic level (actions 4 and 11) passing down to the catchment level. The SEA (see Volume 1 of this report) recommends that an additional strategic action is added to the action plan to ensure that flood management projects deliver both effective flood management and legal compliance with environmental regulations such as the Habitats Directive (see Section 6 below). With regard to the Flood Risk Management Toolkit (action 11) it is advised that the appropriate regulatory procedures need to be referred to in order to ensure that any works instigated through the toolkits do not lead to significant impacts upon Natura 2000 sites.					
Is an appropriate assessment necessary	Action 4: Uncertain. Depending on the nature and the location of flood alleviation schemes, project level assessment may be required. Actions 7 and 8: Uncertain. Depending on the nature and the location of flood alleviation schemes, project level assessment may be required. Action 11: It is considered that appropriate assessment would not be required should the outlined mitigation be implemented.					

6 Conclusion of the Assessment and Mitigation / Avoidance Measures

This Likely Significant Effects Assessment shows that the majority of actions can be screened out of further assessment as they would not result in physical interventions which would affect Natura 2000 sites. However, four actions exhibit uncertain effects that can only be fully determined at a project implementation level. These are:

- Action 4: Develop and implement a prioritised programme of flood alleviation projects;
- Action 7: Create Operational Catchment Plans – providing a high level assessment of flood risk and risk management actions/measures for each catchment within NYCC authority area;
- Action 8: Work with neighbouring LLFAs to Create/provide input to Operational Catchment Plans for those catchments which cross into other authority areas – providing a high level assessment of flood risk and risk management actions as appropriate; and
- Action 11: Develop a programme of rollout of the Flood Risk Management Toolkit to communities across the authority area.

In the case of Flood Risk Management Toolkits (action 11) it is currently uncertain whether significant impacts could occur upon Natura 2000 sites as the contents/scope of the toolkit is not yet known to the assessors. It should be noted that the appropriate regulatory procedures need to be referred to in the toolkits in order to ensure that any works instigated through the toolkits do not lead to significant impacts upon Natura 2000 sites.

To mitigate the remaining uncertain effects identified, it is necessary for the LFRMS (including the catchment scale Operational Catchment Plans) to direct project work that may induce likely significant effects at Natura 2000 sites to explore such effects via an appropriate level of assessment. Therefore, the following mitigation is suggested:

-The inclusion of an additional strategic action as follows:
"Develop the protocols and processes to ensure that projects progressed through LFRMS deliver sustainable development through regulatory compliance and taking opportunities to deliver environmental benefits".

Appendix 5.1: Consultation comments received on scoping and methodology report

Element of Report as set out in key stages (see table 4 above)	Comments received	Organisation	Has the HRA been amended in reaction to comments?
1A. Identify whether the plan is subject to Habitats Regulations Assessment	Stage 1, task A, Natural England agrees that HRA of the LFRMS is likely to be required.	Natural England	Yes, Stage 2 has been progressed as a result
1A. Identify whether the plan is subject to Habitats Regulations Assessment	There is a requirement under UK law for a Habitat Regulations Assessment to be undertaken on the LFRMS	KVA Planning Consultancy on behalf of CPRE	Yes, Stage 2 has been progressed as a result
1B. Identify international sites in and around the plan area	Task B, it appears that all sites have been identified.	Natural England	No need to amend
1B. Identify international sites in and around the plan area	European sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). In the UK, through paragraph 118 of the National Planning Policy Framework (NPPF), Ramsar sites are afforded the same protection as SPAs, although they have international importance rather than just European. The NPPF also states that potential SPAs (pSPAs) and potential SACs (pSACs) should be given the same protection as European sites. NYCPRE acknowledge that the LFRMS is not a planning document, however, welcome the fact that North Yorkshire County Council recognise within the scoping report that potential sites and Ramsar sites are afforded the same level of protection as designated European Sites within the NPPF which reflects wider Government policy.	KVA Planning Consultancy on behalf of CPRE	No need to amend
1B. Identify international sites in and around the plan area	NYCPRE are in full agreement with North Yorkshire County Council that the list of SPA, SAC and Ramsar sites within North Yorkshire are in accord with those listed on the Joint Nature Conservation Council (JNCC)	KVA Planning Consultancy on behalf of CPRE	No need to amend

	website.		
1B. Identify international sites in and around the plan area	However, it has been brought to the attention of NYCPRE that the JNCC are currently investigating extending the existing SPA to beyond Flamborough Head and Bempton Cliffs to the south of Filey to reflect the fact that the internationally recognised important breeding birds have increased in number and extended beyond the original colonies. This may be something that the LFRMS may wish to include and the need for an appropriate assessment under the Habitats Regulations Assessment be investigated.	KVA Planning Consultancy on behalf of CPRE	Natural England's advice was sought and, using information provided by them, further detail of the new pSPA at Flamborough and Filey has been scoped in to this assessment.
C. Identify the conservation objectives and threats to site integrity of European sites	Task C, we will check the conservation objectives and threats at a later stage in the development of the FRMS.	Natural England	Comment noted. No need to amend at this stage.
D. Establish the methodology for undertaking the Assessment	Stage 4 of HRA should refer to 'procedures where adverse effect on integrity of international site remains'.	Natural England	This has been corrected accordingly in this report.

Appendix 5.2 Key Threats to Site Integrity at European Sites

Name of Site	**Qualifying features** *(features in bold denote priority natural habitats or species subject to special provisions in the Habitats Directive)*[18]	**Conservation Objectives** (*Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features).*	**Key Threats to Site Integrity**
Arnecliff and Park Hole Woods SAC	**Annex II species that are a primary reason for selection:** Killarney fern *Trichomanes speciosum* **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; Western acidic oak woodland	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species;	- Specimen collecting; - Physical loss of habitat from woodland under and over management (e.g. removal and smothering, fragmentation of habitat); - Pollution (e.g. from iron workings); - Changes in thermal regime; - Physical damage to habitat;

[18] Of particular note, is Article 6(4) of the Directive, which states *"If in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and / or priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the commission, to other imperative reasons of overriding public interest'.* The Article is transposed via 62 (2) of the 2010 Regulations.

		-The distribution of qualifying species within the site	- Increase in pH of underlying soils
Asby Complex	**Annex I habitats that are a primary reason for selection of this site** -Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia); Dry grasslands and scrublands on chalk or limestone -Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae); Purple moor-grass meadows -**Petrifying springs with tufa formation (Cratoneurion);** Hard water springs depositing lime -Alkaline fens; Calcium rich springwater-fed fens **-Limestone pavements** **Annex II species that are a primary reason for selection of this site** -Geyer`s whorl snail *Vertigo geyeri* -Slender green feather-*moss Drepanocladus (Hamatocaulis) vernicosus* **Annex I habitats present as a qualifying feature, but not a primary reason for site selection** -Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.; Calcium-rich nutrient-poor lakes, lochs and pools -European dry heaths -**Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;* Calcium-rich fen dominated by great fen sedge (saw sedge)**	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site.	- Operations leading to impacts such as physical loss of habitat or physical damage to habitat (e.g. through erosion, overgrazing, habitat fragmentation, or non-toxic contamination, particularly nutrient enrichment; - Operations leading to hydrological change (i.e. changes to water level and flow rate, drainage operations) and physical loss and damage (i.e. drying and fragmentation)

Beast Cliff – Whitby (Robin Hood's Bay) SAC	**Annex I habitats that are a primary reason for selection:** -Vegetated sea cliffs of the Atlantic and Baltic coasts	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	- Changes in agricultural management (or other operations) leading to impacts such as changes in fertility or agri-chemical contamination, physical loss of habitat (for instance from under or overgrazing) or physical damage to habitat (e.g. from trampling); - Changes in coastal defences which affect natural erosion processes; - Recreational disturbance (leading to physical damage including erosion, habitat fragmentation or fire).
Calf Hill and Cragg Woods SAC	**Annex I habitats that are a primary reason for selection of this site** -Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; Western acidic oak woodland **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site** **-Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*); alder woodland on floodplains.**	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site.	-Longer term need to control sheep grazing from adjacent fell (though limited grazing is beneficial); -Site needs small scale selective thinning; -Increase in pH may affect species composition -Significant change in flooding regime / water table (may cause drying out and changes in species composition).
Craven Limestone Complex SAC	**Annex I habitats that are a primary reason for selection:** -Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.; Calcium-rich nutrient poor lakes, lochs and pools -Semi-natural dry grasslands and	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;;	-Intensive grazing may cause physical loss or damage to habitat; -Operations such as quarrying which can cause physical loss and damage to habitat (such as through sedimentation, erosion, fragmentation and barrier effects), hydrological change and changes in the thermal regime or

	scrubland facies: on calcareous substrates (*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone -*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); Purple moor-grass meadows **-Active raised bogs** **-Petrifying springs with tufa formation (*Cratoneurion*); hard-water springs depositing lime** -Alkaline fens; Calcium rich springwater-fed fens **-Limestone pavements** **Annex II species that are a primary reason for selection:** -White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes* -Bullhead *Cottus gobio* -Lady`s-slipper orchid *Cypripedium calceolus* **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** -Calaminarian grasslands of the *Violetalia calaminariae*; Grasslands on soils rich in heavy metals -***Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes**	-The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site.	turbidity; -Drainage can cause hydrological change leading to drying and fragmentation of habitat; -Runoff from agricultural or industrial processes can cause nutrient enrichment of the habitat; -Recreational disturbance can cause erosion, habitat fragmentation and accidental fires; -Specimen collecting (leading to species loss); -Atmospheric pollution (nutrient enrichment)
Eller's Wood and Sand Dale SAC	**Annex II species that are a primary reason for selection:**	With regard to the natural habitats and / or species for which the site has been designated (see	-Intensive grazing or other operations leading to physical loss of habitat and

	-Geyer`s whorl snail *Vertigo geyeri* **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** **-Petrifying springs with tufa formation (*Cratoneurion*); Hard water springs depositing lime**	Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site.	physical damage due to erosion; -Scrub invasion; -Changes in drainage leading to hydrological changes to water level and flow rate, as well as drying and fragmentation
Fen Bog SAC	**Annex I habitats that are a primary reason for selection:** -Transition mires and quaking bogs; Very wet mires often identified by an unstable 'quaking' surface	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site.	-Drainage or other operations leading to hydrological change, and physical loss and damage to habitat (through drying and consequential habitat fragmentation); -Removal of grazing may lead to physical loss of habitat through smothering, and scrub habitat and may also lower the water table; -Any process, such as bracken spraying and agricultural runoff, which may lead to toxic contamination of the habitat; -Upgrading of nearby rail infrastructure is an example of an operation which may lead to physical loss of habitat (through removal and smothering), damage (i.e. through siltation, fragmentation and barrier effects) and changes in turbidity of water; -Peat cutting may also damage the site leading to physical damage (through sedimentation and erosion) and changes in turbidity and pH
Flamborough Head SAC	**Annex I habitats that are a primary reason for selection:** • Reefs	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to	-Fishing or other activities (including recreational diving) leading to physical damage such as erosion and

	• Vegetated sea cliffs of the Atlantic and Baltic coasts • Submerged or partially submerged sea caves	maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site.	fragmentation of submerged habitats; -Industrial (or any other) discharge leading to raised pollution levels, including acidification of terrestrial habitat from atmospheric deposition and changes in the submerged habitat as a result of sedimentation, changes in turbidity, salinity and changes to the thermal regime); -Changes in agricultural management causing toxic contamination, physical loss (through removal by overgrazing, smothering by under-grazing), physical damage through trampling and nutrient enrichment of the terrestrial habitat; -Changes in coastal defences preventing natural erosion; -Recreational disturbance leading to erosion and fragmentation, accidental fires and reduced bird breeding productivity.
Hatfield Moor SAC	**Annex I habitats that are a primary reason for selection of this site** • Degraded raised bogs still capable of natural regeneration	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site.	-Peat cutting (leading to physical loss of habitat); -Water abstraction and agricultural drainage leading to hydrological change (water level and flow rate), physical loss and damage (drying and fragmentation of habitat); -Scrub invasion leading to physical loss of habitat; -Sand and gravel extraction in adjacent sites leading to physical loss of habitat (i.e. through removal and smothering) and hydrological change (water level and flow rate); -Recreational disturbance leading to physical damage (erosion and fragmentation, accidental fires). -Pollution deposition leading to changes in nutrient status
Hellbeck and	**Annex I habitats that are a primary**	With regard to the natural habitats and / or species	-Overgrazing by livestock, or other

Swindale Woods SAC	**reason for selection of this site** • ***Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes**	for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	operations, leading to physical loss (removal), and physical damage (e.g. erosion, habitat fragmentation, and non-toxic contamination through nutrient enrichment)
Humber Estuary SAC	**Annex I habitats that are a primary reason for selection:** • Estuaries • Mudflats and sandflats not covered by seawater at low tide **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** • Sandbanks which are slightly covered by sea water all the time; Subtidal sandbanks • **Coastal lagoons** • Salicornia and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* • Embryonic shifting dunes	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	- Coastal development including housing, industrial and commercial development causing loss and degradation of habitat (including pollution, erosion, fragmentation, sedimentation, etc.), impacts on integrity of breeding and wintering population of birds via disturbance (noise, trampling); - Dredging for navigation or aggregates may also have an important detrimental effect upon the animal and plant life of the sediment, and sediment supply and transport; - Flood defence causing loss and degradation of habitat, fragmentation, barrier effects, changes in hydrology (flow rate and water level), coastal squeeze[19]; - Sewage discharge (domestic and industrial) and agricultural runoff causing eutrophication, sedimentation changes in turbidity and pH, salinity,

[19] Coastal squeeze is cited as 'the biggest threat to the remaining saltmarsh in the Humber Estuary' by the Humber Management Scheme (see: Humber Management Scheme, undated. Humber Estuary European Marine Site [URL: humberems.co.uk/humber/features.php]. It is caused by a defence forming a barrier to landward migration of habitats while water levels rise and cause increasing increasing loss of area on the seaward side

	• Shifting dunes along the shoreline with Ammophila arenaria (`white dunes`); shifting dunes with marram • **Fixed dunes with herbaceous vegetation (`grey dunes`); Dune grassland** • Dunes with *Hippophae rhamnoides;* Dunes with sea buckthorn **Annex II species present as a qualifying feature, but not a primary reason for selection:** • Sea lamprey *Petromyzon marinus* • River lamprey *Lampetra fluviatilis* • Grey seal *Halichoerus grypus*		indirect effects of reduced water quality on food resources. Upstream pollution may cause a barrier to fish migration; - Recreational pressure causing impacts on integrity of breeding and wintering population via disturbance (noise, trampling, presence) Lack of reedbed management causing scrub encroachment;
Ingleborough Complex SAC	**Annex I habitats that are a primary reason for selection:** • Juniperus communis formations on heaths or calcareous grasslands; Juniper on heaths or calcareous grasslands • Alkaline fens; Calcium-rich springwater-fed fens • Calcareous rocky slopes with chasmophytic vegetation; Plants in crevices in base-rich rocks • **Limestone pavements** **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** • Semi-natural dry grasslands and scrubland facies: on calcareous substrates	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Intensive livestock grazing or any operation causing physical loss (removal), physical damage (erosion), nutrient enrichment, or pollution (e.g. though sheep dip) of habitat; -Rabbit grazing causing physical loss (removal), physical damage (erosion), and nutrient enrichment; -Limestone quarrying causing physical loss (removal and smothering of habitat) and hydrological change (including changes to water level and flow rate); -Recreational disturbance causing physical damage (erosion and fragmentation, accidental fires); -*Atmospheric pollution (nutrient enrichment)

	(*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone; • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); Purple moor-grass meadows • **Blanket bogs** • **Petrifying springs with tufa formation (*Cratoneurion*); Hard-water springs depositing lime** • ***Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes**		
Kirk Deighton SAC	**Annex I habitats that are a primary reason for selection:** • *Triturus cristus*; Great crested newt	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Heavy livestock poaching causing physical damage (erosion, habitat fragmentation, siltation); -Introduction of predatory fish causing biological disturbance; - Agricultural, transport and industrial runoff/discharge affecting water quality or causing nutrient enrichment, or causing physical damage (siltation, fragmentation of habitat); -Water abstraction causing physical damage (through fragmentation of habitat) and hydrological change to water level and flow rate; -Atmospheric pollution and deposition (e.g. from transport)
Lower Derwent Valley SAC	**Annex I habitats that are a primary reason for selection:** • Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis)* **Annex I habitats present as a**	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;;	- Coal mining or other extractive industry causing physical loss of habitat (removal and smothering) or hydrological change (water level and flow rate); - Flood management and tidal barrage causing hydrological change (water

	qualifying feature, but not a primary reason for selection: • **Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*); Alder woodland on floodplains** **Annex II species present as a qualifying feature, but not a primary reason for selection:** • Otter Lutra lutra	-The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	level and flow rate) and physical damage (barrier effects and habitat fragmentation); - Domestic and industrial sewage outflow causing phosphorous enrichment; - Intensive agriculture causing physical loss of habitat, physical damage (through erosion, habitat fragmentation or siltation from agricultural runoff), toxic contamination of groundwater (e.g. from sheep dipping) or non-toxic contamination (nutrient enrichment); - Process industry causing impacts such as acidification from sulphur deposition; - Alteration of channel structure (canalisation, artificial barriers, etc.) causing physical loss and damage to habitat (through removal of and damage to riverside woodlands, barrier effects and habitat fragmentation) and hydrological change (water level and flow rate); - Water abstraction causing hydrological change (water level and flow rate) or physical damage (drying and consequential habitat fragmentation); - Waste management (such as landfill) causing physical loss of habitat (including removal and smothering of habitat) or hydrological changes to water level and flow rate; - Housing, inappropriate access and other development leading to recreational pressure, causing physical damage (erosion and fragmentation, accidental fires) or disturbance of nesting and/or over-wintering birds
Moor House – Upper Teesdale -	**Annex I habitats that are a primary reason for selection of this site:**	With regard to the natural habitats and / or species for which the site has been designated (see	-Overgrazing causing physical loss and physical damage to habitat (through

SAC	• Hard *oligo-mesotrophic* waters with benthic vegetation of *Chara* spp; Calcium-rich nutrient-poor lakes, lochs and pools • Alpine and Boreal heaths; Alpine and subalpine heaths • *Juniperus communis* formations on heaths or calcareous grasslands; Juniper on heaths or calcareous grasslands • *Calaminarian* grasslands of the *Violetalia calaminariae;* Grasslands on soils rich in heavy metals • Siliceous alpine and boreal grasslands; Montane acid grasslands • Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia);* Dry grasslands and scrublands on chalk or limestone • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); Purple moor-grass meadows • *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels • Mountain hay meadows • **Blanket bogs** • **Petrifying springs with tufa formation (*Cratoneurion*); Hard-water springs depositing lime** • Alkaline fens; Base rich fens	Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	erosion, habitat fragmentation and nutrient enrichment); -Drainage of bogs causing physical loss of habitat; -Poor muirburn management causing physical loss and damage (e.g. fragmentation) to habitat; -Reservoir construction leading to microclimatic shifts; -Recreational disturbance causing physical damage (erosion and fragmentation); -Operations causing hydrological change

	• **Alpine pioneer formations of *the Caricion bicoloris-atrofuscae;* High altitude plant communities associated with areas of water seepage** • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*); Acidic scree • Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifoli*i); Base rich scree • Calcareous rocky slopes with chasmophytic vegetation; Plants in crevices in base-rich rocks • Siliceous rocky slopes with chasmophytic vegetation; Plants in crevices on acid rocks **Annex II species that are a primary reason for selection of this site:** • Round-mouthed whorl snail *Vertigo genesii* • Marsh saxifrage *Saxifraga hirculus* **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** • European dry heaths • **Limestone pavements**		
Morecambe Bay SAC	**Annex I habitats that are a primary reason for selection of this site:** • Estuaries • Mudflats and sandflats not	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore:	-Coastal protection and flood defence may prevent natural erosion, or cause loss and degradation of habitat, fragmentation, barrier effects, or

	covered by seawater at low tide; intertidal mudflats and sandbanks • Large shallow inlets and bays • Perennial vegetation of stony banks; Coastal shingle vegetation outside the reach of waves • Salicornia and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* • Shifting dunes along the shoreline with Ammophila arenaria (`white dunes`); Shifting dunes with marram • **Fixed dunes with herbaceous vegetation (`grey dunes`); Dune grassland** • Humid dune slacks **Annex II species that are a primary reason for selection of this site:** • Great crested newt *Triturus cristatus* **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** • Sandbanks which are slightly covered by sea water all the time; Subtidal sandbanks • **Coastal lagoons** • Reefs • Embryonic shifting dunes • **Atlantic decalcified fixed**	-The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	changes in hydrology; -Fishing may cause physical damage to submerged habitat (e.g. erosion, fragmentation); -Quarrying may cause physical loss of habitat, physical damage (sedimentation, erosion, fragmentation, barrier effects), hydrological change (water level),and changes in thermal regime and turbidity; -Gas exploration may lead to physical damage to habitat; -Recreational disturbance may cause physical damage (erosion and fragmentation) to habitat. -*Operations causing water pollution

	dunes *(Calluno-Ulicetea*); coastal dune heathland • Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*); Dunes with creeping willow		
Morecambe Bay Pavements SAC	**Annex I habitats that are a primary reason for selection of this site:** • Hard *oligo-mesotrophic* waters with benthic vegetation of *Chara* spp.; Calcium-rich nutrient-poor lakes, lochs and pools • *Juniperus communis* formations on heaths or calcareous grasslands • Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia)*; Dry grasslands and scrublands on chalk or limestone • **Limestone pavements** • ***Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes** • *Taxus baccata* woods of the British Isles; **Yew-dominated woodland** **Annex II species that are a primary reason for selection of this site:** • Narrow-mouthed whorl snail *Vertigo angustior* **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:**	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Agricultural management (e.g. overgrazing) causing physical loss (removal) or physical damage (erosion, habitat fragmentation, nutrient enrichment to habitat; under-grazing may also cause physical loss of habitat as a result of scrub encroachment and smothering; -Poor woodland management causing physical loss of habitat through removal and smothering and physical damage or fragmentation to habitat. -Nutrient enrichment of waterbodies -Operations causing hydrological change

	• European dry heaths • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; Calcium-rich fen dominated by great fen sedge (saw sedge) • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; Western acidic oak woodland		
North Pennine Dales Meadows SAC	**Annex I habitats that are a primary reason for selection:** • Mountain hay meadows **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); Purple moor-grass meadows	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	Intensive agricultural management on or adjacent to site (particularly use of agrochemicals where they can drift on to sites) leading to physical loss of habitat, physical damage (through erosion, habitat fragmentation, and siltation from and nutrient enrichment from agricultural runoff.
North Pennine Moors SAC	**Annex I habitats that are a primary reason for selection:** • European dry heaths • *Juniperus communis* formations on heaths or calcareous grasslands; Juniper on heaths or calcareous grasslands • **Blanket bogs** • **Petrifying springs with tufa formation (*Cratoneurion*); Hard-water springs depositing lime** • Siliceous rocky slopes with chasmophytic vegetation;	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Intensive grazing causing physical loss (removal), physical damage (erosion, habitat fragmentation) and nutrient enrichment -Agrochemicals (sheep dip) causing toxic contamination of groundwater; -Agricultural / other operations affecting drainage. This could lead to hydrological change (water level and flow rate) and physical loss and damage to habitat through drying and fragmentation; -Poor muirburn management causing physical loss (removal), damage (habitat fragmentation);

	Plants in crevices on acid rocks • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; Western acidic oak woodland **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** • Northern Atlantic wet heaths with *Erica tetralix;* Wet heathland with cross-leaved heath • Calaminarian grasslands of the *Violetalia calaminariae;* Grasslands on soils rich in heavy metals • Siliceous alpine and boreal grasslands; Montane acid grasslands • Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia);* Dry grasslands and scrublands on chalk or limestone • Alkaline fens; Calcium-rich springwater-fed fens • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*); Acidic scree • Calcareous rocky slopes with *chasmophytic vegetation;* Plants in crevices in base-rich rocks		-Process industry and waste management (e.g. landfill) / other operations causing acid and nitrogen deposition or physical loss of habitat[20]; -Woodland management causing physical loss (removal and smothering) and physical damage (fragmentation) to habitat; -Recreational disturbance causing physical damage (erosion and fragmentation, accidental fires).

[20] See UKREATE (UK Research on Eutrophication and Acidification of Terrestrial Ecosystems) / Defra, undated. The Impacts of Acid and Nitrogen deposition on: Blanket and Raised Bogs [URL: ukreate.defra.gov.uk/PDFs/Leaflets/Bogs.pdf]

	Annex II species present as a qualifying feature, but not a primary reason for selection: • Marsh saxifrage *Saxifraga hirculus*		
North York Moors SAC	**Annex I habitats that are a primary reason for selection:** • Northern Atlantic wet heaths with *Erica tetralix;* Wet heathland with cross-leaved heath • European dry heaths **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** • **Blanket bogs**	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Agricultural management (e.g. overgrazing) causing physical loss of habitat, physical damage (erosion, habitat fragmentation and nutrient enrichment of habitat; under-grazing may also cause physical loss (through scrub encroachment and smothering); - Operations affecting hydrology may lead to hydrological change (water level and flow rate), physical loss and damage (drying and fragmentation); -Recreational pressure causing physical damage to habitat (erosion and fragmentation, accidental fires); - Process industry and waste management causing acid or nitrogen deposition or physical loss of habitat;
Ox Close SAC	**Annex I habitats that are a primary reason for selection:** • Calaminarian grasslands of the *Violetalia calaminariae;* Grasslands on soils rich in heavy metals **Annex I habitats present as a qualifying feature, but not a primary reason for selection:**	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species;	-Rabbit grazing is a threat, causing physical loss (removal), physical damage (erosion) and nutrient enrichment of habitat; -Overgrazing by livestock - Physical loss or physical damage to habitat (through erosion, habitat fragmentation, and nutrient enrichment); -Housing / other development may cause physical loss (removal and

	• Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia)*; Dry grasslands on chalk or limestone • ***Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich roils associated with rocky slopes**	-The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	smothering) or physical damage (siltation, habitat fragmentation, barrier effects) to habitat; -Recreation – causing erosion -Operations causing nutrient enrichment (e.g. through deposition of N[2122])
River Derwent SAC	**Annex II species that are a primary reason for selection:** • River lamprey *Lampetra fluviatilis* **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; Rivers with floating vegetation often dominated by water-crowfoot **Annex II species present as a qualifying feature, but not a primary reason for selection:** • Sea lamprey *Petromyzon marinus* • Bullhead *Cottus gobio*	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Flood management can cause hydrological change (water level and flow rate), physical damage (barrier effects and habitat fragmentation); -Sewage can cause habitat loss (smothering), eutrophication, (leading to changes in species composition); -Siltation (agricultural runoff) can cause physical damage (barrier effects, habitat fragmentation), physical loss (smothering); -Agricultural and industrial outflow (incl. sheep dip) can cause toxic contamination of water, eutrophication, physical loss or damage (barrier effects); - Alteration of channel structure can lead to hydrological change (flow rate), physical loss and damage (erosion of silt beds); -Artificial barriers (e.g. flood defences) causing physical damage (barrier

[21] For impact of N on calcareous grasslands see, for example, Leake, J.R, 2006. Grassland Soil and Vegetation Response Following Nitrogen Saturation at Wardlaw Hay-Cop in UKEATE, 2006. Terrestrial Umbrella Annual Report [URL: ukreate.defra.gov.uk/publications/reports/Annual_report_2006.htm]

[22] Note that acid deposition is not recorded for base rich habitats such as listed here – See APIS, undated. Acid Deposition: Calcareous Grassland [URL: apis.ac.uk/node/923]: *"Acidifying deposition is generally agreed to have little effect of calcareous grasslands since the calcareous soil provides ample neutralising capacity"*

	• Otter *Lutra lutra*		effects, habitat fragmentation) to the site; -Water abstraction may lead to hydrological change (water level and flow rate); -Waste management may cause physical loss of habitat through removal and smothering, nutrient deposition, acidification, and hydrological change (water level and flow rate)
River Eden SAC	**Annex I habitats that are a primary reason for selection of this site** • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea;* Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; Rivers with floating vegetation often dominated by water-crowfoot • **Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae); Alder woodland on floodplains** **Annex II species that are a primary reason for selection of this site** • White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes* • Sea lamprey *Petromyzon marinus*	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Agricultural, transport and industrial runoff/discharge may affect water quality via nutrient enrichment, or cause physical damage (siltation) or toxic contamination of groundwater; -Inappropriate woodland management may lead to physical loss (removal and smothering) or physical damage (fragmentation).

	• *Lampetra planeri* • River lamprey *Lampetra fluviatilis* • Atlantic salmon *Salmo salar* • Bullhead *Cottus gobio* • Otter *Lutra lutra*		
Skipwith Common SAC	**Annex I habitats that are a primary reason for selection:** • Northern Atlantic wet heaths with Erica tetralix; Wet heathland with cross-leaved heath • European dry heaths	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Scrub invasion leading to physical loss of habitat via smothering by scrub encroachment; -Deep coal mining causing physical loss of habitat (removal and smothering) and hydrological change (water level and flow rate); -Recreational pressure leading to physical damage (erosion and fragmentation, accidental fires) -Operations likely to increase N or acid deposition to site (nutrient enrichment, change of soil pH)[23]
South Pennine Moors	**Annex I habitats that are a primary reason for selection:** • European dry heaths • **Blanket bogs** • Old sessile oak woods with Ilex and Blechnum in the British Isles **Annex I habitats present as a qualifying feature, but not a primary reason for selection:** • Northern Atlantic wet heaths	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely;	-Recreational pressure causing physical damage (trampling, erosion and fragmentation, accidental fires); -Overgrazing by sheep causing physical loss of habitat, physical damage (erosion, habitat fragmentation) and nutrient enrichment; - Poor muirburn management on grouse moors causing physical loss (removal), damage (habitat fragmentation), accidental fires; - Drainage may lead to hydrological change (water level and flow rate),

[23] JNCC Report No. 426 provides a good overview of the sensitivity of lowland heathland communities to air pollution: "*Heathland communities are very sensitive to acid deposition. The organo-mineral soils and stress tolerant vegetation mean they are sensitive to both acidification and eutrophication……in the UK experimental N additions at a level just above the critical load for N have shown changes in productivity, litter production, N cycling and Lichens in lowland heath… but little evidence of grass invasion was seen unless disturbance accompanied N treatment"* Stevens, C.J. et al, 2009. JNCC Report No. 426: Detecting and attributing air pollution impacts during SSSI condition assessment. JNCC, Peterborough [URL: jncc.defra.gov.uk/pdf/JNCC426web.pdf]

	with *Erica tetralix*; wet heathland with cross-leaved heath • Transition mires and quaking bogs; very wet mires often identifiable by an unstable 'quaking surface'	-The populations of qualifying species; -The distribution of qualifying species within the site	physical loss and damage (drying and fragmentation); - Process and transport industry may lead to atmospheric toxic and non-toxic pollution and deposition; - Fly-tipping can cause physical loss of habitat (smothering), biological damage (introduction of invasive species), nutrient enrichment and possible contamination of land
Strensall Common SAC	**Annex I habitats that are a primary reason for selection of this site** • Northern Atlantic wet heaths with *Erica tetralix;* Wet heathland with cross-leaved heath; • European dry heaths	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; -The populations of qualifying species; -The distribution of qualifying species within the site	-Poor muirburn management entailing physical loss of habitat, damage (through habitat fragmentation) and accidental fire spread; -Lack of scrub management causing physical loss (smothering by scrub encroachment); -Overgrazing by sheep causing physical loss (removal), physical damage (erosion, habitat fragmentation) and nutrient enrichment; -Recreational pressure causing physical damage (erosion and fragmentation, accidental fires); -Toxic effects on habitats by herbicides (e.g. from nearby golf course); -Operations likely to increase N or acid deposition to site (nutrient enrichment, change of soil pH)
Thorne Moor SAC	**Annex I habitats that are a primary reason for selection of this site** • Degraded raised bogs still capable of natural regeneration	With regard to the natural habitats and / or species for which the site has been designated (see Qualifying features); subject to natural change, to maintain or restore: -The extent and distribution of qualifying natural habitats and habitats of qualifying species;; -The structure and function (including typical species) of qualifying natural habitats and habits of qualifying species; -The supporting processes on which qualifying natural habitats and habitats of qualifying species	-Peat cutting leading to physical damage to habitat and hydrological change (groundwater level and flow rate); -Water abstraction / drainage / processes affecting hydrology – leading to hydrological change (groundwater level and flow rate); -Lack of scrub management – leading to physical loss (smothering by scrub encroachment) -Recreational pressure – leading to

		rely; -The populations of qualifying species; -The distribution of qualifying species within the site	physical damage (erosion and fragmentation, accidental fires) and disturbance (noise, trampling, presence); -Operations likely to increase N or acid deposition to site (nutrient enrichment, change of soil pH)[24]

[24] As 'ombotrophic' (wholly rain fed) ecosystems lowland raised bogs rely on atmospheric sources of nutrients. This makes them sensitive to increased N deposition which leads to eutrophication. Acid deposition can also result in changes to species composition, particularly declines in species groups such as Sphagnum. (JNCC, 2009)

Name of Site	Qualifying features	Conservation Objectives (*Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features).*	Key Threats to Site Integrity
Bowland Fells SPA	Annex 1 birds and regularly occurring migratory birds not listed on Annex 1 • *Circus cyaneus* –Hen harrier - supports 1.3% of the GB breeding population • *Falco columbarius* – Merlin - supports 1.5% of the GB breeding population • *Larus fuscus* – Lesser black-backed gull - 7.6% of breeding population Article 4.1 qualification • *Circus cyaneus;* • *Falco columbarius* Article 4.2 qualification • *Larus fuscus*	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Sheep grazing is seen as threat that could lead to physical loss of habitat (removal), and physical damage (trampling); -Poor muirburn management leading to physical loss of habitat, and damage (such as habitat fragmentation); - Drainage could lead to hydrological change (water level and flow rate), physical loss and damage (drying and fragmentation); - Specimen collecting may lead to biological disturbance (selective extraction of species)
Flamborough Head & Bempton Cliffs SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Rissa tridactyla* – Black legged Kittiwake - supports 2.6% of the breeding population during the breeding season Article 4.1 qualification • *Rissa tridactyla*	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely;	-Fishing may result in physical damage (erosion, fragmentation of the submerged habitat); -Industrial discharge may lead to toxic contamination as well as sedimentation, changes in turbidity, changes in salinity, or changes in the thermal regime; -Recreational disturbance may lead to physical damage (erosion and fragmentation, accidental fires) as well as reduced bird breeding productivity.

		-The populations of the qualifying features; -The distribution of the qualifying features within the site.	
Humber Flats, Marshes and Coast SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Anas crecca*; Eurasian Teal • *Anas penelope*; Eurasian Wigeon • *Anas platyrhynchos*; Mallard • *Arenaria interpres*; Ruddy turnstone • *Aythya marila;* Greater scaup • *Botaurus stellaris*; Great bittern • *Branta bernicla bernicla*; Dark-bellied brent goose • *Bucephala clangula;* Common goldeneye • *Calidris alba*; Sanderling • *Calidris alpina alpine*; Dunlin • *Calidris canutus*; Red knot • *Charadrius hiaticula*; Common ringed plover • *Circus aerouginosus*; Western Marsh-harrier • *Circus cyaneus*; Hen harrier • *Haematopus ostralegus*; Eurasian oystercatcher • *Limosa lapponica*; Bar-tailed godwit • *Limosa limosa islandica*; Black-tailed godwit • *Numenius arquata*; Eurasian curlew • *Numenius phaeopus*; Whimbrel • *Philomachus pugnax*; Ruff • *Pluvialis apricaria;* Golden plover • *Pluvialis squatarola;* Grey plover	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Coastal development such as housing, commercial, and industrial development may lead to physical loss of habitat; -Flood defence could lead to loss and degradation of habitat, fragmentation, barrier effects (including coastal squeeze), changes in hydrology (flow rate and water level); -Sewage discharge (domestic and industrial) could lead to eutrophication, sedimentation, changes in turbidity and pH, salinity, indirect effects of reduced water quality on food resources; -Recreation pressure may lead to impacts on integrity of breeding and wintering population via disturbance (noise, trampling, presence) - Hydrological changes (such as increased abstraction causing reduced freshwater input); Lack of reedbed management causing scrub encroachment.

	• *Recurvirostra avosetta*; Pied avocet • *Sterna albifrons*; Little tern • *Tadorna tadorna*; Common shelduck • *Tringa nebularia*; Common greenshank • *Tringa tetanus*; Common redshank • *Vanellus vanellus:* Northern lapwing Article 4.1 qualification -Breeding season • *Botaurus stellaris*; Great Bittern • *Circus aeruginosus*; Eurasian marsh harrier • *Recurvirostra avosatta;* Pied avocet • *Sterna albifrons*; Little tern -Wintering • *Botaurus stellaris*; Great Bittern • *Circus aeruginosus*; Eurasian marsh harrier • *Limosa lapponica*; Bar –tailed godwit • *Pluvialis apricaria*; European golden plover • *Recurvirostra avosetta*; Pied avocet -On passage • *Philomachus pugnax*; Ruff Article 4.2 qualifiction -Wintering • *Calidris alpina alpina*; Dunlin • *Calidris canutus*; Red knot • Limosa limosa islandica; Black-tailed godiwit • Tadorna tadorna; Common		

	shelduck • Tringa totanus; Common redshank -On passage • Calidris alpina alpina; Dunlin • Calidris canutus; Red knot • Limosa limosa islandica; Black-tailed godwit • Tringa totanus; Common redshank -An internationally important assemblage of birds 153934 waterfowl		
Leighton Moss SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Botaurus stellaris*; Great bittern • *Circus aeruginosus*; Eurasian marsh harrier Article 4.1 qualification • *Botaurus stellaris*; Great bittern • *Circus aeruginosus*; Eurasian marsh harrier	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Contamination may occur due to eutrophication by agrochemicals or through saline incursion -Changes in water levels (including through groundwater extraction) may cause changes in hydrology (flow rate and water levels). Stability during breeding season is particularly important; -Lack of scrub control may lead to physical loss (smothering) of habitat and changes in hydrology -Dead leaf litter accumulation may cause habitat loss due to drying out of reed beds -Recreational disturbance leading to noise, trampling and disturbance.
Lower Derwent Valley SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Anas clypeata*; Northern shoveler • *Anas crecca*; Eurasian teal • *Anas penelope*; Eurasian wigeon • Bewick's swan (*Cygnus columbianus bewickii)* - regularly supports 0.7% of the GB population	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of	-Dead leaf litter accumulation may cause habitat loss due to drying out of reed bed; -Coal or other extraction industry may cause physical loss of habitat (removal and smothering) or hydrological change (water level and flow rate); -Flood management and tidal barrage may exhibit effects such as hydrological change (water level and flow rate), physical damage (barrier effects and

	• Ruff (*Philomachus pugnax)* - supports 19% of the GB population • Golden plover (*Pluvialis apricaria)* - regularly supports at least 2.4% of the GB breeding population Article 4.1 qualification -Winter • *Cygnus columbianus bewickii*; Bewick's swan • *Philomachus pugnax*; Ruff • *Pluvialis apricaria*; European golden plover Article 4.2 Qualification -Breeding • *Anas clypeata*; Northern shoveler -Wintering • *Anas crecca*; Eurasian teal • *Anas Penelope*; Eurasian wigeon Article 4.2 qualification • 40616 waterfowl, including: • *Cygnus columbianus bewickii* • *Anas Penelope* • *Anas crecca* • *Pluvialis apricaria* • *Philomachus pugnax*	the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	habitat fragmentation); -Domestic and industrial sewage outflow may lead to non-toxic contamination (phosphorous enrichment); -Intensive agriculture may lead to physical loss of habitat (removal), physical damage (erosion, habitat fragmentation, siltation of waterbodies from agricultural runoff), contamination of groundwater (e.g. from sheep dipping) and nutrient enrichment; -Process industry may cause acidification of wetlands from sulphur deposition; -Alteration of channel structure (canalisation, artificial barriers, etc.) may lead to physical loss and damage (removal of and damage to riverside woodlands, barrier effects and habitat fragmentation), or hydrological change (water level and flow rate); -Water abstraction could cause hydrological change (water level and flow rate) or physical damage (drying and habitat fragmentation); -Waste management (e.g. landfill) may lead to physical loss (removal and smothering), nutrient deposition and acidification, hydrological change (water level and flow rate); -Housing development, inappropriate access and other development could cause recreation pressure leading to physical damage (erosion and fragmentation, accidental fires) and disturbance of nesting and/or over-wintering birds, as well as physical loss of habitat.

Morecambe Bay SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Anas acuta*; Northern pintail • *Anser brachyrhynchus*; Pink-footed goose • *Arenaria interpres*; Ruddy turnstone • *Calidris alpina alpina*; Dunlin • *Calidris canutus*; Red knot • *Charadrius hiaticula*; Ringed plover • *Haematopus ostragegus*; Eurasian oystercatcher • *Limosa lapponica*; Bar-tailed godwit • *Numenius arquata*; Eurasian curlew • *Pluvialis squatarola*; Grey plover • *Sterna sandvicensis*; Sandwich tern • *Tadorna tadorna*; Common shelduck • *Tringa totanus*; Common redshank Article 4.1 qualification -Breeding • *Sterna sandvicensis*; Sandwich tern -Wintering • *Anas acuta*; Northern pintail • *Anser brachyrhynchus*; Pink-footed goose	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Land claim for agriculture would lead to physical loss of habitat (removal); -Intensive agriculture leading to physical loss of habitat (removal), physical damage (erosion, habitat fragmentation, siltation from agricultural runoff), toxic contamination of groundwater (sheep dipping), and nutrient enrichment; -Intensive grazing may cause physical loss of habitat (removal), physical damage (trampling); -Coastal protection and flood defence leading to prevention of natural erosion, loss and degradation of habitat, fragmentation, barrier effects, changes in hydrology (flow rate and water level); -Fishing may cause physical damage (erosion, fragmentation); -Quarrying may lead to physical loss of habitat (removal), physical damage (sedimentation, erosion, fragmentation, barrier effects), hydrological change (water level), and changes in thermal regime and turbidity; -Gas exploration may lead to physical damage; -Recreational disturbance may lead to physical damage (erosion and fragmentation)

	• *Arenaria interpres*; Ruddy turnstone • *Calidris alpina alpina*; Dunlin • *Calidris canutus;* Red knot • *Haematopus ostragegus*; Eurasian oystercatcher • *Limosa lapponica*; Bar-tailed godwit • *Numenius arquata*; Eurasian curlew • *Pluvialis squatarola*; Grey plover • *Tadorna tadorna*; Common shelduck • *Tringa totanus*; Common redshank -On passage • *Charadrius hiaticula*; Ringed plover Article 4.2 qualification • 61858 seabirds (breeding), including *sterna sandvicensis* • 210668 waterfowl (wintering)		
North Pennine Moors SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Circus cyaneus* – Hen Harrier - regularly supports 2.2% of the GB breeding population • *Falco columbarius* – Merlin - regularly supports 10.5% of the GB breeding population	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the	-Intensive grazing causing physical loss of habitat (removal), physical damage (erosion, habitat fragmentation) and nutrient enrichment; -Agrochemicals (sheep dip) causing toxic contamination of groundwater; -Agricultural drainage causing hydrological change (water level and flow rate), physical loss and damage

	• *Falco peregrinus* – Peregrine falcon - regularly supports 1.3% of the GB breeding population • *Pluvialis apricaria* – European golden plover - regularly supports at least 6.2% of the GB breeding population Article 4.1 qualification: -Breeding • *Circus cyaneus*; Hen harrier • *Falco columbarius*; Merlin • *Falco peregrinus*; Peregrine falcon • *Pluvialis apricaria*; European golden plover Additional Qualifying features identified by the 2001 UK SPA review[25]: • *Calidris alpina alpina*; Dunlin • *Numenius arquata*; Eurasian curlew	qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	(drying and fragmentation); -Poor muirburn management leading to physical loss (removal), damage (habitat fragmentation); -Process industry causing acid and nitrogen deposition; -Waste management (landfill) causing acid and nitrogen deposition, changes in hydrology; -Woodland management may lead to physical loss of habitat (removal and smothering) or physical damage (fragmentation); -Recreational disturbance may lead to physical damage (erosion and fragmentation, accidental fires); disturbance of nesting birds. -Loss / improvement of in bye (enclosed) land
North York Moors SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Falco columbarius*; Merlin • *Pluvalius apricaria*; European golden plover Article 4.1 qualification -Breeding • *Falco columbarius*; Merlin • *Pluvalius apricaria*; European golden plover	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Agricultural management (e.g. overgrazing) causing physical loss of habitat (removal), physical damage (erosion, habitat fragmentation, and non-toxic contamination (nutrient enrichment); and under-grazing leading to physical loss (smothering, scrub encroachment), this includes improvement of in bye land; -Poor muirburn management may lead to physical loss of habitat (removal) and damage to habitats (e.g. through habitat fragmentation); -Agricultural drainage could cause hydrological change (water level and

[25] Additional qualifying features were added to some SPAs following a review by JNCC published in 2001

			flow rate), physical loss and damage (drying and fragmentation); -Recreational pressure could cause physical damage (erosion and fragmentation, accidental fires) and disturbance of nesting birds; -Illegal persecution of raptors may cause loss of species, reduced breeding success
South Pennine Moors Phase 2 SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Asio flammeus* – Short-eared owl - regularly supports at least 0.3% of the GB breeding population • *Falco columbarius* – Merlin - regularly supports at least 2.2% of the GB breeding population • *Pluvialis apricaria* – European golden plover - regularly supports 1.3% of the GB breeding population Article 4.1 qualification -Breeding • *Asio flammeus*; Short-eared owl • *Falco columbarius;* Merlin • *Pluvalius apricaria*; European golden plover Article 4.2 qualification -An internationally important assemblage of birds including (breeding): • *Actitis hypoleucos*; Common sandpiper • *Calidris alpina schinzill;* Dunlin • *Corduelis flavirostris*; Twite • *Gallinago gallinago;* Common snipe • *Numenius arquata;* Eurasian	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Recreational pressure leading to physical damage (trampling, erosion and fragmentation, accidental fires); -Overgrazing by sheep causing physical loss of habitat (removal), physical damage (erosion, habitat fragmentation), and nutrient enrichment; -Poor muirburn management on grouse moors - physical loss of habitat (removal), damage (habitat fragmentation), accidental fires; -Agricultural drainage may cause hydrological change (water level and flow rate), physical loss and damage (drying and fragmentation) -Loss / improvement of in bye (enclosed) land

	curlew • *Oenathe oenanthe*; Northern wheatear • *Saxicola rubertra;* Whinchat • *Tringa totanus; Common redshank* • *Turdus torquatus*; Ring Ouzel • *Vanellus vanellus*; Northern Lapwing Additional qualifying features identified by the 2001 UK SPA Review: • *Falco peregrinus*; Peregrine falcon (breeding) • *Asio Flammeus*; Short-eared owl (breeding) • *Calidris alpina schinzii*; Dunlin (breeding)		
Teesmouth & Cleveland Coast SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Sterna albifrons –Little tern* - regularly supports 1.7% of the GB breeding population • *Sterna sandvicensis –Sandwich tern* - regularly supports 6.8% of the GB breeding population Article 4.1 qualification -Breeding • *Sterna albifrons;* Little tern -On passage • *Sterna sandvicensis*; Sandwich tern Article 4.2 qualification -Wintering: • *Calidris cantutus;* Red knot -On passage:	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Process industry causing depletion of oxygen in the water, reductions in species, habitat loss; -Flood management leading to hydrological change (water level and flow rate), physical damage (barrier effects and habitat fragmentation); - Alteration of channel structure causing hydrological change (flow rate) and physical loss and damage (erosion of silt beds); -Scrub invasion causing physical loss (smothering by scrub encroachment); -Recreational pressure leading to physical damage (trampling, erosion and fragmentation), impacts on breeding birds due to disturbance (noise, trampling, presence); -Bait gathering resulting in loss of species, reduced breeding success.

	• *Tringa totanus*; Common redshank Over winter the area regularly supports 12312 waterfowl including *Calidris canutus* Additional Qualifying features Identified by the 2001 UK SPA Review: • *Charadrius hiaticula*; Ringed plover (Non breeding)		
Thorne and Hatfield Moors SPA	**Annex I birds and regularly occurring migratory birds not listed on Annex 1:** • *Caprimulgus europaeus;* European nightjar Article 4.1 qualification -Breeding • *Caprimulgus europaeus;* European nightjar	With regard to the individual species and/or assemblage of species for which the site has been classified; Subject to natural change, to maintain or restore: -The extent and distribution of the habitats of the qualifying features; -The structure and function of the habitats of the qualifying features; -The supporting processes on which the habitats of the qualifying features rely; -The populations of the qualifying features; -The distribution of the qualifying features within the site.	-Peat cutting leading to physical damage (loss), hydrological change (groundwater level and flow rate); - Water abstraction causing hydrological change (groundwater level and flow rate); - Lack of scrub management resulting in physical loss (smothering by scrub encroachment); - Recreational pressure leading to physical damage (erosion and fragmentation, accidental fires) and disturbance (noise, trampling, presence).

Name of Site	**Qualifying features**	**Conservation Objectives**	**Key Threats to Site Integrity**

Humber Estuary Ramsar	The site qualifies under: **Ramsar criterion 1**: The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. **Ramsar criterion 3**: The Humber Estuary Ramsar site supports a breeding colony of grey seals *Halichoerus grypus* at Donna Nook. It is the second largest grey seal colony in England and the furthest south regular breeding site on the east coast. The dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad *Bufo calamita*. **Ramsar criterion 5:** Assemblages of international importance – 153,934 waterfowl, non breeding season. **Ramsar criterion 6:** species / populations at levels of international importance: *- Pluvialis apricaria altifrons (on passage: 2.2% of population)* *- Calidris canutus islandica (on passage: 4.1 %);* *- Calidris alpine alpine (on passage: 1.5 %);* *-Limosa limosa islandica (on passage:*	For most Ramsar sites interest features are covered by the conservation objectives for the SAC, Special Protection Area or Site of Special Scientific Interest as appropriate. However, in 2003 English Nature published specific advice[26] on conservation objectives for Ramsar criteria[27] at the site. These are: <u>Criteria 3</u>: Subject to natural change, maintain the wetland hosting a breeding colony of grey seals in favourable condition, in particular: -Intertidal mudflats and sandflats <u>Criteria 5:</u> Subject to natural change, maintain the wetland regularly supporting 20,000 or more waterfowl in favourable condition, in particular: -Intertidal mudflats and sandflats; -Saltmarsh communities; -Tidal reedbeds -Coastal lagoons <u>Criteria 6</u>: Subject to natural change, maintain the wetland regularly supporting 1 percent or more of the individuals in a population of one species or sub-species of waterfowl in favourable condition, in particular: -Intertidal mudflats and sandflats; -Saltmarsh communities; -Tidal reedbeds -Coastal lagoons	-Coastal development (housing, commercial, industry) leading to loss and degradation of habitat, (toxic and non-toxic contamination, erosion, fragmentation, sedimentation, etc.) impacts on integrity of breeding and wintering population via disturbance (noise, trampling, presence); -Flood defence leading to loss and degradation of habitat, fragmentation, barrier effects and coastal squeeze, changes in hydrology (flow rate and water level); -Sewage discharge (domestic and industrial) and pollution from fertiliser ingress resulting in eutrophication, sedimentation changes in turbidity and pH, salinity, indirect effects of reduced water quality on food resources. Upstream pollution may cause a barrier to fish migration; -Recreation pressure causing impacts on integrity of breeding and wintering population via disturbance (noise, trampling, presence); Hydrological changes (such as increased abstraction causing reduced freshwater input); Lack of reedbed management causing scrub encroachment.

[26] English Nature, 2003. The Humber Estuary European Marine Site: English Nature's advice given under Regulation 33 (2) of the Conservation (Natural Habitats &c.) Regulations 1994: Interim Advice, April 2003 [URL: humberems.co.uk/downloads/English%20Natures%20Reg%2033%20Advice.pdf]

[27] At the time of publication the Humber Estuary qualified under criteria 2, 3, 5 and 6.

	2.6%); *-Tringa totanus brittanica (on passage*: 5.7%) *-Tadorna tadorna (wintering: 1.5%)* *-Pluvialis apricaria altifrons (wintering:3.8% of population)* *-Calidris canutus islandica (wintering: 6.3%);* *- Calidris alpine alpina (wintering: 1.7%);* *- Limosa limosa islandica (wintering: 3.2%);* *- Limosa lapponica lapponica (wintering: 2.3%);* *- Tringa totanus brittanica (wintering: 3.6%)*. **Ramsar criterion 8:** The Humber Estuary acts as an important migration route for both river lamprey *Lampetra fluviatilis*and sea lamprey *Petromyzon marinus* between coastal waters and their spawning areas.		
Lower Derwent Valley Ramsar	The site qualifies under: **Ramsar criterion 1**: The site represents one of the most important examples of traditionally managed species-rich alluvial flood meadow habitat remaining in the UK. The river and flood meadows play a substantial role in the hydrological and ecological functioning of the Humber Basin. **Ramsar criterion 2**: The site has a rich assemblage of wetland invertebrates including 16 species of dragonfly and damselfly, 15 British Red Data Book wetland invertebrates as well as a leafhopper, *Cicadula ornate* for which Lower Derwent Valley is the only known site in Great Britain	No specific Ramsar conservation objectives have been published for this site. This Ramsar site's interest features are covered by the conservation objectives for the SAC, Special Protection Area or Sites of Special Scientific Interest as appropriate.	-Coal or other mineral extraction causing physical loss (removal and smothering), hydrological change (water level and flow rate); -Flood management and tidal barrage leading to hydrological change (water level and flow rate), physical damage (barrier effects and habitat fragmentation); - Domestic and industrial sewage outflow causing nutrient / phosphorous enrichment; - Intensive agriculture leading to physical loss of habitat (removal), physical damage (erosion, habitat fragmentation, siltation from agricultural runoff), toxic contamination of groundwater (sheep dipping), and non-toxic contamination (nutrient

	Ramsar criterion 4: The site qualifies as a staging post for passage birds in spring. Of particular note are the nationally important numbers of Ruff, *Philomachus pugnax* and Whimbrel, *Numenius phaeopus*. **Ramsar criterion 5**: Assemblages of international importance – 31942 waterfowl – species with peak counts in winter. **Ramsar criterion 6:** species / populations at levels of international importance: -*Anas Penelope* (2% of GB population); -*Anas crecca* (1% of the population);		enrichment); - Process industry causing non-toxic contamination (acidification from sulphur deposition); - Alteration of channel structure (canalisation, artificial barriers, etc.) leading to physical loss and damage (removal of and damage to riverside woodlands, barrier effects and habitat fragmentation), hydrological change (water level and flow rate); -Water abstraction resulting in hydrological change (water level and flow rate), physical damage (drying and habitat fragmentation); - Waste management (including landfill) causing physical loss of habitat (removal and smothering), nutrient deposition and acidification and hydrological change (water level and flow rate); - Housing, inappropriate access and other development leading to recreational pressure may lead to physical damage (erosion and fragmentation, accidental fires); disturbance of nesting and/or over-wintering birds.
Malham Tarn Ramsar	The site qualifies under: **Ramsar criterion 1**: Contains the highest marl lake in Britain, along with acidophilous bog, calcareous fen and soligenous mire. **Ramsar criterion 2**: Supports the nationally rare alpine bartisia *Bartsia alpina* and narrow small reed *Calamagrostis* *stricta* and seven nationally scarce species. Supports five listed British Red Data Book invertebrates	No specific Ramsar conservation objectives have been published for this site. This Ramsar site's interest features are covered by the conservation objectives for the Sites of Special Scientific Interest as appropriate.	- Process industry leading to acidification of habitat from sulphur deposition; - Agricultural drainage causing hydrological change (water level and flow rate); - Recreational pressure may cause physical damage (erosion and fragmentation); - Quarrying could cause physical loss of habitat (removal), physical damage (sedimentation, erosion, fragmentation, barrier effects), hydrological change (water level), and changes in thermal

	including the caddis fly *Agrypnia crassicornis*		regime and turbidity; - Agricultural and industrial runoff in catchment could lead to non-toxic contamination (nutrient enrichment).
Morecambe Bay Ramsar	The site qualifies under: **Ramsar criteria 4**: The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover *Charadrius hiaticula*. **Ramsar criterion 5**: Assemblages of international importance – 223709 waterfowl – species with peak counts in winter. **Ramsar criterion 6**: species / populations at levels of international importance: Regularly supported during breeding season: -*Larus fuscus graellsii* (13.3% of the breeding population) -*Larus argentatus argentatus* (2.8% of the breeding population) -*Sterna sandvicensis sandvicensis* (2.8% of GB population) Species with peak counts in spring / autumn: -*Phalacrocorax carbo carbo* (4.2 % of the GB population; -*Tadorna tadorna* (2.3% of the population) -*Anas acuta* (6.2 % of the population -*Somateria mollisima mollisima* (7.7 % of the GB population) -*Haematopus ostralegus ostralegus* (6.5% of the GB population) -*Charadrius hiaticula* (1.4% of the	No specific Ramsar conservation objectives have been published for this site. This Ramsar site's interest features are covered by the conservation objectives for the SAC, Special Protection Area or Sites of Special Scientific Interest as appropriate.	-Land claim for agriculture may lead to physical loss (removal) of habitat; -Intensive agriculture could cause physical loss of habitat (removal), physical damage (erosion, habitat fragmentation, siltation from agricultural runoff), toxic contamination of groundwater (sheep dipping), and nutrient enrichment of habitats; -Intensive grazing leading to physical loss of habitat and physical damage (trampling); - Coastal protection and flood defence may have the effect of preventing natural erosion, and / or causing loss and degradation of habitat, fragmentation, barrier effects and changes in hydrology (flow rate and water level); -Fishing may lead to physical damage to habitat (erosion, fragmentation); -Quarrying may cause physical loss of habitat, physical damage (sedimentation, erosion, fragmentation, barrier effects), hydrological change (water level), or changes in thermal regime and turbidity; -Gas exploration may result in physical damage to habitat; -Recreational disturbance may lead to physical damage (erosion and fragmentation)

	population) -*Pluvalius squatarola* (3.1% of GB population) -*Calidris alba* (3.4%of the GB population) -*Numenius arquata arquata* (4.7% of the population) -*Tringa totanus totanus* (3.5% of the population) -*Arenaria interpres interpres* (1.4% of the population) -*Larus fuscus graellsii* (7.6% of the population) Species with peak counts in winter: -*Podiceps cristatus cristatus* (1.3% of the population) -*Anser brachyrhynchus* (1.5% of the population) -*Anas Penelope* (1.5% of the GB population) -*Bucephala clangula clangula* (1.1% of the GB population) -*Mergus serrator* (3.3% of the GB population) -*Pluvailis apricaria apricaria* (1.6% of the GB population) -*Vanellus vanellus* (1% of the GB population) -*Calidris canutus islandica* (14.7% of the population) -*Calidris alpina alpina* (1.9% of the population) -*Limosa lapponica lapponica* (3.8 % of the population)		
Teesmouth & Cleveland Coast Ramsar	The site qualifies under Ramsar criterion 5: Assemblages of international importance - 9528 waterfowl – species with peak counts in winter. Ramsar criterion 6 – species occurring at	No specific Ramsar conservation objectives have been published for this site. This Ramsar site's interest features are covered by the conservation objectives for the SAC, Special Protection Area or Sites of Special Scientific Interest as appropriate.	-Process industry could cause depletion of oxygen / eutrophication in the water, reductions in species, habitat loss; -Flood management may cause hydrological change (water level and flow rate) or physical damage (barrier effects and habitat fragmentation); - Alteration of channel structure could

	levels of international importance: Species with peak counts in spring / autumn *Calidris canutus islandica* (0.9% of the GB population) Species with peak counts in winder *Calidris canutus islandica* (0.9% of the GB population)		lead to hydrological change (flow rate), physical loss and damage (erosion of silt beds); - Scrub invasion may result in physical loss of habitat (i.e. smothering by scrub encroachment); -Recreational pressure could cause physical damage to habitat (trampling, erosion and fragmentation), impacts on integrity of breeding and via disturbance (noise, trampling, presence); -Bait gathering leading to loss of species, reduced breeding success

Appendix 5.3: Flamborough and Filey Coast pSPA and Flamborough Head pSAC

Flamborough and Filey Coast pSPA -

The northern part of the pSPA boundary stretches from the southern end of Cayton Bay to the northern stretch of Filey Bay, and includes a large off shore component. The southern part of the site begins in the southern part of Filey Bay and curves around Flamborough Head to Sewerby. Overview maps of the northern and southern areas of the pSPA can be viewed at:

Northern Area: naturalengland.org.uk/Images/FH-FC-north_tcm6-37226.pdf

Southern Area: naturalengland.org.uk/Images/FH-FC-south_tcm6-37227.pdf

The following interest features are recorded for the site.

Feature	**Population**
Black-legged kittiwake	44,250 pairs; 89,041 breeding adults (2008-2011)
Northern gannet	8,469 pairs, 16,938 breeding adults (2008 – 2012)
Common guillemot	41,607 pairs; 83214 breeding adults (2008 – 2011)
Razorbill	10,570 pairs; 21,140 breeding adults(2008 – 2011)
Seabird assemblage of international importance	215,750 individual seabirds (2008-2012) including the following named components: black-legged kittiwake, northern gannet, common guillemot, razorbill and also northern fulmar. Atlantic puffin, herring gull, European shag and great cormorant are also part of the seabird assemblage.

Source: naturalengland.org.uk/Images/Flamborough-citation_tcm6-37217.pdf [Accessed 31/01/2014]

Key threats to Site Integrity

These are considered to be broadly similar to the existing Flamborough Head and Bempton Cliffs SPA:

-Fishing may result in physical damage (erosion, fragmentation of the submerged habitat);

-Industrial discharge may lead to toxic contamination as well as sedimentation, changes in turbidity, changes in salinity, or changes in the thermal regime;

-Recreational disturbance may lead to physical damage (erosion and fragmentation, accidental fires) as well as reduced bird breeding productivity.

Flamborough Head pSAC

Similarly to the pSPA, it is proposed that the landward boundary of the existing Flamborough Head SAC be modified to ensure that the features of the SAC remain within the site into the future. No additional interest features are proposed. The site boundary for the Flamborough Head pSAC can be viewed at: naturalengland.org.uk/Images/FH-overview_tcm6-37247.pdf.

Appendix 6: Consideration of the Water Framework Directive in the SEA

Consideration of the Water Framework Directive in the SEA

The Water Framework Directive

The European Water Framework Directive (2000/60/EC) (WFD) became part of UK law in December 2003 as part of The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The purpose of the WFD is for the achievement of good chemical status (GCS) and good ecological status (GES) in all natural water bodies (NWBs), and for good ecological potential (GEP) to be reached in all artificial water bodies (AWBs) and heavily modified water bodies (HMWBs). All water bodies must reach GES or GEP by 2015.

The WFD requires that environmental objectives are set for all surface and ground water bodies in EU member states. These objectives are outlined in Table WFD1, below.

Table WFD1: Environmental objectives of the Water Framework Directive.

Objectives	Reference
Surface Waters	
Member States shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water.	Article 4.1(a)(i)
Member States shall protect, enhance and restore all bodies of surface water, subject to the application of subparagraph (iii) for artificial and heavily modified bodies of water, with the aim of achieving good surface water status at the latest 15 years after the date of entry into force of the Directive.	Article 4.1(a)(ii)
Member States shall protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status at the latest 15 years from the date of entry into force of the Directive.	Article 4.1(a)(iii)
Member States shall implement the necessary measures in accordance with Article 16(1) and (8), with the aim of progressively reducing pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances.	Article 4.1(a)(iv)
Groundwater	
Member States shall implement the measures necessary to prevent or limit the input of pollutants into groundwater and to prevent the deterioration of the status of all bodies of groundwater.	Article 4.1(b)(i)
Member States shall protect, enhance and restore all bodies of groundwater, ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status at the latest 15 years after the date of entry into force of the Directive.	Article 4.1(b)(ii)
Member States shall implement the measures necessary to reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order progressively to reduce pollution of groundwater.	Article 4.1(b)(iii)
Other Water Bodies	
Member States shall ensure that the application does not permanently exclude or compromise the achievement of the objectives of this Directive in other bodies of water within the same river basin district and is consistent with the implementation of other Community environmental legislation.	Article 4.8
Other EU Legislation	
Member States shall ensure that the application of the new provisions guarantees at least the same level of protection as the existing Community legislation.	Article 4.9

In order to help achieve these objectives, the Environment Agency has identified 11 River Basin Districts across England and Wales so that the water environment can be managed appropriately.

The area covered by North Yorkshire lies within the River Basin District (RBD) of the Humber River (which covers the majority of the county) and partially within the North West River Basin District and the Northumbria River Basin District. The Humber River Basin District covers a large area – from the North York Moors in the North, to Birmingham in the south.

The Humber RBD contains a total of 1165 water bodies[28] (430 of which are HMWBs, 177 are AWBs and 558 are NWBs). The North West River Basin covers a small area of the western most part of North Yorkshire and the Yorkshire Dales National Park, including the town of Settle. The Northumbria RBD also covers small areas of North Yorkshire to the north of the county.

The River Basin Management Plans (RBMPs) define 'status objectives' for each water body and outline a series of mitigation measures so that each RBD may reach the required status in all of its water bodies. The ecological status of a given water body is based on its biological quality elements. However, in order to achieve the overall aims of the WFD, each water body must also pass a chemical status assessment, which relates to concentrations of identified priority or dangerous substances.

The Directive requires that any activities must not lead to a water body failing to meet its specific WFD status objectives, or prevent conditions from improving. Activities, such as those outlined within the Local Flood Risk Management Strategy, may positively or negatively affect the achievement of a water body's status objectives, for instance by affecting RBMP mitigation measures. In some cases, opportunities may be identified through the LFRMS which can contribute to RBMP mitigation measures for water bodies to help them achieve their WFD status target, while in other cases an action in the LFRMS may lead to a decline in the status of a water body, or may do something to prevent it meeting its stated target.

The ways in which we have integrated the Water Framework Directive into this SEA

In our scoping report we set out an approach to ensure that the Water Framework Directive's objectives are not compromised through the outcomes of the LFRMS. As the LFRMS is a strategic plan, assessment in line with the WFD will be carried out which highlights any tensions at a strategic level of the LFRMS. As a strategic environmental assessment of wider environmental impacts has been undertaken for the LFRMS, the concept of WFD Assessment has been integrated with the SEA process. This has been achieved via the following steps:

[28] The definition of water body includes rivers, lakes, transitional and coastal waters, artificial surface water bodies such as reservoirs and canals.

Step 1: Testing of the SEA objectives against a series of relevant high level objectives that correspond with the Water Framework Directive;

Step 2: Scoping the assessment through baseline data collection (integrated with the SEA baseline);

Step 3: Strategic assessment – Assessing the LFRMS objectives and actions against the WFD compliant SEA Framework.

Results of Steps 1 and 2

At the scoping stage of the SEA we carried out steps 1 and 2 of the WFD assessment process. Step 1 involved reviewing the identified objectives of the Water Framework Directive (consistent with Article 4.1), against the SEA objectives and sub objectives. This broadly showed that the SEA objectives, taken as a whole, were compatible with WFD objectives. After consultation and further review a finalised high level WFD assessment table has been produced.

Table WFD2: Finalised High Level WFD assessment against SEA objectives and sub-objectives.

SEA Objectives		WFD Objective					
		WFD1	WFD2	WFD3	WFD4	WFD5	WFD6
Objectives	**Sub-Objectives**	Prevent deterioration in status of water bodies	Achieve good ecological status/good ecological potential for surface waters	Achieve good chemical status for surface water and groundwater	Achieve good quantitative status for groundwater	Comply with standards for protected areas	Reduce pollution of surface waters and groundwater
1. To minimise flood risk and to reduce the impact of flooding.	a. Raise awareness amongst public and businesses of the potential for flooding and its likely effects.						
	b. Promote opportunities for sustainable flood alleviation, working with natural processes and systems where possible.						
	c. Reduce the number of people and properties at risk of flooding.						
2. To protect and enhance biodiversity and geodiversity and improve habitat connectivity.	a. To use natural systems and processes to enhance habitat networks (including connectivity) & biodiversity, including national and local targets for priority species and habitats.						
	b. To protect and where possible, enhance designated nature conservation sites and protected species.						
	c. To protect and enhance riparian, wetland and floodplain habitats.						

	d. Avoid damage to designated, regional and local geological assets.						
	e. To recognise and enhance the natural environment to deliver ecosystem services.						
3. To enhance or maintain water quality and improve efficiency of water use.	a. To ensure that WFD status objectives for surface & groundwater are not compromised by maintaining or improving upon, quantitative, ecological and chemical status of water bodies.						
	b. To ensure that WFD standards for protected areas are complied with.						
	c. To reduce pollution of surface waters and groundwater.						
4. To safeguard and use soil & land efficiently, and where possible, enhance their environmental and aesthetic qualities.	b. To conserve and enhance soil resources and quality.						
	c. To promote good land management practices that increase flood resilience.						
	d. Reduce the amount of derelict, contaminated, degraded and vacant/underused land.						
5. To conserve & where possible, enhance the historic environment and cultural heritage.	a. To ensure that the landscape character of North Yorkshire is conserved and where possible, enhanced.						
	b. To protect and where possible, enhance elements, include setting, of historical assets.						
	c. To minimise the harm which flooding causes to the significance of heritage assets						
6. To reduce the causes of climate change and to respond and adapt to the effects of climate change.	a. To ensure that flood risk management and mitigation strategies in the LFRMS take into account the effects of climate change.						
	b. To ensure that the LFRMS includes climate adaptation measures when taking into account future flood risk.						
	c. Ensure 'sustainable adaptation' is taken into account when planning flood risk management and mitigation strategies, particularly on the coast where adaptation should include natural coastal processes wherever possible and in-line with SMP policies.						
7. To protect and where possible, improve the wellbeing, health and safety of local communities.	a. To improve health and wellbeing of local communities.						
	b. To maintain and where possible, increase access to the public rights of way network and the wider countryside.						
	c. To provide opportunities for people to access the natural environment.						
	d. To ensure the safety and security of local people through flood management and reduction of flood risk.						
	e. To ensure that water pollution does						

	not pose unacceptable risks to health.						
	f. To enable the community to contribute to and have influence in decision making on flood risk management and mitigation.						
8. To conserve and protect important and essential material assets and infrastructure.	a. To reduce the risk to main transport routes from the risk of flooding.						
	b. To reduce the risk to critical infrastructure from the risks of flooding.						
	c. To encourage the use of sustainable methods of flood risk management.						
	d. Promote the efficient use of resources when carrying out flood management works.						

Table WFD3: Key to the SEA objectives and WFD objectives assessment.

	The SEA objective conflicts with the WFD objective.
	There is uncertainty about whether the SEA objective conflicts with the WFD objective.
	The SEA objective is compatible with the WFD objective and is likely to have a positive effect.
	The SEA objective has no effect on the WFD objective.

As can be seen from the table, most objectives have either a positive or neutral effect on WFD objectives. There are no clear conflicts with WFD objectives. Most uncertainty arises because it is not known how objectives might affect the LFRMS, and the potential for hard engineered defences would not necessarily be inconsistent with some SEA sub objectives. Other uncertainties occur as a result of unpredictable human factors, such as increased access close to water bodies or greater community decision making. Where uncertainty is noted (i.e. at 1c, 2e, 5b,c,d, 7c,d,f, and 8 a, b) it is felt that other SEA objectives and sub objectives provide a balance to these objectives that should ensure that a sustainable outcome compliant with WFD objectives will be arrived at. In particular SEA objectives 2 and 3 are strongly supportive of the WFD.

Having carried out this compatibility assessment exercise and demonstrated that the framework for assessment is broadly consistent with the WFD, the next step was to collect baseline data on topics pertinent to WFD objectives. Volume 2 of this SEA contains a list of relevant plans, policies, programmes and environmental protection objectives, and a compendium of baseline data.

Table WFD3 summarises the data collected through the SEA relevant to WFD.

Table WFD3: Baseline data collected for SEA relevant to WFD.

Data type	Name / Description	Type of information captured
Policy context	European Nitrates Directive	Relevant environmental objectives
Policy context	EU Directive on the protection of groundwater against pollution and	Relevant environmental objectives

	deterioration (2006/118/EC)	
Policy context	EU Bathing Water Directive (2006/7/EC)	Relevant environmental objectives
Policy context	European Water Framework Directive (2000/60/EC)	Relevant environmental objectives
Policy context	EU Urban Waste Water Directive (91/271/EEC)	Relevant environmental objectives
Policy context	Proposal for a directive for establishing a framework for maritime spatial planning and integrated coastal management (2013/0074/EC)	Relevant environmental objectives
Policy context	European Water Framework Directive (2000/60/EC)	Relevant environmental objectives
Policy context	EU Directive on the Conservation of Natural Habitats of Wild Fauna and Flora (92/43/EEC, 1992)	Relevant environmental objectives
Policy context	Salmon and Freshwater Fisheries Act (1975)	Relevant environmental objectives
Policy context	Marine and Coastal Access Act (2009)	Relevant environmental objectives
Policy context	Water Environment (Water Framework Directive) Regulations, 2003	Relevant environmental objectives
Policy context	Water Resources Management Plan 2010-2035 (Yorkshire Water, United Utilities, Northumbria Water, 2009 and 2010)	Relevant environmental objectives
Policy context	Catchment Abstraction Management Strategies	Relevant environmental objectives
Policy context	River Basin Management Plans	Relevant environmental objectives
Baseline environmental conditions and trends	Biodiversity flora and flora – protected sites	Spatial, statistical and condition data
Baseline environmental conditions and trends	Water quality: Nitrate Vulnerable zones	Spatial data
Baseline environmental conditions and trends	Water quality: Groundwater Source Protection Zones	Spatial data
Baseline environmental conditions and trends	Water quality: Status of water bodies	Spatial and statistical data
Baseline environmental conditions and trends	Water availability: groundwater availability	Spatial and statistical data
Baseline environmental conditions and trends	Marine and coastal environment	Listed coastal designations

Results of Step 3

Step 3 involved undertaking strategic assessment, in other words assessing the LFRMS objectives and actions against the WFD compliant SEA Framework. The full results of this exercise are shown in Volume 1 of the Environmental Report. However, in relation to the assessments against SEA objectives 2 and 3, which were identified in the scoping report as

the objectives making the greatest contribution to WFD objectives all but 1 objective and 5 actions in the LFRMS reported either positive or neutral contributions. These objectives and actions are:

Objective 1: A greater role for communities in managing flood risk;

Action 4: 'Develop and implement a prioritised programme of flood alleviation projects' – reported both possible positive and uncertain effects against SEA objective 2 (biodiversity);

Action 7, 8: 'Create Operational Catchment Plans – providing a high level assessment of flood risk and risk management actions/measures for each catchment within NYCC authority area' and 'Work with neighbouring LLFAs to create/provide input to Operational Catchment Plans for those catchments which cross into other authority areas – providing a high level assessment of flood risk and risk management actions as appropriate'.

Action 10,11: 'Develop a Flood Risk Management Toolkit of practical measures that can be used to support local communities to manage flood risk' and 'Develop a programme of rollout of the Flood Risk Management Toolkit to communities across the authority area'. These objectives taken together reported possible neutral and uncertain effects against SEA objectives 2 (biodiversity) and 3 (water quality and quantity).

Although objective 1 reported an uncertain relationship with the SEA objectives most relevant to WFD, it is considered that these objectives serve only to guide more specific strategic actions. Therefore the SEA findings for actions 4, 7, 8, 10 and 11, as they relate to WFD and where further uncertainty was highlighted, are considered in more detail in table WD4 below.

Table WFD4: Uncertainties reported during the SEA process related to WFD

LFRMS Action	**4. Develop and implement a prioritised programme of flood alleviation projects**							
SEA Objectives	**Impact / timescale**			**Type of effect**				**Analysis**
	S	M	L	P	T	D	I	
2. To protect and enhance biodiversity and geodiversity and improve habitat connectivity.	+/?	+/ ?	+/ ?	✓	✓		✓	The implementation of flood alleviation projects would lead to a reduced flood risk in the benefitting areas which may result in a positive effect on biodiversity and geodiversity by maintaining access to sites and protecting habitats as a consequence of areas of land being made resilient to flooding, and creating new habitats through features like flood storage and SUDS. However, depending on the method of flood risk reduction (i.e. where hard engineering options are implemented), this could also have negative consequences for biodiversity and geodiversity). Therefore, the result is uncertain until methods of flood

								risk reduction are set out.
LFRMS Action	**7. Create Operational Catchment Plans – providing a high level assessment of flood risk and risk management actions/measures for each catchment within NYCC authority area** **8. Work with neighbouring LLFAs to create/provide input to Operational Catchment Plans for those catchments which cross into other authority areas – providing a high level assessment of flood risk and risk management actions as appropriate**							
SEA Objectives	**Impact / timescale**			**Type of effect**				**Analysis**
	S	M	L	P	T	D	I	
2. To protect and enhance biodiversity and geodiversity and improve habitat connectivity.	0	+/ ?	+/ ?	✓	✓		✓	It is anticipated that some positive impacts will occur in relation to this objective in the medium to long term, through the creation of catchment specific plans. The implementation of catchment specific actions/measures would lead to a reduced flood risk in the benefitting areas which may result in a positive effect on biodiversity and geodiversity by maintaining access to sites and protecting habitats as a consequence of areas of land being made resilient to flooding, and creating new habitats through features like flood storage and SUDS. However, depending on the method of flood risk reduction proposed in the catchment scale plans (i.e. should hard engineered flood alleviation options be proposed), this could also have negative consequences for biodiversity and geodiversity. Therefore, an uncertain result has also been recorded until methods of flood risk reduction are set out. A neutral effect has been recorded in relation to this objective in the short term as although it is anticipated that the catchment specific plans will have been created within the next 3 years, it is considered unlikely that a significant number of interventions will have been implemented and that significant biodiversity effects will have been realised.
LFRMS Action	**10. Develop a Flood Risk Management Toolkit of practical measures that can be used to support local communities to manage flood risk** **11. Develop a programme of rollout of the Flood Risk Management Toolkit to communities across the authority area** Assumptions: it is assumed that these actions will be implemented within 3							

	years of strategy adoption.							
2. To protect and enhance biodiversity and geodiversity and improve habitat connectivity.	?/0	?/0	?/0		✓		✓	Community preparedness for flooding resulting through a toolkit would have insignificant effects on biodiversity and geodiversity. However, if the toolkit fully explored the scope of what communities can do to manage flooding, including retention or creation of green infrastructure and SUDS, there might well be some local benefits to biodiversity. However, at this stage of the LFRMS it is uncertain that this would occur.
3. To enhance or maintain water quality and improve efficiency of water use.	?/0	?/0	?/0		✓		✓	Community preparedness for flooding resulting through a toolkit would have insignificant effects on water quality if it sought to increase the preparedness of communities to flooding. However, if the toolkit fully explored the scope of what communities can do to manage flooding, including retention or creation of green infrastructure and SUDS, or design guidance for the flood resistance of permitted development and planning applications there might well be some benefits to water quality. However, at this stage of the LFRMS it is uncertain that this would occur.

LFRMS Action 4: As can be seen from the table, uncertainty relates to the possibility that a prioritised flood alleviation programme might lead to support for hard engineered solutions for flooding and that such solutions may be in sensitive locations. From a WFD perspective hard engineered defences may lead to a range of impacts on the biodiversity of watercourses; for instance, the Environment Agency's WFD Look Up Tables point to effects of linear defences such as loss of shading associated with the riparian zone or loss of floodplain ecology associated with connectivity[29].

LFRMS Actions 7 and 8: The uncertainty here relates to the possibility that the Operational Catchment Plans might lead to support for certain types of flood alleviation schemes such as hard engineered defences that may be in sensitive locations. As outlined above, from a WFD perspective hard engineered defences may lead to a range of impacts on the biodiversity of watercourses.

LFRMS Actions 10 and 11: The uncertainty noted here arises not from any negative association with biodiversity or water quality, where neutral effects are likely. Rather it is the lack of an indication that a positive contribution to the objectives can be made. Indeed there seems to be ample opportunity that a community toolkit could make a significant contribution to the WFD, for instance through promotion of SUDS and natural flood management at a community level, however no indication is given by the action that this will be the case. As no negative effect is observed there is no requirement for mitigation for this.

[29] Environment Agency, undated. Look up table C – potential hydromorphological impacts of new schemes

Suggested Mitigation: To provide certainty that actions 4, 7 and 8 would not detract from WFD objectives it is suggested that the LFRMS refer to the requirements of the WFD (and other environmental requirements placed on the LFRMS) through a strategic action. Such an action would require that the flood management projects deliver both effective flood management and legal compliance with environmental regulations. Suggested wording for an action is:

"Develop the protocols and processes to ensure that projects progressed through LFRMS deliver sustainable development through regulatory compliance and taking opportunities to deliver environmental benefits".

Such mitigation would ensure that WFD objectives are not detracted from, and that a proactive contribution to the achievement of status objectives listed in RBMPs can be achieved. This would also go some way to addressing the lost opportunity noted at actions 10 and 11 too.

Further Steps

In the scoping report for this SEA we suggested that three further steps of assessment could potentially be applied to the LFRMS. These were:

Step 4: Screening of geographically specific LFRMS Action Plan actions against relevant water body status objectives in RBMPs;

Step 5: Detailed assessment - further assessment is undertaken for those criteria where a potential adverse effect has been identified to determine the effects on elements contributing to water body status.

Step 6: Article 4.7 test - if the actions are predicted to cause deterioration in water body status or prevent the water body from meeting its objectives, then assessment is also made against the conditions listed in Article 4.7.of the Water Framework Directive[30].

[30] The article 4.7 test requires the consideration of a series of reasons that must apply for works to go ahead and include:

> i. All practicable steps have been taken to mitigate the forecast adverse impacts on the water body;
>
> ii. The modification and use of Article 4.7 is to be reported and explained in the next River Basin Management Plan update after an exemption is granted;
>
> iii. The reasons for the modifications are of overriding public interest and/or the benefits to the environment and to society of achieving the [WFD] objectives are outweighed by the benefits of the new modifications to human health, maintenance of human safety or for the purpose of Sustainable Development, and;
>
> iv. The beneficial objectives served by the modifications to the water body cannot, for reasons of technical feasibility or disproportionate cost, be achieved by other means, which are a significantly better environmental option (Alternative Modifications).

It is the view of the assessors that, because the majority of actions in the LFRMS are strategic actions and do not have any geographically specific components, other than that they will take place within North Yorkshire, assessment under these later steps is not required. Two actions within the LFRMS, actions 7 and 8, do have a geographically specific component as they would lead to the creation of catchment specific Operational Catchment Plans. As outlined in section 1.2 of the Environmental Report, the Operational Catchment Plans will be entirely consistent with the strategic level action plan and the Environment Agency Flood Risk Management Plans, both of which are subject to WFD compliance assessment. It is therefore considered that further screening of these catchment scale plans will not be required. However, as the LFRMS directs future project work it will be necessary to screen projects affecting water courses for their impacts on the achievement of the water body status objectives in the relevant RBMP.

Should the potential mitigation at step 3 of this assessment be implemented this should ensure that projects are screened for their impacts on water body status objectives.

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