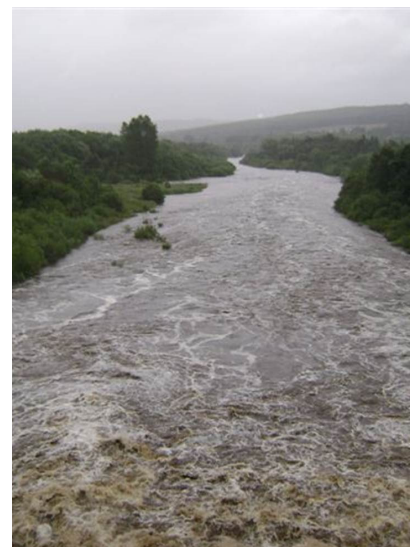
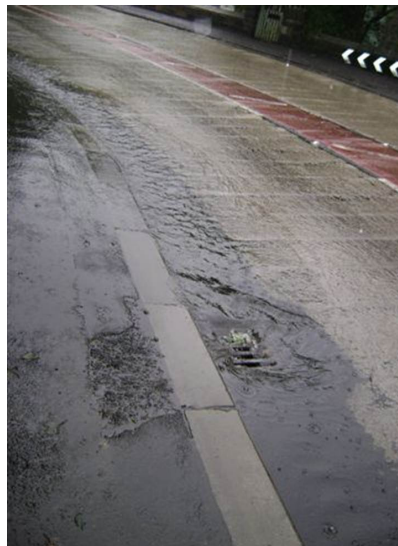




HRA for Northumberland Draft Local Flood Risk Management Strategy

Prepared for:
Northumberland County
Council

UNITED
KINGDOM &
IRELAND



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1. INTRODUCTION

1.1 Background

1.1.1 URS has been commissioned by Northumberland County Council to carry out a Habitats Regulations Assessment (HRA) of the Local Flood Risk Management Strategy (LFRMS).

1.1.2 It is a requirement of the EU ‘Habitats Directive’ 1992 (hereafter referred to as the Habitats Directive)¹ and the Conservation of Habitats and Species Regulations 2010 (Box 1) that ‘land use plans’ are subject to an ‘Appropriate Assessment’ (AA) if it is likely that they will lead to significant [adverse] effects on a Natura 2000 site (Special Areas of Conservation (SACs), and Special Protection Areas (SPAs)). As a matter of UK Government policy Ramsar sites², candidate Special Areas of Conservation (cSAC) and proposed Special Protection Areas (pSPA) are given equivalent status. These protected sites are collectively referred to as ‘European sites’ in this report.

EU ‘Habitats Directive’ 1992

“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.”
Article 6 (3)

Conservation of Habitats and Species Regulations 2010 (as amended)

“A competent authority, before deciding to ... give any consent for a plan or project which 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) ... must make an appropriate assessment of the implications for the site in view of that sites conservation objectives ... The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site ...”.

Box 1. The legislative basis for Appropriate Assessment

1.1.3 The Habitats Directive applies the precautionary principle to protected areas; plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. This is in contrast to the Strategic Environmental Assessment (SEA) Directive which does not prescribe how plan or programme proponents should respond to the findings of an environmental assessment; it simply says that the assessment findings (as documented in the ‘environmental report’) should be ‘taken into account’ during preparation of the plan or programme. In the case of the Habitats Directive, potentially damaging plans and projects may be permitted only if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation will be necessary to ensure the overall integrity of the Natura 2000 network of protected sites.

¹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

² Wetlands of International Importance designated under the Ramsar Convention 1979

- 1.1.4** As assessment of plans has developed, the term Habitats Regulations Assessment (HRA) has come into currency for describing the overall assessment process (including screening to determine whether significant adverse effects are likely or not) and this term is used below when necessary to distinguish the process from the 'Appropriate Assessment' stage itself.
- 1.2** **Scope of HRA**
- 1.2.1** The scope of the HRA includes all European sites within Northumberland (the coverage of this Local Flood Risk Management Strategy) and additionally any European sites outside Northumberland that are designated for features that could potentially be significantly affected by measures or action plans within the man Local Flood Risk Strategy.
- 1.2.2** The Local Flood Authority is required through the Flood Risk Regulations (2009) to prepare responses to flooding from surface water, groundwater, ordinary water courses (not sewers or main rivers, which are the responsibility of water companies and the Environment Agency (EA), respectively), lakes and canals and to have such information reviewed by the Environment Agency.
- 1.2.3** The local sources of flooding that are required to be managed under the LFRMS are:
- Surface runoff and ponding – surface water prior to entry into water courses;
 - Groundwater – subterranean water in contact with substrates; and
 - Water courses – other than those on the EAs statutory map of main rivers (therefore including ditches, ponds, lakes, streams and land drains).
- 1.2.4** Therefore any European sites that could be affected by action plans arising through this Local Flood Risk Management Strategy should be subject to HRA.
- 1.2.5** In the case of a Local Flood Risk Management Strategy this will include any sites that are affected by water levels or pollution and which could lie within the catchment of or downstream of local flooding events in Northumberland.
- 1.2.6** The following European designated sites lie within Northumberland or partially within Northumberland:
- Irthinghead Mires Ramsar
 - Holburn Lake and Moss SPA / Ramsar
 - Lindisfarne SPA / Ramsar
 - Northumbria Coast SPA / Ramsar
 - Coquet Island SPA
 - Farne Islands SPA
 - North Pennine Moors SPA / SAC
 - Berwickshire and North Northumberland Coast SAC
 - Border Mires, Kielder - Butterburn SAC

- Ford Moss SAC
- Harbottle Moors SAC
- Newham Fen SAC
- North Northumberland Dunes SAC
- North Pennine Dales Meadows SAC
- Roman Wall Loughs SAC
- River Eden SAC
- River Tweed SAC
- Simonside Hills SAC
- Tweed Estuary SAC
- Tyne and Allen River Gravels SAC

1.2.7 Full details of European designated sites within Northumberland (partially or wholly) can be found in Appendix 1.

1.2.8 In addition, the following European sites lie within 10km of Northumberland and were also subject to an assessment:

- Din Moss-Hoselaw Loch SPA / Ramsar: located within the Scottish Borders, approximately 0.7km north of Northumberland.
- Tyne and Nent SAC: located approximately 1.8km south of Northumbria within Cumbria.
- Durham Coast SAC: located approximately 2.8km south east of Northumberland within Durham.
- Moor House – Upper Teesdale SAC: located approximately 4.5km south of Northumberland within Durham and Cumbria.
- Borders Woods SAC: located approximately 6.7km north west of Northumberland within the Scottish Borders.
- Langholm - Newcastleton Hill SPA: located approximately 9.3km west of Northumberland within the Scottish Borders and Dumfries and Galloway

1.2.9 Full details of European designated sites outside of Northumberland but within 10km of Northumberland can be found in Appendix 1.

1.2.10 For the purposes of this assessment the following European protected sites either wholly or partially within Northumberland have been screened out from any further assessment:

- Coquet Island SPA: features for which the suite is designated (Roseate tern, common tern, arctic tern, and sandwich tern) and their supporting habitats are not vulnerable to any pathways as a result if the Northumberland LFRMS.

- Farne Island SPA: features for which the suite is designated (common tern, arctic tern, and sandwich tern) and their supporting habitats are not vulnerable to any pathways as a result of the Northumberland LFRMS.

1.2.11 For the purposes of this assessment the following European protected sites outside of Northumberland but within 10km of Northumberland have been screened out from any further assessment:

- Borders Woods SAC: the features for which the site is designated (Tilio –Acerion forests of slopes, scree and ravines.) are not vulnerable to any impact pathways as a result of the Northumberland LFRMP.

1.2.12 This document therefore focusses on the potential for impacts on the remaining European designated sites both within Northumberland (fully or partially) and within 10km. These are as follows: Irthinghead Mires Ramsar, Holburn Lake and Moss SPA / Ramsar, Lindisfarne SPA/ Ramsar, Northumbria Coast SPA/ Ramsar, Tyne & Nent SAC, Tyne & Allen River Gravels SAC, North Pennine Moors SPA/ SAC, Berwickshire and North Northumberland Coast SAC, Border Mires, Kielder - Butterburn SAC, Ford Moss SAC, Harbottle Moors SAC, Newham Fen SAC, North Northumberland Dunes SAC, North Pennine Dales Meadows SAC, Roman Walls Loughs SAC, River Eden SAC, River Tweed SAC, Simonside Hills SAC, Tweed Estuary SAC, Din Moss-Hoselaw Loch SPA / Ramsar, Durham Coast SAC, Moor House – Upper Teesdale SAC, and Langholm – Newcastleton Hill SPA.

1.2.13 Full details of the European designated sites are located within Appendix 1 and illustrated within Figure 1.

1.3 This report

1.3.1 Chapter 2 of this report explains the process by which the HRA has been carried out. Chapter 3 presents an assessment of the LFRMS Action Plan Objectives and Proposed Actions in respect of European sites. The key findings are summarised in Chapter 4: Conclusions. The details of the European sites considered within this report are provided in Appendix 1.

2. METHODOLOGY

2.1 The Process of HRA

2.1.1 The HRA has been carried out in the continuing absence of formal Government guidance. Communities & Local Government (CLG) released a consultation paper on AA of Plans in 2006³. As yet, no further formal guidance has emerged although informal guidance documents exist, produced by RSPB and for internal use by Natural England. Figure 2 below outlines the stages of HRA according to current draft CLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

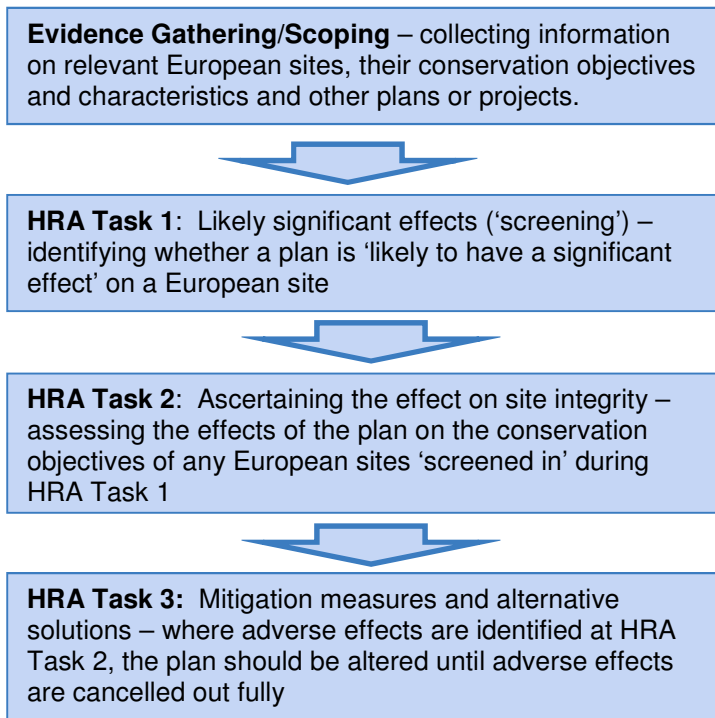


Figure 2: Four-Stage Approach to Habitat Regulations Assessment

³ CLG (2006) Planning for the Protection of European Sites, Consultation Paper

2.2 HRA Task One: Likely Significant Effects (Screening)

2.2.1 The first stage of any Habitat Regulations Assessment is a Likely Significant Effect (LSE) or screening test - essentially a high level risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required, and on which aspects any AA will need to be focussed. The essential question is: "Is the [plan] (or any part of the [plan]), either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"

2.2.2 This stage of the HRA process is the focus of this report.

2.3 Confirming Other Plans and Projects that may act 'In Combination'

2.3.1 It is a requirement of the Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question. If any effects of the LFRMS are found to be insignificant (i.e. greater than de minimus but less than significant) they must be assessed in-combination with other plans and projects.

3. SCREENING OF PROPOSED ACTIONS

3.1 Introduction

3.1.1 All Objectives and Measures contained within the Local Flood Risk Management Strategy Action Plan were screened for potential conflicts with European sites. All of the Objectives and Actions could be ‘screened out’ as there was no potential for the Actions themselves, as they are worded in the LFRMS, to result in a likely significant effect on European designated sites within Northumberland (fully or partially) and within 10km of Northumberland. However, since some of the Actions are very broad, subsequent plans and projects will in some circumstances need to be subject to their own HRA screening.

3.1.2 The following table (Table 3) highlights the Objectives and Action Plans and the HRA screening appraisal.

| Objective | Action | Assessment |
|--|---|--|
| 1. Improve knowledge and understanding of flood risk throughout Northumberland | Ensure Flood and Coastal Erosion Risk Management Team involvement in pre-planning consultation with developers to ensure appropriate studies are undertaken to identify and understand local flood risk | No LSE: no impact pathway. Positive in that it encourages pre-planning of flood related issues. |
| | Use local knowledge and indicative flood risk areas to ensure our limited resources are used to investigate and understand local flood risk in higher risk priority areas | No LSE: no impact pathway. Positive in that it increases flood risk understanding. |
| | Continue to improve knowledge of local flood risk issues through liaison with established community groups and Parish Councils. | No LSE: no impact pathway. Positive in that it increases flood risk understanding. |
| | In higher risk priority areas investigate local flood risks and identify how future development and climate change impacts may affect local communities | No LSE: no impact pathway Positive in that it helps provide detail to inform appropriate flood risk management. Individual Flood Risk Management Plans do have the potential to lead to LSE. For example, the entire Tweed Catchment Rivers are SAC, such that a person developing a Surface Water Management Plan addressing surface water flooding such as runoff from land, small water courses and ditches that occurs as a result of heavy rainfall within that catchment would need to |

| Objective | Action | Assessment |
|-----------|---|---|
| | | <p>determine if any part of the plan could have a significant effect on any of the SAC interest features.</p> <p>Detail is not available at the LFRMS level to assess the impacts of individual Management Plans. Individual Management Plans should have regard for the protection of European designated sites and be subject to screening at the individual Management Plan level.</p> |
| | Continue to work in collaboration and build relationships with other risk management authorities to share best practice and develop a consistent approach to flood risk | <p>No LSE: no impact pathway.</p> <p>Positive in that collaboration with other risk management agencies will ensure effective and efficient working practices and prevent adverse effects on European designated sites. .</p> |
| | Continue to liaise with risk management authorities in accordance with existing governance and communication arrangements | <p>No LSE: no impact pathway.</p> <p>Positive in that improved communication will ensure efficient flood risk management.</p> |
| | Define impact criteria by adopting a risk based approach to investigating flooding which considers human, social and economic impacts | <p>No LSE: no impact pathway.</p> <p>It should be noted that impacts upon any European designated site should be considered within the detailed defined impact criteria.</p> |
| | Publish Flood Investigation Reports in line with Section 19 of the Flood and Water Management Act requirements on the Council website | <p>No LSE: no impact pathway.</p> <p>Positive in that it shares knowledge.</p> |
| | Continue to use outcomes of Flood Investigation Reports to build-up the evidence base and prioritise future programme of works | <p>No LSE: no impact pathway.</p> <p>Positive in that any flood management prescriptions are founded on local evidence based details.</p> |
| | Identify key flood risk asset owners and develop a maintenance programme with them (particularly key for riparian owners); | <p>No LSE since the LFRMS Action itself simply commits to identifying a maintenance programme.</p> <p>Any flood maintenance programme has potential</p> |

| Objective | Action | Assessment |
|---|---|--|
| | | to have a LSE upon European designated sites to which any affected watercourse is hydrologically connected. Sufficient detail is not available at the LFRMS level to assess the impacts of individual maintenance programmes. Maintenance programmes will need to have regard to the requirements to protect and enhance ecology generally and European sites in particular. |
| | Continue to update the Flood Risk Asset Register with significant assets identified during flood investigations and the preparation of flood risk studies | No LSE: no impact pathway. |
| | Establish effective regimes to share flood risk asset information between Council departments and risk management authorities | No LSE: no impact pathway. |
| 2. Promote sustainable development to reduce local flood risk with consideration to the anticipated impact of climate change. | Ensure the evidence base is up to date and regular updates are made as necessary (significant flood event, update to the core strategy, new legislation) | No LSE: no impact pathway Positive in that it ensures all flood risk management is based on current information. |
| | Continue to work with Local planning Teams to provide advice on local flooding matters and assist with the development of policies that are informed by a sound evidence base | No LSE: This action is not prescriptive and as such will not have a LSE upon any European designated site. Any advice provided with regards to local flood matters has potential to have a LSE upon European designated sites to which any affected watercourse is hydrologically connected. As such European designated sites should be considered at the detailed stage policy development. |
| | Follow established process on consultation of planning applications to enforce planning policies from a flood risk perspective | No LSE: no impact pathway. Positive in that ensures appropriate established processes are followed. |
| | Where reasonably practicable require all new development located in | No LSE: no impact pathway. |

| Objective | Action | Assessment |
|-----------|--|--|
| | catchments with known flood risk issues to achieve a reduction in greenfield runoff (50% reduction in brownfield runoff). | Positive in that it is attempting to reduce flood risks via the planning process. |
| | Continue to promote awareness of flood risk implications and the use of SuDS in planning decision making | No LSE: no impact pathway. |
| | Encourage developers, statutory consultees and local planning teams to work closely with the SuDS Approval Body at the master planning stage as drainage implications could influence site layout | No LSE: no impact pathway. Positive in that it is addressing potential contributing factors to flood risk. The implementation of SuDS would be a positive aspect for preventing adverse effects upon European designated sites. |
| | Produce local SuDS standards to guide developers and their consultants seeking adoption of SuDS by Northumberland County Council | No LSE: no impact pathway. Positive in that it is addressing potential contributing factors to flood risk. The implementation of SuDS would be a positive aspect for preventing adverse effects upon European designated sites. |
| | Approve, adopt and maintain SuDS, which meet the standards outlined in the local SuDS standards, once the SuDS Approval Body (SAB) is implemented | No LSE: no impact pathway. Positive in that it is addressing potential contributing factors to flood risk. The implementation of SuDS would be a positive aspect for preventing adverse effects upon European designated sites. |
| | Work in partnership with Northumbrian Water Limited to understand existing capacity of sewage treatment works and sewerage systems to ensure that new development does not increase surface water flooding as a consequence of capacities being exceeded | No LSE: Positive in that it provides information to forecast future issues, that could have an impact upon European designated sites. |
| | Identify contributions to flood mitigation schemes through the development management process | No LSE: no impact pathway. Positive in that it identifies potential mitigation sources for flood mitigation measures. |
| | Ensure that Water Framework Directive Assessments are undertaken where development may impact waterbodies and prevent Water Framework Directive objectives being met | No LSE: no impact pathway. Positive in that it is ensuring compliance with the WFD, reducing the likelihood of adverse effects upon European designated sites. |

| Objective | Action | Assessment |
|--|---|---|
| | Continue to work with risk management authorities, universities, developers, landowners and other similar organisations to promote and develop natural flood management schemes to reduce risk posed to rural communities | <p>No LSE: since the LFRMS Action itself simply commits to identifying a natural flood management schemes.</p> <p>Positive in that novel flood defence/ avoidance schemes are being actively sought.</p> <p>Any flood management scheme has potential to have a LSE upon European designated sites to which any affected watercourse is hydrologically connected. Sufficient detail is not available at the LFRMS level to assess the impacts of individual Management Plans. Individual Management Plans should have regard for European designated sites and be subject to screening if required at the individual Management Plan level.</p> |
| 3. Actively manage flood risk and drainage infrastructure to reduce likelihood of flooding | Review and monitor the risk based approach to highway gully maintenance | No LSE: no impact pathway. |
| | Continue to follow established approach to consenting works to ordinary watercourses | No LSE: no impact pathway. Positive in that it ensures works are conducted in a way that will ensure no LSE upon European designated sites. |
| | Continue to work with RMAs and other interested stakeholders to manage flood risk and identify multi-beneficial solutions | <p>No LSE: This action is not prescriptive and as such will not have a LSE upon any European designated site.</p> <p>Any physical management of flood risk has potential to have a LSE upon European designated sites to which any affected watercourse is hydrologically connected. As such</p> |

| Objective | Action | Assessment |
|-----------|---|--|
| | | European designated sites should be considered at the detailed stage policy development. |
| | Review and update the Local Flood Risk Management Strategy (LFRMS) Action Plan on an annual basis | <p>No LSE: This action is not prescriptive and as such will not have a LSE upon any European designated site.</p> <p>Any amendment to an Action Plan within the LFRMS that has a potential LSE upon a European designated site, once amended could have a LSE upon a European designated site. . As such European designated sites should be considered at the detailed stage policy development</p> |
| | Prioritise work with consideration of Defra's outcome measures, and the availability of funding | No LSE: no impact pathway |
| | Use the flood risk asset register to inform maintenance activities | <p>No LSE since the LFRMS Action itself simply commits to informing maintenance activities.</p> <p>Regular maintenance will reduce the likelihood of large scale schemes will need to be undertaken which may have a LSE upon a European designated site.</p> <p>Any regular maintenance activities have the potential to lead to LSE. The level of detail needed to assess individual maintenance scheme is not available at the LFRMS level. Individual flood management/ maintenance schemes and projects should have regard for European designated sites and be subject to screening if required when the appropriate level of detail is available.</p> |

| Objective | Action | Assessment |
|---|---|--|
| | Prioritise and deliver a programme of studies, investigation and works in line with available funding routes and with consideration of the severity and frequency of flooding. | No LSE: no impact pathway. |
| | Promote local choice by working collaboratively with RMAs, developers, landowners and community groups to attract funding and deliver the most effective solutions. | No LSE: no impact pathway. |
| 4. Encourage communities to become more resilient to flooding by increased public awareness and understanding their concerns. | Work with existing groups and Parish and Town Councils to identify and develop appropriate ways to engage with local communities and to help support flood actions plans | No LSE: no impact pathway. |
| | Publish information on the website to inform communities of flood risk and how to be better prepared and update as new information becomes available | No LSE: no impact pathway. Positive in that small scale flood risk management may prevent the need for works which could have adverse effects upon European designated sites. |
| | Maintain and update the Lead Local Flood Authority section of the Northumberland County Council's website | No LSE: no impact pathway. Positive in that awareness will result in preparedness and thus potentially prevent flooding events happening which could have an LSE upon a European designated site. |
| | Ensure final version and future updates of the local strategy are freely available to the public in a range of formats | No LSE: no impact pathway. |
| | Identify groups of people within the community that may be more vulnerable to flooding and ensure that engagement activities are communicated in a suitable format | No LSE: no impact pathway. |
| | Work with communities to raise awareness of the benefits of local flood plans which will provide a better understanding of local flood risk and the location of important drainage assets in their area | No LSE: no impact pathway. |
| 5. Be better prepared for flood events and post flood recovery | Ensure the Northumberland Flood Action Plan remains current and in line with latest flood and weather warning guidance | No LSE: Positive in that it ensures that up to date information is used to inform flood risk management. |
| | Develop a communications plan to support communities | No LSE: no impact pathway. |
| | Work in partnership with the Environment Agency and other partners | No LSE: no impact pathway. |

| Objective | Action | Assessment |
|-----------|--|--|
| | when responding to a flooding incident | Positive in that collaboration will ensure effective flood risk management. |
| | Help communities to develop Flood Action Plans and Community agreements | No LSE: This action is not prescriptive and as such will not have a LSE upon any European designated site. |
| | Identify critical infrastructure at risk and develop resilience plans | No LSE: no impact pathway. |
| | Identify and support communities that would benefit from having a local flood forum and help to develop Community Agreements / Local Flood Plans | No LSE: no impact pathway. |
| | Utilise the natural links between the FCERM Team and Civil Contingencies Team to promote and co-ordinate flood response and preparedness across key teams within the authority | No LSE: no impact pathway. |

3.2 Other plans and projects

- 3.2.1** This section discusses other plans and projects that may operate in combination with the Flood Risk Management Strategy.
- 3.2.2** Water Company Water Resources Management Plans could theoretically lead to an in combination effect on European sites sensitive to changes in hydrology, if such plans included strategies that would reduce water availability or impeded water quality to such European sites, and if there were any mechanism by which the LFRMS could contribute to this 'in combination'. However, the LFRMS does not include any strategic Action Plans that that would be likely to lead to such effects.
- 3.2.3** Development of new housing under local authority Core Strategies and Local Plans has the potential to increase water demand and increase pressure on water treatment facilities. However, such spatial strategies are subject (through any need for mitigation identified through their own HRA assessments) to timely provision of infrastructure capacity, such as water resource availability and sewerage treatment works. Hydrological changes and water quality reductions would be avoided through regulatory frameworks implemented by the Environment Agency, working with water companies as necessary to ensure approaches to achieve favourable status of European sites. Coupled with the fact that the LFRMS does not contain any detail within the Action Plans that would be likely to lead to any effects on hydrological processes or water quality that would affect European sites, there is no likelihood of in combination effects of the LFRMA alongside local authority strategic plans of this type.

4. CONCLUSIONS

4.1 Conclusions and Recommendations

- 4.1.1** The Action Plans within the Local Flood Risk Management Strategy for Northumberland have been screened out as having no Likely Significant Effects on any European sites. The Strategic Objectives and Action Plans within the document all promote measures to avoid or reduce flooding events that arise on land not normally subject to natural flooding. Although a number of sites exist both within Northumberland and within 10km of Northumberland, the Action Plans of the LFRMS for Northumberland do not detail any prescription which at this point can be identified to have a Likely Significant Effect upon a European designated site.
- 4.1.2** The document promotes collaboration between relevant organisations for management of flood risk, and the co-ordinated approach outlined means that the potential for any unforeseen effects of flood management on European sites is negligible, either alone or in combination with other plans and projects.
- 4.1.3** Several LFRMS Actions have been screened out on the basis that, as expressed in the LFRMS, they are sufficiently broad that they will not themselves result in a likely significant effect on European sites. However, this does not remove the need for subsequent plans produced to deliver these actions to be subject to HRA screening. In particular it should be noted that any natural flood management or maintenance schemes and projects have the potential to lead to likely significant effects on European sites depending on their details. Detail is not available at the LFRMS level to assess the impacts of management and maintenance activities. This document is essentially a policy control document. Individual projects and plans should have regard for European designated sites and be subject to screening if required at the level when the appropriate level of detail is available level.
- 4.1.4** It is therefore recommended that the Action Plan incorporates the statement 'It should be noted that any maintenance programme affecting water courses within any European designated site or upstream of a European designated site have potential to have a likely

significant effect upon the designated site. As such, potential impacts on European sites should be considered at the detailed stage of planned flood management'. This should directly follow the sentence '*Identify key flood risk asset owners and develop a maintenance programme with them (particularly key for riparian owners.*'

4.1.5

It is recommended that the Action Plan incorporates the statement '*It should be noted that any maintenance programme or natural flood management schemes affecting water courses within any European designated site or upstream of a European designated site have potential to have a likely significant effect upon the designated site. As such, potential impacts on European sites should be considered at the detailed stage of planned flood management.*' This should directly follow the sentence '*Continue to work with risk management authorities, universities, developers, landowners and other similar organisations to promote and develop natural flood management schemes to reduce risk posed to rural communities.*'

5. APPENDIX – EUROPEAN SITES

European Sites Wholly or Partly Within Northumberland

Irthinghead Mires Ramsar

Irthinghead Mires is located within the in the counties of Northumberland and Cumbria. It is a composite site encompassing seven separate areas of mire (Gowany Knowe Moss, Felecia Moss, Coom Rigg Moss, Hummel Knowe Moss, Haining Head Moss, Grain Heads Moss, and Butterburn Flow) around the head of the River Irthing. The site contains internationally important examples of blanket mire, with a notable variety of Sphagnum mosses. Typical components of the vegetation also include *Calluna vulgaris*, *Erica tetralix*, *Empetrum nigrum*, *Vaccinium myrtillus*, *Eriophorum angustifolium*, *E. vaginatum*, *Andromeda polifolia*, *Narthecium ossifragum*, *Drosera rotundifolia*, *D. anglica* and *Trichophorum cespitosum*. A rare spider, *Eboria caliginosa*, has been recorded at Coom Rigg Moss.

Features of European interest⁴

The site is designated as a Ramsar for its:

- Population of breeding waders at Butterburn Flow.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Since 1987 the mires have been gradually drying-out as a result of nearby afforestation.

Holburn Lake and Moss SPA / Ramsar

Holburn Lake and Moss is located within the northern extent of Northumberland. It is a small artificial lake created in 1934 and an adjacent area of mire with the surrounding. The vegetation in the mire is dominated variously by Sphagnum mosses, *Calluna vulgaris*, *Erica tetralix* and *Eriophorum angustifolium*. An island in the lake supports a large stand of *Typha latifolia*.

Features of European interest⁵

The site is designated as an SPA for its:

- Internationally important numbers of Greylag goose *Anser anser*.

The site is designated as a Ramsar site for its:

- Internationally important wintering populations of turnstone *Arenaria interpres* (2.6 % of the Eastern Atlantic Flyway population) and purple sandpiper *Calidris maritima* (1.6% of the Eastern Atlantic Flyway population).

Key Environmental Vulnerabilities

⁴ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

⁵ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

The key environmental vulnerabilities for the site are:

- In 1990 60% of Holburn Moss was damaged as a result of uncontrolled heather burning and there has been little regeneration of the vegetation to date.
- Drainage has damaged the site in the past, but this is now being controlled through the damming of ditches in order to retain water.
- A recent planning application to extend an area of nearby peat extraction was approved in 1992, subject to conditions providing for monitoring of the Ramsar site and other safeguards.
- Some disturbance has been caused by public use of nearby footpaths, even though access to the site itself is strictly limited.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function, and the supporting processes of the habitats and habitats that support qualifying features of the SPA.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European sites.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Lindisfarne SPA / Ramsar

Lindisfarne is located within the northern extent of Northumberland. It is a coastal zone extending south from the town of Berwick-upon-Tweed, to include most of Holy Island and Budle Bay. It contains large intertidal flats, with a large area of saltmarsh. The shoreline is partly rocky, but there is also a major sand dune system with well-developed dune slacks. The sand and silt flats support beds of *Zostera*.

Features of European interest⁶

The site is designated as an SPA for its populations of wintering or breeding:

- Eurasian widgeon *Anas penelope*
- Greylag goose *Anser anser*
- Brant goose *Branta bernicla hrota*
- Sanderling *Calidris alba*
- Dunlin *Calidris alpina alpina*

⁶ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Common ringed plover *Charadrius hiaticula*
- Long-tailed duck *Clangula hyemalis*
- Whooper swan *Cygnus cygnus*
- Bar-tailed godwit *Limosa lapponica*
- Common scoter *Melanitta nigra*
- Red-breasted merganser *Mergus serrator*
- European Golden Plover *Pluvialis apricaria*
- Grey plover *Pluvialis squatarola*
- Common eider *Somateria mollissima*
- Little tern *Sterna albifrons*
- Roseate tern *Sterna dougallii*
- Common shelduck *Tadorna tadorna*
- Redshank *Tringa totanus*

The site is designated as a Ramsar site for its:

- Extensive intertidal flats, including a large area of saltmarsh, with the lower part dominated by *Spartina anglica*.
- The shoreline is partly rocky, but there is also a major sand dune system with well-developed dune slacks. The sand and silt flats support beds of *Zostera*, which provide food for an internationally important flock of wintering *Branta bernicla hrota*.
- Other birds wintering in internationally important numbers include *Anser anser*, *Anas penelope*, *Charadrius hiaticula*, *Limosa lapponica* and *Tringa tetanus*. The average peak count of all wintering water birds regularly exceeds 20,000 individuals.
- The dune systems support a rich flora and diverse invertebrate fauna and the site is of national importance for breeding terns, including *Sterna dougallii* and *S. albifrons*.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Holy Island receives up to 750,000 visitors each year, presenting a number of management difficulties (e.g. sewage disposal from caravan sites). English Nature and National Rivers Authority have agreed a programme of work to reduce or eliminate point sources of domestic sewage pollution.
- The impacts of bait-digging, controlled hunting, wind surfing and micro-light aircraft are also being carefully monitored. These are being controlled via bye-laws and foreshore zonation.

- The colonisation of intertidal flats by *Spartina anglica* has been mirrored by a decline in *Zostera*. Chemical control measures have been used to limit its spread.
- Water quality problems exist (from sewage discharges and agricultural run-off).

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function, and the supporting processes of the habitats and habitats that support qualifying features of the SPA.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European sites.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Northumbria Coast SPA / Ramsar

The Northumbria Coast runs along the eastern extent of Northumberland, reaching south into County Durham. The site supports internationally important wintering populations of turnstone *Arenaria interpres* and purple sandpiper *Calidris maritima* and nationally important breeding colony of little tern *Sterna albifrons*.

Features of European interest⁷

The site is designated as an SPA /Ramsar for its populations of wintering or breeding:

- Turnstone *Arenaria interpres* (2.6% of the Eastern Atlantic Flyway population).
- Sandpiper *Calidris maritimae* (1.6% of the Eastern Atlantic Flyway population).
- Little tern *Sterna albifrons*.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Little terns are vulnerable to disturbance by tourists in the summer causing reduced breeding success. The National Trust employs wardens each summer to protect the little tern colony at Beadnell Bay.

Conservation Objectives

The Conservation Objectives for the site are:

- Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the regularly occurring Annex 1 bird species (little tern *Sterna albifrons*), under the Birds Directive, in particular: Sandy beaches and shallow inshore waters at Low Newton

⁷ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of regularly occurring migratory bird species purple sandpiper *Calidris maritima* and turnstone *Arenaria interpres*, under the Birds Directive, in particular: rocky shores with associated boulder and cobble beaches which create artificial high tide roost sites

Coquet Island SPA

Coquet Island is located approximately 1.4km east of the central Northumberland coastline. The site supports nationally important breeding populations of roseate tern *Sterna dougallii*, common tern *Sterna hirundo*, Arctic tern *Sterna paradisaea*, and sandwich tern *Sterna sandvicensis*. At present, the site is not open to visitors.

Features of European interest⁸

The site is designated as an SPA for its populations of wintering or breeding:

- Roseate tern *Sterna dougallii*
- Common tern *Sterna hirundo*
- Arctic tern *Sterna paradisaea*
- Sandwich tern *Sterna sandvicensis*

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Thin soils on the island are disturbed by burrowing rabbits and puffins which has led to concern over loss of vegetation and subsequent erosion. Management is being undertaken to mitigate this.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function, and the supporting processes of the habitats and habitats that support qualifying features of the SPA.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European sites.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Farne Islands SPA

The Farne Islands are located approximately 2.4km east of the northern Northumberland coastline. It is located within the Berwickshire and North Northumberland Coast SAC. The site

⁸ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

supports nationally important breeding populations of common tern *Sterna hirundo*, Arctic tern *Sterna paradisaea*, and sandwich tern *Sterna sandvicensis*. At present, the site is not open to visitors.

Features of European interest⁹

The site is designated as an SPA for its populations of wintering or breeding:

- Common tern *Sterna hirundo*
- Arctic tern *Sterna paradisaea*
- Sandwich tern *Sterna sandvicensis*

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Two of the islands are open to visitors, though access is controlled and managed.
- The thin soil cap found on the islands is easily disturbed by burrowing rabbits and puffins and by seals during their breeding season. Management of the vegetation/ soil cap and the pupping areas for seals is undertaken.
- Marine activities including inshore fishing, recreation and pleasure craft are currently being monitored.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function, and the supporting processes of the habitats and habitats that support qualifying features of the SPA.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European sites.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

North Pennine Moors SPA / SAC

The North Pennine Moors is located within the west of Northumberland, extending into County Durham, North Yorkshire and Cumbria. The SPA is 147,246ha and the SAC is 103,109ha in extent. The site comprises bog, marsh, heath, scrub, dry grassland and broad-leaved deciduous woodland habitats. It is of national importance for its population of breeding birds.

Features of European interest¹⁰

⁹ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

The site is designated as an SPA for its:

- Hen harrier *Circus cyaneus* 2.2% of the GB breeding population (count as at 1993 and 1994).
- Merlin *Falco columbarius* 10.5% of the GB breeding population (estimated population).
- Peregrine falcon *Falco peregrinus* 1.3% of the GB breeding population (count as at 1991).
- European golden plover *Pluvialis apricaria* (North-western Europe - breeding) at least 6.2% of the GB breeding population (estimated population).

The site is designated as an SAC for its:

- Northern Atlantic wet heaths with *Erica tetralix*, for which the area is considered to support a significant presence.
- European dry heaths, for which the site is considered to be one of the best areas in the United Kingdom.
- *Juniperus communis* formations on heaths or calcareous grasslands, for which the site is considered to be one of the best areas in the United Kingdom.
- Calaminarian grasslands of the *Violetalia calaminariae*, for which the area is considered to support a significant presence.
- Siliceous alpine and boreal grasslands, for which the area is considered to support a significant presence.
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), for which the area is considered to support a significant presence.
- Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe).
- Blanket bogs, for which the site is considered to be one of the best areas of this habitat within the United Kingdom.
- Petrifying springs with tufa formation (*Cratoneurion*). This habitat is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100ha. The site is considered to be one of the best areas of this habitat within the United Kingdom.
- Alkaline fens, for which the area is considered to support a significant presence.
- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladanii*), for which the area is considered to support a significant presence.

¹⁰ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Calcareous rocky slopes with chasmophytic vegetation. This habitat is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000ha. The site is considered to support a significant presence.
- Siliceous rocky slopes with chasmophytic vegetation, for which the site is considered to be one of the best areas for this habitat within the United Kingdom
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. This site is considered to be one of the best areas for this habitat within the United Kingdom.
- Marsh saxifrage *Saxifraga hirculus*, which is known from 15 or fewer 10 x 10 km squares in the United Kingdom. The site is considered to support a significant presence.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Qualifying habitats and qualifying breeding bird populations are mostly dependent upon stock grazing and burning at sympathetic levels. Problems with overgrazing and over-burning is being overcome via management agreements and related incentives.
- Blanket bogs have been subject to drainage to improve land for sporting activities. This has disrupted the hydrology and has caused erosion. In the most part, drains are being blocked and the blanket bogs re-wetted and restored under management.
- Recreational activity has led to erosion in areas. This is being addressed through access management.
- Acidic and nitrogen deposition are damaging vegetation and as such bird populations. Such issues are being addressed through existing pollution control mechanisms.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Berwickshire and North Northumberland Coast SAC

The Berwickshire and North Northumberland Coast is located along the northern coast of Northumberland. The site supports nationally important coastal habitats such as mudflats and sandflats, large shallow inlets and bays, reefs and submerged or partially submerged sea caves and a nationally important population of grey seals.

Features of European interest¹¹

The site is designated as an SAC for its:

- Sandbanks which are slightly covered by sea water all the time
- Estuaries
- Mudflats and sandflats not covered by seawater at low tide, for which this is considered to be one of the best areas in the United Kingdom
- Large shallow inlets and bays, for which this is considered to be one of the best areas in the United Kingdom
- Reefs, for which this is considered to be one of the best areas in the United Kingdom
- Atlantic salt meadows *Glauco-Puccinellietalia maritimae*
- Submerged or partially submerged sea caves, for which this is considered to be one of the best areas in the United Kingdom
- Population of European otter *Lutra lutra*
- Population of grey seal *Halichoerus grypus*, for which this is considered to be one of the best areas in the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- The varied geological features along the coast attract a variety of recreational users for angling, diving, watersports, etc. In the case of diving, the most popular areas are subject to a voluntary code of practice. Any difficulties arising from recreational activities are addressed by the site management scheme.
- The estuarine reef communities support an important crustacean fishery whilst offshore fisheries exist for *Nephrops* and some pelagic and demersal fish species. Wastewater discharges could have a localised effect on the site but will be subject to EC water quality legislation.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- Subject to natural change, maintain in favourable condition the reefs, in particular: the extent, distribution, diversity and species richness of reef communities.
- Subject to natural change, maintain in favourable condition the submerged or partially submerged sea caves, in particular: the diversity of sea cave communities and their characteristic zonation.

¹¹ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Subject to natural change, maintain in favourable condition the mudflats and sandflats not covered by sea water at low tide, in particular: the extent of eelgrass bed communities and mussel *Mytilus edulis* bed communities and the diversity of infaunal communities.
- Subject to natural change, maintain in favourable condition the habitats for the grey seal *Halichoerus grypus*, in particular: The extent and suitability of grey seal breeding habitat on the Farne Islands.

Border Mires, Kielder - Butterburn SAC

Border Mires, Kielder - Butterburn is located within the central section of Northumberland. The site typically consists of national important habitats including transition mires and quaking bogs, blanket bogs and petrifying springs.

***Features of European interest*¹²**

The site is designated as an SAC for its:

- Northern Atlantic wet heaths with *Erica tetralix*, which the area is considered to support a significant presence.
- European dry heaths, which the area is considered to support a significant presence
- Blanket bogs, which this is considered to be one of the best areas in the United Kingdom
- Transition mires and quaking bogs, which this is considered to be one of the best areas in the United Kingdom
- Depressions on peat substrates of the Rhynchosporion,
- Petrifying springs with tufa formation (*Cratoneurion*), which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares, and for which the area is considered to support a significant presence.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Bogs have become dried out in areas as a result of forestry drainage and conifer planting. A rehabilitation programme of damaged bogs is taking place.
- The Kielder Forest is largely ungrazed and is not burnt, improving their condition and nature conservation value. However, small areas (c. 10%) of forest margins and on the highest elevation parts of the site are overgrazed by livestock and suffer some damage from burning. This will be addressed in future management.
- The Royal Air Force Spadeadam Base contains part of the SAC. In the past, drains were created to form a dummy runway which caused some damage to the bog. Bog rehabilitation has now been agreed with Ministry of Defence in the long-term.

¹² Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function, and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Ford Moss SAC

Ford Moss is located in the north east of Northumberland. The site is 61ha and comprises bogs, marshes water fringed vegetation, fens, coniferous woodland, mixed woodland, broad-leaved deciduous woodland and improved grassland.

Features of European interest¹³

The site is designated as an SAC for its:

- Active raised bogs at this location are considered to be one of the best areas of this habitat within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Bog communities present have been degraded by historic drainage from past coal mining activities, afforestation, burning and grazing. The restriction of trees and damming will enhance the water retention of the site.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function, and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

¹³ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Harbottle Moors SAC

Harbottle Moors is located within the central section of Northumberland. It is 936ha and is dominated by nationally important heathland habitats.

Features of European interest¹⁴

The site is designated as an SAC for its:

- European dry heaths at this location are considered to be one of the best areas of this habitat within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Most of the site is on Ministry of Defence (MoD) lands, adjacent to a firing range. The MoD land is lightly grazed and predominantly managed to prevent the spread of wildfires resulting by MoD activities. As a result, the greatest pressure to the site comes from managed burns and accidental wildfires. The heathland habitat is easily damaged by severe burns and can take up to five years to begin recovery. Areas where heath vegetation is not present are susceptible to localised erosion.
- The small areas of blanket mire and the crags on site are particularly sensitive to burning. The MoD has agreed in principle not to burn the mires, their input slopes or the areas around crags.
- The remaining area is owned by Forest Enterprise (FE). The FE land is subject to light grazing from sheep, with small areas of controlled burning.
- A small non-intervention area has been established on the FE land. FE this is the only section of the site open to the public, but visitor pressure appears to be low.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function, and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

¹⁴ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Newham Fen SAC

Newham Fen is 13.5ha and is located within the east of Northumberland. It is dominated by broad-leaved deciduous woodland with areas of fens, improved grassland, and inland waterbodies.

Features of European interest¹⁵

The site is designated as an SAC for its:

- Alkaline fens at this site are considered to be one of the best areas of this habitat within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Management works have taken place to rectify the encroachment of scrub and woodland into the fen vegetation. This is due to changes in the hydrology of the site
- Following the installation of a new hydrological system, the fen habitat has become rewetted and a habitat management regime has been established to maintain species richness.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the integrity of the site and to ensure that the site achieves Favourable Conservation Status of its Qualifying Features by maintaining and restoring;
- The extent, distribution, structure and functionality (including typical species) of the qualifying habitats and the supporting process on which the Qualifying habitats rely.

North Northumberland Dunes SAC

North Northumberland Dunes is 1147ha and is located at the northern extent of the Northumberland coast. The site contains coastal habitats such as coastal sand dunes, tidal habitats including salt marshes, inland waterbodies, bogs, marshes and heath habitats.

Features of European interest¹⁶

The site is designated as an SAC for its:

- Alkaline fens at this site are considered to be one of the best areas of this habitat within the United Kingdom.

¹⁵ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

¹⁶ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Embryonic shifting dunes, is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares, additionally it is considered to be one of the best areas in the United Kingdom for this habitat.
- Shifting dunes along the shoreline with *Ammophila arenaria* (“white dunes”), it is considered to be one of the best areas in the United Kingdom for this habitat.
- Fixed dunes with herbaceous vegetation (“grey dunes”), it is considered to be one of the best areas in the United Kingdom for this habitat
- Dunes with *Hippophae rhamnoides*.
- Dunes with *Salix repens ssp. argentea (Salicion arenariae)*, is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares, additionally it is considered to be one of the best areas in the United Kingdom for this habitat.
- Humid dune slacks, it is considered to be one of the best areas in the United Kingdom for this habitat.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Poor grazing management (both under-grazing and over-grazing) has led to habitat degradation. Discussions have been held to rectify this in the form of appropriate management agreements.
- Areas of the site have populations of the non-native invasive plant *Acaena novae-zealandiae*. Control methods are currently being identified.
- The dunes are impacted upon by recreation activities. English Nature, the local authorities and site managers are working together to address this issue.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

North Pennine Dales Meadows SAC

North Pennine Dales Meadows covers 497ha. It is located within the western extent of Northumberland. The SAC site contains grassland habitats of national importance.

Features of European interest¹⁷

The site is designated as an SAC for its:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*).
- Molinia meadows on calcareous, peaty or clayey-siltladen soils (*Molinion caeruleae*) for which the site is considered to support a significant presence.
- Mountain hay meadows for which the site is one of only two known outstanding localities for this habitat within the United Kingdom.
- Alkaline fens
- Limestone pavements

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- These grassland habitats depend upon traditional agricultural management that is no longer economic, such as hay-cutting and no or minimal use of agrochemicals. Management agreements and Stewardship payments are being used to promote the continuation of traditional management.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Roman Wall Loughs SAC

Roman Wall Loughs is approximately 684ha and is located within the south western extent of Northumberland. The site contains inland waterbodies with associated wetland habitats, heathland and scrub, grassland habitats, woodland habitats and inland rock habitats.

Features of European interest¹⁸

The site is designated as an SAC for its:

¹⁷ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

¹⁸ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation, for which the site is considered to be one of the best areas of this habitat within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- These grassland habitats depend upon traditional agricultural management that is no longer economic, such as hay-cutting and no or minimal use of agrochemicals. Management agreements and Stewardship payments are being used to promote the continuation of traditional management.
- The lakes are vulnerable to excess nutrient enrichment resulting from certain farming activities. Non-damaging farming practices are being promoted to deter damaging activities.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

River Eden SAC

River Eden is approximately 2463ha located on the western boundary of Northumberland. The majority of the site is located in Cumbria. The site comprises nationally important saline and freshwater riverine habitats, associated terrestrial habitats including broad-leaved deciduous woodlands. These habitats support nationally important species assemblages of fish, aquatic crustacean and bi-valve.

Features of European interest¹⁹

The site is designated as an SAC for its:

- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*, for which this site is considered to be one of the best areas of this habitat within the United Kingdom.
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, for which this site is considered to be one of the best areas of this habitat within the United Kingdom.

¹⁹ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- *Tilio-Acerion* forests of slopes, screes and ravines.
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*), for which this site is considered to be one of the best areas of this habitat within the United Kingdom.
- Freshwater pearl mussel *Margaritifera margaritifera*
- White-clayed crayfish *Austropotamobius pallipes*, for which this site is considered to be one of the best areas for this species within the United Kingdom.
- Sea lamprey *Petromyzon marinus*, for which this site is considered to be one of the best areas for this species within the United Kingdom.
- European brook lamprey *Lampetra planeri*, for which this site is considered to be one of the best areas for this species within the United Kingdom.
- European river lamprey *Lampetra fluviatilis*, for which this site is considered to be one of the best areas for this species within the United Kingdom.
- Allis shad *Alosa alosa*
- Atlantic salmon *Salmo salar*, for which this site is considered to be one of the best areas for this species within the United Kingdom.
- Bullhead *Cottus gobio*, for which this site is considered to be one of the best areas for this species within the United Kingdom.
- European otter *Lutra lutra*, for which this site is considered to be one of the best areas for this species within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Many of the features for the designation of the SAC are sensitive to water quality and habitat quality of the stream and marginal vegetation. Many of the streams within the site suffer from overgrazing of riverbanks, nutrient run-off which can lead to poor water quality and eutrophication.
- Activities associated with sheep-dipping potentially pose a threat to the site.
- A great deal of the alluvial forest areas are either in poor condition or fragmented.
- The above vulnerabilities are being addressed via a partnership approach to improve habitats and water quality.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.

- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

River Tweed SAC

River Tweed is approximately 3795ha located within the northern extent of Northumberland with the majority of the SAC in the Scottish Borders. The site comprises nationally important saline and freshwater riverine habitats, associated terrestrial habitats including broad-leaved deciduous woodlands. These habitats support nationally important species assemblages of fish.

***Features of European interest*²⁰**

The site is designated as an SAC for its:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, for which the site is considered to be one of the best areas of this habitat within the United Kingdom.
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
- Sea lamprey *Petromyzon marinus*, for which the area is considered to support a significant presence.
- European brook lamprey *Lampetra planeri*, for which the area is considered to support a significant presence.
- European river lamprey *Lampetra fluviatilis*, for which the area is considered to support a significant presence.
- Allis shad *Alosa alosa*
- Atlantic salmon *Salmo salar*, for which this site is considered to be one of the best areas for this species within the United Kingdom.
- Bullhead *Cottus gobio*
- European otter *Lutra lutra*, for which this site is considered to be one of the best areas for this species within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

²⁰ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- The river is impacted upon from acidification and eutrophication. Aspects of pollution and eutrophication are being addressed within Scotland through current SEPA regulations and the Water Framework Directive and by the Environment Agency within England.
- The river is impacted upon by river-works and bankside management. These affects are minimised via standards of forestry practice.
- The river is impacted upon by genetic pollution and disease. Genetic pollution issues are subject to statutory controls.
- The river is impacted upon by abstraction and impoundment management.
- In combination, The River Tweed Catchment Management Plan, SSSI consents and Habitats Directive regulation will effect long-term protection of the site and qualifying features.

Conservation objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Simonside Hills SAC

Simonside Hills is approximately 2082ha located within the central area of Northumberland. The European Site consists of two areas separated by Harwood Forest. The European Site comprises bog and marsh, heathland and scrub and broadleaved deciduous woodland

Features of European interest²¹

The site is designated as an SAC for its:

- European dry heaths, for which the site is considered to be one of the best areas of this habitat within the United Kingdom.
- Blanket bogs, for which the area is considered to support a significant presence.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

²¹ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Burning is affecting the hydrology of the blanket bog mire habitat. The use of burning plans will help manage this issue. A section of the moor is managed under a non-intervention policy.
- Active drains present within the blanket bog habitat affect the hydrology of the mire and the species composition. Blocking all active grips will help re-wet the blanket bogs.
- Several permissive footpaths have resulted in significant erosion, in particular on the areas of peat around Millers Moss and Simonside Ridge. An access project is being developed with Natural England the Park Authority in preparation for open access, limit damage across the blanket bog, and to undertake footpath restoration works.
- Within the lower dry heath slopes and within woodland gullies, bracken and rhododendron are a problem. These invasive species are spreading across the dry heath and out shading the dwarf shrubs, also preventing natural regeneration within the woodlands. Bracken control is being undertaken.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Tweed Estuary SAC

The Tweed Estuary is approximately 156ha and is located within the north eastern extent of Northumberland. The site comprises coastal habitats such as tidal rivers, estuaries, mud and sand flats, lagoons (including saltwork basins), salt marshes salt pastures and salt steppes

Features of European interest²²

The site is designated as an SAC for its:

- Estuaries, for which this is considered to be one of the best areas for this habitat within the United Kingdom.
- Mudflats and sandflats not covered by seawater at low tide, for which the site is considered to be one of the best areas of this habitat within the United Kingdom.
- Sea lamprey *Petromyzon marinus*, for which the area is considered to support a significant presence.

²² Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- European river lamprey *Lampetra fluviatilis*, for which the area is considered to support a significant presence.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- The Tweed catchment large dominated by arable land. This is a source of nutrient enrichment to the riverine habitats.
- Small scale coastal protection works are proposed and infrequent dredging operations are undertaken in the Tweed dock.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Tyne and Allen River Gravels SAC

Tyne and Allen River Gravels is approximately 37ha and is located within the south west of Northumberland. The site comprises inland waterbodies, heath and scrub land, dry grassland, broad-leaved deciduous and coniferous woodlands and inland rock features.

Features of European interest²³

The site is designated as an SAC for its:

- Calaminarian grasslands of the *Violetalia calaminariae*, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- The qualifying habitat has been created by deposition of minerals out of the rivers Tyne and Allen onto gravel banks. Mining activities upstream have virtually stopped, reducing the amount of metals carried by and deposited by the rivers.
- In places the rivers have changed course, isolating the shingle banks.
- Succession to grassland and scrub is taking place on some of the component SSSIs.

²³ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

European Sites Present Within 10km of the Northumberland Boundary

Din Moss-Hoselaw Loch SPA / Ramsar

Din Moss-Hoselaw Loch is approximately 50ha. It is located within the Scottish Borders, approximately 0.7km north of Northumberland. Hoselaw Loch is surrounded by Din Moss, an area of raised bog with associated fens. The loch is used by large numbers of wintering Icelandic/Greenland Pink-footed Goose *Anser brachyrhynchus* and Icelandic Greylag Goose *Anser anser*.

Features of European interest²⁴

The site is designated as an SPA for its overwintering populations of:

- Greylag Goose *Anser anser*, 1,081 individuals representing at least 1.1% of the wintering Iceland/UK/Ireland population (5 year peak mean 1991/2 - 1995/6)
- Pink-footed Goose *Anser brachyrhynchus*, 1,180 individuals representing at least 0.5% of the wintering Eastern Greenland/Iceland/UK population (5 year peak mean 1991/2 - 1995/6)
- The site is designated as a Ramsar site for its:
- Pink-footed goose, *Anser brachyrhynchus* of the Greenland, Iceland/UK population. 1180 individuals, representing an average of 0.4% of the population (5 year peak mean 1991/92-1995/96).
- Greylag goose, *Anser anser anser*, of the Iceland/UK, Ireland population. 2054 individuals, representing an average of 2.3% of the population (Source period not collated).

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- There is some disturbance of the site through shooting and recreation but it is not thought to be significant

²⁴ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Tyne and Nent SAC

Tyne and Nent is approximately 37ha. It is located approximately 1.8km south of Northumbria within Cumbria. Habitats present on site include inland waterbodies, both dry and humid grasslands and missed woodland.

***Features of European interest*²⁵**

The site is designated as an SAC for its overwintering populations of:

- Calaminarian grasslands of the *Violetalia calaminariae*, for which the site is considered to be one of the best areas of this habitat within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- The grassland habitats present on site are dependent on the maintenance of a high metal content in the substrate. Metal loving plants (metalophytes) are being lost via successional processes.
- Motorcycle scrambling close to the SAC has potential to spread to the SAC and cause damage to the SAC.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

²⁵ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Durham Coast SAC

Durham Coast is approximately 393ha. It is located approximately 2.8km south east of Northumbria within Durham. Habitats present on site include coastal areas such as coastal dunes, sea cliffs and grassland habitats.

Features of European interest²⁶

The site is designated as an SAC for its overwintering populations of:

- Vegetated sea cliffs of the Atlantic and Baltic coasts, for which this area is considered to be one of the best areas of this habitat within the United Kingdom.
- Fixed dunes with herbaceous vegetation (“grey dunes”)

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Plans exist for the non-interventionist management of the vegetated cliffs.
- The majority of the site is in public ownership and an agreed management plan is being developed to protect nature conservation interests.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Moor House – Upper Teesdale SAC

Moor House – Upper Teesdale is approximately 38,796ha. It is located approximately 4.5km south of Northumbria within Durham and Cumbria. Habitats present on site include inland waterbodies, heathland, grassland, bogs, fens, springs and rocky habitats including cliffs, scree slopes and limestone pavements. In addition, the area supports nationally important populations of marsh saxifrage and aquatic fauna.

Features of European interest²⁷

The site is designated as an SAC for its overwintering populations of:

²⁶ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

²⁷ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.*, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- European dry heaths, for which the area is considered to support a significant presence of this habitat.
- Alpine and Boreal heaths, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- *Juniperus communis* formations on heaths or calcareous grasslands, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Calaminarian grasslands of the *Violetalia calaminariae*, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Siliceous alpine and boreal grasslands, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe)
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*), for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels, which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000ha, and for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Mountain hay meadows, for which this is one of only two known outstanding localities of this habitat within the United Kingdom. This is considered to be a rare habitat as its total extent in the United Kingdom is estimated to be less than 1000ha.
- Blanket bogs, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Petrifying springs with tufa formation. This is considered to be a rare habitat as its total extent in the United Kingdom is estimated to be less than 100ha. This area is considered to be one of the best areas of this habitat within the United Kingdom.
- Alkaline fens, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*. This is considered to be a rare habitat as its total extent in the United Kingdom is estimated to be less than 1000ha. This area is considered to be one of the best areas of this habitat within the United Kingdom.

- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*), for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*). This habitat is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000ha. This area is considered to be one of the best areas of this habitat within the United Kingdom.
- Calcareous rocky slopes with chasmophytic vegetation. This is considered to be a rare habitat as its total extent in the United Kingdom is estimated to be less than 1000ha. This area is considered to be one of the best areas of this habitat within the United Kingdom.
- Siliceous rocky slopes with chasmophytic vegetation, for which the area is considered to be one of the best areas of this habitat within the United Kingdom.
- Limestone pavements. This area is considered to support a significant presence of this habitat.
- Round-mouthed whorl snail *Vertigo genesii*. This area is one of only two known outstanding localities of this species within the United Kingdom. This species is known from 15 or fewer 10 x 10 km squares in the United Kingdom.
- European brook lamprey *Lampetra planeri*
- Bullhead *Cottus gobio*
- European otter *Lutra lutra*
- Marsh saxifrage *Saxifraga hirculus* is known from 15 or fewer 10 x 10 km squares in the United Kingdom. This location is considered to be one of the best areas in the United Kingdom for this species.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Unsustainable grazing has had a negative effect on virtually all the Annex I habitats listed. The severity of the overgrazing has made it difficult to assessments of conservation structure and function of the overgrazed habitats. This is being tackled through fundamental policy change as well as targeted local action.
- Bogs have been damaged through inappropriate burning and drainage.
- Reservoir construction may have impacted on vegetation due to increased access, acid deposition and the microclimatic shifts.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.

- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Borders Woods SAC

Borders Woods is approximately 53ha. It is located approximately 6.7km north west of Northumbria within the Scottish Borders. The site is dominated by broadleaved deciduous woodland with heathland, grassland and inland rocky habitats present.

Features of European interest²⁸

The site is designated as an SAC for its overwintering populations of:

- *Tilio-Acerion* forests of slopes, screes and ravines. This area is considered to be one of the best areas of this habitat within the United Kingdom.

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Much of the site is managed by the Scottish Wildlife Trust and Scottish Natural Heritage and by various management agreements with landowners. The integrity of the remainder of the site is supported by connection with similar undesignated woodlands, which are sympathetically managed via long-term forest plans.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain and restore the extent and distribution, the structure, function and viability (including typical species of a habitat), and the supporting processes of the habitats and habitats that support qualifying features of the European site.
- To maintain and restore the populations of qualifying features and the habitats that support qualifying features and the distribution of the qualifying species with the European site.
- To ensure no significant disturbance of typical species of the habitat
- In all cases, maintenance implies restoration if the feature is not currently in favourable condition.

Langholm - Newcastleton Hill SPA

Langholm - Newcastleton Hills is approximately 7,544ha. It is located approximately 9.3km west of Northumbria within the Scottish Borders and Dumfries and Galloway. The site is dominated with bog habitats. Heathland, dry, humid and alpine and sub alpine grassland, and

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broadleaved deciduous woodland habitats are also present. The site supports a nationally important population of breeding hen harrier.

Features of European interest²⁹

The site is designated as an SAC for its overwintering populations of:

- Hen harrier *Circus cyaneus*. The site supports approximately 2.7% of the GB breeding population (Count as at 1994-1998)

Key Environmental Vulnerabilities

The key environmental vulnerabilities for the site are:

- Moorland habitat supports the population of hen harriers. This habitat is threatened by degradation and loss of heather, and peat erosion (through inappropriate muirburn, overgrazing, public/vehicular access and the spread of bracken).
- Management to control bracken, restore heather, ensure appropriate stocking levels (including a feral goat population) and ensure appropriate muirburn exists.
- Agricultural practices, game management and recreational activities (including walking and birdwatching) have potential to disturb breeding hen harriers.

Conservation Objectives

The Conservation Objectives for the site are, subject to natural change:

- To maintain in the long-term a viable population and distribution within the site of the qualifying species.
- To maintain the extent and distribution, the structure and function (including typical species), and the supporting processes of the habitats and habitats that support qualifying features of the European site.

²⁹ Features of European Interest are the features for which a European site is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.