HRA STAGE 1 SCREENING AND STAGE 2 APPROPRIATE ASSESSMENT

This report details the HRA screening process carried out for the development of Northumbrian Water's DWMP.

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Executive Summary

This report details the screening process of a Habitats Regulations Assessment for all 249 catchments that are part of Northumbrian Water's Drainage and Waste Management Plan (DWMP). The screening has been carried out for two planned options as part of the DWMP, below ground concrete storage tanks and a hybrid approach of Surface Water Management (comprising blue/ green corridors, SuDS features and short sections of new surface water sewers). The precise location of these options is not available at the plan stage so it has been assumed that they cover the entire area of the catchment. The screening shows 95 of the catchments require the HRA progressing to the appropriate assessment stage, 46 may require mitigation during construction and ongoing maintenance/operation and the remaining 108 require no further assessment. It is expected that the number requiring appropriate assessment will be reduced considerably when the location and/or more details regarding the options is available.

An appropriate assessment was conducted on the 95 catchments, showing that with appropriate mitigation, no likely effect is expected on any protected sites. Another screening will be conducted on each of these catchments (and those requiring mitigation) at project level when more detail is available, progressing to full HRA if necessary.

Acronyms / Abbreviations

HRA	Habitats Regulations Assessment
NWG	Northumbrian Water Group
DWMP	Drainage and Wastewater Management Plan
SEA	Strategic Environmental Assessment
L3	Level 3 (tactical planning unit from NWG's DWMP)
SuDS	Sustainable drainage system
SAC	Special Area of Conservation
SPA	Special Protection Area
cSAC	Candidate Special Area of Conservation
pSPA	Potential Special Protection Area
LSE	Likely Significant Effect
AA	Appropriate Assessment
IROPI	Imperative Reasons of Overriding Public Interest
GIS	Geographic Information System

1 Introduction

1.1 Background and purpose

This document comprises the Stage 1 Screening of a Habitats Regulations Assessment (HRA), carried out to assess potential impacts of Northumbrian Water Group's (NWG) Drainage and Wastewater Management Plan (DWMP). This plan is being developed concurrently with the Strategic Environmental Assessment (SEA) process.

1.2 The Drainage Water Management Plan

DWMPs are long-term strategic plans to set out efforts to provide robust and resilient drainage and wastewater systems and assess risks to drainage systems, stakeholders and the environment. Water UK have set out a framework for creating DWMPs[1], which sets out three levels of management structure, Level 1, Level 2 and Level 3. Level 1 has a company level scope, bringing together Level 2 and 3 in a high-level plan. Level 2 covers large strategic planning areas, made up of multiple catchments and wastewater treatment works. Finally, Level 3 (L3) is a tactical planning unit and covers a single wastewater treatment works and its catchment (in some cases this may be a collection of small or sub catchments for larger wastewater treatment works).

NWG's DWMP has resulted from an extensive assessment process, in which a wide range of options have been considered. This list of options has now been preliminarily narrowed to below ground storage and a hybrid Surface Water Management option of concrete sewers and Sustainable Drainage Systems (SuDS) / blue/green corridors. More detail is provided in Section 2.2.

1.3 Habitats Regulations Assessment Process

This document has been prepared based on the methodology for HRA set out in the national guidance contained in 'Habitats regulations assessments: protecting a European Site. Published 24 Feb 2021' (GOV.UK 2021[2]). The guidance sets out a three-stage approach to HRA (as illustrated in Plate 1-1 Process of HRA below) and emphasises the iterative nature of the process.

Plate 1-1 Process of HRA

[1] Water UK DWMP Framework Report
[2] Habitats regulations assessments: protecting a European site - GOV.UK (www.gov.uk)

Stage 1: Screening

The Screening Stage involves the determination of the European Sites which could potentially be affected by the Plan and their determining interests; and whether the implementation of the Plan could result in a 'Likely Significant Effect', either alone or in-combination with other Plans and Projects.

HRA case law (the 'Dilly Lane' case, 2008) determined that mitigation measures that were 'incorporated into the Project' or which 'formed part of the Project' could be taken into account at the Screening 'Likely Significant Effect' test stage of HRA (as long as they were effective). The ruling judge accepted that certain facets of a Project, which are intended to avoid or reduce negative impacts on a European Site (i.e., mitigation), can still be regarded as 'incorporated into the Project' if they are promoted that way by the developer.

However, a more recent ruling (Court of Justice of the European Union ('CJEU') People Over Wind and Sweetman v Coillte Teoranta (C-323/17)) concluded that mitigation measures intended to avoid or reduce impacts on a European Site could not be regarded as part of 'the Project' and thus should not be taken into account at the Screening Stage of HRA when judging whether Likely Significant Effects on the integrity of a European Site.

Whilst the above case law relates specifically to Projects (rather than Plans), it is now generally accepted that any measures inherently part of the scheme design (described as 'embedded mitigation' in this report) which are not specifically incorporated into the scheme for ecological reasons, but nonetheless reduce ecological effects, can be considered at the HRA Screening Stage. Where further measures are required to be added to the Project to achieve the purpose of avoiding or reducing its harmful effects on a European Site (described as 'additional mitigation' in this report), they should not be considered at the Screening Stage and an Appropriate Assessment is required. This distinction is yet to be tested by further case law but in the absence of any clear guidance or explanation of the ruling from the statutory authorities, appears to be the most practical and pragmatic approach in the light of the recent ruling. This approach is supported by articles in a recent Habitats Regulations Assessment Journal (DTA Publications, 2018).

In the event that Likely Significant Effects are identified at the Screening Stage, on the basis of objective information and in the absence of mitigation / avoidance measures, the Competent Authority should proceed to the next stage of assessment (Stage 2: Appropriate Assessment).

Stage 2: Appropriate Assessment

During Stage 2 (Appropriate Assessment), an assessment of whether there would be an adverse effect on the integrity of the European Site concerned, and the consideration of measures to address this effect, is required. The precautionary principle should be applied, with the focus being on objectively demonstrating, with supporting evidence and in light of appropriate mitigation, that there will be no adverse effects on the integrity of the European Sites. Where this is not possible, or uncertainty remains, adverse effects must be assumed and consideration of Stage 3.

Stage 3: Derogation

Stage 3 determines whether a Plan or Project proposal, that would have an adverse effect on a European Site, qualify for an exemption. There are three legal tests that need to be applied in order: there are no feasible alternative solutions that avoid damage or are less damaging to the site; the proposal needs to be carried out for imperative reasons of overriding public interest; and finally, the necessary compensation measures can be secured.

This report details the screening process and primarily involves assessing two criteria:

- Whether the proposal is directly connected with or necessary for the conservation management of a national site.
- Whether the proposal risks having a significant effect on a national site on its own or in combination with other proposals.

2 Methods

2.1 Information gathering and national site network assessment

A total of 249 Level 3 catchments[3] (see Appendix B) from NWG's DWMP were provided by NWG and for the HRA process all selected options are being applied to each catchment. Given the strategic nature of the DWMP, the exact site location and details of the measures to be implemented within each catchment are not yet available, so for the purposes of this screening options cover the entire catchment. More details on selected options are provided in section 2.2. Many of these details are still subject to change, such as through the adaptive planning approach within the plan or the asset management project lifecycle, so the assessment here has been as conservative and accurate as possible given the strategic nature of the plan.

The national sites within and in proximity to the operating region for NWGs wastewater services Group (Northumberland, Durham, Tyne and Wear, and small areas of North Yorkshire, Cumbria and Berwickshire) were identified, using GIS and a spatial join of NWG Level 1 areas (plus a 5km buffer) and SAC, SPA and Ramsar boundaries sourced from Natural England[4]. Each national site was assessed for its conservation objectives through both its selection features and relevant positive and negative impacts, for example a site may be highly impacted by marine pollution (impact code H03), and mildly impacted by grazing pressure (impact code A04). This information was obtained from each sites' standard data form[5] (see Appendix A). Initially a 5km buffer, defined by professional judgement based on an initial evaluation of national sites and their qualifying feature ecological needs was used to determine which catchments could be screened out and which might need elevating to the appropriate assessment stage. Each L3 catchment was assigned all associated pressures of national sites they were within, or partially within 5km of.

[3] Water UK DWMP Framework Report
[4] SACs, SPAs, Ramsars https://naturalengland-defra.opendata.arcgis.com/
[5] List of SACs https://sac.jncc.gov.uk/site/, List of SPAs https://jncc.gov.uk/our-work/list-of-spas/

2.2 Options

NWG have selected primarily a combination of options, the provision of underground storage tanks, with several catchments adopting a hybrid option of Surface Water Management. Potential pressures to national sites associated with these options are outlined in **Table 2.2.**

Table 2.2 – Selected options and associated potential impacts

Option	Description	Potential pressures
Option 1: Below-ground storage	Excavation of ground to install concrete storage tanks and associated infrastructure (connecting pipework etc.)	• Habitat loss both temporary and ongoing • Temporary disturbances both indirect (light, noise, vibration etc.) and direct (collision, erosion etc.) • Spread of non-native invasive species during construction • Contamination/pollution (only likely in the event of damage or insufficient planning)
Option 2: Hybrid option, Surface Water Management	Creation of short sections of new concrete sewers, SuDS and/or blue/green corridors. Could involve excavation, and planting.	• Modification of water quality • Habitat loss (through replacement of existing habitat for new habitats) • Modifications to species interactions • Spread of non-native invasive species during construction • Contamination/pollution

2.3 Limitations

Details of national sites are provided and curated by third parties. Whilst the most up to date information on the location and relevant sites has been collected at the time of publication of this report, this data may change over time, and Stantec cannot be held responsible for any error in data collected.

DWMPs are strategic documents, setting out the investment needs and priorities over a 25-year period, as such the details are still relatively high level and subject to change through the adaptive planning approach or asset management project lifecycle. Most importantly detailed information on where and how options will be implemented is not yet available/confirmed. Within this context, this report has been prepared under the conservative assumption that options are applied to the entirety of any L3 catchment, and that construction is not necessarily carried out in the most considerate fashion. When this information is available it is likely that considerably greater L3 catchments can be screened out at Stage 1.

Two pieces of case law identify that plan level HRAs cannot be expected to provide conclusive results regarding whether the plan will have any Likely Significant Effects.

“It would also hardly be proper to require a greater level of detail in preceding plans or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision

of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure."[6]

"Each appropriate assessment must be commensurate to the relative precision of the plans at any particular stage and no more. There does have to be an appropriate assessment at the Core Strategy stage, but such an assessment cannot do more than the level of detail of the strategy at that stage permits."[7]

With this in mind, appropriate assessment has been undertaken to the extent possible on the basis of the precision of the plan, with further update required with increasing specificity in the subsequent at project level.

3 Screening

There is no evidence currently available to suggest any options within the L3 catchments are required to maintain or can improve the conservation status of any national sites considered in this assessment. Until such evidence is available no L3 catchments can be safely screened out for this reason.

There are 106 L3 catchments a significant distance (over 5km) from all national sites and can be safely screened out from further assessment. The remaining 143 L3 sites will be further examined in Section 4 using a high-level assessment of the relevant national sites and their potential for impact. The results screening results for each individual catchment are provided in Appendix B.

4 High Level Assessment

A total of 49 L3 catchments are within or partially within a national site. Without more specific option details, it must be recommended that options within these L3 catchments are progressed to the appropriate assessment stage. If the location of the options is provided, and it is shown that the entirety of the planned works is outside of any national sites, the screening process conducted for those L3 catchments within 5km of a national site but not overlapping, will need repeating for those sites.

The remaining 94 catchments have been assessed against their associated national site pressures (see Appendix B). Affected national sites and pressures associated with the impacts identified in **Table 2.2** are listed in **Table 4.1**.

Of these 94 L3 catchments:

- two L3 catchments require no further assessment,

[6] Opinion of advocate general Kokott, 9th June 2005, Case C-6/04. Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland
[7] Sean Feeney v Oxford City Council and the Secretary of State CLG para 92 of the judgment dated 24 October 2011 Case No. CO/3797/2011, Neutral Citation [2011] EWHC 2699 Admin

- 46 require mitigation (until plan location details show otherwise) and
- 46 require appropriate assessment (until location details show otherwise).

Table 4.1 – L3 catchments by national site

National site	No. of L3 catchments within 5km	Relevant national site pressures
Berwickshire & North Northumberland Coast (SAC)	8	• I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish) • G05 - Other human intrusions and disturbances
Castle Eden Dene (SAC)	3	• I02 - Problematic native species • I01 - Invasive non-native species
Durham Coast (SAC)	18	• I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • K01 - Abiotic (slow) natural processes • A08 - Fertilisation • G05 - Other human intrusions and disturbances
Ford Moss (SAC)	4	• J02 - Human induced changes in hydraulic conditions
Newham Fen (SAC)	1	Air pollution is primary pressure on site so selected options unlikely to influence site except where directly overlapping.
North Pennine Dales Meadows (SAC)	4	• A03 - Mowing / cutting of grassland • A08 - Fertilisation • A02 - Modification of cultivation practices
River Tweed (SAC)	6	• H02 - Pollution to groundwater (point sources and diffuse sources) • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions
Simonside Hills (SAC)	2	• A02 - Modification of cultivation practices • G05 - Other human intrusions and disturbances • I01 - Invasive non-native species
Thrislington (SAC)	13	• M01 - Changes in abiotic conditions
Tyne & Allen River Gravels (SAC)	6	• I01 - Invasive non-native species • K02 - Biocenotic evolution, succession
Tyne & Nent (SAC)	1	• K01 – Abiotic (slow) natural processes • G05 – Other human intrusions and disturbances • K02 - Biocenotic evolution, succession
North Pennine Moors (SAC & SPA)	12	• K04 - Interspecific floral relations • J02 - Human induced changes in hydraulic conditions • A04 - Grazing • A02 - Modification of cultivation practices
North York Moors (SAC & SPA)	11	• K04 - Interspecific floral relations • I01 - Invasive non-native species • M01 - Changes in abiotic conditions
Northumberland Marine (SPA)	15	This site's primary pressures are aquaculture and human recreational pressures which are not linked to any of the selected options.

National site	No. of L3 catchments within 5km	Relevant national site pressures
Teesmouth and Cleveland Coast (SPA & RAMSAR)	12	• J03 - Other ecosystem modifications • I01 - Invasive non-native species • M02 - Changes in biotic conditions • H07 - Other forms of pollution • H03 - Marine water pollution • G05 - Other human intrusions and disturbances • M01 - Changes in abiotic conditions
Holburn Lake & Moss (SPA & RAMSAR)	1	• I01 - Invasive non-native species • G05 - Other human intrusions and disturbances • K03 - Interspecific faunal relations • M02 - Changes in biotic conditions
Lindisfarne (SPA & RAMSAR)	3	• H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish) • I01 - Invasive non-native species • M02 - Changes in biotic conditions • K03 - Interspecific faunal relations
Northumbria Coast (SPA & RAMSAR)	29	• M02 - Changes in biotic conditions • K03 - Interspecific faunal relations • H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish) • G05 - Other human intrusions and disturbances

The two chosen options have been assessed against relevant pressures, showing which associated pressures require mitigation or further assessment. Each pressure has been rated as either negligible, low, medium, or high, where:

- Negligible requires no further action.
- Low may require some minor mitigation depending on option location or specifics.
- Medium is likely to require mitigation, or must be significantly distanced from the nearby national site.
- High is likely to require appropriate assessment unless the location is further than 5km from the national site.

Mitigations are suggested in **Table 4.3** that will reduce the threat posed by pressures marked as medium.

It should be noted that A03 and A04 are primarily positive pressures but can also be negative (meaning that the national site requires a specific level of regularity and/or type of mowing/cutting or grazing). For this report it is assumed that any site with A03 or A04 listed as a pressure is negatively affected. This should be re-assessed when further information is available about the options and option locations.

Table 4.2 – Assessment of pressures against options (cells are highlighted in white for negligible, green for low, yellow for medium and red for high threat to national sites)

Pressure	Option 1 assessment	Option 2 assessment
A03 - Mowing / cutting of grassland	Some mowing/cutting may be required during construction of storage tank location and may be continued with replacement plant community after construction.	Some mowing/cutting may be required during construction, and this may continue through maintenance.
A04 - Grazing	Temporary removal of grazing pressure may occur for a small area during construction. Grazing may be used more long term to maintain the area.	Changes in grazing may occur during construction and changes in plant assemblages may disrupt or encourage further grazing.
A08 - Fertilisation	Level of fertilisation is unlikely to change.	Level of fertilisation is unlikely to change, unless used to encourage vegetation growth within blue/green corridors.
G05 - Other human intrusions and disturbances	Disturbances may be high during construction but should be temporary. Potential for ongoing disturbance through maintenance.	Disturbances likely to be high during construction. Ongoing disturbance may be increased with better access to area provided during construction. Potential for ongoing disturbance through maintenance.
H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish)	Storage tank whilst connected to the sewer network has the potential to leak pollutants to the surroundings.	Potential for pollution to be released into blue/green corridors. Where these corridors are still being established there is a risk of pollution spread.
H02 - Pollution to groundwater (point sources and diffuse sources)	Storage tank whilst connected to the sewer network has the potential to leak pollutants to the surroundings.	Potential for pollution to be released into blue/green corridors. Where these corridors are still being established there is a risk of pollution spread.
I01 - Invasive non-native species	Risk of spreading non-native invasive species during construction.	Risk of spreading non-native invasive species during construction. Risk of corridors becoming pathways for further non-native invasive species spread.
I02 - Problematic native species	This pressure refers to deer grazing and non-yew conifer growth at Castle Eden Dene. Option 1 will unlikely increase this pressure.	This pressure refers to deer grazing and non-yew conifer growth at Castle Eden Dene. Option 2 may have potential to expand deer habitat.
J02 - Human induced changes in hydraulic conditions	This option is likely to change hydraulic conditions particularly during storm events, by changing downstream flowrates.	This option is highly likely to change hydraulic conditions, reducing downstream flowrates.

Pressure	Option 1 assessment	Option 2 assessment
K01 - Abiotic (slow) natural processes	The two sites that are susceptible to this pressure are unlikely to be disrupted by option 1 in this way. At Durham coast, the slow erosion/geological processes would make the option impractical in the locations they occur. At Tyne and Nent, construction and maintenance of this option would be unlikely to change the level (or rate of change) of soil metals.	The two sites that are susceptible to this pressure are unlikely to be disrupted by option 1 in this way. At Durham coast, the slow erosion/geological processes would make the option impractical in the locations they occur. At Tyne and Nent, construction and maintenance of this option would be unlikely to change the level (or rate of change) of soil metals.
K02 - Biocenotic evolution, succession	Risk of disruption to succession pattern through removal of species or spread of species during construction.	Risk to changes in succession through the establishment of differing plant communities in the blue/green corridors.
K04 - Interspecific floral relations	Risk of unbalancing floral relations through higher removal or damage of any one species, or introduction of new species.	Risk to unbalancing floral relations through the establishment of differing plant communities in the blue/green corridors.
M01 - Changes in abiotic conditions	Risk of temporary changes during construction, particularly if these are irreversible.	Risk of modifying ongoing abiotic conditions with the establishment of blue/green corridors.

Table 4.3 – Suggested mitigations for medium or higher level threats (cells are highlighted in white for negligible, green for low, yellow for medium and red for high threat to national sites with mitigation in place)

Pressure	Option 1 assessment	Option 2 assessment
A03 - Mowing / cutting of grassland	Replace vegetation communities after construction and ensure that level of mowing/cutting is appropriate for nearby national site features. This is likely a localised threat, so mitigation is only required if location is within 500m.	Replace vegetation communities after construction and ensure blue/green corridor plant communities do not require mowing or cutting. This is likely a localised threat, so mitigation is only required if location is within 500m.
A04 - Grazing	Ensure replacement plant communities do not require grazing. This is likely a localised threat, so mitigation is only required if location is within 500m.	Ensure blue/green corridor plant communities do not require grazing. This is likely a localised threat, so mitigation is only required if location is within 500m.

Pressure	Option 1 assessment	Option 2 assessment
G05 - Other human intrusions and disturbances	Minimise construction footprint (including number of staff on site and access) and keep maintenance required as low as possible if general visual disturbance is detectable at National site. For other disturbances such as light pollution or vibration, ensure location is distant enough for disturbance not to occur, or appropriate assessment will be required.	Minimise construction footprint (including number of staff on site and access) and keep maintenance required as low as possible if general visual disturbance is detectable at National site. For other disturbances such as light pollution or vibration, ensure location is distant enough for disturbance not to occur, or appropriate assessment will be required. Ensure that if location is within visual range of National site that access to site is not improved to public.
H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish)	With appropriate construction of underground storage, the risk of leaks should be negligible. Ensure that any connecting structures/pipes will not leak, and they are regularly monitored.	Ensure location is downstream from National site or ensure blue/green corridors are fully established before any overflow is allowed.
H02 - Pollution to groundwater (point sources and diffuse sources)	With appropriate construction of underground storage, the risk of leaks should be negligible. Ensure that leak risk is minimised for any connecting structures/pipes, and they are regularly monitored.	Ensure location is downstream from National site or ensure blue/green corridors are fully established before any overflow is allowed.
I01 - Invasive non-native species	A comprehensive biosecurity plan should be in place for any construction or maintenance access. Ensure personnel and equipment is cleaned and/or disinfected before entering and leaving the site.	A comprehensive biosecurity plan should be in place for any construction or maintenance access. Ensure personnel and equipment is cleaned and/or disinfected before entering and leaving the site. Survey for nearby non-native invasive species to ensure corridors will not provide an immediate non-native spread along them. Monitor corridors for the presence of non-native invasive species going forward.
I02 - Problematic native species	N/A	Ensure planted vegetation does not include non-yew conifers and install deer exclusion features if adjacent to Castle Eden Dene.
J02 - Human induced changes in hydraulic conditions	If the location of this option is downstream of all relevant national sites within 5km, or outside a 5km radius from all relevant sites, then no further action is required. Otherwise, appropriate assessment is required.	If the location of this option is downstream of all relevant national sites within 5km, or outside a 5km radius from all relevant sites, then no further action is required. Otherwise, appropriate assessment is required.

Pressure	Option 1 assessment	Option 2 assessment
K02 - Biocenotic evolution, succession	Ensure plant community is returned/replanted accurately after disturbance of construction.	Ensure plant community is returned/replanted accurately after disturbance of construction. For blue/green corridors, ensure plant community will not disrupt succession on the relevant National sites (check successional stages of species planted and dispersal distances).
K04 - Interspecific floral relations	Ensure plant community is returned/replanted accurately after disturbance of construction, and that construction is carried out in winter when interspecific floral relations are likely dormant.	Ensure plant community is returned/replanted accurately after disturbance of construction, and that construction is carried out in winter when interspecific floral relations are likely dormant. For blue/green corridors ensure plant community will not disrupt existing flora on the relevant National sites (check successional stages of species planted and dispersal distances).
M01 - Changes in abiotic conditions	Ensure abiotic conditions are not significantly modified during or after construction.	Ensure abiotic conditions are not significantly modified during or after construction.

5 Appropriate assessment

Following HRA stage 1 screening and high-level assessment, 95 catchments have been identified as requiring stage 2 appropriate assessment. The potential impacts identified fall under three categories:

- Physical
    - Changes to hydrological flow (J02)
    - Human activity (A03, G05)
    - Other physical changes (M01)
- Biological
    - Vegetation management (A03, A04)
    - Invasive and problematic native species (I01, I02)
    - Disruption to interspecific and successional relationships (K02, K04)
- Chemical
    - Pollution (H01, H02)

This appropriate assessment firstly sets out mitigation measures to prevent any likely significant effects of the plan on European sites, but also contains the caveat that any aspects of the plan will have a HRA carried out at project level when sufficient details are available.

- The key factor behind likely significant effects on European sites is currently the uncertainty on option locations. To this end options will be sited sensitively wherever possible to avoid any European sites.
- A number of standard practices within constructions will mitigate impacts, including:
    - Dust prevention
    - Vibration reduction
    - Biosecurity
    - Sensitive use of sight lighting and other visual impacts
- **Table 4.3** sets out several specific mitigations that will prevent impacts on European sites.
    - A project level HRA (including stage 1 screening and stage 2 appropriate assessment where applicable) will be carried out on each option at project level when details, locations and scope of intended works are available.

6 Conclusions

A HRA screening has been carried out on a total of 249 L3 catchments as part of NWG DWMP, the screening outcome for each individual catchment is available in Appendix B, including recommendations for further screening and appropriate assessment.

Two options have been assessed for each catchment and recommendations are provided for each option in **Table 4.3**. In total, 95 L3 catchments required progressing to a plan level appropriate assessment stage of the HRA. This recommendation is currently based on assuming that the options are placed in the worst possible locations (for example within a national site, or adjacent etc for those that do not intersect a national site). It is likely that with further details that many of these requiring appropriate assessment can be reduced to only requiring mitigation during construction and ongoing maintenance or even screened out entirely.

The plan level appropriate assessment carried out on the remaining 95 L3 catchments shows that with appropriate mitigation, no likely impact is expected on any protected sites. Whilst there are high level threats identified in **Table 4.3**, these are expected to be mitigated by siting the options appropriately, i.e., not siting options within European Sites or within 500-1000m of any European Sites. Importantly, another full HRA including stage 1 screening and stage 2 appropriate assessment where appropriate will be conducted on each L3 catchment at project level when more information is available. When implementing the DWMP, the following needs to be completed:

1. Using Appendix B and the DWMP, identify individual L3 catchments where no measures are proposed through the final DWMP, to screen out those requiring no further work.

2. The 46 L3 sites requiring mitigation (dependent on option) and the 95 that required appropriate assessment must have the recommended mitigations included in the plan, or a detailed enough location provided to ensure significant distance from the nearby national site.

Appendix A National sites

SAC	Reason for SAC designation	
Ford Moss	Annex I habitats that are a primary reason for selection **Active raised bogs** * Priority feature Ford Moss is a largely intact 46 ha bog in undulating topography in the rain-shadow of the Cheviot Hills. Although partially drained, the re-wetted surface contains many waterlogged areas with species typical of peat-formation. Thus, although there are drier purple moor-grass *Molinia caerulea*-dominated parts, it is considered to be predominantly active raised bog. There is a 12 m depth of peat within the confining basin. The vegetation includes species of raised bog as well as poor-fen, which is also indicated in places by the presence of white sedge *Carex curta* where water runs into the bog from the surrounding slopes.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	Positive impacts
	H04 - Air pollution, air-borne pollutants	A02 - Modification of cultivation practices
	J02 - Human induced changes in hydraulic conditions	A04 - Grazing
	B02 - Forest and Plantation management & use	
Tyne & Nent	Annex I habitats that are a primary reason for selection **Calaminarian grasslands of the Violetalia calaminariae** At this site in the north-west Pennines, Calaminarian grassland occurs in association with lead mine waste and river shingles of the rivers South Tyne and Nent. This site supports a rich metallophyte flora with substantial populations of six species of higher	

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">plant metallophytes: thrift Armeria maritima, moonwort Botrychium lunaria, Pyrenean scurvygrass Cochlearia pyrenaica, spring sandwort Minuartia verna, alpine penny-cress Thlaspi caerulescens and mountain pansy Viola lutea. The site is also of great importance for its lichen communities associated with both spoil and river shingle. A number of rare and scarce species are present, including Peltigera venosa, P. neckeri and Sarcosagium campestre var. macrosporum. The site shows the full succession from open sparsely vegetated shingle and spoil to closed turf. Transitions from Calaminarian grassland to both calcareous grassland and dry heath also occur.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>H04 - Air pollution, air-borne pollutants</td><td>B02 - Forest and Plantation management & use</td></tr>
<tr><td></td><td>K01 - Abiotic (slow) natural processes</td><td>A04 - Grazing</td></tr>
<tr><td></td><td>U - Unknown threat or pressure</td><td>B06 - Grazing in forests/ woodland</td></tr>
<tr><td></td><td>G05 - Other human intrusions and disturbances</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>K02 - Biocenotic evolution, succession</td><td></td></tr>
<tr><td>Newham Fen</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>Alkaline fens</u>

Newham is important as a lowland short sedge fen in north-east England, a part of the UK in which Alkaline fens are rare. The site is an example of basin fen, developed from the hydroseral succession of a small lake. The main fen community is M13 Schoenus nigricans – Juncus subnodulosus mire and M9 Carex rostrata – Calliergon cuspidatum/giganteum mire, and there are transitions to S25 Phragmites australis – Eupatorium cannabinum tall-herb fen, MG1 Arrhenatherum elatius grassland and W2 Salix cinerea – Betula pubescens – Phragmites australis woodland. A number of rare species occur at this site, including narrow-leaved marsh-orchid Dactylorhiza traunsteineri, coralroot orchid Corallorhiza trifida, dark-leaved willow Salix myrsinifolia and round-leaved wintergreen Pyrola rotundifolia.</td></tr>
</table>

SAC	Reason for SAC designation	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	Positive impacts
	H04 - Air pollution, air-borne pollutants	A04 - Grazing
		D05 - Improved access to site
Thrislington	Annex I habitats that are a primary reason for selection **<u>Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)</u>** Thrislington is a small site but nonetheless contains the largest of the few surviving stands of CG8 *Sesleria albicans – Scabiosa columbaria* grassland. This form of calcareous grassland is confined to the Magnesian Limestone of County Durham and Tyne and Wear, north-east England. It now covers less than 200 ha and is found mainly as small scattered stands.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	Positive impacts
	H04 - Air pollution, air-borne pollutants	D05 - Improved access to site

SAC	Reason for SAC designation	
	M01 - Changes in abiotic conditions	
	U - Unknown threat or pressure	
Castle Eden Dene	Annex I habitats that are a primary reason for selection **Taxus baccata woods of the British Isles** * Priority feature Castle Eden Dene in north-east England represents the most extensive northerly native occurrence of yew *Taxus baccata* woods in the UK. Extensive yew groves are found in association with ash-elm *Fraxinus-Ulmus* woodland and it is the only site selected for yew woodland on magnesian limestone in north-east England.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	Positive impacts
	I02 - Problematic native species	D05 - Improved access to site
	B02 - Forest and Plantation management & use	
	H04 - Air pollution, air-borne pollutants	
	I01 - Invasive non-native species	
Durham Coast	Annex I habitats that are a primary reason for selection **Vegetated sea cliffs of the Atlantic and Baltic Coasts** The Durham Coast is the only example of vegetated sea cliffs on magnesian limestone exposures in the UK. These cliffs extend along the North Sea coast for over 20 km from South Shields southwards to Blackhall Rocks. Their vegetation is unique in the British Isles and consists of a complex mosaic of paramaritime, mesotrophic and calcicolous grasslands, tall-herb fen, seepage flushes and wind-pruned scrub. Within these habitats rare species of contrasting phytogeographic distributions often grow together forming unusual and species-rich communities of high scientific interest. The communities present on the sea cliffs are largely	

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">maintained by natural processes including exposure to sea spray, erosion and slippage of the soft magnesian limestone bedrock and overlying glacial drifts, as well as localised flushing by calcareous water.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>I01 - Invasive non-native species</td><td>A03 - Mowing / cutting of grassland</td></tr>
<tr><td></td><td>J02 - Human induced changes in hydraulic conditions</td><td>D05 - Improved access to site</td></tr>
<tr><td></td><td>K01 - Abiotic (slow) natural processes</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>A08 - Fertilisation</td><td>B02 - Forest and Plantation management & use</td></tr>
<tr><td></td><td>G05 - Other human intrusions and disturbances</td><td></td></tr>
<tr><td>Border Mires -Kielder Butterburn</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>Blanket bogs (* if active bog)</u> * Priority feature

This complex is part of what was once the largest continuous tract of Blanket bogs across northern England and is particularly important for the quality of the transition it represents between blanket bog and raised mire. Although much of the land has been afforested, significant areas of the original bog remain throughout the forested expanse and these have been selected to represent this habitat type in northern England. The climate is wetter here than in some other parts of northern England, and this is reflected in the composition of the vegetation, which is dominated by species of cottongrass Eriophorum and a reduced cover of heather Calluna vulgaris. At Butterburn Flow the wetter climate is also emphasised by quite distinct surface patterning of Sphagnum hollows separated by Sphagnum ridges in the largest of the open areas. It is a very good example of the Sphagnum-rich cross-leaved heath Erica tetralix and Sphagnum papillosum vegetation type.

<u>Transition mires and quaking bogs</u></td></tr>
</table>

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">Border Mires, Kielder – Butterburn is made up of several individual sites running north-east from Carlisle. Collectively, these sites contain a wide range of bog-moss Sphagnum species, for example 11 on Caudbeck alone, along with an almost equally large number of Carex species. The transition mire element of these sites is relatively small, but is an important component of one of the least-damaged and more valuable species-rich mire complexes in England.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA

<u>Northern Atlantic wet heaths with Erica tetralix</u>

<u>European dry heaths</u>

<u>Petrifying springs with tufa formation (Cratoneurion)</u> * Priority feature</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>A02 - Modification of cultivation practices</td><td>B02 - Forest and Plantation management & use</td></tr>
<tr><td></td><td>M02 - Changes in biotic conditions</td><td>D05 - Improved access to site</td></tr>
<tr><td></td><td>H04 - Air pollution, air-borne pollutants</td><td>A04 - Grazing</td></tr>
<tr><td></td><td>J02 - Human induced changes in hydraulic conditions</td><td>B06 - Grazing in forests/ woodland</td></tr>
<tr><td></td><td>B02 - Forest and Plantation management & use</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td>Simonside Hills</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>European dry heaths</u></td></tr>
</table>

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">Species occurrence description not yet available.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

<u>Blanket bogs (* if active bog)</u> * Priority feature</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>A02 - Modification of cultivation practices</td><td>B06 - Grazing in forests/ woodland</td></tr>
<tr><td></td><td>G05 - Other human intrusions and disturbances</td><td>A04 - Grazing</td></tr>
<tr><td></td><td>G01 - Outdoor sports and leisure activities, recreational activities</td><td>B02 - Forest and Plantation management & use</td></tr>
<tr><td></td><td>J01 - Fire and fire suppression</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>I01 - Invasive non-native species</td><td></td></tr>
<tr><td>Harbottle Moors</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>European dry heaths</u>

At a little under 400 m altitude, Harbottle Moors is a relatively low-lying example of upland European dry heath. Situated on Carboniferous rocks, the heathland community is dominated by heather Calluna vulgaris with some crowberry Empetrum nigrum, bilberry Vaccinium myrtillus and bracken Pteridium aquilinum. Some areas are relatively species-rich, with up to six different dwarf shrub species being found. This may suggest a fairly un-intensive management history with regard to grazing and burning.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection</td></tr>
</table>

SAC	Reason for SAC designation	
	NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	Positive impacts
	H04 - Air pollution, air-borne pollutants	A02 - Modification of cultivation practices
	I01 - Invasive non-native species	A04 - Grazing
	G05 - Other human intrusions and disturbances	
Tyne & Allen River Gravels	Annex I habitats that are a primary reason for selection **<u>Calaminarian grasslands of the Violetalia calaminariae</u>** This site in north-east England encompasses the most extensive, structurally varied and species-rich examples of riverine Calaminarian grasslands in the UK. The river gravels contain a range of structural types, ranging from a highly toxic, sparsely vegetated area with abundant lichens through to closed willow/alder *Salix*/*Alnus* woodland. In addition, the site is of considerable functional interest for the series of fossilised river channel features. Spring sandwort *Minuartia verna* and thrift *Armeria maritima* are particularly abundant, and there are several rare species, including Young's helleborine *Epipactis youngiana*, which has its main UK population at this site. The site is also of great importance for its lichen communities. A number of rare and scarce species are present, including the Red Data Book-listed *Peltigera venosa*.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	Positive impacts

SAC	Reason for SAC designation	
	H04 - Air pollution, air-borne pollutants	B02 - Forest and Plantation management & use
	I01 - Invasive non-native species	A02 - Modification of cultivation practices
	K02 - Biocenotic evolution, succession	
	U - Unknown threat or pressure	
Roman Wall Loughs	Annex I habitats that are a primary reason for selection **<u>Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation</u>** The Roman Wall Loughs area contains three natural eutrophic lakes, Crag, Broomlee and Greenlee Loughs. Together the loughs contain 11 species of pondweed *Potamogeton* including *P. lucens*, *P. pusillus*, and *P. obtusifolius. P. gramineus* occurs in all three loughs in an unusual association with stoneworts *Chara* spp. The nationally-rare autumnal water-starwort *Callitriche hermaphroditica* occurs in Crag Lough. Shoreweed *Littorella uniflora* grows in Broomlee and Greenlee Loughs, and greater bladderwort *Utricularia vulgaris* in the latter.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	Positive impacts
	I01 - Invasive non-native species	A02 - Modification of cultivation practices
	U - Unknown threat or pressure	A03 - Mowing / cutting of grassland
	H02 - Pollution to groundwater (point sources and diffuse sources)	A04 - Grazing
		B02 - Forest and Plantation management & use
North Pennine Dales Meadows	Annex I habitats that are a primary reason for selection **<u>Mountain hay meadows</u>**	

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td rowspan="9"></td><td colspan="2">The North Pennine Dales contain a series of isolated fields within several north Pennine and Cumbrian valleys. The site encompasses the range of variation exhibited by Mountain hay meadows in the UK and contains the major part of the remaining UK resource of this habitat type. The grasslands included within the site exhibit very limited effects of agricultural improvement and show good conservation of structure and function. A wide range of rare and local meadow species are contained within the meadows, including globeflower Trollius europaeus, the lady's-mantles Alchemilla acutiloba, A. monticola and A. subcrenata, and spignel Meum athamanticum</td></tr>
<tr><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

<u>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)</u></td></tr>
<tr><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>A03 - Mowing / cutting of grassland</td><td>A03 - Mowing / cutting of grassland</td></tr>
<tr><td>A08 - Fertilisation</td><td>D05 - Improved access to site</td></tr>
<tr><td>H04 - Air pollution, air-borne pollutants</td><td>A04 - Grazing</td></tr>
<tr><td>A02 - Modification of cultivation practices</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>B06 - Grazing in forests/ woodland</td></tr>
<tr><td></td><td>D05 - Improved access to site</td></tr>
<tr><td></td><td>B02 - Forest and Plantation management & use</td></tr>
<tr><td>Tweed Estuary</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>Estuaries</u>

The Tweed Estuary is a complex estuary, which discharges into the North Sea. It is a long narrow estuary, which is still largely natural and undisturbed, with its water quality classified as excellent throughout. It supports a wide range of habitats compared</td></tr>
</table>

SAC	Reason for SAC designation
	with other estuaries in north-east England. At its mouth there are substantial sandbanks and some areas of rocky shore. Further upstream, large areas of estuarine boulders and cobbles overlie sediment flats and extend into subtidal areas of the channel. Sheltered estuarine mud and sandflats occur away from the fast-flowing river channel. A wide range of littoral sediments occurs within the estuary. These range from exposed east-facing sandy shores at the estuary mouth, including its sheltering sand-spit, to muddy gravels where the river is actively eroding the banks. The most exposed sandy shores are subject both to wave action and, in places, the scouring action of the outflowing river; their mobile infauna (crustaceans and a few polychaetes) and ephemeral algae reflect these conditions. Species and habitat diversity rises with increasing shelter, until increasingly low-salinity estuarine conditions upstream lead to naturally low infaunal diversity, dominated by characteristic species that are tolerant of brackish-water conditions. Fish species include the rare anadromous 1102 allis shad *Alosa alosa*, which runs in the estuary, migratory 1106 Atlantic salmon *Salmo salar*, and occasional records of 1099 river lamprey *Lampetra fluviatilis* and 1095 sea lamprey *Petromyzon marinus*. **<u>Mudflats and sandflats not covered by seawater at low tide</u>** The Tweed is a long narrow estuary with a wide variety of intertidal mudflat and sandflat communities. Sandstell Point, at the mouth of the estuary, is a wide spit of clean mobile sand. This sand is subject both to wave action and, in places, the scouring action of the outflowing river, and is characterised by a mobile infauna (mainly crustaceans such as *Eurydice pulchra* and *Bathyporeia* spp. and a few polychaetes) which reflect these conditions. On the more sheltered west-facing shore of this spit, and on Calot Shad on the opposite bank, reduced mobility of the sand allows robust polychaetes such as *Scolelepis squamata* and *Paraonis fulgens* to occur with the crustaceans. Both biotopes are highly representative of the north-east of England. Further upstream at Yarrow Slake, more sheltered areas of muddy sand are characterised by polychaetes, amphipods, oligochaetes and enchytraeids that are characteristic species tolerant of brackish conditions.
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA
	Annex II species that are a primary reason for selection NA
	Annex II species present as a qualifying feature, but not a primary reason for site selection **<u>Sea lamprey</u>** *Petromyzon marinus*

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2"><u>River lamprey</u> Lampetra fluviatilis</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>G01 - Outdoor sports and leisure activities, recreational activities</td><td></td></tr>
<tr><td></td><td>H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish)</td><td></td></tr>
<tr><td></td><td>G05 - Other human intrusions and disturbances</td><td></td></tr>
<tr><td></td><td>I01 - Invasive non-native species</td><td></td></tr>
<tr><td></td><td>J02 - Human induced changes in hydraulic conditions</td><td></td></tr>
<tr><td>River Tweed</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation</u>

The Tweed represents sub-type 2 in the north-eastern part of its range. It is the most species-rich example, by far, of a river with Ranunculus in Scotland, and is the only site selected for this habitat in Scotland. The river has a high ecological diversity which reflects the mixed geology of the catchment. Stream water-crowfoot Ranunculus penicillatus ssp. pseudofluitans, a species of southern rivers and streams, here occurs at its most northerly location as does fan-leaved water-crowfoot R. circinatus, along with river water-crowfoot R. fluitans, common water-crowfoot R. aquatilis, pond water-crowfoot R. peltatus and a range of hybrids. The Tweed is also the most northerly site for flowering-rush Butomus umbellatus.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection

<u>Atlantic salmon</u> Salmo salar

The River Tweed supports a very large, high-quality salmon Salmo salar population in a river which drains a large catchment on the east coast of the UK, with sub-catchments in both Scotland and England. The Tweed is the best example in Britain of a large river showing a strong nutrient gradient along its length, with oligotrophic conditions in its headwaters, and nutrient-rich lowland</td></tr>
</table>

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">conditions just before it enters the sea at Berwick. The high proportion of the River Tweed accessible to salmon, and the variety of habitat conditions in the river, has resulted in the Scottish section of the river supporting the full range of salmon life-history types, with sub-populations of spring, summer salmon and grilse all being present. The extensive system supports a significant proportion of the Scottish salmon resource. In recent years, the salmon catch in the River Tweed is the highest in Scotland, with up to 15% of all salmon caught. Considerable work has been done by the Scottish Environment Protection Agency (and previously the Tweed River Purification Board) and the River Tweed Foundation in tackling pollution and easing the passage of salmon past artificial barriers in the river. This has reversed many of the river's historical problems with water quality and access for salmon.

Otter *Lutra lutra*

This large river system contains extensive water and riparian habitat suitable for otters *Lutra lutra*. The extensive tributary burns provide good feeding habitat. The area provides extensive suitable habitat for all the necessary aspects of otter's life cycle and the site is a good representative of the south-east lowlands of Scotland and the north-east of England.</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection

Sea lamprey *Petromyzon marinus*

Brook lamprey *Lampetra planeri*

River lamprey *Lampetra fluviatilis*</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>H02 - Pollution to groundwater (point sources and diffuse sources)</td><td>A06 - Annual and perennial non-timber crops</td></tr>
<tr><td></td><td>I01 - Invasive non-native species</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>J02 - Human induced changes in hydraulic conditions</td><td>A04 - Grazing</td></tr>
<tr><td>Moor House-Upper Teesdale</td><td colspan="2">Annex I habitats that are a primary reason for selection

Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.</td></tr>
</table>

SAC	Reason for SAC designation
	This site includes a single small hard oligo-mesotrophic waterbody, Tarn Dub, an upland pool which is impermanent in nature and situated on the slopes of Cronkley Fell. A species-poor flora includes stoneworts *Chara* spp. in the deeper parts, as well as shoreweed *Littorella uniflora*, the aquatic moss *Fontinalis antipyretica* and tubular water-dropwort *Oenanthe fistulosa*. **Alpine and Boreal heaths** Moor House – Upper Teesdale has the most extensive area of Alpine and Boreal heaths south of Scotland and is the best southern outlier. The main sub-type is H19 *Vaccinium myrtillus – Cladonia arbuscula* heath, which occurs on an extensive plateau. Characteristically (as in the Scottish Highlands) there is an abundance of lichens, especially *Cladonia* species, but on this site there is also an unusual abundance of large clumps of the montane lichen *Cetraria islandica*. At the edge of the plateau *Vaccinium – Cladonia* heath gives way below to a wind-clipped form of H12 *Calluna vulgaris – Vaccinium myrtillus* heath. which grades into taller heaths of the same community lower down the slopes. These represent alpine to boreal transitions which, in the more severe climate of the Highlands, would be represented by lichen- or bryophyte-rich prostrate *Calluna* heaths. Similarly, on one level summit at an altitude of 600 m, wind-clipped heather of a short but upright growth form occurs among a profusion of lichens, especially *Cladonia* species. This constitutes an unusual alpine/subalpine form of *Calluna – Vaccinium* heath that is very local in England. **Juniperus communis formations on heaths or calcareous grasslands** This site represents *Juniperus communis* formations on a more acidic substrate in north-east England. It has the second most extensive area of juniper scrub in UK and the largest south of Scotland. The main area of juniper scrub grows on the igneous whin-sill, at moderately high altitude. In Upper Teesdale the juniper has developed mainly on heath and is of the W19 *Juniperus communis – Oxalis acetosella* type. There are transitions to dwarf-shrub heath, acidic grasslands and whin-sill cliffs. Small patches of juniper scrub also occur on calcareous soils, including the sugar limestone grassland for which this site is famous. Palaeo-environmental evidence indicates that juniper scrub has been present continuously since the last glacial period. **Calaminarian grasslands of the Violetalia calaminariae** This site contains an example of Calaminarian grassland on lead-mine spoil associated with the Carboniferous limestone at high altitude in the Pennines of northern England. Much of the spoil is unvegetated and has a variety of particle sizes ranging from coarse rubble to fine sediment, and several steep, unstable slopes. The metallophytes spring sandwort *Minuartia verna*, alpine penny-cress *Thlaspi caerulescens* and Pyrenean scurvygrass *Cochlearia pyrenaica* occur along with lichens such as *Cladonia rangiformis*, *C. chlorophaea* and *Coelocaulon aculeatum*. **Siliceous alpine and boreal grasslands**

SAC	Reason for SAC designation
	The summit of Cross Fell has the best-developed and most extensive area of Siliceous alpine and boreal grasslands in England. The U10 *Carex bigelowii – Racomitrium lanuginosum* moss-heath that covers the summit cap has a high cover of woolly fringe-moss *Racomitrium lanuginosum*. **Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)** Extensive stands of CG9 *Sesleria albicans – Galium sterneri* grassland occur at this site in northern England. It is an important variant of this community since it contains a rich assemblage of relict arctic-alpine species, such as spring gentian *Gentiana verna* and alpine forget-me-not *Myosotis alpestris*, making Moor House – Upper Teesdale one of the most important arctic-alpine refugia in the UK. The grasslands are for the most part heavily grazed but show transitions to a wide range of other vegetation types, including 7130 Blanket bogs, acid grassland, 7230 Alkaline fens, 6520 Mountain hay meadows, 8240 Limestone pavements, cliffs and 8120 calcareous and calcshist screes of the montane to alpine levels. **Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)** This is one of three sites representing M26 *Molinia caerulea – Crepis paludosa* mire in northern England. Although less extensive and more fragmentary than at Craven Limestone Complex, stands occur in a wider range of ecological contexts, including examples within 6520 Mountain hay meadows (which are not found in other sites), as well as examples in lightly grazed pasture, on wet margins of woodland and on stream banks. **Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels** Moor House – Upper Teesdale comprises an area of mixed geology made up of carboniferous sandstones, mudstone and limestones. The combination of acidic and base-rich soil has given rise to an important range of vegetation types that has also been influenced by climatic conditions on this, the highest part of the Pennines. Hydrophilous tall herb fringe communities occur on wet ledges in base-rich rocks, which are inaccessible to grazing livestock. One of the most extensive stands is on a tributary of Little Gill, and examples also occur at Lady Gill, Greencastle, High Cup Nick and Mickle Fell. Typical species that occur in these localities include great wood-rush *Luzula sylvatica*, wood crane's-bill *Geranium sylvaticum*, water avens *Geum rivale*, lady's-mantle *Alchemilla glabra*, wild angelica *Angelica sylvestris* and roseroot *Sedum rosea*. **Mountain hay meadows**

SAC	Reason for SAC designation
	Upper Teesdale contains actively-managed Mountain hay meadows at their highest altitude in the UK. Though representing a smaller proportion of the national resource than the North Pennine Dales Meadows, the meadows of this site have been managed at an extremely low level of agricultural intensification and show good conservation of habitat structure and function. There are important populations of an extensive suite of hay meadows species, including several rare species of lady's-mantle (*Alchemilla acutiloba*, *A. monticola* and *A. subcrenata*) and abundant globeflower *Trollius europaeus* **Blanket bogs (* if active bog)** * Priority feature This site in the northern Pennines represents Blanket bogs in the north of England. The site includes the least damaged and most extensive tracts of typical M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire in England and shows this community type up to its highest altitude in England. This large expanse of peat displays the full range of features typical of the Pennines, with extensive erosion, mainly on higher areas, interspersed with large swathes of bog dominated by heather *Calluna vulgaris* or cottongrasses *Eriophorum* spp. A few areas display small-scale surface patterning, with distinct *Sphagnum* hollows and intervening ridges. Some parts of the site show characteristics of the western-type Scottish Blanket bogs, whereas the lichen-rich areas are a feature of bogs in Fennoscandia. **Petrifying springs with tufa formation (Cratoneurion)** * Priority feature This is one of three sites in northern England that have extensive series of petrifying springs with tufa formation. At this site Carboniferous limestones are thinly-bedded amidst shales, sandstones and slates. Tufa springs often occur at the junction between limestone and these other, less permeable, rocks at a range of altitudes. Tufa springs are associated with calcareous glacial drift and can be found in calcareous grasslands, in fen systems of grazed pastures, associated with limestone scar cliffs and screes and amidst acid heathland and grassland. The flora is exceptionally rich and includes rare northern species such as bird's-eye primrose *Primula farinosa* and Scottish asphodel *Tofieldia pusilla*. **Alkaline fens** This is one of two upland sites in northern England selected for Alkaline fens. Spring-fed flush fens of NVC type M10 *Carex dioica – Pinguicula vulgaris* mire are widespread on the moors amidst calcareous grassland, limestone scars, heath and bog, in enclosed pastures amidst a range of acid and calcareous grasslands and in meadows, often as part of complex vegetation mosaics. The site has an exceptionally important rare plant flora associated with flush vegetation, including species such as bird's-eye primrose *Primula farinosa* and Scottish asphodel *Tofieldia pusilla*. On the highest and coldest parts of the site fen grades into Annex I type 7240 Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*, and intermediate examples occur. **Alpine pioneer formations of the Caricion bicoloris-atrofuscae** * Priority feature

SAC	Reason for SAC designation
	This site in northern England is the largest and most diverse example of Alpine pioneer formations of the *Caricion bicoloris-atrofuscae* south of the Highlands. It is a southern outlier with an extensive area of the habitat type, and is a southern outpost for many of the rarer arctic-alpine plants characteristic of this habitat type, with a unique relict mountain flora. Teesdale sandwort *Minuartia stricta* is restricted to Upper Teesdale, and other rare species found in this habitat type include false sedge *Kobresia simpliciuscula*, hair sedge *Carex capillaris* and Scottish asphodel *Tofieldia pusilla*. The NVC types represented are M10 *Carex dioica – Pinguicula vulgaris* mire and M11 *Carex demissa – Saxifraga aizoides* mire. **Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)** Moor House – Upper Teesdale is representative of communities on both low and high altitude siliceous scree in northern England. Screes are extensive, with diverse plant communities. Cross Fell is a southern outlier of high-altitude gritstone scree, with a flora including rare lichens and some widespread montane vascular plants. Ferns including parsley fern *Cryptogramma crispa* and holly fern *Polystichum lonchitis* occur on extensive whin-sill screes at lower altitudes. **Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)** This site is representative of the communities of calcareous and calcshist screes in the north of England up to an altitude of 760 m. This site has the most extensive areas of calcareous and calcshist scree in the UK, consisting of Carboniferous limestone. Communities are diverse and there is a mix of northern and southern floristic elements, including holly-fern *Polystichum lonchitis*, rigid buckler-fern *Dryopteris submontana*, limestone fern *Gymnocarpium robertianum*, musk thistle *Carduus nutans* and mossy saxifrage *Saxifraga hypnoides*. Hairy stonecrop *Sedum villosum* occurs where scree is flushed by springs. **Calcareous rocky slopes with chasmophytic vegetation** This is one of three sites representing Calcareous rocky slopes with chasmophytic vegetation in the north of England. Crevice communities occur on extensive limestone scars, especially along the Pennine escarpment and around the summits of hills. Cliff crevice vegetation occurs extensively and to an altitude of 760 m. The most extensive community present is characterised by green spleenwort *Asplenium viride* and brittle bladder-fern *Cystopteris fragilis*. Less common species found in this community include hoary whitlowgrass *Draba incana*, alpine cinquefoil *Potentilla crantzii* and holly-fern *Polystichum lonchitis*. The site is also of interest for its combination of southern and northern flora. Rarer southern species include bird's-foot sedge *Carex ornithopoda* and horseshoe vetch *Hippocrepis comosa*. The whitebeam *Sorbus rupicola*, which is widely distributed but found at only a few sites, is also present. **Siliceous rocky slopes with chasmophytic vegetation**

SAC	Reason for SAC designation
	Moor House – Upper Teesdale, which includes the highest point of the Pennines, has a mixed geology of Carboniferous sandstones, mudstone and limestones, that have influenced the important plant communities that are found there. This cSAC is one of only a very few sites in England supporting Siliceous rocky slopes with chasmophytic vegetation. The most extensive occurrences of this community type are where the Whin Sill outcrops at Falcon Clints, Ravenscar, Holwick Scars and High Force. Some examples also occur at Middle Tongue and alongside Cash Burn. Characteristic species present include parsley fern *Cryptogramma crispa*, mountain male-fern *Dryopteris oreades* and northern buckler-fern *D. expansa*. Bearberry *Arctostaphylos uva-ursi* and starry saxifrage *Saxifraga stellaris* also occur in this community.
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site **European dry heaths** **Limestone pavements** * Priority feature
	Annex II species that are a primary reason for selection **Round-mouthed whorl snail** *Vertigo genesii* In Upper Teesdale round-mouthed whorl snail *Vertigo genesii* lives amongst moss, low-growing sedges and a rich assemblage of rare and local arctic-alpine plants such as bird's-eye primrose *Primula farinosa* and Scottish asphodel *Tofieldia pusilla*. *V. genesii* is found at a number of base-rich flushes around the slopes of Widdybank Fell and at isolated flushes further east on Cronkley Fell and Holwick Fell, at altitudes between 400 m and 525 m. The snail is locally abundant at some flushes and dominates the molluscan fauna at many of them. **Marsh saxifrage** *Saxifraga hirculus* This very large site in northern England is the most important site for marsh saxifrage *Saxifraga hirculus* in the UK. The site consists of an extensive upland complex on limestone and gritstone, with acid grassland, blanket mire, limestone outcrops and flushes. Drainage water in many of the flushes is influenced by the underlying geology – Upper Carboniferous mudstones and shales within more extensive limestone. Approximately ten of the flush areas support populations of marsh saxifrage, including areas in the Appleby Fells, Cross Fell and Upper Teesdale, containing a total of over 270,000 plants – >90% of the UK population. In this area distributions are very patchy within flushes so that population estimates are hard to support, but individual populations

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">in these localities can be large, with several localities supporting thriving populations of many thousands of plants. In 1999 the largest population was estimated at 153,100 individuals.</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>A02 - Modification of cultivation practices</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>J01 - Fire and fire suppression</td><td>B02 - Forest and Plantation management & use</td></tr>
<tr><td></td><td>K04 - Interspecific floral relations</td><td>B06 - Grazing in forests/ woodland</td></tr>
<tr><td></td><td>A04 - Grazing</td><td>D05 - Improved access to site</td></tr>
<tr><td></td><td>K05 - Reduced fecundity/ genetic depression</td><td>A03 - Mowing / cutting of grassland</td></tr>
<tr><td></td><td></td><td>A06 - Annual and perennial non-timber crops</td></tr>
<tr><td></td><td></td><td>A04 - Grazing</td></tr>
<tr><td>Berwickshire & North Northumberland Coast (includes marine components)</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>Mudflats and sandflats not covered by seawater at low tide</u>

This is an extensive and diverse stretch of coastline in north-east England and south-east Scotland. There is variation in the distribution of features of interest along the coast. Stretches of the coast in England support a very extensive range of intertidal mudflats and sandflats, ranging from wave-exposed beaches to sheltered muddy flats with rich infaunal communities. These have been selected as biologically diverse and extensive examples of clean sandflats on the east coast. Those in the Lindisfarne and Budle Bay area and on the adjacent open coast flats north of Holy Island are the most extensive in north-east England, with the largest intertidal beds of narrow-leaved eelgrass Zostera angustifolia and dwarf eelgrass Z. noltei on the east coast of England, a diverse infauna, and some large beds of mussels Mytilus edulis. Some of the bays along the open coast have mobile sediments, with populations of sand-eels Ammodytes sp., small crustaceans and polychaete worms. More sheltered sediments have very stable lower shore communities of burrowing heart-urchins Echinocardium cordatum and bivalve molluscs.
<u>Large shallow inlets and bays</u>

Whilst predominantly rocky, this extensive and diverse stretch of coastline has several characteristic, sediment-dominated embayments in north-east England, including Budle Bay, Beadnell Bay and Embleton Bay. Each of these areas is relatively exposed and uniform in nature and is characterised by crustacean /polychaete- and bivalve/polychaete-biotopes. Budle Bay is adjacent and continuous with the bay to the north between the island of Lindisfarne and the mainland. This area forms one of the</td></tr>
</table>

SAC	Reason for SAC designation
	most extensive areas of sandflats between the Firth of Forth and the Wash, and these are some of the richest examples of these biotopes in north-east England. In the sublittoral, Beadnell and Embleton Bays form a sandy break in the otherwise continuous reef habitat in this site. These areas are characterised by extensive areas of clean sand with often dense populations of the heart urchin *Echinocardium cordatum*, and razor clams *Ensis siliqua* and *E. arcuatus*. **Reefs** This site is an extensive and diverse stretch of coastline in north-east England and south-east Scotland. Moderately wave-exposed reef habitats occur throughout the site. The subtidal rocky reefs and their rich marine communities, together with the wide variety of associated littoral reefs, are the most diverse known on the North Sea coast. Their remarkably varied nature is due to the wide range of physical conditions in the area, from wave-exposed locations on the open coast, through more sheltered reefs within bays, to those exposed to strong tidal streams in sounds and off headlands. There is also a diverse range of rock types, including soft limestones and hard volcanic rock. The Farne Islands are of special importance as they are among the very few rocky islands with extensive reefs in the enclosed North Sea. A large number of the species present are characteristic of cold water and several reach their southern or eastern limit of distribution within the area. **Submerged or partially submerged sea caves** This is an extensive and diverse stretch of coastline in north-east England and south-east Scotland. Caves occur throughout the site in both the intertidal and the subtidal zones in a range of different hard rock exposures. There are examples of partially submerged caves in the cliffs north of Berwick and in the limestone at Howick (south of Craster), and there are submerged sea caves, tunnels and arches in the volcanic rock of the Farne Islands and around St Abb's Head. Caves occur in association with 1170 Reefs, in both the intertidal and the subtidal zones. Depending on the depth of the cave and its morphology, the site supports a range of distinct biological communities.
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA
	Annex II species that are a primary reason for selection **Grey seal** *Halichoerus grypus*

<table>
<tr><th>SAC</th><th colspan="2">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">This is an extensive and diverse stretch of coastline in north-east England and south-east Scotland. There is variation in the distribution of features of interest along the coast. The north-east England coastal section is representative of grey seal Halichoerus grypus breeding colonies in the south-east of its breeding range in the UK. It is the most south-easterly site selected for this species, and supports around 2.5% of annual UK pup production.</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>I01 - Invasive non-native species</td><td>D05 - Improved access to site</td></tr>
<tr><td></td><td>J02 - Human induced changes in hydraulic conditions</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish)</td><td>A04 - Grazing</td></tr>
<tr><td></td><td>G01 - Outdoor sports and leisure activities, recreational activities</td><td></td></tr>
<tr><td></td><td>G05 - Other human intrusions and disturbances</td><td></td></tr>
<tr><td>North Northumberland Dunes</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>Embryonic shifting dunes</u>

North Northumberland Dunes represents Embryonic shifting dunes in north-east England. The embryonic shifting dune vegetation of this long series of dunes is both extensive and varied. There are examples of all the main embryonic dune communities. Lyme-grass Leymus arenarius communities are particularly strongly represented, but sand couch Elytrigia juncea communities and strandline species are also present.

<u>"Shifting dunes along the shoreline with Ammophila arenaria (""white dunes"")"</u>

This site consists of a number of dune systems on the north-east coast of England, most of which are accreting and forming suitable conditions for the development of shifting dunes with Ammophila arenaria. Lyme-grass Leymus arenarius is a characteristic species in this habitat type in north-east England, often as an important component. Climbing dunes can occur on steep rocky coasts, as found at Bamburgh. Some of the dune systems support a number of uncommon dune plants, some of which are at the limit of their distribution in the UK.

<u>"Fixed coastal dunes with herbaceous vegetation (""grey dunes"")"</u> * Priority feature</td></tr>
</table>

SAC	Reason for SAC designation
	North Northumberland Dunes represents fixed dunes with herbaceous vegetation in north-east England. It is an active site with extensive calcareous fixed dunes locally grading into more acidic fixed dune vegetation and dune heath. The site has been selected particularly as a representative of the north-eastern variant, in which bloody crane's-bill *Geranium sanguineum* is prominent. **Dunes with Salix repens ssp. argentea (Salicion arenariae)** The dunes of Holy Island and Ross Links are calcareous and represent dunes with *Salix repens ssp. argentea* on the north-east coast of England. Creeping willow *Salix repens ssp*. argentea dominates the more mature dune slacks and a number of rare plant species are associated with this type of vegetation. The mature slacks contribute to the wide range of habitats found on this site and form part of a well-developed successional series. **Humid dune slacks** North Northumberland Dunes represents a rare example of well-developed dune slack vegetation on the east coast of England. Holy Island contains a number of calcareous, species-rich dune slacks, which support a number of rare species, such as coralroot *Corallorhiza trifida*, dune helleborine *Epipactis leptochila* var. *dunensis* and seaside centaury *Centaurium littorale*. Active slack formation is continuing at this site and a range of successional stages are present. The humid dune slacks of nearby Ross Links contain vegetation typical of more base-poor conditions. The site as a whole therefore contains an exceptional range of humid dune slack types, including 40 ha of the full range of slack vegetation types characterised by common sedge *Carex nigra*.
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA
	Annex II species that are a primary reason for selection **Petalwort** *Petalophyllum ralfsii* This site represents petalwort *Petalophyllum ralfsii* in north-east England. There are extensive dune systems with slacks here, both on the mainland and on Holy Island. Petalwort has been recorded from Holy Island and from two locations on the mainland.
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA

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<tr><td></td><td>K03 - Interspecific faunal relations</td><td></td></tr>
<tr><td></td><td>M02 - Changes in biotic conditions</td><td></td></tr>
<tr><td>North York Moors</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>Northern Atlantic wet heaths with Erica tetralix</u>

This site in north-east Yorkshire within the North York Moors National Park contains the largest continuous tract of upland heather moorland in England. M16 Erica tetralix – Sphagnum compactum wet heath is the second most extensive vegetation type on the site and is predominantly found on the eastern and northern moors where the soil is less free-draining. Purple moor-grass Molinia caerulea and heath rush Juncus squarrosus are also common within this community. In the wettest stands bog-mosses, including Sphagnum tenellum, occur, and the nationally scarce creeping forget-me-not Myosotis stolonifera can be found in acid moorland streams and shallow pools.

<u>European dry heaths</u>

This site in north-east Yorkshire within the North York Moors National Park contains the largest continuous tract of upland heather moorland in England. Dry heath covers over half the site and forms the main vegetation type on the western, southern and central moors where the soil is free-draining and has only a thin peat layer. The principal NVC type present is H9 Calluna vulgaris – Deschampsia flexuosa, with some H10 Calluna vulgaris – Erica cinerea heath on well-drained areas throughout the site, and large areas of H12 Calluna vulgaris – Vaccinium myrtillus heath on steeper slopes.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

<u>Blanket bogs (* if active bog)</u> * Priority feature</td></tr>
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<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>K04 - Interspecific floral relations</td><td>B02 - Forest and Plantation management & use</td></tr>
<tr><td></td><td>I01 - Invasive non-native species</td><td>A02 - Modification of cultivation practices</td></tr>
<tr><td></td><td>H04 - Air pollution, air-borne pollutants</td><td>A04 - Grazing</td></tr>
<tr><td></td><td>J01 - Fire and fire suppression</td><td>B06 - Grazing in forests/ woodland</td></tr>
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<tr><td>North Pennine Moors</td><td colspan="2">Annex I habitats that are a primary reason for selection

<u>European dry heaths</u>

The North Pennine Moors (along with the North York Moors) hold much of the upland heathland of northern England. At higher altitudes and to the wetter west and north of the site complex, the heaths grade into extensive areas of 7130 blanket bogs. The most abundant heath communities are H9 Calluna vulgaris – Deschampsia flexuosa heath and H12 Calluna vulgaris – Vaccinium myrtillus heath. There are also examples of H18 Vaccinium myrtillus – Deschampsia flexuosa, H10 Calluna vulgaris – Erica cinerea and H21 Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium heaths.

<u>Juniperus communis formations on heaths or calcareous grasslands</u>

The North Pennine Moors includes one major stand of juniper scrub in Swaledale as well as a number of small and isolated localities. The Swaledale site grades into heathland and bracken Pteridium aquilinum but the core area of juniper is of W19 Juniperus communis – Oxalis acetosella woodland with scattered rowan Sorbus aucuparia and birch Betula spp.

<u>Blanket bogs (* if active bog)</u> * Priority feature

The North Pennine Moors hold the major area of blanket bog in England. A significant proportion remains active with accumulating peat, although these areas are often bounded by sizeable zones of currently non-active bog, albeit on deep peat. The main NVC type is M19 Calluna vulgaris – Eriophorum vaginatum blanket mire, but there is also representation of M18 Erica</td></tr>
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SAC	Reason for SAC designation
	tetralix – Sphagnum papillosum blanket mire and some western localities support M17 *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. Forms of M20 *Eriophorum vaginatum* blanket mire predominate on many areas of non-active bog. **Petrifying springs with tufa formation (Cratoneurion)** * Priority feature The petrifying springs habitat is very localised in occurrence within the North Pennine Moors, but where it does occur it is species-rich with abundant bryophytes, sedges and herbs including bird's-eye primrose *Primula farinosa* and marsh valerian *Valeriana dioica.* **Siliceous rocky slopes with chasmophytic vegetation** Acidic rock outcrops and screes are well-scattered across the North Pennine Moors and support vegetation typical of Siliceous rocky slopes with chasmophytic vegetation in England, including a range of lichens and bryophytes, such as *Racomitrium lanuginosum*, and species like stiff sedge *Carex bigelowii* and fir clubmoss *Huperzia selago*. **Old sessile oak woods with Ilex and Blechnum in the British Isles** Birk Gill Wood is an example of old sessile oak woods well to the east of the habitat's main distribution in the UK. However, this sheltered river valley shows the characteristic rich bryophyte and lichen communities of the type under a canopy of oak, birch *Betula sp.* and rowan *Sorbus aucuparia*. The slopes are boulder-strewn, with mixtures of heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus* and moss carpets in the ground flora.
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site **Northern Atlantic wet heaths with Erica tetralix** **Calaminarian grasslands of the Violetalia calaminariae** **Siliceous alpine and boreal grasslands** **Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)**

SAC	Reason for SAC designation	
	Alkaline fens **Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)** **Calcareous rocky slopes with chasmophytic vegetation**	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection **Marsh saxifrage** *Saxifraga hirculus*	
	Negative impacts	Positive impacts
	K04 - Interspecific floral relations	B02 - Forest and Plantation management & use
	J01 - Fire and fire suppression	D05 - Improved access to site
	J02 - Human induced changes in hydraulic conditions	A02 - Modification of cultivation practices
	A04 - Grazing	A03 - Mowing / cutting of grassland
	A02 - Modification of cultivation practices	G03 - Interpretative centres
		B06 - Grazing in forests/ woodland
		A06 - Annual and perennial non-timber crops
		A04 - Grazing

SPA/RAMSAR	Reason for SPA designation	Reason for Ramsar designation
Teesmouth & Cleveland Coast (includes marine components)	**Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC** **Knot** *Calidris canutus* **Ruff** *Philomachus pugnax* **Avocet** *Recurvirostra avosetta*	**Reason for designation** **Internationally important numbers of waterbirds** Species with peak counts in winter: 9528 waterfowl (5 year peak mean 1998/99-2002/2003

SAC	Reason for SAC designation	
	Little Tern *Sterna albifrons* **Common Tern** *Sterna hirundo* **Redshank** *Tringa totanus* During the breeding season, the site regularly supports: *Recurvirostra avosetta* 1.2% of the GB population 5 year peak mean, 2010 – 2014 *Sterna hirundo* 4.0% of the GB population 5 year peak mean, 2010 – 2014 *Sternula albifrons* 4.3% of the GB population 5 year peak mean, 2010 – 2014. On passage the area regularly supports: *Thalasseus sandvicensis* (Western Europe/Western Africa) 6.8% of the GB population 5 year peak mean, 1988 – 1992 *Caldris pugnax* 2.4% of the GB population 5 year peak mean, 2011/12 – 2015/16. ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: *Calidris canutus* (North-eastern Canada/Greenland/Iceland/North-western Europe) 1.6% of the population 5 year peak mean for 1991/92 – 1995/96. On passage the area regularly supports: Trin*ga totanus* (Eastern Atlantic - wintering) 1.1% of the East Atlantic Flyway population 5 year peak mean, 1987 – 1991. **Other important species of flora and fauna** **Waterbird assemblage** ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 26,014 waterbirds 5 year peak mean, 2011/12 – 2015/16 Including: Mareca strepera, Spatula clypeata, Calidris alba, Mareca penelope, Vanellus vanellus, Larus argentatus and Chroicocephalus ridibundus.	**Qualifying Species/populations (as identified at designation) - Species/populations occurring at levels of international importance** Species with peak counts in spring/autumn: **Common redshank** *Tringa totanus totanus* 883 individuals, representing an average of 0.7% of the GB population (5 year peak mean 1998/9- 2002/3) Species with peak counts in winter: **Red knot** *Calidris canutus islandica* 2579 individuals, representing an average of 0.9% of the GB population (5 year peak mean 1998/9-2002/3) **Noteworthy flora and fauna** **Flora** *Festuca arenaria, Puccinellia rupestris, Ranunculus baudotii* (all Nationally Scarce) **Fauna** Species currently occurring at levels of national importance Species regularly supported during the breeding season: Little tern *Sterna albifrons albifrons* 40 pairs, representing an average of 2% of the GB population (Five year mean for 1995 to 1998) Species with peak counts in spring/autumn: Northern shoveler *Anas clypeata* 7 individuals, representing an average of 0% of the GB population (5 year peak mean 1998/9- 2002/3) Common greenshank *Tringa nebularia* 7 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9- 2002/3) Invertebrates: *Pherbellia grisescens, Thereva valida, Longitarsus nigerrimus, Dryops nitidulus, Macroplea mutica, Philonthus dimidiatipennis, Trichohydnobius suturalis* (all RDB)

SAC	Reason for SAC designation			
	Negative impacts	Impact strength	Positive impacts	Impact strength
	E01 - Urbanised areas, human habitation	L		
	G01 - Outdoor sports and leisure activities, recreational activities	H		
	D01 - Roads, paths and railroads	L		
	C03 - Renewable abiotic energy use	L		
	F06 - Hunting, fishing or collecting activities not referred to above	M		
	J03 - Other ecosystem modifications	L		
	I01 - Invasive non-native species	M		
	M02 - Changes in biotic conditions	L		
	H04 - Air pollution, air-borne pollutants	L		
	H07 - Other forms of pollution	L		
	F05 - Illegal taking/ removal of marine fauna	L		
	H03 - Marine water pollution	M		
	D03 - Shipping lanes, ports, marine constructions	H		
	G05 - Other human intrusions and disturbances	L		
	M01 - Changes in abiotic conditions	L		
Holburn Lake & Moss	**Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC** **Greylag goose** *Anser asner* Over winter the area regularly supports: Anser anser [Iceland/UK/Ireland] 2.2% of the population 5 year peak mean 1991/92-1995/96		**Reason for designation** The site is an important winter roost site for greylag geese, of which the entire Icelandic race winters in Britain. Peak counts in winter: 2150 individuals, representing an average of 2.4% of the population (Source period not collated) Regularly visited by large flocks of mallard *Anas platyrhynchos*, *wigeon Anas penelope* and teal *Anas crecca*, provides an inland roost for coastal wildfowl during unfavourable weather conditions. A few pairs of shelduck *Tadorna tadorna*, shoveler *Anas clypeata* and tufted duck *Aythya fuligula* regularly breed here. **Noteworthy flora and fauna** Species currently occurring at levels of national importance with peak counts in spring/autumn: Eurasian teal *Anas crecca*, NW Europe 2013 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9- 2002/3)	
	Negative impacts	Impact strength	Positive impacts	Impact strength

SAC	Reason for SAC designation			
	I01 - Invasive non-native species	H	G03 - Interpretative centres	H
	G05 - Other human intrusions and disturbances	H	D05 - Improved access to site	H
	G01 - Outdoor sports and leisure activities, recreational activities	H		
	K03 - Interspecific faunal relations	H		
	M02 - Changes in biotic conditions	H		
Coquet Island (includes marine components)	**Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC** **Roseate Tern** *Sterna dougallii* **Common Tern** *Sterna hirundo* **Arctic Tern** *Sterna paradisaea* **Sandwich Tern** *Sterna sandvicensis* During the breeding season the area regularly supports: *Sterna dougallii* (Europe - breeding) 93.02% of the GB breeding population 5 year peak mean (2010-2014); *Sterna hirundo* (Northern/Eastern Europe - breeding) 11.89% of the GB breeding population over a 5 year peak mean (2010-2014); *Sterna paradisaea* (Arctic - breeding/Southern Oceans - wintering) 2.32% of the GB breeding population over a five year peak mean (2010-2014); *Sterna sandvicensis* (Western Europe/Western Africa) 11.82% of the GB breeding population over a 5 year peak mean (2010-2014). **Other important species of flora and fauna** **Seabird assemblage** ARTICLE 4.2 QUALIFICATION (2009/147/EC): An internationally important assemblage of seabirds. In the breeding season the area regularly supports 47,662 individuals (5 year peak mean 2010-2014) including the 4 species listed above plus: *Fratercula arxtica, Chroicocephalus ridibundus* as main components of the assemblage.		NA	
	Negative impacts	Impact strength	Positive impacts	Impact strength

SAC	Reason for SAC designation			
	I01 - Invasive non-native species	H	G03 - Interpretative centres	H
	G05 - Other human intrusions and disturbances	H	D05 - Improved access to site	H
	G01 - Outdoor sports and leisure activities, recreational activities	H		
	K03 - Interspecific faunal relations	H		
	M02 - Changes in biotic conditions	H		
Lindisfarne (includes marine components)	**Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC** **Wigeon** *Anas penelope* **Greylag goose** *Anser anser* **Pale-bellied Brent goose** *Branta bernicla hrota* **Sanderling** *Calidris alba* **Dunlin** *Calidris alpina alpina* **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* **Golden Plover** *Pluvialis apricaria* **Grey Plover** *Pluvialis squatarola* **Eider** *Somateria mollissima* **Little Tern** *Sterna albifrons* **Roseate Tern** *Sterna dougallii* **Shelduck** *Tadorna tadorna* ***Redshank*** *Tringa totanus* During the breeding season the area regularly supports: *Sterna albifrons* (Eastern Atlantic - breeding) 0.6% of the GB breeding population 5 year mean, 1992-1996 *Sterna dougallii* (Europe - breeding) at least % of the GB breeding population Count, as at late 1990s Over winter the area regularly supports: *Cygnus cygnus* (Iceland/UK/Ireland) 0.9% of the GB population 5 year peak mean 1991/92-1995/96 *Limosa lapponica* (Western Palearctic - wintering) 5.6% of the GB population 5 year peak mean 1991/92-1995/96 *Pluvialis apricaria* [North-western Europe - breeding] 2.1% of the GB population 5 year peak mean 1991/92-1995/96		**Reason for designation** **Assemblages of international importance:** Species with peak counts in winter: 44970 waterfowl (5 year peak mean 1998/99-2002/2003) **Species/populations occurring at levels of international importance:** Qualifying Species/populations (as identified at designation) Species with peak counts in spring/autumn: **Light-bellied brent goose** *Branta bernicla hrota* 2799 individuals, representing an average of 55.9% of the population (5 year peak mean 1998/9-2002/3) **Eurasian wigeon** *Anas penelope* 10857 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3) **Ringed plover** *Charadrius hiaticula* 114 individuals, representing an average of 0.3% of the GB population (5 year peak mean 1998/9- 2002/3 - spring peak) **Common redshank** *Tringa totanus tetanus* 1572 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3) Species with peak counts in winter: **Greylag goose** *Anser anser anser* 750 individuals, representing an average of 0.9% of the GB population (5 year peak mean for 1995/6-1999/2000) **Bar-tailed godwit** *Limosa lapponica lapponica* 3757 individuals, representing an average of 3.1% of the population (5 year peak mean 1998/9-2002/3)	

SAC	Reason for SAC designation	
	Over winter the area regularly supports: *Anas penelope* (Western Siberia/North-western/North-eastern Europe) 0.6% of the population 5 year peak mean 1991/92-1995/96 *Anser anser* [Iceland/UK/Ireland] 1.4% of the population 5 year peak mean 1991/92-1995/96 *Branta bernicla* hrota [Svalbard/Denmark/UK] 36.9% of the population 5 year peak mean 1991/92-1995/96 *Calidris alba* (Eastern Atlantic/Western & Southern Africa - wintering) 0.9% of the population in Great Britain 5 year peak mean 1991/92-1995/96 *Calidris alpina alpina* (Northern Siberia/Europe/Western Africa) 1.4% of the population in Great Britain 5 year peak mean 1991/92-1995/96 *Charadrius hiaticula* (Europe/Northern Africa - wintering) 0.3% of the population 5 year peak mean 1991/92-1995/96 *Clangula hyemalis* (Iceland/Greenland) 0.3% of the population in Great Britain 5 year peak mean 1991/92-1995/96 *Mergus serrator* (North-western/Central Europe) 0.2% of the population in Great Britain 5 year peak mean 1991/92-1995/96 *Pluvialis squatarola* (Eastern Atlantic - wintering) 3.6% of the population in Great Britain 5 year peak mean 1991/92-1995/96 *Somateria mollissima* (Britain/Ireland) 2% of the population in Great Britain 5 year peak mean 1991/92-1995/96 *Tadorna tadorna* (North-western Europe) 1.2% of the population in Great Britain 5 year peak mean 1991/92-1995/96	Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in spring/autumn: **Pink-footed goose** *Anser brachyrhynchus* 2531 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3) **Noteworthy flora and fauna** Lower Plants: **Petalwort** *Petalophyllum ralfsii* (Habitats Directive Annex II species) Higher plants **Dune helleborine** *Epipactis sancta* (endemic on Holy Island) Species currently occurring at levels of national importance: Species with peak counts in spring/autumn: **Black (common) scoter** *Melanitta nigra nigra* 547 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9- 2002/3 - spring peak) **European golden plover** *Pluvialis apricaria apricaria* 3322 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9- 2002/3) **Grey plover** *Pluvialis squatarola* 1261 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1998/9- 2002/3) **Ruff** *Philomachus pugnax* 11 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9- 2002/3) **Eurasian curlew** *Numenius arquata arquata* 1507 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9- 2002/3) **Common greenshank** *Tringa nebularia*

<table>
<tr><th>SAC</th><th colspan="4">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2"></td><td colspan="2">10 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9- 2002/3)

Species with peak counts in winter:
Slavonian grebe Podiceps auratus
9 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9- 2002/3)

Common shelduck Tadorna tadorna
1455 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9- 2002/3)

Common eider Somateria mollissima mollissima
1241 individuals, representing an average of 1.7% of the GB population (5 year peak mean 1998/9- 2002/3)

Red knot Calidris canutus islandica
3532 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9- 2002/3)

Dunlin Calidris alpina alpina
8649 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9- 2002/3)</td></tr>
<tr><td></td><td>Negative impacts</td><td>Impact strength</td><td>Positive impacts</td><td>Impact strength</td></tr>
<tr><td></td><td>H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish)</td><td>H</td><td>A04 - Grazing</td><td>H</td></tr>
<tr><td></td><td>I01 - Invasive non-native species</td><td>H</td><td>A02 - Modification of cultivation practices</td><td>H</td></tr>
<tr><td></td><td>M02 - Changes in biotic conditions</td><td>H</td><td>D05 - Improved access to site</td><td>H</td></tr>
<tr><td></td><td>K03 - Interspecific faunal relations</td><td>H</td><td></td><td></td></tr>
<tr><td></td><td>G01 - Outdoor sports and leisure activities, recreational activities</td><td>H</td><td></td><td></td></tr>
<tr><td>Northumberland Marine (includes marine components)</td><td colspan="2">Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC

Puffin Fratercula arctica
Little Tern Sterna albifrons
Roseate Tern Sterna dougallii
Common Tern Sterna hirundo</td><td colspan="2">NA</td></tr>
</table>

<table>
<tr><th>SAC</th><th colspan="4">Reason for SAC designation</th></tr>
<tr><td></td><td colspan="2">Arctic Tern Sterna paradisaea
Sabdwich Tern Sterna sandvicensis
Guillemot Uria aalge

During the breeding season the area regularly supports: Sterna sandvicensis 19.66% of GB breeding population 5 year mean 2010-2014 Sterna hirundo 12.86% of GB breeding population 5 year mean 2010-2014 Sterna paradisaea 9.02% of GB breeding population 5 year mean (2010-2014) Sterna dougallii 93.02% of GB breeding population 5 year mean (2010-2014) Sternula albifrons 2.37% of GB breeding population 5 year mean (2010-2014) Fratercula arctica 1.05% of biogeographic population 5 year mean (2008-2013) Urla aalge 1.72% of biogeographic population 5 year mean (2010-2014).

Other important species of flora and fauna

Seabird assemblage

An internationally important assemblage of seabirds. In the breeding season the area regularly supports 214, 669 individual seabirds (five year peak mean 2010-2014) including Phalacrocorax carbo, Phalacrocorax aristotelis, Chroicocephalus ridibundus and Rissa tridactyla.</td><td colspan="2"></td></tr>
<tr><td></td><td>Negative impacts</td><td>Impact strength</td><td>Positive impacts</td><td>Impact strength</td></tr>
<tr><td></td><td>G01 - Outdoor sports and leisure activities, recreational activities</td><td>M</td><td></td><td></td></tr>
<tr><td></td><td>F01 - Marine and Freshwater Aquaculture</td><td>L</td><td></td><td></td></tr>
<tr><td>Northumbria Coast</td><td colspan="2">Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC

Turnstone Arenaria interpres
Purple Sandpiper Calidris maritima
Little Tern Sterna albifrons
Arctic Tern Sterna paradisaea</td><td colspan="2">Overview

The Northumbria Coast Ramsar site comprises several discrete sections of rocky foreshore between Spittal, in the north of Northumberland, and an area just south of Blackhall Rocks in County Durham. These stretches of coast regularly support nationally important numbers of purple sandpiper and high concentrations of turnstone. The Ramsar site also includes an area of sandy beach at Low Newton, which supports an</td></tr>
</table>

SAC	Reason for SAC designation	
	During the breeding season the area regularly supports: *Sterna albifrons* 1.7% of the GB breeding population over 5 year peak mean (1993-1997) and *Sterna paradisaea* 2.92% of the GB population over 5 year peak mean (2010-2014). During the wintering season the area regularly supports *Arenaria interpres* (Western Palearctic - wintering) 2.6% of biogeographic population over 5 year peak mean (1992/3-1996/7). During the wintering season the area regularly supports *Caldris maritima* 1.6% of biogeographic population over 5 year peak mean (1992/3-1996/7).	nationally important breeding colony of little tern, and parts of three artificial pier structures which form important roost sites for purple sandpiper. **Species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation)** Species regularly supported during the breeding season: **Little tern** Sterna albifrons albifrons 43 apparently occupied nests, representing an average of 2.2% of the GB population (Seabird 2000 Census) Species with peak counts in winter: **Purple sandpiper** Calidris maritima maritima wintering 291 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9- 978 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3) **Noteworthy Fauna** Species currently occurring at levels of national importance: Species regularly supported during the breeding season: Great cormorant *Phalacrocorax carbo carbo* 248 apparently occupied nests, representing an average of 2.9% of the GB population (Seabird 2000 Census) Black-legged kittiwake *Rissa tridactyla tridactyla* 4070 apparently occupied nests, representing an average of 1.1% of the GB population (Seabird 2000 Census) Arctic tern *Sterna paradisaea* 1200 apparently occupied nests, representing an average of 2.2% of the GB population (Seabird 2000 Census) Species with peak counts in spring/autumn: European golden plover *Pluvialis apricaria apricaria*, 2911 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9- 2002/3)

SAC	Reason for SAC designation			
			Species with peak counts in winter: Common eider Somateria mollissima mollissima 1361 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9- 2002/3) Sanderling *Calidris alba* 419 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9- 2002/3)	
	Negative impacts	Impact strength	Positive impacts	Impact strength
	G01 - Outdoor sports and leisure activities, recreational activities	H	A02 - Modification of cultivation practices	H
	M02 - Changes in biotic conditions	H		
	K03 - Interspecific faunal relations	M		
	H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish)	H		
	G05 - Other human intrusions and disturbances	H		
North York Moors	**Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC** **Merlin** *Falco columbarius* **Golden Plover** *Pluvialis apricaria* During the breeding season the area regularly supports: *Falco columbarius* at least 2.7% of the GB breeding population 1996, *Pluvialis apricaria* [North-western Europe - breeding] at least 2.3% of the GB breeding population 1996.		NA	
	Negative impacts	Impact strength	Positive impacts	Impact strength
	F03 - Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	H	A04 - Grazing	H
	H04 - Air pollution, air-borne pollutants	H	B06 - Grazing in forests/ woodland	H

SAC	Reason for SAC designation			
	I01 - Invasive non-native species	H	A02 - Modification of cultivation practices	H
	J01 - Fire and fire suppression	H	A03 - Mowing / cutting of grassland	H
	M01 - Changes in abiotic conditions	H	B02 - Forest and Plantation management & use	H
North Pennine Moors	**Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC** **Hen Harrier** *Circus cyaneus* **Merlin** *Falco columbarius* **Peregrine Falcon** *Falco peregrinus* **Golden Plover** *Pluvialis apricaria* During the breeding season the area regularly supports: *Circus cyaneus* 2.2% of the GB breeding population - Count as at 1993 and 1994, *Falco columbarius* 10.5% of the GB breeding population Estimated population, *Falco peregrinus* 1.3% of the GB breeding population - Count as at 1991, *Pluvialis apricaria* [North-western Europe - breeding] at least 6.2% of the GB breeding population Estimated population		NA	
	Negative impacts	Impact strength	Positive impacts	Impact strength
	K05 - Reduced fecundity/ genetic depression	H	A04 - Grazing	H
	A04 - Grazing	H	D05 - Improved access to site	H
	J01 - Fire and fire suppression	H	A03 - Mowing / cutting of grassland	H
	F03 - Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	H	G03 - Interpretative centres	H
	J02 - Human induced changes in hydraulic conditions	H	A02 - Modification of cultivation practices	H
			B02 - Forest and Plantation management & use	H
Irthinghead Mires	NA		**Reason for designation** Supports an outstanding example of undamaged blanket bogs which are characteristic of the vegetation of upland north-western Britain. Most	

SAC	Reason for SAC designation	
		English (and many Scottish) blanket bogs have been extensively degraded by afforestation, burning, agricultural drainage and overgrazing. The Irthinghea Mires are one of few examples of this vegetation type in a near-natural state. There is also good representation of different topographic mire type and surface patterning. A notable variety of Sphagnum mosses. Butterburn Flow supports several rare plants, whilst a rare spider*, Eboria caliginosa*, has been recorded at Coom Rogg Moss. **Noteworthy flora and fauna** Nationally important species occurring on the site. Higher Plants: *Carex magellanica* Lower Plants: *Sphagnum imbricatum, Sphagnum pulchrum, Sphagnum magellanicum* Invertebrates: *Eboria caliginosa*

Appendix B List of L3 catchments and associated screening results

L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
05-D29	Ponteland	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D25	Newburn	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D26	Denton Valley	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D31	Gosforth	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D32	Jesmond	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D28	Newcastle City	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D33	Lower Ouseburn	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D30	Benton	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D36	Heaton	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D55	Prudhoe	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D02	Crawcrook	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D11	Whickham South & Sunniside	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D16	Chowdene	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D15	Team Valley	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D24	Leam Lane,Wardley,Bill Quay	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D09	Derwenthaugh	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D17	Bensham	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D14	Dunston & Lobley Hill	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D10	Whickham North	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D06	Blaydon West	Tyneside	>5000	N/A	N/A	No further assessment necessary

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
05-D22	Felling & Felling Shore	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D23	Heworth	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D20	Gateshead Stadium,Mount Pleasant	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D12	Dunston Hill	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D18	Gateshead Central	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D04	Ryton East	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D13	Dunston,Teams	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D07	Blaydon East	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D03	Ryton West	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D21	Friars Goose	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D19	Gateshead West	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D27	Benwell	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D34	Byker	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D35	Walker	Tyneside	>5000	N/A	N/A	No further assessment necessary
05-D05	Ryton Haugh	Tyneside	>5000	N/A	N/A	No further assessment necessary
01-D11	Whittingham	North Northumberland	>5000	N/A	N/A	No further assessment necessary
03-D35	Bellingham	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
03-D38	West Woodburn	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
01-D18	Netherton	North Northumberland	>5000	N/A	N/A	No further assessment necessary
02-D43	Kirkwhelpington	South Northumberland	>5000	N/A	N/A	No further assessment necessary

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
02-D13	Morpeth	South Northumberland	>5000	N/A	N/A	No further assessment necessary
02-D22	Pegswood	South Northumberland	>5000	N/A	N/A	No further assessment necessary
02-D50	Hebron	South Northumberland	>5000	N/A	N/A	No further assessment necessary
02-D15	Ulgham	South Northumberland	>5000	N/A	N/A	No further assessment necessary
01-D60	Longhorsley	North Northumberland	>5000	N/A	N/A	No further assessment necessary
01-D05	Felton	North Northumberland	>5000	N/A	N/A	No further assessment necessary
01-D06	Newton on the Moor	North Northumberland	>5000	N/A	N/A	No further assessment necessary
02-D25	St Marys Hospital	South Northumberland	>5000	N/A	N/A	No further assessment necessary
03-D51	Gunnerton	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
03-D50	Barrasford	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
03-D05	Corbridge	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
03-D68	Great Whittington	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
02-D37	Fenwick	South Northumberland	>5000	N/A	N/A	No further assessment necessary
02-D32	Belsay	South Northumberland	>5000	N/A	N/A	No further assessment necessary
03-D01	Heddon on the Wall	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
04-D11	Birtley	Derwent	>5000	N/A	N/A	No further assessment necessary
04-D16	Rowlands Gill	Derwent	>5000	N/A	N/A	No further assessment necessary
04-D12	Kibblesworth	Derwent	>5000	N/A	N/A	No further assessment necessary

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
03-D47	Wark	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
03-D56	Birtley	Upper Tyne	>5000	N/A	N/A	No further assessment necessary
07-D10	Delves	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D09	Leadgate South	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D13	Crookhall	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D08	Leadgate North	Central Wear	>5000	N/A	N/A	No further assessment necessary
04-D01	Ebchester	Derwent	>5000	N/A	N/A	No further assessment necessary
04-D10	Chopwell,Blackhall Mill	Derwent	>5000	N/A	N/A	No further assessment necessary
07-D27	Ushaw Moor & Brandon	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D35	Carrville & Belmont & Shincliffe	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D42	Elvet Hill	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D25	Esh Winning	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D41	Durham City & Newton Hall	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D26	Bearpark	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D16	Langley Park & Witton Gilbert	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D15	Lanchester & Burnhope	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D01	Sacriston	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D02	Nettlesworth	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D07	Great Lumley	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D04	Chester le Street	Central Wear	>5000	N/A	N/A	No further assessment necessary

L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
04-D08	Annfield Plain & Stanley	Derwent	>5000	N/A	N/A	No further assessment necessary
07-D14	South Stanley & Craghead	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D37	Sherburn	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D61	Houghton/Hetton	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D34	West Rainton	Central Wear	>5000	N/A	N/A	No further assessment necessary
08-D16	Fatfield	Wearside	>5000	N/A	N/A	No further assessment necessary
08-D15	Washington Central	Wearside	>5000	N/A	N/A	No further assessment necessary
08-D14	Washington North	Wearside	>5000	N/A	N/A	No further assessment necessary
08-D13	Nissan	Wearside	>5000	N/A	N/A	No further assessment necessary
07-D54	North Evenwood & Ramshaw	Central Wear	>5000	N/A	N/A	No further assessment necessary
06-D04	Low Etherley	Upper Wear	>5000	N/A	N/A	No further assessment necessary
06-D05	Crook	Upper Wear	>5000	N/A	N/A	No further assessment necessary
07-D59	Willington & Hunwick	Central Wear	>5000	N/A	N/A	No further assessment necessary
07-D47	Byers Green	Central Wear	>5000	N/A	N/A	No further assessment necessary
11-D61	Whitton & Thorpe Thewles	Teesside	>5000	N/A	N/A	No further assessment necessary
10-D15	Melsonby	Skerne	>5000	N/A	N/A	No further assessment necessary
10-D12	Neasham, Hurworth & Hurworth Place	Skerne	>5000	N/A	N/A	No further assessment necessary
10-D02	Darlington South	Skerne	>5000	N/A	N/A	No further assessment necessary
11-D04	Middleton St George	Teesside	>5000	N/A	N/A	No further assessment necessary

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
11-D05	Oaktree & Teesside Airport	Teesside	>5000	N/A	N/A	No further assessment necessary
10-D01	Darlington North	Skerne	>5000	N/A	N/A	No further assessment necessary
10-D09	Sadberge	Skerne	>5000	N/A	N/A	No further assessment necessary
10-D22	Newton Aycliffe	Skerne	>5000	N/A	N/A	No further assessment necessary
11-D64	Kirklevington	Teesside	>5000	N/A	N/A	No further assessment necessary
11-D58	Yarm	Teesside	>5000	N/A	N/A	No further assessment necessary
11-D08	Newby	Teesside	>5000	N/A	N/A	No further assessment necessary
11-D65	Aislaby Village	Teesside	>5000	N/A	N/A	No further assessment necessary
11-D63	Longnewton	Teesside	>5000	N/A	N/A	No further assessment necessary
08-D05	Peterlee	Wearside	0.00	SAC	Castle Eden Dene	Appropriate assessment required
08-D03	Easington	Wearside	0.00	SAC	Durham Coast	Appropriate assessment required
03-D29	Allendale Town & Catton	Upper Tees	0.00	SAC	North Pennine Dales Meadows	Appropriate assessment required
01-D36	Wooler	North Northumberland	0.00	SAC	River Tweed	Appropriate assessment required
01-D38	Chatton	North Northumberland	0.00	SAC	River Tweed	Appropriate assessment required
01-D39	Cornhill on Tweed	North Northumberland	0.00	SAC	River Tweed	Appropriate assessment required
01-D42	Etal	North Northumberland	0.00	SAC	River Tweed	Appropriate assessment required
01-D51	Norham	North Northumberland	0.00	SAC	River Tweed	Appropriate assessment required
01-D53	Horncliffe North	North Northumberland	0.00	SAC	River Tweed	Appropriate assessment required

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
06-D09	Stanhope & Crawleyside	Upper Wear	0.00	SPA	North Pennine Moors	Appropriate assessment required
02-D16	Broomhill	South Northumberland	0.00	SPA	Northumberland Marine	Appropriate assessment required
01-D32	Alnmouth	North Northumberland	0.00	SPA	Northumberland Marine	Appropriate assessment required
01-D26	Lesbury	North Northumberland	0.00	SPA	Northumberland Marine	Appropriate assessment required
02-D01	Blyth	South Northumberland	0.00	SPA	Northumberland Marine	Appropriate assessment required
11-D31	South Bank Eston	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D43	Thornfield Road	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D55	Stockton Centre	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D44	Middlesbrough North	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D52	Stockton East	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D33	Marske	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D26	Middleton	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
11-D46	Middlesbrough East	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D59	Thornaby North	Teesside	0.00	SPA	Teesmouth and Cleveland Coast	Appropriate assessment required
01-D35	Berwick	North Northumberland	0.00	RAMSAR	Lindisfarne	Appropriate assessment required
05-D01	Seaton Valley	Tyneside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
05-D41	Cullercoats	Tyneside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
05-D40	Whitley Bay	Tyneside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
05-D44	Tynemouth	Tyneside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
05-D47	Westoe	Tyneside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
05-D50	Harton	Tyneside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
01-D25	Longhoughton & Boulmer	North Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
01-D29	Craster South	North Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
01-D27	Embleton	North Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
01-D47	Beadnell	North Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
01-D45	Seahouses	North Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
02-D46	Bedlington & Cambois	South Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
02-D45	Ashington	South Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
01-D02	Amble & Warkworth	North Northumberland	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
08-D01	Seaham	Wearside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
08-D12	Ryhope & Silksworth	Wearside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
08-D06	Seaburn & Roker	Wearside	0.00	RAMSAR	Northumbria Coast	Appropriate assessment required
11-D32	Redcar	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D68	Port Clarence	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D67	High Clarence	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D49	North Billingham	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D28	Hartlepool South	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D27	Burn Valley	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
11-D24	Hartlepool North	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required
11-D25	Thorpe Street/Headland	Teesside	0.00	RAMSAR	Teesmouth and Cleveland Coast	Appropriate assessment required
01-D70	Rock	North Northumberland	4600	SAC	Berwickshire & North Northumberland Coast	Appropriate assessment required pending further details
10-D21	Trimdon Grange	Skerne	3900	SAC	Castle Eden Dene	Mitigation necessary pending further details
05-D51	Cleadon Park	Tyneside	750	SAC	Durham Coast	Appropriate assessment required pending further details
08-D04	Hawthorn	Wearside	1300	SAC	Durham Coast	Appropriate assessment required pending further details
05-D49	Tyne Dock,Whiteleas	Tyneside	1600	SAC	Durham Coast	Appropriate assessment required pending further details
08-D02	Murton	Wearside	2000	SAC	Durham Coast	Appropriate assessment required pending further details
05-D52	Simonside	Tyneside	2300	SAC	Durham Coast	Appropriate assessment required pending further details
01-D56	Bowsden	North Northumberland	3900	SAC	Ford Moss	Appropriate assessment required pending further details
01-D49	Ellingham	North Northumberland	3300	SAC	Newham Fen	Mitigation necessary pending further details
06-D06	St Johns Chapel & Westgate	Upper Wear	720	SAC	North Pennine Dales Meadows	Appropriate assessment required pending further details
01-D37	Millfield	North Northumberland	30	SAC	River Tweed	Appropriate assessment required pending further details
01-D43	Crookham	North Northumberland	60	SAC	River Tweed	Appropriate assessment required pending further details
01-D12	Powburn	North Northumberland	100	SAC	River Tweed	Appropriate assessment required pending further details

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
01-D40	Branxton	North Northumberland	2100	SAC	River Tweed	Appropriate assessment required pending further details
01-D13	Eglingham	North Northumberland	2400	SAC	River Tweed	Appropriate assessment required pending further details
01-D15	Glanton	North Northumberland	2600	SAC	River Tweed	Appropriate assessment required pending further details
01-D09	Rothbury	North Northumberland	1900	SAC	Simonside Hills	Mitigation necessary pending further details
01-D10	Thropton	North Northumberland	3000	SAC	Simonside Hills	Mitigation necessary pending further details
07-D45	Cornforth	Central Wear	470	SAC	Thrislington	Mitigation necessary pending further details
10-D25	Chilton Lane	Skerne	560	SAC	Thrislington	Mitigation necessary pending further details
10-D23	Ferryhill South	Skerne	1100	SAC	Thrislington	Mitigation necessary pending further details
10-D27	Bishop Middleham	Skerne	1100	SAC	Thrislington	Mitigation necessary pending further details
07-D31	Bowburn	Central Wear	1200	SAC	Thrislington	Mitigation necessary pending further details
10-D24	Ferryhill North	Skerne	1700	SAC	Thrislington	Mitigation necessary pending further details
07-D44	Spennymoor	Central Wear	2500	SAC	Thrislington	Mitigation necessary pending further details
07-D33	Kelloe	Central Wear	3300	SAC	Thrislington	Mitigation necessary pending further details
10-D19	Fishburn	Skerne	3500	SAC	Thrislington	Mitigation necessary pending further details
11-D48	Sedgefield	Teesside	3700	SAC	Thrislington	Mitigation necessary pending further details
07-D57	Bishop Auckland	Central Wear	4500	SAC	Thrislington	Mitigation necessary pending further details
07-D30	Sunderland Bridge	Central Wear	4500	SAC	Thrislington	Mitigation necessary pending further details
10-D20	Trimdon Village	Skerne	4600	SAC	Thrislington	Mitigation necessary pending further details
03-D48	Newbrough & Fourstones	Upper Tyne	200	SAC	Tyne & Allen River Gravels	Mitigation necessary pending further details
03-D14	Haltwhistle	Upper Tyne	370	SAC	Tyne & Allen River Gravels	Appropriate assessment required pending further details

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
03-D03	Hexham	Upper Tyne	3100	SAC	Tyne & Allen River Gravels	Appropriate assessment required pending further details
03-D49	Humshaugh	Upper Tyne	4100	SAC	Tyne & Allen River Gravels	Mitigation necessary pending further details
03-D04	Anick & Oakwood	Upper Tyne	4200	SAC	Tyne & Allen River Gravels	Mitigation necessary pending further details
03-D63	Alston	Upper Tyne	400	SAC	Tyne & Nent	Appropriate assessment required pending further details
09-D23	Bowes	Upper Tees	310	SPA	North Pennine Moors	Appropriate assessment required pending further details
09-D17	Middleton in Teesdale	Upper Tees	340	SPA	North Pennine Moors	Appropriate assessment required pending further details
07-D52	Butterknowle	Central Wear	1300	SPA	North Pennine Moors	Appropriate assessment required pending further details
06-D13	Wolsingham	Upper Wear	1300	SPA	North Pennine Moors	Appropriate assessment required pending further details
04-D02	Consett & Castleside	Derwent	2400	SPA	North Pennine Moors	Appropriate assessment required pending further details
03-D28	Haydon Bridge	Upper Tyne	2600	SPA	North Pennine Moors	Appropriate assessment required pending further details
09-D06	Barnard Castle	Upper Tees	3700	SPA	North Pennine Moors	Appropriate assessment required pending further details
06-D15	Tow Law	Upper Wear	5000	SPA	North Pennine Moors	Appropriate assessment required pending further details
11-D34	Saltburn,Skelton Brotton	Teesside	260	SPA	North York Moors	Mitigation necessary pending further details
11-D36	Guisborough	Teesside	560	SPA	North York Moors	Mitigation necessary pending further details
11-D22	Faceby	Teesside	1200	SPA	North York Moors	Mitigation necessary pending further details

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
11-D14	Carlton in Cleveland	Teesside	1300	SPA	North York Moors	Mitigation necessary pending further details
11-D16	Great Broughton	Teesside	1900	SPA	North York Moors	Mitigation necessary pending further details
11-D35	Loftus	Teesside	2000	SPA	North York Moors	Mitigation necessary pending further details
11-D09	Great Ayton	Teesside	2000	SPA	North York Moors	Mitigation necessary pending further details
11-D23	Potto	Teesside	2300	SPA	North York Moors	Mitigation necessary pending further details
11-D13	Stokesley	Teesside	3500	SPA	North York Moors	Mitigation necessary pending further details
11-D20	Hutton Rudby	Teesside	5000	SPA	North York Moors	Mitigation necessary pending further details
02-D17	Lyneburn Valley	South Northumberland	290	SPA	Northumberland Marine	Mitigation necessary pending further details
01-D30	Dunstan	North Northumberland	610	SPA	Northumberland Marine	Appropriate assessment required pending further details
02-D02	Cramlington	South Northumberland	1400	SPA	Northumberland Marine	Mitigation necessary pending further details
01-D04	Acklington & Togston	North Northumberland	2800	SPA	Northumberland Marine	Mitigation necessary pending further details
01-D03	Shilbottle	North Northumberland	2800	SPA	Northumberland Marine	Appropriate assessment required pending further details
01-D01	Alnwick	North Northumberland	3400	SPA	Northumberland Marine	Appropriate assessment required pending further details
02-D20	Stannington Station	South Northumberland	4900	SPA	Northumberland Marine	No further assessment necessary
02-D21	Hepscott	South Northumberland	5000	SPA	Northumberland Marine	No further assessment necessary

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
11-D45	Middlesbrough South	Teesside	240	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D29	Greatham	Teesside	360	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D42	Tees Valley	Teesside	490	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D60	Thornaby South & Ingleby Barwick	Teesside	520	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D51	South Billingham	Tesside	600	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D56	Stockton South	Teesside	1500	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D57	Eaglescliffe	Teesside	1900	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D54	Eastbourne	Teesside	2000	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D53	Stockton West	Teesside	2200	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
11-D47	Nunthorpe	Teesside	3400	SPA	Teesmouth and Cleveland Coast	Mitigation necessary pending further details
01-D52	Lowick	North Northumberland	3600	RAMSAR	Holburn Lake & Moss	Appropriate assessment required pending further details

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L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
01-D59	Haggerston	North Northumberland	1700	RAMSAR	Lindisfarne	Appropriate assessment required pending further details
01-D50	Belford Industrial Estate	North Northumberland	2100	RAMSAR	Lindisfarne	Appropriate assessment required pending further details
01-D46	Belford	North Northumberland	2600	RAMSAR	Lindisfarne	Appropriate assessment required pending further details
05-D39	Brierdene	Tyneside	320	RAMSAR	Northumbria Coast	Mitigation necessary pending further details
05-D42	Whitley Lodge	Tyneside	460	RAMSAR	Northumbria Coast	Mitigation necessary pending further details
05-D45	North Shields	Tyneside	570	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
05-D48	High Shields	Tyneside	600	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
08-D10	Hendon Burn	Wearside	900	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
05-D38	Chirton	Tyneside	1600	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
08-D08	Wearmouth	Wearside	1600	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
08-D07	Hylton Castle	Wearside	1700	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
05-D46	Royal Quays	Tyneside	1800	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
05-D43	Willington Quay	Tyneside	2200	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
08-D11	Pallion	Wearside	2200	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
08-D09	Barnes Burn	Wearside	2300	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details

HRA STAGE 1 SCREENING AND STAGE 2 APPROPRIATE ASSESSMENT
List of L3 catchments and associated screening results

L3 Identity	L3 Name	Catchment name	Distance to National site (m)	Nearest National site type	Nearest National site name	Recommendations (same for both options)
05-D37	Wallsend	Tyneside	3900	RAMSAR	Northumbria Coast	Mitigation necessary pending further details
01-D31	Rennington	North Northumberland	4300	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
05-D53	Jarrow,Hedworth	Tyneside	4300	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
05-D54	Hebburn	Tyneside	4400	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details
07-D60	Herrington	Central Wear	4700	RAMSAR	Northumbria Coast	Appropriate assessment required pending further details