Department for Business, Energy & Industrial Strategy

# HABITATS REGULATIONS ASSESSMENT REPORT

## Habitats Regulations Assessment of National Policy Statement for Geological Disposal Infrastructure

## Final

January 2018

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# Non-Technical Summary

## The National Policy Statement for Geological Disposal Infrastructure and Habitats Regulations Assessment

This report has been produced for the purpose of supporting the Secretary of State for Business, Energy and Industrial Strategy in meeting his obligations under regulation 110 of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') as regards the National Policy Statement for Geological Disposal Infrastructure (the draft National Policy Statement).

The purpose of the draft National Policy Statement will be to guide the Secretary of State and the Planning Inspectorate in considering, and the developer of the site in preparing, any applications for development consent in relation to geological disposal nationally significant infrastructure projects, including deep boreholes. It will apply to the development of these facilities in England only. The draft National Policy Statement is non-site specific and provides the high level assessment principles against which development consent order applications will be considered. In this regard, the proposed National Policy Statement will be similar to the other non-nuclear energy infrastructure National Policy Statements already designated by BEIS[1].

## Screening

The draft National Policy Statement has been subject to a screening assessment to determine whether it is likely to have significant effects on any European sites. As the draft National Policy Statement is a high-level policy document that does not constrain potential locations for a geological disposal facility (GDF) within England (either explicitly or implicitly), or provide specific design criteria for a GDF, all European sites within England are potentially capable of being affected by the outcomes of the draft National Policy Statement, with sites in adjacent areas of Wales and Scotland also potentially affected (due to common borders and geographical proximity). Due to the distance and absence of causal pathways for any potential effects arising from the draft National Policy Statement, no likely significant effects have been identified on European sites in Northern Ireland or any other member state. However, the possibility of likely significant effects on one or more European sites in England, Wales and/or Scotland cannot be excluded. Consistent with the scope of the Habitats Regulations, it is also noted that the draft National Policy Statement is not directly connected with or necessary to the management of any European site. On this basis and in line with the requirements of the Habitats Regulations, an appropriate assessment has been undertaken.

[1] Energy National Policy Statement designated on 19th July 2011. Non nuclear cover EN-1 Overarching Energy NPS to EN-5 Electricity Networks Infrastructure National Policy Statement, available online at: https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure

## Appropriate assessment

The appropriate assessment comprised:

- a review of the possible pathways by which European sites might be affected by projects that are compliant with or supported by the draft National Policy Statement; and, subsequently; and
- a review of the content and scope of the draft National Policy Statement, to identify opportunities for policy requirements that will prevent or reduce any adverse effects that may result from supported developments.

The draft National Policy Statement identifies the importance of biodiversity and nature conservation through reference to policy and regulatory requirements. It also clearly states the responsibilities of the Secretary of State and the developer with regard to international sites (so project compliance with the Habitats Regulations), with the Secretary of State directed to ensure that "appropriate weight is attached to designated sites of international, national and local importance, protected species and habitats and other species of principal importance for the conservation of biodiversity, and to biodiversity and geological interests within the wider environment" (paragraph 5.4.7 of the draft National Policy Statement). The draft National Policy Statement also sets out a range of mitigation and conservation measures that should be taken into account by the developer.

However, the draft National Policy Statement, as a non-site specific planning document does not rule out the possibility (however small) of any geological disposal infrastructure having adverse effects on European sites. In consequence, the appropriate assessment concluded that it was not possible to rule out the possibility that any European site in England could, in theory, be potentially vulnerable to adverse effects as a result of the development of geological disposal infrastructure anticipated by the draft National Policy Statement.

Given the envisaged potential for a GDF (or deep investigative boreholes) in England to impact upon adjacent areas of Scotland and Wales, the appropriate assessment has also determined that there are a number of European sites in Scotland and Wales that could also be vulnerable to the potential effects of any geological disposal infrastructure.

Mitigation measures that would exclude the possibility of specific adverse effects are not available at the strategic level that the draft National Policy Statement operates at, and policy statements to that effect would exceed the provisions of the Habitats Regulations. The appropriate assessment does recommend some amendments to the draft National Policy Statement to emphasise the significance of European sites and the protection they receive and to ensure that avoidance and mitigation are prioritised when designing developments; however, the residual possibility of any geological disposal infrastructure having an adverse effect on a European site remains.

## Alternative solutions

In consequence, and consistent with the Habitats Regulations Assessment stages, the Habitats Regulations Assessment examined alternative approaches for the draft National Policy Statement, including:

- no National Policy Statement;
- a National Policy Statement that is generic but applies exclusionary criteria (such criteria may be included on the grounds of landscape, cultural and natural heritage and nature conservation for example); and
- a location-specific National Policy Statement that identifies candidate sites for the GDF.

The assessment concluded that the alternatives examined would: (i) not provide any additional certainty that adverse effects on European sites could be avoided or reduced, compared to the current National Policy Statement; (ii) not be feasible; and (iii) compromise the ability to ensure the successful and timely delivery of the GDF in a geologically suitable environment (and hence not fulfil the Government's policy objective on the disposal of higher activity radioactive waste).

It is the Government's view that there are no alternative solutions in respect of the draft National Policy Statement that would be less damaging to European sites. As a result, the case for designating the National Policy Statement for imperative reasons of overriding public interest was considered. It is considered that the National Policy Statement could be designated for reasons of human health, public safety and beneficial consequences of primary importance to the environment.

## Conclusion

The draft National Policy Statement identifies the importance of biodiversity and nature conservation through reference to policy and regulatory requirements. It clearly states the responsibilities of the Secretary of State and the developer with regard to international sites. It is the view of Government that the National Policy Statement (as drafted) would facilitate the successful and timely delivery of a GDF, by ensuring a coordinated approach to waste management and geological disposal; and by providing clear guidance on developer requirements. This will provide a long-term, secure, safe and sustainable solution to the disposal of higher activity radioactive waste.

The Habitats Regulations Assessment of the draft National Policy Statement does not remove the need for project-level Habitats Regulations Assessments, or prejudice the scope or outcomes of these assessments. The designation of the National Policy Statement for imperative reasons of overriding public interest does not mean that these reasons will necessarily extend to all developments arising from the National Policy Statement, although the information provided in the National Policy Statement and Habitats Regulations Assessment may have some relevance.

We would welcome your views on this Habitats Regulations Assessment report, which can be provided by responding to the consultation questions in the separate consultation document titled 'Consultation - National Policy Statement for Geological Disposal Infrastructure'.

# 1. Introduction

## Background

1.1. The 2014 White Paper 'Implementing Geological Disposal'[2] (the '2014 White Paper') set out the UK Government's intention to amend the Planning Act 2008[3] to bring geological disposal facilities (GDFs) for radioactive waste, and the deep boreholes[4] required to investigate potential sites for these facilities, within the definition of nationally significant infrastructure projects in England and UK territorial waters adjacent to England, and to designate a National Policy Statement (NPS) to guide future decision making. The Infrastructure Planning (Radioactive Waste Geological Disposal Facilities) Order 2015[5], which came into force on 27 March 2015, amended the Planning Act 2008 to extend the categories of nationally significant infrastructure projects to include development relating to geological disposal. In consequence, a draft NPS for Geological Disposal Infrastructure (as defined by Section 30A of the Planning Act 2008) (the draft NPS), has been developed by the Department for Business, Energy and Industrial Strategy (BEIS) as part of its work in managing the UK nuclear legacy and radioactive waste safely and cost effectively.

1.2. The purpose of the draft NPS will be to guide the Secretary of State and the Planning Inspectorate in considering, and the developer of the site in preparing, any applications for development consent in relation to GDF-related nationally significant infrastructure projects, including deep boreholes. Once the draft NPS has been designated, the Secretary of State will be required to determine any applications for development consent in accordance with it, unless certain other criteria (set out in the Planning Act 2008) apply. The draft NPS is non-site specific and provides the high level assessment principles against which development consent order applications will be considered. In this regard, the proposed NPS will be similar to the other non-nuclear energy infrastructure NPSs already designated by BEIS[6].

1.3. On 23 June 2016, the European Union (EU) referendum took place and the people of the UK voted to leave the EU. Until exit negotiations are concluded, the UK remains a full member of the EU and all the rights and obligations of EU membership remain in force. During this period, the Government will continue to negotiate, implement and apply EU legislation. The outcome of these negotiations will determine what arrangements apply in relation to EU legislation in future once the UK has left the EU[7].

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[2] Department for Energy and Climate Change (DECC) (now BEIS) (July 2014), 'Implementing Geological Disposal - A Framework for the long-term management of higher activity radioactive waste', available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332890/GDF_White_Paper_FINAL.pdf

[3] The Planning Act 2008, available online at: http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

[4] Deep boreholes are for site investigation only and do not refer to any proposals for deep borehole disposal of radioactive waste.

[5] S.I. 2015 No. 949. The Infrastructure Planning (Radioactive Waste Geological Disposal Facilities) Order 2015, available online at: https://www.legislation.gov.uk/uksi/2015/949/pdfs/uksi_20150949_en.pdf

[6] Energy NPSs designated on 19th July 2011. Non-nuclear covers EN-1 Overarching Energy NPS to EN-5 Electricity Networks Infrastructure NPS, available online at: https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure

[7] In so far as the context permits or requires, a reference to the European Union includes a reference to the European Atomic Energy Community.

## Habitats Regulations Assessment

1.4. Regulation 110 of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') applies the provisions of regulations 105 and 107 to National Policy Statements. Regulation 105 states that if a land-use plan "(a) is likely to have a significant effect on a European site[8] or a European offshore marine site[9] (either alone or in combination with other plans or projects); and (b) is not directly connected with or necessary to the management of the site" then the plan-making authority must "…make an appropriate assessment of the implications for the site in view of that site's conservation objectives" before the plan is given effect. The plan-making authority (in this case, the Secretary of State for Business, Energy and Industrial Strategy) may agree to the plan only if it has determined that it will not adversely affect the integrity of the European site; or, where this is not the case, that the plan or project meets the provisions of regulation 107 (that there is no satisfactory alternative; and that the plan or project must be authorised for imperative reasons of overriding public interest (IROPI)[10]). The process by which the requirements of regulations 105 and 107 are met is generally known as Habitats Regulations Assessment (HRA)[11].

1.5. The assessment and HRA Report have been completed by Amec Foster Wheeler Environment and Infrastructure UK Ltd (Amec Foster Wheeler) on behalf of BEIS.

## Purpose of this report

1.6. This report is intended to support the Secretary of State in meeting his obligations under regulation 110 of the Habitats Regulations. It documents Amec Foster Wheeler's assessment of the draft NPS against the requirements of the Habitats Regulations, summarising the HRA process and its application to the draft NPS, and detailing the results of the screening and appropriate assessment stages. It then considers alternatives to the draft NPS and sets out the case for authorising the plan for IROPI.

1.7. It should be noted that the draft NPS does not identify potential locations for the construction of a GDF (explicitly or implicitly), and so this assessment is not location-specific either; instead, it focuses on the assessment of the draft NPS policies and objectives, aiming to identify measures that can be incorporated into the draft NPS to avoid, reduce or mitigate adverse effects. The assessment is therefore specific to the draft NPS. BEIS notes that all development consent order applications which may be

[8] Strictly, 'European sites' are: any Special Area of Conservation (SAC) from the point at which the European Commission and the UK Government agree the site as a 'Site of Community Importance' (SCI); any classified Special Protection Area (SPA); any candidate SAC (cSAC); and (exceptionally) any other site or area that the Commission believes should be considered as an SAC but which has not been identified by the Government. However, the term is commonly used when referring to potential SPAs (pSPAs), to which the provisions of Article 4(4) of Directive 2009/147/EC (the 'new wild birds directive') apply; and to listed and proposed Ramsar Sites, to which the provisions of the Habitats Regulations are typically applied a matter of Government policy (e.g. NPPF paragraph 118; EN-1 paragraph 5.3.9). 'European site' is therefore used in this report in its broadest sense, as an umbrella term for all of the above designated sites. The protection provided by the Habitats Regulations is sometimes (but not always) explicitly extended to include possible SACs (pSACs) by Government policy (e.g. the NPPF specifically includes pSACs at paragraph 118; EN-1 does not).

[9] 'European offshore marine sites' are defined by regulation 15 of The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended); these regulations cover waters (and hence sites) over 12 nautical miles from the coast.

[10] Having established there are no feasible alternative solutions, the competent authority must be able to identify "imperative reasons of overriding public interest" (IROPI) that justify the plan or project despite the environmental damage it will cause.

[11] The term 'appropriate assessment' has been historically used to describe the process of assessment; however, the process is now more typically termed 'Habitats Regulations Assessment' (HRA), with the term 'appropriate assessment' limited to the specific stage within the process.

made pursuant to the draft NPS, once designated, will be subject to the requirements of the planning system under the Planning Act 2008[12]. Therefore this assessment does not remove the need for future project-level HRAs of any geological disposal infrastructure that may be proposed.

1.8. In addition, Section 5(3) of the Planning Act 2008 requires that an appraisal of the sustainability (AoS) of the policy set out in the statement be carried out before an NPS can be designated. The AoS ensures that the likely environmental and socio-economic effects of the draft NPS are identified, described and evaluated. The AoS also satisfies the requirements of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (commonly referred to as the Strategic Environmental Assessment (SEA) Directive) and relevant implementing regulations[13] (the SEA Regulations). The AoS for the draft NPS is reported separately from this HRA report, although the conclusions of the HRA have helped to inform the appraisal process. The AoS report describes the scope and content of the draft NPS in some detail and is cross-referenced, where appropriate, to avoid unnecessary duplication of information.

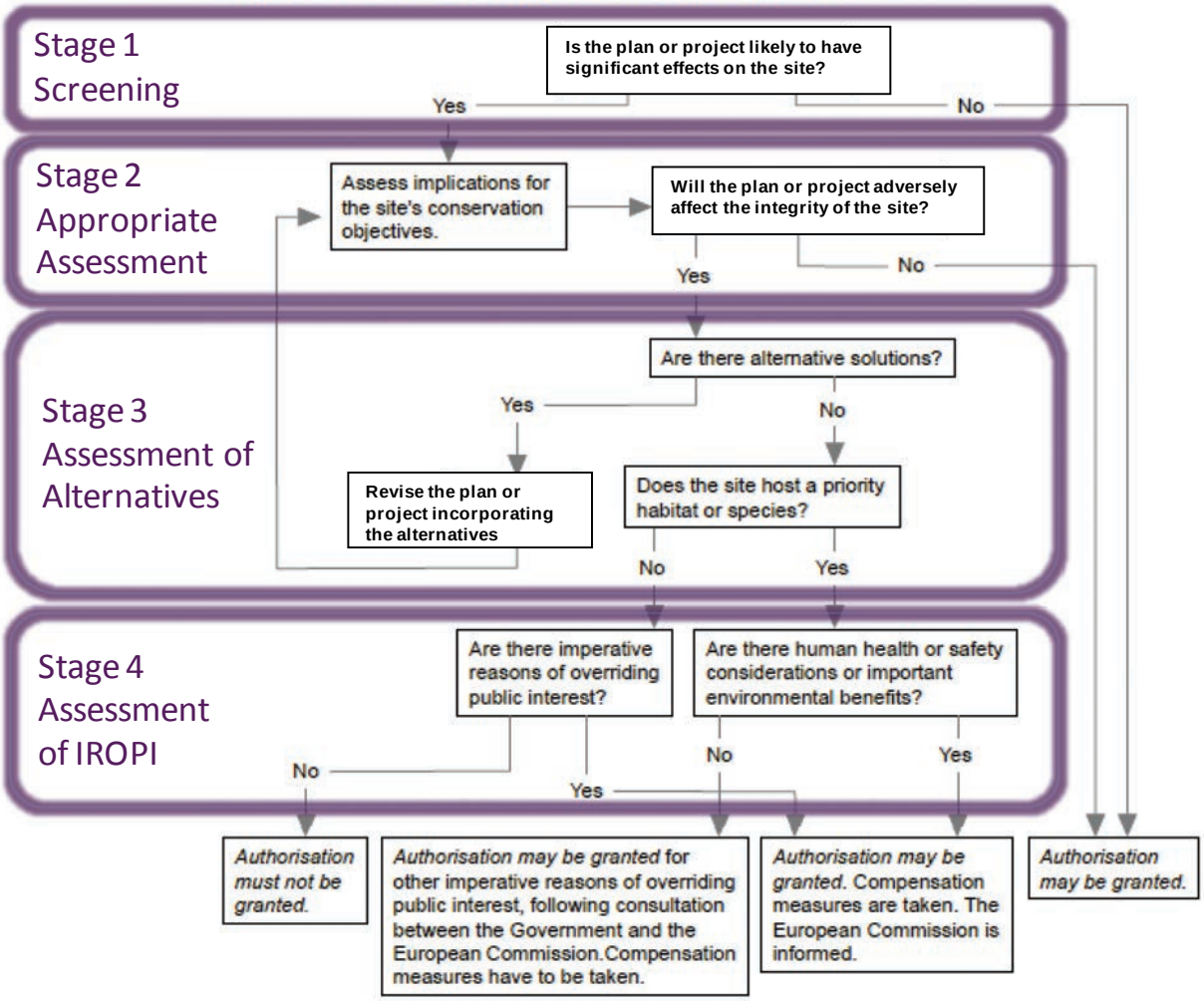
[12] The Planning Act 2008, available online at: http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1
[13] The Environmental Assessment of Plans and Programmes Regulations 2004 S.I. 2004 No. 1633, available online at: http://www.legislation.gov.uk/uksi/2004/1633/pdfs/uksi_20041633_en.pdf

# 2. HRA of the draft NPS

## HRA overview

Regulation 110 of the Conservation of Habitats and Species Regulations 2017 applies the provisions of regulations 105 and 107 to National Policy Statements. The requirements of regulations 105 and 107 are usually addressed through a staged process with sequential tests. The current European Commission guidance[14] suggests a four-stage process for HRA, although not all stages will be necessarily required; these stages, and the assessment process, are summarised in **Figure 2.1**.

**Figure 2.1 Summary of HRA process and stages**




[14] Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC 2002), available online at: http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf

2.1. At the screening stage, the plan should be considered 'likely' to have an effect if the competent authority (in this case, the Secretary of State) is unable on the basis of objective information to exclude the possibility that it could have significant effects on any European site, either alone or in combination with other plans or projects; an effect will be 'significant' if it could undermine the site's conservation objectives. The 'test of significance' is therefore a relatively low bar: 'significant effects' can generally be interpreted as any negative effects that are not negligible or inconsequential; 'likely' is interpreted as a simple question of whether the plan or project concerned is capable of having an effect[15]. If 'no significant effect' cannot be established then an appropriate assessment is required. What constitutes an appropriate assessment is not defined by the Regulations or the Habitats Directive; however, the assessment must provide a robust, objective, scientific basis for determining whether the integrity of a site is likely to be affected that is proportional to the complexity, scale and risk of effects.

2.2. Regulation 105 essentially provides a test that the final plan must pass; there is no statutory requirement for HRA to be undertaken on draft plans or similar developmental stages (e.g. issues and options; preferred options). However, as with SEA, it is accepted best practice for the HRAs of strategic plans or policy documents to be run as an iterative process alongside their development. This helps ensure that policies that plan positively for the environment are developed from the beginning of the plan-making process, rather than the HRA being a purely retrospective assessment exercise applied towards the end of the process.

2.3. If the competent authority cannot determine that there will be no adverse effects on the integrity of a site then it must consider alternative solutions for delivering the objectives of the plan or project (regulation 107); if no alternatives are available, then a case for authorising the plan or project may be made for IROPI.

## Guidance

2.4. There is little specific guidance on the application of HRA to National Policy Statements, particularly as similar high-level policy documents are often excluded from the HRA process[16]. However, the HRA of the draft NPS is based on case-practice established through the HRAs of similar NPSs (e.g. EN-1 – EN-5) and the following general guidance:

- Department for Environment, Food and Rural Affairs [Defra] (2012) The Habitats and Wild Birds Directives in England and its seas: Core guidance for developers, regulators & land/marine managers. Defra, London;
- DTA Publications (2016) The Habitats Regulation Handbook [online]. Available at: http://www.dtapublications.co.uk/handbook/ [Accessed 06 June 2017];

[15] Case C-258/11: Judgment of the Court (Third Chamber) of 11 April 2013 and Opinion of the Advocate General dated 22nd November 2012. Peter Sweetman and Others v An Bord Pleanála. Reference for a preliminary ruling: Supreme Court - Ireland.
[16] EC guidance on the application of Article 6(3) ('Managing Natura 2000 sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC' (EC, 2000) states that "…a distinction needs to be made with 'plans' which are in the nature of policy statements, i.e. policy documents which show the general political will or intention of a ministry or lower authority. An example might be a general plan for sustainable development across a Member State's territory or a region. It does not seem appropriate to treat these as 'plans' for the purpose of Article 6(3), particularly if any initiatives deriving from such policy statements must pass through the intermediary of a landuse or sectoral plan. However, where the link between the content of such an initiative and likely significant effects on a Natura 2000 site is very clear and direct, Article 6(3) should be applied".

- European Commission (2001). Assessment of plans and projects significantly affecting Natura 2000 sites[17]: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC
- European Commission (2000). Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/433/EEC. European Commission, Brussels; and
- European Commission (2007/2012) Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC: Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion Of The Commission. European Commission, Brussels.

# The NPS for Geological Disposal Infrastructure

## Introduction

2.5. The 2014 White Paper[18] on the long-term management of higher activity radioactive waste sets out the UK Government's intention to produce an NPS to help guide applications for the development of GDFs. The 2014 White Paper identifies the following purposes of the NPS for Geological Disposal Infrastructure:

> "6.12. The purpose of the NPS is to guide the Secretary of State and the Planning Inspectorate in the consideration of any applications for a Development Consent Order for the development of a GDF, and the use of boreholes to characterise potential sites, in England.
>
> 6.13. Once the NPS has been designated, the Secretary of State will be required to determine any applications for development consent in accordance with it, unless certain other criteria (set out in the Planning Act 2008) apply."

2.6. This section expands on the description above, providing further detail in respect of the policy context, the need for geological disposal infrastructure, nationally significant infrastructure projects and the scope and contents of the draft NPS for Geological Disposal Infrastructure.

## Government policy on management of higher activity radioactive waste

2.7. In 2001, the UK Government and devolved administrations started the 'Managing Radioactive Waste Safely' programme, with the aim of finding a practical long-term management solution for the UK's higher activity radioactive waste. Between 2003 and 2006, a wide range of options for how to deal with the UK's higher activity radioactive waste was considered, from indefinite storage on or below the surface through to propelling the waste into space. This work was carried out by the independent Committee on Radioactive Waste Management (CoRWM) and involved extensive consultation with the public and expert groups.

[17] Natura 2000 is a network of nature protection areas in the territory of the European Union. It is made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated respectively under the Habitats Directive and Birds Directive. The network includes both terrestrial and marine sites (Marine Protected Areas (MPAs)).

[18] Department for Energy and Climate Change (DECC) (now BEIS) (July 2014), 'Implementing Geological Disposal - A Framework for the long-term management of higher activity radioactive waste', available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332890/GDF_White_Paper_FINAL.pdf

2.8. In July 2006, CoRWM recommended[19] that geological disposal, coupled with safe and secure interim storage, was the best available approach for the long-term management of the UK's legacy of higher activity radioactive wastes. CoRWM stated that the aim should be to progress disposal as soon as practicable, consistent with developing and maintaining public confidence.

2.9. In October 2006, the UK Government and the devolved administrations published a response broadly accepting these recommendations[20]. After public consultation, two subsequent White Papers published in 2008 confirmed the Government's commitment to geological disposal for legacy waste[21] and set out the Government's position on the use of geological disposal to dispose of higher activity radioactive waste generated as a result of new nuclear power stations[22].

2.10. In addition to accepting CoRWM's recommendations on geological disposal as the best approach for the long-term management of the UK's higher activity radioactive waste, the Government also accepted:

- a commitment to an intensified programme of research and development into the long-term safety of geological disposal; and
- that developments in alternative waste management options should be actively pursued through monitoring of, and participation in, national or international research and development programmes.

2.11. In line with this, the Nuclear Decommissioning Authority (NDA) and Radioactive Waste Management Limited (RWM) continue to review other long-term management options. At the moment, no credible alternatives have emerged that would accommodate all of the categories of waste in the inventory for disposal. In any realistic future scenario, some form of GDF will remain necessary.

2.12. The UK Government remains committed to the policy of geological disposal of higher activity wastes, for the reasons set out in CoRWM's Recommendations to Government and subsequent UK Government policy documents on radioactive waste management (including the draft NPS). In June 2013, CoRWM issued a statement reiterating its commitment to geological disposal[23].

2.13. After the previous GDF siting process came to an end in 2013, the UK Government set out a new approach to siting a GDF in the 2014 White Paper[24]. The 2014 White Paper also set out the overarching policy framework for implementing geological disposal,

[19] CoRWM (2006) 'Managing our Radioactive Waste Safely – CoRWM's Recommendations to Government', July 2006, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294118/700_-_CoRWM_July_2006_Recommendations_to_Government_pdf.pdf

[20] Defra, Scottish Executive, the National Assembly for Wales and DoE (NI) (2008) 'Response to the Report and Recommendations from the Committee on Radioactive Waste Management (CoRWM)', available online at: http://130.88.20.21/uknuclear/pdfs/corwm-govresponse.pdf

[21] Defra (2008) 'Managing radioactive waste safely: a framework for implementing geological disposal', available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/68927/7386.pdf

[22] Department of Business, Energy and Regulatory Reform (DBERR) (now BEIS) (2008) Nuclear white paper 2008: 'Meeting the energy challenge', page 99, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228944/7296.pdf

[23] CoRWM (2013) 'CoRWM Statement on Geological Disposal', CoRWM doc. 3122 Final (13 June 2013), available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/225113/CoRWM_statement_on_geological_disposal.pdf

[24] DECC (now BEIS) (2014), 'Implementing Geological Disposal - A framework for the long-term management of higher activity radioactive waste', July 2014, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332890/GDF_White_Paper_FINAL.pdf

including initial actions led by the UK Government and the developer to support the siting process. The 2014 White Paper updates and replaces the earlier 2008 White Paper, 'Managing Radioactive Waste Safely' (the '2008 White Paper'). The siting process is separate from the process of considering development consent applications.

## The need for geological disposal infrastructure

2.14. There is a technical, ethical and legal need for the safe and secure management of the UK's higher activity radioactive waste in the long term. There is legacy waste, including waste from over 60 years' nuclear generation, which is presently temporarily stored at over 30 sites in the UK; there is also a need for disposal of higher activity radioactive waste for any new nuclear power stations that are commissioned in the coming decades.

2.15. The CoRWM recommendations identified geological disposal, coupled with safe and secure interim storage, as the best available approach for the long-term management of the UK's legacy of higher activity radioactive wastes. This was accepted in the Government's response to these recommendations. There is also a need to prevent a burden from falling on future generations and reduce the future potential risks associated with repackaging waste in temporary storage and terrorism or societal breakdown.

2.16. The UK Government's policy framework for managing higher activity radioactive waste in the long term specifically through geological disposal has been developed, consulted on and put into effect, prior to the development of the draft NPS.

2.17. The Secretary of State will assess applications for infrastructure covered by the NPS on the basis that need has been demonstrated.

## Nationally significant infrastructure projects

### Legislative and consenting background

2.18. The Planning Act 2008 introduced a procedure to streamline the decision-making process for nationally significant infrastructure projects. Under the Act, a developer wishing to construct a nationally significant infrastructure project must first apply for development consent. All development consent order applications which may be made pursuant to the NPS, once designated, will be subject to the requirements of the planning system under the Planning Act 2008. As part of this process, the applicant should consider whether the proposed nationally significant infrastructure project should be considered as Environmental Impact Assessment development under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the Environmental Impact Assessment Regulations)[25]. Similarly, the developer should consider the potential effects of the proposed development on protected habitats through consideration of requirements of the Conservation of Habitats and Species Regulations 2017 [26].

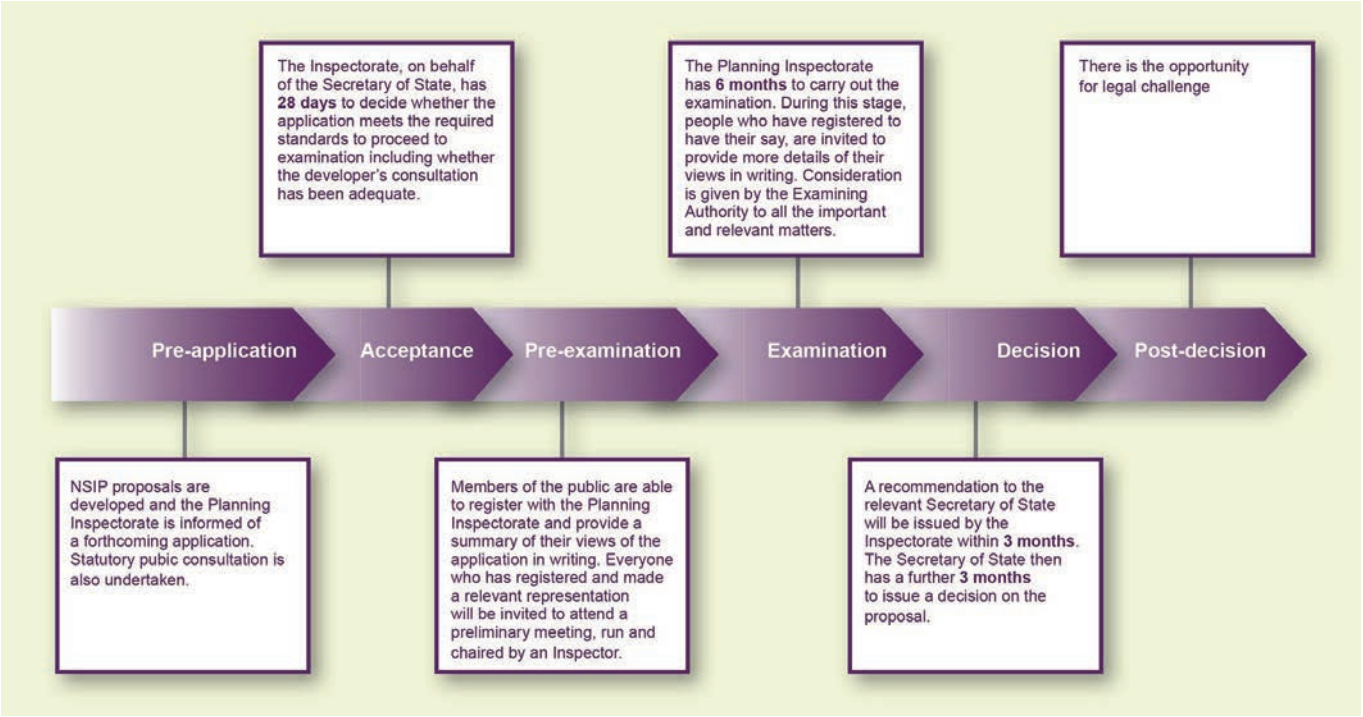
[25] Planning Inspectorate (March 2015) 'Preliminary Environmental Information, Screening and Scoping: Advice note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping', available online at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/03/Advice-note-7v4.pdf

[26] Planning Inspectorate (December 2015) 'Habitats Regulations Assessment: Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects', available online at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/

2.19. For such projects, the relevant Secretary of State will appoint an 'Examining Authority' to examine the application. The Examining Authority will be from the Planning Inspectorate, and will be either a single Inspector or a panel of three or more Inspectors. Once the examination has been concluded, the Examining Authority will make a recommendation to the Secretary of State, who will make the decision on whether to grant or to refuse consent.

2.20. There are six stages in the development consent application process for nationally significant infrastructure projects and these are shown in **Figure 2.2**.

**Figure 2.2 The development consent process for nationally significant infrastructure projects**




Source: The Planning Inspectorate (2012) http://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2013/04/Advice-note-8-1v4.pdf [Accessed October 2015].

2.22. Part 3 of the Planning Act 2008 lists the projects that are to be determined as nationally significant infrastructure projects. In March 2015, The Infrastructure Planning (Radioactive Waste GDF) Order 2015[27] amended the Act to extend the categories of nationally significant infrastructure projects to include GDFs and the deep boreholes required to investigate potential sites for these facilities.

2.23. In addition to development consent under the Planning Act 2008, a developer will also need permits from the environmental regulator before constructing a nationally significant infrastructure project. In England, the Environment Agency is responsible for environmental protection under the Environmental Permitting (England and Wales) Regulations 2016. Its responsibilities include regulating radioactive and non-radioactive discharges and disposals to air, water (both surface and groundwater) and land, including disposal by transfer to another site. There are separate environmental regulators in other parts of the UK. The Environment Agency will therefore be responsible for regulating the environmental aspects of developing geological disposal

[27] S.I. 2015 No. 949. The Infrastructure Planning (Radioactive Waste Geological Disposal Facilities) Order 2015, available online at: https://www.legislation.gov.uk/uksi/2015/949/pdfs/uksi_20150949_en.pdf

infrastructure (e.g. regulating the impacts of any discharges from the facility's ventilation system during the operation of the facility).

2.24. For a GDF, the developer will need regulatory approval before each stage of development can begin (a process known as 'staged regulation') and, in particular, disposal of radioactive waste will not be allowed without the appropriate environmental permit.

2.25. The independent Office for Nuclear Regulation is responsible for the safety and security regulation of the nuclear sector across the UK. The Office for Nuclear Regulation grants licences that allow licence holders to use nuclear sites for specified activities. The Office for Nuclear Regulation also regulates the safety of transport of radioactive materials.

2.26. A future GDF will be a nuclear installation under the Nuclear Installations Act 1965 and, as such, it will be the Office for Nuclear Regulation's role to ensure that, prior to construction of a GDF, a licensing process is in place; such that the Office for Nuclear Regulation can consider the granting of a licence for the site, with the requisite site licence conditions attached, and enforce the requirements of that licence. The Office for Nuclear Regulation will also be responsible for advice, assessment of the licensee's security, and approving security arrangements for the geological disposal facility, and for securing compliance with those arrangements.

2.27. To demonstrate how a GDF meets high standards of safety, security and environmental protection, the developer will need to develop and maintain a number of safety cases (including operational safety and environmental safety) and security plans throughout the lifecycle of the facility, all of which will be subject to scrutiny by the independent nuclear regulators. Where the developer and/or independent regulators are not satisfied that suitable safety cases for the construction, operation and closure of a GDF can be made following receipt of data from any programme of deep boreholes, work at that site will cease.

2.28. The Office for Nuclear Regulation and the appropriate environmental regulator must be consulted in any application for development consent for a GDF. The appropriate environmental regulator must also be consulted in any application for development consent for borehole investigations to characterise potential candidate sites.

### National policy statements

2.29. NPSs set out the criteria by which applications for nationally significant infrastructure projects within their scope are determined. They include the Government's objectives for the development of nationally significant infrastructure in a particular sector and set out:

- how this will contribute to sustainable development;
- how these objectives have been integrated with other Government policies (including those "relating to the mitigation of, and adaption to, climate change");
- how actual and projected capacity and demand have been taken into account;
- relevant issues in relation to safety or technology;
- circumstances where it would be particularly important to address the adverse impacts of development; and
- specific locations, where appropriate, in order to provide a clear framework for investment and planning decisions.

2.30. They also include any other policies or circumstances that Ministers consider should be taken into account in decisions on infrastructure development.

2.31. NPSs undergo a process of public consultation and parliamentary scrutiny before being designated (i.e. published). They provide the framework within which Inspectors make their recommendations to the Secretary of State.

## The NPS for Geological Disposal Infrastructure

### What is the purpose of the NPS?

2.32. The NPS for Geological Disposal Infrastructure will set out the need for geological disposal infrastructure for the disposal of higher activity radioactive waste, and the Government's policies to deliver them. Once designated, it will be used as the primary basis for the examination by the Examining Authority of, and decisions by the Secretary of State on, development consent order applications for geological disposal facility infrastructure that falls within the definition of a nationally significant infrastructure project as defined in the Planning Act 2008. It addresses the following objectives:

- implementation of government policy on geological disposal for higher activity radioactive waste and the need for such infrastructure;
- to establish a clear and transparent planning process to guide the preparation and development of nationally significant infrastructure projects relating to the geological disposal of higher activity radioactive waste in England;
- to provide a planning process that enables infrastructure to be developed which will provide a long-term, secure, safe and sustainable solution to the disposal of higher activity radioactive waste;
- to provide guidance to nationally significant infrastructure project developers on the relevant infrastructure, generic impacts and general siting considerations that may need to be taken into account when planning for the development of geological disposal infrastructure;
- to provide the primary basis for examination by the Examining Authority and for decisions by the Secretary of State, on development consent applications for geological disposal infrastructure; and
- to provide policy and guidance on generic impacts to support any relevant local planning authorities in preparing their local impact reports, which they will be invited to prepare under Section 60 of the Planning Act.

### What is the scope of the NPS?

2.33. The NPS, once designated, will provide the framework for decision making on development consent applications for the construction of nationally significant infrastructure related to the geological disposal of higher activity radioactive waste only in England, and beneath the seabed in waters adjacent to England up to the seaward limits of the territorial sea.

2.34. The NPS will be non-site specific and so does not include candidate sites. It is therefore analogous to the non-nuclear Energy NPSs (EN-1 to EN-5) rather than the approach taken in the Energy NPS for new nuclear infrastructure (EN-6). The process of identifying a site for geological disposal infrastructure is separate from the process of

considering development consent applications. Any application for development consent is expected to be made following a separate GDF siting process used to identify prospective GDF sites. In line with current Government policy as outlined in the 2014 White Paper, the siting process is expected to be led by the developer.

2.35. In Scotland, Wales and Northern Ireland, planning consents for all radioactive waste projects are devolved to the Scottish Government, Welsh Government and Northern Ireland Executive respectively. The Secretary of State will not decide applications in these regions and the NPS will not apply. Notwithstanding, relevant Scottish and Welsh plans and programmes and baseline information have been considered in the preparation of this AoS, given the early assumption that a GDF and related deep boreholes sited in England could potentially have effects in Scotland or Wales due to their shared borders, and geographical proximity, with England.

### What infrastructure is covered by the NPS?

2.36. The infrastructure covered by the NPS reflects the definitions for nationally significant infrastructure that are related to the geological disposal of higher activity radioactive waste set out in Section 30A of the Planning Act 2008, as follows:

- Construction of facilities in England where the main purpose of the facility is expected to be the final disposition of radioactive waste, where:
  - the part of the facility where radioactive waste is to be disposed of is expected to be constructed at a depth of at least 200 metres beneath the surface of the ground or seabed; and
  - the natural environment which surrounds the facility is expected to act, in combination with any engineered measures, to inhibit the transit of radionuclides from the part of the facility where radioactive waste is to be disposed of to the surface.
- Construction of one or more boreholes, and any associated excavation, construction or building work, in England or waters adjacent to England up to the seaward limits of the territorial sea, where:
  - the borehole is expected to be constructed to a depth of at least 150 metres beneath the surface of the ground or seabed; and
  - the main purpose of constructing the borehole is to obtain information, data or samples to determine the suitability of a site for the construction or use of a radioactive waste GDF.

2.37. Therefore, the NPS covers both types of infrastructure projects – the deep boreholes necessary to determine the suitability of sites for a GDF, and the construction of a GDF itself. Applications for development consent for these projects may also include 'associated development' within the meaning of the Planning Act. Development that does not fall within the definition of geological disposal infrastructure or associated development may require a separate application for planning permission to a local authority.

## What is the waste to be managed by a GDF?

2.38. The types of higher activity radioactive waste (and nuclear materials that could be declared as waste) to be received and disposed of in a GDF covered by the NPS are identified in the 2014 White Paper[28] as:

- high level waste (HLW) arising from the reprocessing of spent nuclear fuel at Sellafield;
- intermediate level waste (ILW) arising from existing nuclear licensed sites, and defence, medical, industrial, research and educational activities;
- the small proportion of low level waste (LLW) that is not suitable for disposal in the national Low Level Waste Repository (LLWR);
- spent fuel from existing commercial reactors (yet to be declared waste) and research reactors that is not reprocessed;
- spent fuel (yet to be declared waste) and intermediate level waste from a new build programme up to a defined amount;
- plutonium stocks - residual plutonium not re-used in new fuel manufacture (yet to be declared waste);
- uranium stocks – including that arising from enrichment and fuel fabrication activities (yet to be declared waste); and
- irradiated fuel and nuclear materials (yet to be declared waste) from the UK defence programme.

2.39. The volumes of these wastes (known as the 'inventory for disposal') have been made publicly available as part of the 'Radioactive Waste Management (RWM) Geological Disposal: The 2013 Derived Inventory'[29]. When an application is made for development consent for a GDF, there will remain some uncertainty with regard to the volumes of these wastes (e.g. the precise volume of waste from new nuclear power stations will not be known).

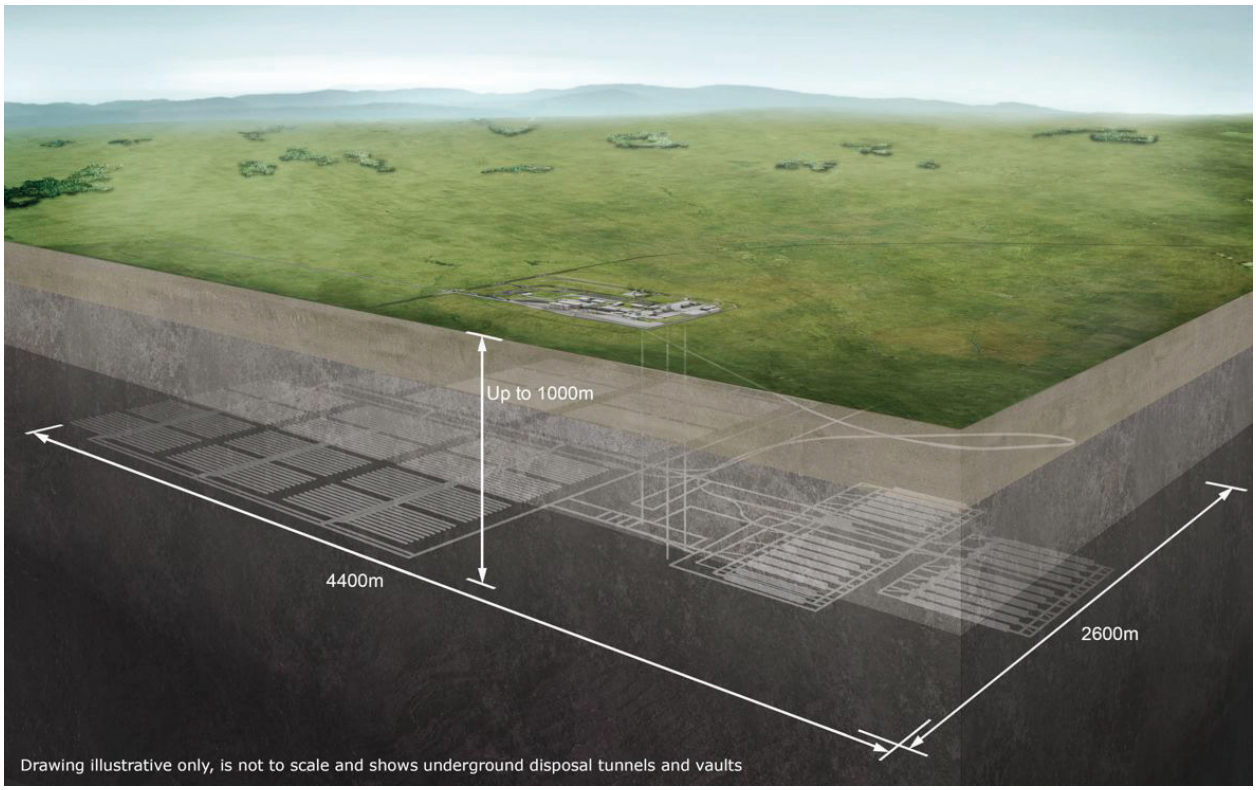
## What could a GDF look like?

2.40. **Figure 2.3** provides an illustrative diagram for a GDF. It will have both surface and underground facilities linked by access tunnels and/or shafts, depending on the layout of these facilities. The underground facilities do not need to be located directly below the surface facilities – they could be separated by a distance of several kilometres.

[28] DECC (now BEIS) (2014), 'Implementing Geological Disposal - A framework for the long-term management of higher activity radioactive waste', July 2014, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332890/GDF_White_Paper_FINAL.pdf

[29] Radioactive Waste Management 'The 2013 Derived Inventory', available online at: https://rwm.nda.gov.uk/publication/geological-disposal-2013-derived-inventory/

**Figure 2.3 Illustrative diagram of a geological disposal facility**




2.41. The surface facilities could cover an area of approximately one square kilometre, although the layout of these facilities will be tailored to the site. The primary purpose of the surface facilities will be to receive waste packages from a port or the rail and road networks, and transfer them to the underground disposal facilities.

2.42. The underground facilities are expected to comprise a system of vaults for the disposal of intermediate level waste and an array of engineered tunnels for the disposal of high level waste and spent fuel. High level waste and spent fuel require different disposal structures because they generate heat.

2.43. The precise layout and design of the facilities will depend on the inventory for disposal and the specific geological characteristics at the site in question.

2.44. Site investigations, including the drilling of boreholes, will be undertaken to improve understanding of the local geology and to identify potential sites prior to the construction of a GDF. This is known as the site characterisation phase. No radioactive waste will be emplaced for disposal during this phase.

2.45. **Figure 2.4** provides an overview of the geological disposal process from its preparation to its closure. It highlights an initial community engagement and site investigations phase of 15-20 years. The construction of the surface facilities and underground tunnels and vaults could then last for a further 20 years. It is envisaged that the facility would operate for approximately 100-150 years, although further construction of underground vaults to receive further intermediate level waste, high level waste and spent fuel would occur during this operational period. Closure of the facility would take place after this, with vaults backfilled and sealed and surface facilities removed. The site would subsequently be restored and returned to a consented land use.

**Figure 2.4 The geological disposal process**


## The draft NPS for Geological Disposal Infrastructure

2.46. The draft NPS, which is the subject of this HRA Report, comprises five chapters, as follows:

- **Chapter 1**: provides an overview of the purpose and scope of the NPS including the draft NPS objectives;
- **Chapter 2**: sets out the government policy on the management of higher activity radioactive wastes, including an outline of what geological disposal is, the waste to be managed and the strategy for implementation;
- **Chapter 3**: outlines the need for geological disposal infrastructure;
- **Chapter 4**: sets out the assessment principles against which applications relating to geological disposal infrastructure are to be decided. In considering any proposed development, the Examining Authority and the Secretary of State (as decision maker) should take into account:
  - its potential benefits, including its contribution to meeting the need for geological disposal infrastructure, job creation and any long-term or wider benefits; and
  - its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.

The chapter refers to regulatory requirements associated with planning such as the Infrastructure Planning Environmental Impact Assessment Regulations[30] and the Habitats Regulations[31]. It also outlines the permitting and consenting requirements of (amongst others) the Environmental Permitting (England and Wales) Regulations 2016, the Nuclear Installations Act 1965 and the Planning Act 2008; and

- **Chapter 5**: sets out the generic impacts to be considered by an applicant and the Examining Authority. Guidance is provided across the following topics:
  - Air Quality;
  - Noise;
  - Biodiversity and Nature Conservation (including Flora and Fauna);
  - Climatic Factors including Climate Change and Adaptation;
  - Cultural Heritage including Architectural and Archaeological Heritage;
  - Socio-economics, Population and Demographics;
  - Flood Risk and Coastal Change;
  - Human Health;
  - Landscape and Visual Impacts;
  - Land Use;
  - Traffic and Transport;
  - Waste Management; and
  - Water Quality (including Surface and Ground Water Quality and Availability).

  For each impact, guidance is provided to the applicant on the matters to be considered and presented in an Environmental Statement, which must be completed to meet the requirements of the Environmental Impact Assessment Regulations, and on decision making by the Secretary of State. Guidance is also provided on the proposed mitigation measures to be considered by the applicant.

## HRA of the NPS

### What can be assessed, and how?

2.47. The draft NPS (and the NPS to be designated) is a high-level policy document that does not identify specific potential locations for infrastructure. The principal mechanisms by which European sites could be affected will therefore be indirect, through the policies that influence the future development of a GDF. In this regard it is analogous to the non-nuclear Energy NPSs (EN-1 to EN-5). The HRA must therefore assess the likely effects and outcomes of the NPS with a particular focus on:

[30] The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2009/2263), available online at: http://www.legislation.gov.uk/uksi/2009/2263/contents/made

[31] The Conservation of Habitats and Species Regulations 2017 and the Offshore Marine Conservation (Natural Habitats &c) Regulations 2007 (as amended), available online at: https://www.legislation.gov.uk/uksi/2017/1012/pdfs/uksi_20171012_en.pdf and http://www.legislation.gov.uk/uksi/2007/1842/contents/made respectively.

- the overarching objectives of the NPS;
- the development principles; and
- the generic impacts and siting considerations, including generic mitigation measures.

2.48. The HRA of the draft NPS is necessarily a strategic assessment. Information on the likely effects of any development that may come forward following the NPS is extremely limited. Notwithstanding the absence of information on location, the uncertainties regarding the developments and possible impact pathways are numerous: for example, the specific technologies and detailed designs have not yet been developed; there may be significant changes in European site conditions; or our understanding of the ecological requirements of the 'qualifying features'[32] of a site may alter. Attempting to undertake a detailed analysis of how each site might be affected by a hypothetical development is neither feasible or, arguably, meaningful – the uncertainties over the final outcomes are too great. However, as quantifying or accurately identifying likely effects on specific sites will not be feasible, the appropriate assessment also aims to determine whether there are any policy measures that can be included within the draft NPS which will ensure that it cannot adversely affect any European sites.

2.49. Regulation 105 of the Habitats Regulations requires that the potential effects of a plan on European sites must also be considered 'in combination with other plans or projects'. Consideration of 'in combination' effects is not a separate assessment, but is integral to the screening and appropriate assessment stages and the development of avoidance/ mitigation measures. There is limited guidance available on the scope of the 'in combination' element, particularly which plans should be considered for high level strategies. However, the assessment should not necessarily be limited to plans at the same level in the planning hierarchy and there is consequently a wide range of plans that could have potential 'in combination' effects with the draft NPS.

2.50. The AoS identifies a number of policies, plans and programmes which could operate cumulatively with the draft NPS. However, due to the strategic nature of the HRA of the draft NPS, the uncertainties associated with any 'in combination' assessment are considerable, and multiply the uncertainties associated with the NPS. In particular, as the NPS is not location-specific, and does not constrain or direct developments, the NPS could (in theory) interact with any strategic plan related to England, and several relating to Scotland and Wales (due to their common borders and geographical proximity) and offshore marine areas. Furthermore, details of the precise nature, scale, timing, duration and location of any future activities associated with the NPS are wholly unknown.

2.51. Attempting to identify specific potential effects associated with developments that may arise from the NPS and other plans is therefore not practicable and such an assessment would not provide any meaningful results that would allow specific mitigation to be identified. For example, housing allocations in every local plan could have theoretical 'in combination' effects on water resources when considered with a GDF; or could affect air quality through 'in combination' effects via increases in traffic. The number and variety of these 'theoretical' interactions is obviously huge, and any assessment would be largely generic; how this would translate into policy is not clear, other than equally generic policy statements requiring that 'in combination' effects do not occur. 'In

[32] Each European site has 'qualifying features' listed in its citation (e.g. specific habitats or species; species assemblages; etc.) which are effectively the reasons for the site's protection. These are commonly referred to as the site 'interest features'.

combination' assessments of specific future developments derived from the NPS (e.g. a GDF) with existing plans and projects can only be reasonably undertaken at the project-level.

2.52. As specific 'in combination' effects are not identifiable in any meaningful way, it is therefore important to ensure that the NPS does not include any measures that would obviously constrain the mitigation options available for future development, or direct development such that conflict with other plans is inevitable, or contain policies or objectives that would allow protective measures included in other plans to be over-ridden or ignored. The use of policies that preclude developments with 'in combination' effects may be an option in this regard.

# 3. Screening

## Overview

3.1. Regulation 110 of the Habitats Regulations applies the provisions of regulations 105 to National Policy Statements, therefore the draft NPS must be subject to the 'screening' tests, which determine:

- whether the plan or policy is likely to have a significant effect on a European site or a European offshore marine site (alone or in combination with other plans or projects); and, if so;
- whether the plan is directly connected with or necessary to the management of any European site.

3.2. At the screening stage, the draft NPS should be considered 'likely' to have an effect if the competent authority (the Secretary of State) is unable (on the basis of objective information) to exclude the possibility that it could have significant effects on any European site, either alone or in combination with other plans or projects. An effect will be 'significant' if it could undermine the site's conservation objectives. The 'test of significance' is therefore a relatively low bar: 'significant effects' can generally be interpreted as any negative effects that are not negligible or inconsequential.

## European sites

3.3. In the UK there are currently:

- 653 Special Areas of Conservation (SACs), Sites of Community Importance (SCI), Special Protection Areas (SPAs), and candidate Special Areas of Conservation (cSACs)[33], 16 of which are offshore sites;
- 270 Special Protection Areas[34];
- 1 potential Special Protection Area (pSPA); and
- 153 Ramsar sites[35].

3.4. It is not generally appropriate to employ 'arbitrary' distance zones during screening, although as distance is a strong determinant of the scale and likelihood of most effects, the considered use of a suitably precautionary search area does help rationalise any assessment. For an interest feature to be affected by an infrastructure project (be it a GDF or deep investigative boreholes), an environmental change that the feature is sensitive to needs to occur, and then the feature needs to be exposed to that change.

[33] JNCC (2016) SACs in the United Kingdom. Available online at: http://jncc.defra.gov.uk/page-1458
[34] JNCC (2016) Special Protection Areas (SPAs): UK. Available online at: http://jncc.defra.gov.uk/page-1400
[35] JNCC (2015) Designated and Proposed Ramsar sites in the UK and Overseas Territories & Crown Dependencies, available online at: http://jncc.defra.gov.uk/page-1389

3.5. The principal characteristics of any geological disposal infrastructure are summarised in **Section 2** of this report. Despite the scale of the development, the 'zone of influence' of most potential construction and operational impacts (e.g. noise pollution, air pollution) will be relatively limited, probably less than 1 kilometre in most instances if sited in terrestrial environments. For example, most construction noise will naturally attenuate to background levels or less within several hundred metres of a development site boundary, even if screening effects are ignored; dusts will typically be deposited within 100 metres of a site boundary.

3.6. Based on the information available in the draft NPS, comparison with other major infrastructure projects, and analysis of the interest features of the UK European sites, it is considered unlikely that the 'zone of influence' of any geological disposal infrastructure scheme will extend a substantial distance beyond the development area boundary. Therefore, a precautionary 20 kilometres 'zone of influence' is assumed for future developments supported by the draft NPS; this is used as the basis for scoping the HRA[36]. All sites in Wales, Scotland or Northern Ireland that are over 20 kilometres from the English border (or 20 kilometres from the 12 nautical mile seaward territorial limit associated with England) are considered unlikely to be subject to significant effects as the result of the NPS or a future GDF (alone or in combination), except for:

- sites over 20 kilometres that are functionally linked to terrestrial surface or ground water catchments or resources in England;
- sites with mobile species that may make significant use of distant habitats outside a European site boundary that coincide with the zone of influence, or be affected during migrations, i.e.
  - sites on the UK mainland supporting bat species (Lesser horseshoe bat *Rhinolophus hipposideros*; Greater horseshoe bat *Rhinolophus ferrumequinum*; Barbastelle *Barbastella barbastellus*; and Bechstein's bat *Myotis bechsteinii*);
  - sites supporting marine mammals (Bottlenose dolphin *Tursiops truncates*; Harbour porpoise *Phocoena phocoena*; Grey seal *Halichoerus grypus*; Harbour seal *Phoca vitulina*);
  - sites supporting diadramous fish (e.g. Atlantic salmon *Salmo salar*; Sea lamprey *Petromyzon marinus*; River lamprey *Lampetra fluviatilis*; Allis shad *Alosa alosa*; Twaite shad *Alosa fallax*); and
  - Special Protection Areas supporting species with core ranges over 15 kilometres, based on Scottish Natural Heritage guidance[37] (Greylag goose, Pink-footed goose, Barnacle goose, Osprey).

3.7. Based on this, 634 European sites are considered unlikely to be affected by the outcomes of the draft NPS or a future GDF and are therefore screened out of the appropriate assessment. The European sites that have been identified as being potentially vulnerable and screened into the assessment are listed along with their interest features in **Appendix A**.

[36] The 20 kilometre zone of influence area is consistent with the HRA of the New Nuclear NPS (EN-6). The HRA of the New Nuclear NPS (EN-6) states "European Sites within a 20 kilometre radius were scoped into the screening process. European Sites at a greater distance, but with hydrological connectivities to European Sites within the 20 kilometre radius, were also scoped into the screening in line with statutory consultee advice".

[37] SNH (2013) 'Guidance: Assessing Connectivity with Special Protection Areas (SPAs)', available online at: http://www.snh.gov.uk/docs/A994842.pdf

## The draft NPS

3.8. The draft NPS is a high-level policy document. It is not site specific, does not identify candidate sites, and does not constrain potential locations for a GDF within England (either explicitly or implicitly) such that siting options are limited to a few discrete areas only; nor does it provide specific designs for a GDF or specific constraints on generic designs. It does, however, provide a policy framework supporting the development of any geological disposal infrastructure in England.

3.9. With regard to biodiversity, the draft NPS identifies the importance of biodiversity and nature conservation through reference to policy and regulatory requirements. It also clearly states the responsibilities on the Secretary of State and developer with regard to international sites (i.e. project compliance with the Habitats Regulations), with the Secretary of State directed to ensure that "appropriate weight is attached to designated sites of international, national and local importance, protected species and habitats and other species of principal importance for the conservation of biodiversity, and to biodiversity and geological interests within the wider environment" (paragraph 5.4.7 of the draft NPS).

3.10. The draft NPS also sets out a range of mitigation and conservation measures that should be taken into account by the developer. However, the draft NPS, as a non-site specific planning document, does not rule out the possibility (however small) of any geological disposal infrastructure having adverse effects on European sites. Any European sites within England are potentially vulnerable to the outcomes of the draft NPS, with sites in Scotland and Wales also potentially affected.

3.11. As a result, the possibility of significant effects on one or more sites cannot be excluded, and the NPS is not directly connected with or necessary to the management of any European site. **On this basis, and consistent with the stages of the HRA process, appropriate assessment is required**.

## Relevance to future projects

3.12. The HRA screening assessment for the draft NPS is undertaken at a strategic level, based on the assumptions for geological disposal infrastructure that are set out in the draft NPS. It does not remove the need for developers or competent authorities to consider the potential effects on European sites of specific future projects, or set any precedent regarding the acceptability of future proposals. This is because there may be significant changes in site conditions or the understanding of the interest feature ecology between designation of the draft NPS and the design and submission of any associated projects, particularly regarding mobile species' use of and dependence on non-designated habitats. New impact pathways, which are not present or evident at the moment, may become apparent. Therefore, the screening of each project should be completed on its own merits and the HRA of the draft NPS does not prejudice such an assessment.

# 4. Appropriate assessment

## Overview

4.1. The screening indicates that significant effects on European sites as a result of the draft NPS cannot be ruled out. The impacts of the draft NPS could operate at two levels:

- At the strategic level, where policies or criteria might:
  - positively direct or support development that is likely to have an adverse effect on a European site, or compromise the ability of developments to avoid or mitigate adverse effects; or
  - not exclude the possibility of adverse effects occurring.
- At the project-level, where schemes supported by the draft NPS could adversely affect European sites during their development or operation, decommissioning or post-closure period.

4.2. The appropriate assessment has therefore comprised:

- a review of the possible pathways by which European sites might be affected by projects that are compliant with or supported by the draft NPS; and, subsequently
- a review of the content and scope of the draft NPS to identify opportunities for policy requirements that will prevent or reduce any adverse effects that may result from geological disposal infrastructure developments.

## Effects associated with supported development

### Aspects and impacts

4.3. **Table 4.1** provides a brief summary of the principal pathways by which European sites or interest features could be affected by development supported by the NPS. The list is not comprehensive, and the precise effects of a development on a particular site or feature will vary depending on the scale and type of activity, and the sensitivities and exposure (together, the 'vulnerability') of the site interest features to the environmental changes associated with those activities. Interest features that are potentially sensitive to the various aspects are grouped into broad categories with similar sensitivities (for example, breeding birds; wintering birds; marine mammals; water-dependent terrestrial ecosystems; etc.) to rationalise the table (see also **Appendix B**).

4.4. **Table 4.1** also provides an indication of the relative risk of 'unmitigatable' adverse effects arising as a result of site investigation[38] (SI) or construction, operation and decommissioning of the GDF, on a 'high'(H), 'moderate'(M) or 'low' (L) qualitative risk

[38] Site investigation works include deep investigative boreholes.

scale[39]. As a general rule, if significant effects on a European site cannot be avoided through appropriate siting then the larger scale of the GDF works (relative to site investigation works) will result in a higher risk of adverse effects that cannot be mitigated. This indicates the importance of appropriate siting as an avoidance measure. It should be noted that it is assumed, in accordance with the NPS, that all normal operating permits and permissions will be adhered to and so risks such as 'radioactive discharge' are not specifically considered. The purpose of a GDF is to isolate radioactive waste from reaching the surface environment. The regulators will only accept the safety case for a GDF if it demonstrates that the facility meets their required high standards for protection of people and the environment. It is therefore reasonable to rely on the robustness of the regulatory regime to ensure effective operation of the facility. As such, the risk of incident outside normal operating conditions is considered unlikely and therefore the assessment considers the conditions in respect of the ordinary operation of a site.

[39] The 'high', 'moderate' or 'low' risk classification is a qualitative assessment, based on the information available on the schemes likely to come forward under the NPS; the interest features of the European sites and their typical sensitivities; and previous project-level HRAs of similar schemes (either similar in type or scale).

**Table 4.1 Potential pathways and effects associated with site investigation (SI) or GDF development, and risks of unavoidable adverse effects due to site investigation works or GDF construction (C), operation (O) or decommissioning (D).**

| Pathway | Possible Mechanisms and Potential Effects | Sensitive Feature Groups | Risk of Unavoidable Adverse Effects | | | |
|---|---|---|---|---|---|---|
| | | | SI | GDF C | GDF O | GDF D |
| **Direct physical changes to the environment** | Most works associated with the site investigation or the construction of the GDF will have direct physical effects on habitats, which may have direct or secondary effects on European sites, for example:<br>• Works associated with site investigation or the GDF may result in the direct physical loss of European sites or habitat within a European site (in most instances this would constitute an adverse effect). | All habitats and species. | M | H | L | L |
| | • Works outside a European site boundary may affect physical processes or features that help support or maintain the site habitats, through for example:<br>  • impacts on geomorphological processes; and<br>  • removal of features or habitats that buffer sites against other effects (e.g. eutrophication - the enrichment of an ecosystem with chemical nutrients, typically compounds containing nitrogen and phosphorus which can lead to algal blooms, decomposition or organic matter and deoxygenation of waters). | All habitats and species, but particularly geomorphologically dynamic habitats (e.g. wetland and riparian habitats; coastal habitats; estuarine and intertidal habitats and marine habitats). | L | H | L | L |
| | • Works outside a European site boundary may directly affect habitats or features that are critical to the maintenance of species populations (see also disturbance effects, below), and can occur several kilometres outside a European site. For example:<br>  • removal of foraging habitats, roost sites or breeding sites;<br>  • removal of habitats that facilitate or allow daily or seasonal species movements; and<br>  • removal of habitats that support meta-populations[40] of species in association with European sites.<br>• Habitat loss and fragmentation may displace species and increase competition for | Wetland/estuarine birds; other birds; terrestrial mammals; marine mammals; diadramous[41] fish; some non-migratory wetland and riparian plants, fish and invertebrates. | L | H | L | L |

[40] Meta-populations are 'populations of populations' – effectively groups of distinct and spatially separated populations of the same species (or unoccupied supporting habitats) that nevertheless have some interaction, typically through migration of individuals between populations, or colonisation of the unoccupied supporting habitat. The stability of meta-populations therefore requires maintenance of connectivity between existing populations and retention of suitable but unoccupied habitats.
[41] Diadromous fish are those that spend part of their lifecycle in freshwater environments, and part in marine environments.

| Pathway | Possible Mechanisms and Potential Effects | Sensitive Feature Groups | Risk of Unavoidable Adverse Effects | | | |
|---|---|---|---|---|---|---|
| | resources in other European sites. | | | | | |
| **Disturbance / displacement (noise, vibration, visual)** | Aspects associated with construction or operation may not necessarily result in physical loss of habitats but can nevertheless disturb or displace sensitive interest features (so altering their natural behaviour and potentially affecting their ability to survive, reproduce etc.). These effects can occur some distance outside a European site. For example:<br>• noise from plant or personnel;<br>• vibration from plant, particularly in the water environment;<br>• visual disturbance of species due to plant or personnel movements; and<br>• site lighting displacing species from preferred commuting routes or foraging areas. | Wetland/estuarine birds; Other birds; terrestrial mammals; marine mammals and diadramous fish. | M | H | L | L |
| **Changes in water quality** | Site investigation or GDF development may affect water quality through discharges to watercourses during construction or operation. These could have a range of effects depending on the nature of the discharge and the sensitivity of the features exposed to it, but typically it would involve chronic effects on habitats or species, for example:<br>• eutrophication of waterbodies leading to changes in habitats;<br>• local physio-chemical effects due to differences in the discharge and receiving waters (e.g. discharge of freshwater into brackish or saline environments; discharges of saline dewatering into freshwater environments); and<br>• barrier effects for migratory species due to poor water quality. | Wetland and riparian habitats; estuarine and intertidal habitats; marine habitats; diadramous fish; non-migratory wetland and riparian plants, fish and invertebrates; marine mammals; wetland/estuarine birds and other birds. | L | M | L | L |
| **Changes in surface or groundwater hydrology** | Many interest features are dependent to some extent on ground and surface water hydrological characteristics. These might include:<br>• groundwater dependent terrestrial ecosystems such as fens;<br>• rivers and associated species, where flow timing and duration as well as volume are significant;<br>• inundation communities and habitats dependent on surface water flooding, such as floodplain meadows or wet woodlands;<br>• communities dependent on locally impeded drainage (e.g. mires); and<br>• species dependent on freshwater flows (obviously fish and aquatic species, but potentially some coastal birds).<br>The effects of development will vary according to the scale and type of impact and the sensitivities of the interest features. Site investigation works are likely to be lower | Wetland and riparian habitats; upland habitats; coastal habitats; estuarine and intertidal habitats; marine habitats; diadramous fish; non-migratory wetland and riparian plants, fish and invertebrates and wetland/estuarine birds. | L | H | H | L |

| Pathway | Possible Mechanisms and Potential Effects | Sensitive Feature Groups | Risk of Unavoidable Adverse Effects | | | |
|---|---|---|---|---|---|---|
| | impact. The GDF could:<br>• require ground-water or surface-water abstraction for construction or operation, which may affect groundwater dependent terrestrial ecosystems or local watercourses;<br>• interrupt surface, subsurface or groundwater drainage and flow paths and hence alter flows or water tables supporting dependent terrestrial, aquatic or coastal ecosystems; and<br>• require dewatering operations and hence discharges to watercourses that may alter hydrological, physio-chemical or morphological characteristics. | | | | | |
| **Toxic and non-toxic contamination** | Toxic and non-toxic contamination is generally a risk to be managed during construction and operation rather than a planned or authorised outcome of a development. The mechanisms and effects will vary depending on the nature of the contamination and the sensitivity of the features exposed to it, but might include:<br>• contamination of soils and groundwater by construction-derived pollutants such as fuel or lubricants, affecting dependent habitats and species;<br>• sediment-heavy run-off affecting local watercourses and features relied on by certain species (e.g. gravels used for spawning by fish); and<br>• smothering of vegetation and habitats through dust deposition. | All sites and habitats potentially vulnerable, but particularly wetland and riparian habitats; estuarine and intertidal habitats; diadramous fish; non-migratory wetland and riparian plants, fish and invertebrates and wetland/estuarine birds. | L | L | L | L |
| **Air quality** | Site investigation, or the construction, operation or decommissioning of the GDF may affect local air quality as a result of construction plant or transport emissions. These will generally be short-range (the 2015 Department of Transport's Transport Analysis Guidance (TAG UNIT A3 Environmental Impact Appraisal) states that "beyond 200 metres, the contribution of vehicle emissions from the roadside to local pollution levels is not significant"). The ones that are most relevant to habitats and species (particularly plant species) are the primary pollutants sulphur dioxide ($SO_2$, typically from combustion of coal and heavy fuel oils) and nitrogen oxides (NOx, mainly from vehicles). These pollutants affect habitats and species mainly through acidification and eutrophication. For example:<br>• Acidification increases the acidity of soils, which can directly affect some organisms but which also leads to leaching of some important base chemicals (e.g. calcium), and mobilisation and uptake by plants of toxins (especially metals such as aluminium); and<br>• Air pollution contributes to eutrophication by increasing the amounts of available nitrogen. This is a particular problem in low-nutrient habitats, where available nitrogen is frequently the limiting factor on plant growth, and results in slow-growing low-nutrient specialists being out-competed by faster growing species that can take | Low nutrient systems including some wetland and riparian habitats; dry woodlands and grasslands; upland habitats and coastal habitats. | L | L | L | L |

| Pathway | Possible Mechanisms and Potential Effects | Sensitive Feature Groups | Risk of Unavoidable Adverse Effects | | | |
|---|---|---|---|---|---|---|
| | advantage of the increased amounts of available nitrogen.<br><br>Additional effects could be related to particulate deposition, given the excavation and removal of significant quantities of waste rock in the construction of the GDF.<br><br>The effects of air pollution will depend on the habitats that are exposed to it and their sensitivities – for example, most acid mire habitats (e.g. Blanket Bog) are not particularly vulnerable to acidification but are vulnerable to increased nutrient inputs. It is possible, depending on scheme location, that critical load thresholds for some pollutants may be exceeded during the construction phase of the GDF. | | | | | |
| **Constraining future habitat changes** | A development may have no direct or indirect impacts on the sites, habitats or species themselves, but could increase their vulnerability to other environmental changes or 'in combination' effects in the short and long term. The most common example of this is coastal squeeze, where coastal habitats are prevented or restricted from migrating or changing due to fixed landward boundaries (sea walls, development, etc.), although any otherwise dynamic habitat (e.g. meandering rivers) could be similarly constrained. Due to the nature of the GDF it would always constitute a 'hard boundary' that would not be expected to change with geomorphological processes, although the surface site may be decommissioned during site closure. | Particularly: wetland and riparian habitats; coastal habitats; estuarine and intertidal habitats; marine habitats; non-migratory wetland and riparian plants, fish and invertebrates and wetland/estuarine birds. | L | H | H | M |

## Project-level mitigation opportunities

4.5. Specific mitigation measures cannot be identified at the strategic level and any list of 'possible' measures would be partial; in reality, there will be a wide range of potential mitigation approaches that could be employed for most effects. However, the importance of avoidance (e.g. through siting of works, or timing etc.) should not be understated: avoiding potential effects should always be the first option. The following notes on mitigation for the project stages reflect this principle.

### Site investigation

4.6. Adverse effects during the site investigation stage would mainly arise as a result of the borehole drilling programme and associated activities. Although some investigation sites and boreholes may remain in use or monitored for several years, the temporary nature of most works means that, in combination with sensitive selection of drilling sites, there is a high potential for effective mitigation and/or site restoration. There is potential for very short-term minor disturbance to wildlife during aerial and geophysical surveys, although this is unlikely to cause any long-term or significant adverse effect. Advance desk-based studies and surveys should enable the avoidance of effects on the most sensitive locations. Mitigation should therefore involve:

- full consideration of effects on biodiversity, flora and fauna and ecosystem services in the GDF siting process, in line with Environmental Impact Assessment;
- design and implementation of all geophysical and borehole surveys within the context of an environmental management plan;
- identification of any designated sites, sensitive habitats and records of protected species ahead of any surveys and avoid sensitive locations and times of the year as far as possible; and
- reinstate working sites to ensure that habitats are returned to their previous condition or better, with appropriate aftercare. If reinstatement cannot be achieved, provide compensatory habitat creation measures.

### Construction

4.7. The effects of constructing a GDF could be direct (e.g. loss to hard engineering or access roads) or indirect (e.g. changes in character due to alterations in drainage patterns, deposition of pollutants or the effects arising from disturbance). Surface disturbance could vary for different rock types, and this may reduce any potential biodiversity effects. The longer term nature of the occupation of the site means that mitigation work would focus on habitat replacement or enhancement on land surrounding the surface-based facilities of a GDF rather than habitat restoration in its original location. Mitigation could therefore involve:

- a new construction phase environmental management plan(s), including specific attention to matters such as transport access arrangements and opportunities for

habitat enhancement on- and off-site, potentially as part of Green Infrastructure[42] and biodiversity off-setting measures as agreed with appropriate regulators;

- detailed design and layout of a GDF to seek to retain or minimise loss of any valuable biodiversity habitats and species and retain any linkages (corridors) between areas that could become isolated, as well as proposals for restoration following completion of construction works; and
- if retention or other adequate mitigation cannot be achieved, then compensatory replacement habitat may be required off-site, potentially in tandem with landscape measures.

### Operation, decommissioning and closure

4.8. Adverse effects during operation would be less likely than during construction (since good design and/or mitigation measures should ensure that ongoing adverse effects do not occur), but pathways do theoretically exist, for example disturbance from operational noise and light pollution, the risk of accidental pollution incidents and water management. These would normally be controlled through initial site design and through environmental management plans. It is assumed, in accordance with the NPS, that all normal operating permits and permissions will be adhered to and so risks such as 'radioactive discharge' are not specifically considered. The purpose of a GDF is to isolate radioactive waste from reaching the surface environment. The regulators will only accept the safety case for a GDF if it demonstrates that the facility meets their required high standards for protection of people and the environment. It is therefore reasonable to rely on the robustness of the regulatory regime to ensure effective operation of the facility. As such, the risk of incident outside normal operating conditions is considered unlikely and therefore the assessment considers the conditions in respect of the ordinary operation of a site.

4.9. Ongoing maintenance of biodiversity mitigation/enhancement features and monitoring of their success would be essential, however. The initial stages of the closure process have the potential to cause adverse effects similar to construction and operation, although generally on a smaller scale. The final stage of closure is the restoration of the site, which is assumed to be as close as possible to its pre-GDF state. Given that any landscape, ecological planting or habitat creation works could largely be retained and that there would be many decades to mature and gain value; there is the potential to recreate an environment of greater value than the one originally lost, depending on the nature of the final end-state.

## Assessment of draft NPS components

### Assessment of adverse effects

4.10. The content of the draft NPS is largely neutral with regard to European sites. It repeats or reflects the current legislative or policy protections for European sites, and does not include measures or policies that could (directly or indirectly) increase the likelihood of European sites being affected by future development, for example:

[42] Green Infrastructure refers to a strategically planned and managed network of green spaces and other environmental features vital to the sustainability of any urban area.

- by including any elements that direct development, such that particular European sites would be at greater risk of adverse effects; or
- by constraining future developments (through siting criteria) such that opportunities to avoid or minimise adverse effects at the project level are removed or compromised.

4.11. Adverse effects on European sites are not therefore an inevitable or apparently unavoidable consequence of the NPS policies or its implementation. However, the draft NPS does not exclude the possibility of adverse effects (for example, by including provisions whereby projects with residual adverse effects are refused) as Council Directive 92/43/EEC (the 'Habitats Directive') allows for plans or projects to proceed under the strict tests under Article 6. Therefore, projects that are supported by or compliant with the NPS may still have adverse effects. The appropriate assessment must therefore conclude that adverse effects on the integrity of one or more European sites as a result of the NPS cannot be ruled out.

### 'In combination' effects

4.12. Regulation 105 requires that the potential effects of a plan on European sites must also be considered 'in combination with other plans or projects'. Consideration of 'in combination' effects is integral to the screening and appropriate assessment stages and the development of avoidance/mitigation measures. There is limited guidance available on the scope of the 'in combination' element, particularly which plans should be considered for high level strategies. The AoS identifies a number of policies, plans and programmes which could operate cumulatively with the NPS. Due to the strategic nature of this assessment, and the uncertainties that remain, it is not practicable or meaningful to interrogate the plans in detail, to attempt to identify specific 'in combination' effects that may occur if a development were sited in a particular area (for example, comparing the NPS against every Catchment Flood Management Plan to determine whether there are policy conflicts that would increase the likelihood of unavoidable adverse effects). Specific consideration of 'in combination' effects would be required as developments are brought forward through the NPS; however, the draft NPS does not include any measures that would obviously constrain the mitigation options available for future development, or direct development such that conflict with other plans is inevitable, or contain policies or objectives that would allow protective measures included in other plans to be ignored.

### Recommendations

4.13. The following paragraphs provide some recommendations for additions to the draft NPS text which may strengthen its policy framework for European sites, or which clarify HRA procedures. These will not, however, exclude the possibility of adverse effects.

#### NPS Section 1

4.14. Sections 1.4 (Consideration of deep boreholes investigation) and 1.5 (Consideration of geological disposal facilities) should ideally make reference to the evidential requirements of HRA as well as the Environmental Statement, including the use of Evidence Plans for nationally significant infrastructure projects. So, for example:

- paragraph 1.4.5 could be modified to read "…The applicant should be able to identify the approximate location of all the deep boreholes in that application to such

a degree to enable the applicant to provide a specific and relevant Environmental Statement, and (if necessary) Habitats Regulations Assessment"; and

- paragraph 1.4.6 could be modified to read "Applicants should seek advice from the statutory and other relevant consultees on their expectations for the nature and scope of information to be presented in an Environmental Statement for the proposed boreholes locations. The use of Evidence Plans for nationally significant infrastructure projects should be considered where Natura 2000 sites may be affected".

### NPS Section 2

4.15. No comments.

### NPS Section 3

4.16. No comments.

### NPS Section 4

4.17. Parts of Section 4 set out the general principles underpinning the assessment of any schemes, including the role and position of the NPS. In particular paragraph 4.1.6 notes that "In the event of a conflict between [the NPS and National Planning Policy Framework] or any other documents and this NPS, the NPS prevails for the purposes of the Secretary of State's decision-making".

4.18. Changes to this are not necessarily required, but the statement does therefore require the policies and protections set out in Section 5 to be clear regarding the policy importance of European sites (see paragraph 4.22 below).

4.19. With regard to the remainder of Section 4:

- at paragraph 4.2.11 it is suggested that the independence of Environmental Impact Assessment and HRA is made clear, for example: "References to an Environmental Statement in this NPS should be taken as including a statement which provides this information, even if the proposed development is not an Environmental Impact Assessment development. Note that other detailed environmental assessments, including HRA, may be required regardless of the planning status of the development"; and
- at paragraph 4.5.7 it is suggested that 'habitats and ecosystems' replace 'vegetation'.

### NPS Section 5

4.20. Section 5 is the main section for policy controls and it is important that the text here provides sufficient weight to the protection of European sites and their significance in future determinations.

4.21. With regard to paragraph 5.4.3, reference should also be made to the evidential requirements of HRA, for example:

> "The applicant should ensure that the Environmental Statement clearly sets out any likely significant impacts on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England). The Environmental Statement must also consider the full range of potential impacts

on ecosystems including habitats, protected species or species identified as being of principal importance to biodiversity and nature conservation. The applicant will be required to obtain any information that the Secretary of State, taking advice from the relevant Statutory Nature Conservation Bodies (SNCBs), considers necessary for assessing the project against the provisions of the Habitats Regulations. The applicant may wish to refer to the Appraisal of Sustainability and Habitats Regulations Assessment reports that accompany this NPS."

4.22. Given the principles set out at paragraph 4.1.7 (the primacy of the NPS), paragraph 5.4.8 should be explicit that the sites afforded the same protection as European sites by National Planning Policy Framework (NPPF) paragraph 118 are also treated as such by the NPS (rather than the more equivocal "The National Planning Policy Framework states that the following wildlife sites should have the same protection as European sites"). Deletion of "The National Planning Policy Framework states that" would address this.

4.23. The section on 'International Sites' should be enhanced to emphasise the importance of the HRA in the design and decision-making. The following additions (or similar) after paragraph 5.4.9 would provide some additional clarity in this regard:

- "The developer will obtain any information that the Secretary of State requires to assess the project against the provisions of the Habitats Regulations, and it is recommended that the Evidence Plan approach for nationally significant infrastructure projects be pursued where significant effects are possible. The developer will be required to demonstrate that it has fully consulted the relevant Statutory Nature Conservation Bodies (SNCBs) pre-application and had regard to comments received. Any assessments must provide a robust, objective, scientific basis for determining whether the integrity of a site is likely to be affected and be proportional to the type, complexity, scale and risk of effects.
- If adverse effects on integrity cannot be discounted, the Secretary of State will examine alternative solutions for delivery of the proposed development that will have no or lesser effects on the integrity of the European site(s) affected. Alternative solutions may include different locations as well as different approaches to delivering the development, and the 'no development' option. Developments affecting European sites will not be supported unless it can be clearly demonstrated that the mitigation hierarchy has been employed throughout the design process.
- If no alternative solutions are available then the Secretary of State may permit the scheme for Imperative Reasons of Overriding Public Interest, provided that any compensatory measures necessary to ensure the overall coherence of Natura 2000 are identified and secured. Compensatory measures must be:
  - appropriate to the interest features affected and biogeographical area, and be capable of protecting the overall coherence of the Natura 2000 network;
  - based on robust scientific evidence, technically and practically feasible, clearly defined and measureable, and likely to be effective; and
  - fully secured before consent is given (i.e. all the necessary legal, technical, financial and monitoring arrangements must be in place) and ideally operational and effective before the adverse effect occurs."

4.24. Section 5.7 (Socio-economics, Population and Demographics) touches on some of the issues that may arise through secondary development associated with the GDF (e.g. new housing for construction workers which is related to the nationally significant infrastructure project's development but not part of the development consent application). Obviously, the secondary development could have significant effects on European sites in the area, alone or in combination, for example by increasing demands on waste water infrastructure. Whilst these will be addressed by separate permitting regimes, it is suggested that the potential for effects through secondary development be recognised so that it can be reasonably factored into any siting process. This could be included in Section 5.7, or elsewhere. In reality, most effects due to secondary development are likely to be avoidable, but for example:

- "5.7.7 The changing influx of workers during construction, operation (construction will continue through most of the operation phase of the geological disposal facility) and eventual closure/sealing phases of the geological disposal infrastructure may alter the demand for services and facilities in the areas surrounding the proposed development. This could change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). This in turn could affect local environmental receptors (such as sensitive species or parts of the local community), and the applicant should demonstrate how this has been taken into account in the design and siting process. There could also be effects on social cohesion depending on how populations and service provision change as a result of the development."

4.25. Section 5.8 (Flood risk and Coastal Change) should ideally include references to future environmental changes, and the need to ensure that development does not significantly compromise the opportunities for habitats and species to adapt, for example:

- "5.8.17 The applicant should be particularly careful to identify any effects of physical changes on the integrity and special features of Marine Conservation Zones, candidate marine Special Areas of Conservation, coastal Special Areas of Conservation and candidate coastal Special Areas of Conservation, coastal Special Protection Areas and potential coastal Special Protection Areas, Ramsar sites, Sites of Community Importance (SCIs) and potential Sites of Community Importance and Sites of Special Scientific Interest. The applicant should also demonstrate that the development will not significantly affect the ability of these designated sites and their interest features to adapt to a changing climate, through (for example) mechanisms such as coastal squeeze."

## Conclusion

4.26. The appropriate assessment has concluded that any European site in England could, in theory, be potentially vulnerable to adverse effects as a result of the geological disposal infrastructure anticipated by the draft NPS, as the possibility of adverse effects is not excluded. Given the possibility of any geological disposal infrastructure being sited close to the border with Wales or Scotland, it is also noted that there are a number of European sites in Scotland and Wales that may also be vulnerable to the potential effects of any geological disposal infrastructure. Mitigation measures that would exclude the possibility of specific adverse effects are not available at the strategic level that the NPS operates at, and policy statements to that effect would exceed the provisions of the

Habitats Regulations. **Some amendments to the draft NPS are recommended to emphasise the significance of European sites and the protection they receive; and to ensure that avoidance and mitigation are prioritised when designing developments; however, the residual possibility of geological disposal infrastructure having an adverse effect on a European site remains**.

# 5. Assessment of alternatives

## Overview

### Legislative requirements

5.1. Regulation 107(1) of the Habitats Regulations states that "If the plan-making authority are satisfied that, there being no alternative solutions [our emphasis], the land use plan must be given effect for imperative reasons of overriding public interest…they may give effect to the land use plan notwithstanding a negative assessment of the implications for the European site or the European offshore marine site…". The purpose of the alternative solutions consideration is to determine whether there are any other feasible ways to deliver the overall objective of the plan or project which will be less damaging to the integrity of the European site(s) affected. The plan or project can only proceed to be considered in relation to IROPI if there are no alternative solutions.

5.2. An alternative solution must be financially, technically and legally feasible; and have a lesser effect on the integrity of the European site(s) affected by the proposals.

### Scope of assessment

#### Alternatives to geological disposal

5.3. The assessment of alternative solutions does not consider alternatives to geological disposal. CoRWM[43] examined a wide range of options for the long-term management of the UK's higher activity radioactive waste including alternative methods of disposal, in a process which involved extensive consultation with the public and expert groups. CoRWM issued recommendations in July 2006 that geological disposal, coupled with safe and secure interim storage, was the best available approach for the long-term management of the UK's legacy of higher activity radioactive wastes[44]. In October 2006, the UK Government and the devolved administrations published a response broadly accepting these recommendations[45]. After public consultation, two subsequent White Papers published in 2008 confirmed the Government's commitment to geological disposal for legacy waste[46] and set out the Government's position on the use of geological disposal to dispose of higher activity waste generated as a result of new nuclear power stations[47]. In June 2013, CoRWM issued a statement reiterating its

[43] The Committee on Radioactive Waste Management (CoRWM) provides independent scrutiny and advice to the UK governments on the long-term management of higher activity radioactive wastes. CoRWM is an advisory non-departmental public body, sponsored by the Department for Business, Energy & Industrial Strategy.
[44] CoRWM (2006) 'Managing our Radioactive Waste Safely – CoRWM's Recommendations to Government', July 2006, available online at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294118/700_-_CoRWM_July_2006_Recommendations_to_Government_pdf.pdf
[45] Defra, Scottish Executive, the National Assembly for Wales and DoE (NI) (2006) 'Response to the Report and Recommendations from the Committee on Radioactive Waste Management (CoRWM)', available online at:
http://130.88.20.21/uknuclear/pdfs/corwm-govresponse.pdf
[46] Defra (2008) 'Managing radioactive waste safely: a framework for implementing geological disposal', available online at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/68927/7386.pdf
[47] Department of Business, Energy and Regulatory Reform (DBERR) (now BEIS) (2008) Nuclear white paper 2008: 'Meeting the energy challenge', page 99, available online at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228944/7296.pdf

commitment to geological disposal[48], stating that "The aim should be to progress to disposal as soon as practicable, consistent with developing and maintaining public and stakeholder confidence". Since then, the UK Government has been committed to the policy of geological disposal, most recently reflected in the 2014 White Paper.

5.4. The primary objective of the NPS is the: "implementation of government policy on geological disposal for higher activity radioactive waste and to set out the need for such infrastructure" (paragraph 1.10.1). Any alternative policy on the long-term management of radioactive waste that does not involve geological disposal (i.e. a 'no GDF policy') cannot therefore fulfil the primary objective of the NPS. In addition, a 'no GDF policy' could not satisfy the need for a permanent disposal solution for higher activity waste from a technical, ethical or legal perspective. Council Directive 2011/70/Euratom broadly accepts that at the technical level, at this time, deep geological disposal represents the safest and most sustainable option as the end point of the management of high-level waste and spent fuel considered as waste[49]. The International Atomic Energy Agency (IAEA) safety standards also require (among other things) that governments "establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities shall be clearly allocated for disposal facilities for radioactive waste to be sited, designed, constructed, operated and closed"[50].

5.5. Any assessment of alternatives as part of the HRA process will not therefore revisit alternatives to geological disposal itself since this does not fulfil the policy objective.

5.6. This is consistent with the requirements of Regulation 107, which refers to 'alternative solutions' rather than 'alternatives'. This distinction is intended to focus the assessment on alternative ways of meeting the objective of the plan (in this case, implementation of government policy on geological disposal for higher activity radioactive waste) rather than alternatives to the objective. Defra (2012) guidance provides some useful examples in this regard; in particular, "In considering alternative solutions to an offshore wind renewable energy development the competent authority would normally only need consider alternative offshore wind renewable energy developments. Alternative forms of energy generation (e.g. building a nuclear power station instead) are not alternative solutions to this project as they are beyond the scope of its objective". Therefore, the assessment of alternatives does not consider alternatives to geological disposal, only alternative ways in which a NPS (or similar) could be drafted or delivered which would be less damaging to the integrity of the European site(s) affected whilst still fulfilling the policy objective.

5.7. Having said that, in addition to accepting CoRWM's recommendations on geological disposal as the best approach for the long-term management of the UK's legacy higher-activity waste, the Government also accepted:

- a commitment to an intensified programme of research and development into the long-term safety of geological disposal; and

[48] CoRWM (2013) 'CoRWM Statement on Geological Disposal', CoRWM doc. 3122 Final (13 June 2013), available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/225113/CoRWM_statement_on_geological_disposal.pdf

[49] Council Directive 2011/70/Euratom, recital 23, July 2011, available online at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011L0070

[50] IAEA (2011) 'IAEA Safety Standards - Disposal of Radioactive Waste: Specific Safety Requirements No.SSR-5 (Waste Requirement 1: Government responsibilities)', available online at: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf

- that developments in alternative waste management options should be actively pursued through monitoring of, and participation in, national or international research and development programmes.

5.8. In line with this, the Nuclear Decommissioning Authority (NDA) and Radioactive Waste Management Limited (RWM) continue to review other long-term management options. At the moment, no credible alternatives have emerged that would accommodate all of the categories of waste in the inventory for disposal. In any realistic future scenario, some form of GDF will remain necessary.

### Alternatives to the NPS

5.9. The potential alternatives to the NPS considered during its development are set out in detail in Section 2 of the AoS. In summary, three potential alternatives were identified:

- no NPS;
- an NPS that is generic but applies exclusionary criteria (such criteria may be included on the grounds of landscape, cultural and natural heritage and nature conservation for example); and
- a location-specific NPS that identifies candidate sites for the GDF.

5.10. These alternatives are assessed in the following sections. It should be noted that the assessment of alternatives for NPS purposes does not replace the need for the assessment of alternatives for HRA purposes at the project level.

## Assessment of alternatives

#### No NPS

5.11. The 2014 White Paper sets out Government's intention to designate a NPS for GDF infrastructure. Although it is the view of Government that an NPS would facilitate the successful and timely delivery of a GDF, it is possible that the objective (geological disposal) could be achieved without an NPS. In this case, existing planning policy and legislation would be relied on when testing the acceptability of any proposals for a GDF or associated infrastructure that come forward; with regard to European sites, the primary national policy against which proposals would be assessed is the National Planning Policy Framework. The NPS reflects the requirements of the National Planning Policy Framework and does not provide a lower level of protection for European sites; therefore, the 'no NPS' alternative solution would not perform better than the NPS, would not be less likely to result in significant effects, or be less damaging to the integrity of any European site(s) that may ultimately be affected.

#### Use of exclusionary criteria or policies

5.12. Many plans and policy documents use exclusionary/safeguarding criteria or policies that restrict development to, or prevent it occurring in, certain areas (typically referred to as exclusionary or inclusionary criteria respectively). These exclusionary criteria or policies are therefore protective measures included in the plan to ensure certain receptors are not affected. A wide range of specific criteria could be employed in the NPS to control the location of any geological disposal infrastructure, although these can largely be categorised as either fundamental technical/safety criteria (for example, providing

direction based on geological suitability), or policy criteria (e.g. providing direction for socio-economic reasons; environmental reasons; etc.).

5.13. Exclusionary criteria (depending on their wording) would not necessarily alter the likelihood of European sites being significantly affected, or lessen the severity of any adverse effects. Excluding some specified locations might (indirectly) exclude the possibility of adverse effects on European sites in that area, but European sites outside any excluded area would remain at risk; this would not then alter the assessment of the HRA (that the possibility of adverse effects cannot be excluded). The Habitats Regulations do not allow for the balancing of 'lesser' effects on one site versus another.

5.14. The exception to this would be a policy or framework that explicitly safeguards European sites and seeks to prevent adverse effects occurring as a result of future geological disposal infrastructure development. Although it is assumed that the general risk of adverse effects could be reduced by excluding works from within a European site, it would not necessarily exclude the possibility of adverse effects occurring. For example, adverse effects could arise if the development were sited adjacent to, or close to, the boundary of the European site, or if the interest features of the European site included mobile species (such as bats or migratory birds) who used extended areas outside the designated site for foraging or breeding. In consequence, any safeguarding policy would need to reference likely effects on a site rather than just its geographical extent. Safeguarding in the NPS might therefore be achieved through:

- an overarching policy excluding development that would have adverse effects on any European site (this is sometimes employed in plans using caveats such as "development proposals will only be in accordance with this plan and will only be permitted if there are no adverse effects on the integrity of …" etc.);
- the identification of generic but precautionary exclusion areas, based on the typical sensitivities of the interest features of every site that is potentially vulnerable (e.g. "no development will be permitted within 20 kilometres of a Special Area of Conservation designated for its bat populations, or associated Sites of Special Scientific Interest …"); or
- the identification of bespoke site-specific exclusion areas, based on specific analysis of every site that is potentially vulnerable (e.g. "no development will occur within 500 metres of [x] Special Area of Conservation…").

5.15. Taking each of these three areas in turn.

5.16. Firstly, with regard to the use of an overarching policy excluding development that would have adverse effects on any European site, this is not generally appropriate for policy documents where a clear effect can be identified, due to the need for bespoke measures and to avoid conflict between different aspects of the plan. For the NPS, it is not possible to identify specific effects or the likelihood of them occurring: simply, the possibility of adverse effects cannot be excluded. An overarching exclusionary policy (e.g. "development that has an adverse effect will not be permitted…") might therefore be an acceptable approach (from an HRA perspective) for ensuring that adverse effects do not occur as a result of the NPS.

5.17. This approach would, however, exceed what would be required by the Habitats Regulations and the Habitats Directive at project level, as they allow developments to take place where there are no alternative solutions and IROPI apply. Government policy can sometimes set more stringent standards than are strictly required by legislation (for example, Ramsar sites are treated as European sites as a matter of government policy,

and not due to any legislative provision). However, in the context of the draft NPS this approach would mean limiting the areas in which geological disposal infrastructure could be developed before all the relevant information is available. This could reduce the potential scope for the provision of new infrastructure in a suitable and sustainable location. In consequence, it would not fulfil the policy objective, in that rather than facilitating the timely and successful delivery of a GDF it would risk compromising the Government's ability to deliver a GDF in a geologically suitable environment.

5.18. Secondly, a 'generic' exclusion policy based on site interest features would have similar issues, and would probably be more precautionary in its scope. It would be possible to qualify any exclusion (for example, "no development will be permitted within 20 kilometres of a Special Area of Conservation designated for its bat populations, unless project-level environmental studies or HRA indicate that the exclusion is not required or not appropriate, or that alternative or additional mitigation measures are more appropriate/necessary", or similar) although this would obviously not provide certainty with respect to concluding 'no adverse effects' (although it could reduce the risk that they could arise).

5.19. The use of a 'generic' exclusion policy based on site interest features may prematurely exclude some areas from detailed consideration. In consequence, their use within the NPS could compromise the Government's ability to ensure that geological disposal infrastructure is sited in a geologically suitable environment. Geological considerations are critical to ensuring that there are effective barriers with no conceivable pathways from the facility to the surface environment. In consequence, a 'generic' exclusion policy could compromise the Government's ability to deliver a GDF in a geologically suitable environment and so risk not fulfilling the policy objective to provide a long-term, secure, safe and sustainable solution to the disposal of higher activity waste.

5.20. Thirdly, with regard to specifying geographical exclusion areas on a site-by-site basis, as the NPS is not location-specific, and the precise details of any geological disposal infrastructure proposals are not known, it is not possible to identify specific effects or specific European sites that might be affected. The development of bespoke exclusion areas is not therefore considered practicable or appropriate for achieving the objectives of the NPS as:

- the data required to robustly identify exclusion areas for each European site would be substantial;
- without site investigations, scheme design, and construction details, any assessment of effects would be provisional and hence exclusion areas necessarily (and so perhaps overly) precautionary;
- any exclusions would be pre-judging the acceptability of future proposals based on partial information; and
- any exclusions could prevent geologically favourable locations from being investigated, which could compromise the Government's ability to ensure that geological disposal infrastructure is sited in a geologically suitable environment.

### Location-specific NPS

5.21. The alternative to a non-location specific NPS would be for the Government to determine the location of geological disposal infrastructure in the NPS, for example by:

- identifying all possible locations of the infrastructure; or

- by identifying specific area(s) in the country, with the precise location subject to future investigations of specific sites.

5.22. In theory, strategic direction to a specific location could allow a GDF to be sited such that significant effects on European sites are almost certainly avoided (e.g. where there are no European sites within, say, 20 kilometres). This would allow the HRA of the NPS to conclude that significant effects have been avoided; it would also reduce the costs and investment in project-level HRA.

5.23. This approach would, however, require that all of the site-investigation information necessary to identify a site (and to exclude reasonable alternatives) be collected prior to the designation of the NPS and hence identification of 'the site'; this information is not currently available, and will not be in the short term. Furthermore, this approach creates a potential paradox. The site investigation works needed for the designation of a location-specific NPS would include the completion of boreholes. Boreholes whose main purpose is "to obtain information, data or samples to determine the suitability of a site for the construction or use of a radioactive waste GDF" would be included within the scope of infrastructure covered by the NPS. Gaining planning permission for any such infrastructure covered by Section 30A of the Planning Act 2008 in the absence of a NPS may not be straightforward.

5.24. The suitability of a site will be influenced by a range of factors, including the design that is pursued and the technologies that can be employed, and it would be inappropriate for the NPS to be prescriptive in this regard. A location-specific NPS designated without the benefit of detailed site investigations, or information on technological approaches, may directly or indirectly increase the risk of adverse effects on some sites by prematurely reducing siting options.

5.25. An 'area-specific' approach may require less information at the NPS stage, although the data requirements would still be substantial and the arguments against a 'site-specific' approach would also apply.

5.26. An alternative solution must be less damaging to the integrity of the European site(s) affected. From an HRA perspective, it is difficult to see that 'location-specific' or 'area-specific' approaches would necessarily have any clear advantages over the current NPS approach whilst still enabling the policy objective to be delivered. As the draft NPS stands, adverse effects on site integrity cannot be quantified – simply, the NPS does not exclude the possibility of adverse effects on one or more European sites. A location- or area-specific NPS would probably exclude the possibility of adverse effects on some European sites, but not all because:

- there would remain a risk of adverse effects unless explicit exclusionary criteria were used in the NPS (see above); and
- all of the design and assessment for a specific site would be carried out at the NPS stage (effectively, a 'no NPS' alternative) – 'no adverse effects' would still not be guaranteed under this scenario.

5.27. Moreover, the Government does not believe that these alternatives can be assessed without the preparation of an indicative list of sites. A separate siting process to identify, characterise and assess sites will be led by the developer. The information requirements for any such siting exercise would be considerable and could not be satisfied in the near future. Therefore, a location- or area-specific NPS is not considered a technically feasible alternative solution for the HRA; nor is it considered likely to

provide any additional certainty that adverse effects on European sites can be avoided or reduced, compared to the current NPS.

### Summary

5.28. The appropriate assessment has determined that any European site in England (as well as some sites in Scotland or Wales) is, in theory, potentially vulnerable to adverse effects as a result of the development of a geological disposal infrastructure. Consequently, regulation 107 of the Habitats Regulations requires an assessment of alternative solutions to determine whether there are any other feasible ways to deliver the overall objective of the plan (i.e. delivery of a GDF) which will be less damaging to the integrity of the European site(s) affected. The assessment of alternatives does not consider alternatives to a GDF. Three principal alternative approaches for the NPS have been considered:

- no NPS;
- an NPS that is generic but applies exclusionary criteria (such criteria may be included on the grounds of landscape, cultural and natural heritage and nature conservation for example); and
- a location-specific NPS that identifies candidate sites for the GDF.

5.29. The assessment concluded that the alternatives examined would: (i) not provide any additional certainty that adverse effects on European sites could be avoided or reduced, compared to the current NPS; (ii) not be feasible; and (iii) compromise the ability to ensure the successful and timely delivery of the GDF in geologically suitable environment (and hence not fulfil the Government's policy objective on the disposal of higher activity waste). **It is the Government's view that there are no alternatives solutions in respect of the draft NPS that would be less damaging to European sites**.

5.30. It is the view of Government that the NPS (as drafted) would facilitate the successful and timely delivery of a GDF, by ensuring a coordinated approach to waste management and geological disposal; and by providing clear guidance on developer requirements. This will provide a long-term, secure, safe and sustainable solution to the disposal of higher activity waste.

5.31. It should be noted that the assessment of alternatives for NPS purposes does not replace the need for the assessment of alternatives for HRA purposes at the project level.

# 6. IROPI and compensatory measures

## Legislative requirements

6.1. Regulation 107(1) of the Habitats Regulations allows a plan to be given effect notwithstanding a "negative assessment of the implications for the European site or the European offshore marine site…" if there are no alternatives and it can be demonstrated that the plan is required for Imperative Reasons of Overriding Public Interest (IROPI). If the European site supports a priority habitat or species then regulation 107(2) applies, which states that the IROPI must relate to "human health, public safety or beneficial consequences of primary importance to the environment"; other IROPI, including socio-economic reasons, require consultation with the European Commission. This section outlines the Government's consideration of IROPI for designating the draft NPS, despite it not being possible to rule out adverse effects and there being no alternative solutions. It also sets out a strategic framework for compensatory measures in accordance with Article 6(4) of the Habitats Directive.

## Imperative reasons of overriding public interest (IROPI)

6.2. The appropriate assessment has demonstrated that the possibility of adverse effects on one or more European sites as a result of the implementation of the draft NPS cannot be ruled out. The assessment of alternative solutions, in Section 5 of this HRA report, has concluded that there are none that are feasible and which would provide any additional certainty that adverse effects on European sites can be avoided or reduced, compared to the draft NPS, whilst delivering the policy objective. As the draft NPS does not identify potential areas or sites for a GDF, any European site within England and several within Scotland and Wales are potentially vulnerable to its outcomes. Therefore, sites with priority features could potentially be affected.

6.3. There is currently no facility to permanently dispose of the higher activity radioactive waste inventory; geological disposal provides a practical and technically achievable means to do so. However, without this facility there are consequences for human health and public safety. Some of the higher activity wastes under consideration will remain hazardous to humans and the wider biosphere for hundreds of thousands of years; new interim stores currently being built typically have a design life of one hundred years. Therefore long-term storage is not a viable option as stores would have to be rebuilt and the waste packages within them repacked, many times during the hundreds of thousands of years that the waste remains hazardous, involving the consequent risk to health and safety protection of workers and the general public against the dangers arising from ionising radiation.

6.4. It is this requirement for human monitoring, maintenance, rebuild and repackaging and the constant protection from natural processes, environmental changes, and malicious attack that means that the UK Government does not consider present long-term storage to be a permanent solution for health and safety reasons. It will also not be possible for the Nuclear Decommissioning Authority to complete the decommissioning and clean-up of existing nuclear sites without a GDF.

6.5. Without a GDF there are also consequences of primary importance to the environment as geological disposal infrastructure is a necessary enabler for new nuclear power. The

'2008 White Paper' stated explicitly that before development consents for new nuclear power stations are granted, the Government will need to be satisfied that effective arrangements exist or will exist to manage and dispose of the waste they will produce.

6.6. New nuclear power is required for the UK to meet its energy and climate change objectives and forms one of the three main elements of the Government's strategy for moving towards a decarbonised, diverse electricity sector by 2050.

6.7. It is the view of Government that an NPS would facilitate the successful and timely delivery of a GDF, by ensuring a coordinated approach to waste management and geological disposal; and by providing clear guidance on developer requirements.

6.8. Furthermore, it is considered that the potential alternatives examined (see Section 5) would: (i) not provide any additional certainty that adverse effects on European sites could be avoided or reduced, compared to the current NPS; (ii) not be feasible; and (iii) compromise the ability to ensure the successful and timely delivery of the GDF in geologically suitable environment (and hence not fulfil the Government's policy objective on the disposal of higher activity waste).

6.9. Consequently, based on the reasons noted at paragraphs 6.3 to 6.6, the Government is satisfied that the production of an NPS for the GDF is supported by Imperative Reasons of Overriding Public Interest related to human health, public safety or beneficial consequences of primary importance to the environment.

6.10. As the IROPI relate to human health, public safety and beneficial consequences of primary importance to the environment, the Government is not required to seek the opinion of the European Commission before adopting the NPS, in accordance with regulation 107(2).

## Compensatory measures

6.11. Regulation 109 of the Habitats Regulations states that "the appropriate authority must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected" if a plan is given effect for IROPI, despite it being impossible to rule out adverse effects on a European site or European offshore marine site.

6.12. As specific effects on specific European sites cannot be identified at this stage, it is not appropriate (or possible) to specify compensatory measures at the NPS level. The measures that may be required will depend on the projects that are put forward and the European sites and interest features that are affected. Compensatory measures may therefore be required at the project level. However project-level compensatory measures, if required, must meet the following criteria:

- they must be clearly defined, technically and practically feasible, likely to be effective, measureable, and based on robust scientific evidence;
- they must be appropriate to the interest features affected and biogeographical area, and be capable of protecting the overall coherence of the network of European sites; and
- they must be fully secured before consent is given (i.e. all the necessary legal, technical, financial and monitoring arrangements must be in place) and ideally should be operational and effective before the adverse effect occurs.

6.13. It is suggested, however, that these criteria be included in the NPS to ensure that the broad requirements of any compensatory measures are clearly set out.

## Project level HRA

6.14. The HRA of the draft NPS does not remove the need for project-level HRAs, or prejudice the scope or outcomes of these assessments. The designation of the NPS for IROPI does not mean that these reasons will necessarily extend to all developments arising from the NPS, although the information provided in the NPS and HRA may have some relevance.

# Glossary and abbreviations

| Term | Definition |
|---|---|
| **AoS** | An appraisal of the sustainability of the policy set out in a National Policy Statement, as required by Section 5(3) of the Planning Act 2008. |
| **BEIS** | Department for Business, Energy and Industrial Strategy. The department brings together responsibilities for business, industrial strategy, science, innovation, energy, and climate change. |
| **CoRWM** | Committee on Radioactive Waste Management (CoRWM). CoRWM provides independent scrutiny and advice to the UK governments on the long-term management of higher activity radioactive wastes. CoRWM is an advisory non-departmental public body, sponsored by the Department for Business, Energy and Industrial Strategy. |
| **Cumulative effects** | Effects that occur where several individual activities which each may have an insignificant effect, combine to have a significant effect. |
| **DCO** | Development Consent Order. A consent by a Minister for a Nationally Significant Infrastructure Project. This replaces a range of other consents, such as planning permission and listed building consent. |
| **Defra** | Department for Environment, Food and Rural Affairs. The UK government department responsible for safeguarding the natural environment, supporting the food and farming industry, and sustaining the rural economy. |
| **EIA** | Environmental Impact Assessment. A legal requirement under EU Directive 85/337/EEC (as amended) for certain types of project, including various categories of radioactive waste management project. It requires information on the environmental impacts of a project proposal to be submitted by the developer and evaluated by the relevant competent authority. |
| **European site** | European sites include Sites of Community Importance (SCIs), Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs). 'European Site' is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017. |
| **GDF** | A geological disposal facility is a highly-engineered facility capable of isolating radioactive waste within multiple protective barriers, deep underground, to ensure that no harmful quantities |

| Term | Definition |
|---|---|
| | of radioactivity ever reach the surface environment. The development of a geological disposal facility will be a major infrastructure project of national significance. |
| **HAW** | Higher activity waste includes high level waste (HLW), intermediate level waste (ILW) and some low level waste (LLW) that is unsuitable for disposal in the Low Level Waste Repository (LLWR). HAW arises from activities such as: reactor operation, reprocessing of spent nuclear fuel and decommissioning. |
| **HLW** | High level waste. This is waste in which the temperature may rise significantly as a result of its radioactivity, so this factor has to be taken into account in the design of storage or disposal facilities. |
| **HRA** | Habitats Regulations Assessment. This is an assessment of whether a draft plan or project is likely to have a significant effects on any European sites (either alone or 'in combination' with other plans or projects); and, if so, whether these effects will result in any adverse effects on that site's integrity with reference to the site's conservation objectives. This is undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 and Directive 92/43/EEC (the 'Habitats Directive'). |
| **IAEA** | International Atomic Energy Agency (IAEA). The IAEA is the international centre for cooperation in the nuclear field. The Agency works with its Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies. |
| **IROPI** | Regulation 107(1) of the Habitats Regulations allows a plan to be given effect notwithstanding a "negative assessment of the implications for the European site or the European offshore marine site…" if there are no alternatives and it can be demonstrated that the plan is required for imperative reasons of overriding public interest (IROPI). If the European site supports a priority habitat or species then regulation 107(2) applies, which states that the IROPI must relate to "human health, public safety or beneficial consequences of primary importance to the environment"; other IROPI, including socio-economic reasons, require consultation with the European Commission. |
| **ILW** | Intermediate level waste. This is waste exceeding the upper boundaries for LLW that do not generate sufficient heat for this to be taken into account in the design of storage or disposal facilities. |
| **LLW** | Low level waste. This is waste having a radioactive content not exceeding 4 Gigabecquerels per tonne of alpha activity, or 12 Gigabecquerels per tonne of beta/gamma activity. |
| **LLWR** | Low Level Waste Repository. The UK national facility for the |

| Term | Definition |
|---|---|
| | near surface disposal of solid Low Level Waste, located near to the village of Drigg in Cumbria. |
| **NDA** | Nuclear Decommissioning Authority. A non-departmental public body created through the Energy Act 2004. The Nuclear Decommissioning Authority is a strategic authority that owns 19 UK sites and the associated civil nuclear liabilities and assets of the public sector. It reports to the Department for Business, Energy and Industrial Strategy (BEIS); for some aspects of its functions in Scotland, it is responsible to Scottish Ministers. |
| **NIA65** | Nuclear Installations Act 1965. The main act of Parliament that relates to nuclear installations. A GDF will be a nuclear installation under the Act. |
| **N2K (Natura 2000) sites** | Natura 2000 is a network of nature protection areas in the territory of the European Union. It is made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated respectively under the Habitats Directive and Birds Directive. The network includes both terrestrial and marine sites (Marine Protected Areas (MPAs)). |
| **NPPF** | National Planning Policy Framework. The framework, published by DCLG in 2012, sets out the Government's planning policies for England and how these are expected to be applied. |
| **NRW** | Natural Resources Wales. The environmental regulator in Wales. It was created in 2013 with a mission to ensure that the environment and natural resources of Wales are sustainably maintained, enhanced, and used, now and in the future. Its regulatory responsibilities includes the regulation of the disposal of radioactive wastes from nuclear sites, as well as other premises in Wales. All permits relating to sites generating or disposing of radioactive waste in Wales are issued by Natural Resources Wales. Compliance with these permits at nuclear sites is currently carried out by the Environment Agency specialists on behalf of Natural Resources Wales, but enforcement is undertaken directly by Natural Resources Wales. |
| **RWM** | Radioactive Waste Management Limited. It is a wholly-owned subsidiary of the Nuclear Decommissioning Authority (NDA), which is an Executive Non-Departmental Public Body of the Department for Business, Energy and Industrial Strategy (BEIS). RWM is leading the delivery of geological disposal. |
| **NOx** | Nitrogen oxides. NOx is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. |
| **NSIP** | Nationally significant infrastructure projects. These are large scale developments that require development consent under the Planning Act 2008. |

| Term | Definition |
|---|---|
| **ONR** | The Office for Nuclear Regulation. The Office for Nuclear Regulation independently regulates nuclear safety and security at 36 nuclear licensed sites in Great Britain. It also regulates the transport of radioactive materials and plays a key role in ensuring that the UK's safeguards obligations are met. |
| **Ramsar** | Ramsar sites are wetlands of international importance, designated under the Ramsar Convention (first signed in 1971). |
| **SAC** | Special Areas of Conservation are strictly protected sites designated under the EC Habitats Directive. Candidate SACs (cSACs) are sites that have been submitted to the European Commission, but not yet formally adopted. |
| **SCI** | A Site of Community Importance (SCI) is defined in the European Commission Habitats Directive (92/43/EEC) as a site which, in the biogeographical region or regions to which it belongs, contributes significantly to the maintenance or restoration at a favourable conservation status of a natural habitat type or of a species and may also contribute significantly to the coherence of Natura 2000, and/or contributes significantly to the maintenance of biological diversity within the biogeographic region or regions concerned. |
| **SEA** | An iterative process for gathering information and evidence, assessing effects, developing mitigation and enhancement measures and making recommendations to refine a plan or programme in view of its predicted environmental effects. It is a statutory requirement for certain plans and programmes under the Strategic Environmental Assessment (SEA) Directive (Directive 2001/42/EC) and UK Strategic Environmental Assessment (SEA) Regulations (SI 2004/1633, SI 2004/1656, SR 2004/280). |
| **SEA Directive** | Strategic Environmental Impact Assessment Directive. Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. |
| **SNH** | Scottish Natural Heritage is the Scottish public body responsible for the country's natural heritage, especially its natural, genetic and scenic diversity. It advises the Scottish Government and acts as a government agent in the delivery of conservation designations, i.e. national nature reserves, local nature reserves, long distance routes, national parks, Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation, Special Protection Areas and the national scenic area. |
| **$SO_2$** | Sulphur dioxide (a toxic and odorous gas). |
| **SPA** | Special Protected Areas (SPA) are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive. Potential SPAs (pSPAs) are sites that have been submitted to |

| Term | Definition |
| --- | --- |
| | the European Commission, but not yet formally adopted. |

# Appendix A
# European Sites Potentially Vulnerable to Effects of the NPS

Table A.1 European sites within 20 kilometres of English border or 12 nautical mile limit

| Site | Interest Features |
|---|---|
| **Alde, Ore and Butley Estuaries SAC** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Estuaries; and<br>• Mudflats and sandflats not covered by seawater at low tide. |
| **Alyn Valley Woods/ Coedwigoedd Dyffryn Alun SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Arnecliff and Park Hole Woods SAC** | • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• *Trichomanes speciosum.* |
| **Asby Complex SAC** | • Alkaline fens; Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;*<br>• *Drepanocladus (Hamatocaulis) vernicosus;*<br>• European dry heaths;<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• Limestone pavements;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Petrifying springs with tufa formation (*Cratoneurion*);<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Vertigo geyeri.* |
| **Ashdown Forest SAC** | • European dry heaths;<br>• Northern Atlantic wet heaths with *Erica tetralix*; and<br>• *Triturus cristatus.* |
| **Aston Rowant SAC** | • *Asperulo-Fagetum* beech forests; and<br>• *Juniperus communis* formations on heaths or calcareous grasslands. |
| **Avon Gorge Woodlands SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Barnack Hills and** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-* |

| Site | Interest Features |
|---|---|
| **Holes SAC** | *Brometalia*) (* important orchid sites). |
| **Baston Fen SAC** | • *Cobitis taenia.* |
| **Bath and Bradford-on-Avon Bats SAC** | • *Myotis bechsteini;*<br>• *Rhinolophus ferrumequinum*; and<br>• *Rhinolophus hipposideros.* |
| **Beast Cliff - Whitby (Robin Hood`s Bay) SAC** | • Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Bee`s Nest and Green Clay Pits SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Triturus cristatus.* |
| **Beer Quarry and Caves SAC** | • *Myotis bechsteini;*<br>• *Rhinolophus ferrumequinum; and*<br>• *Rhinolophus hipposideros.* |
| **Benacre to Easton Bavents Lagoons SAC** | • Coastal lagoons. |
| **Berwickshire and North Northumberland Coast SAC** | • *Halichoerus grypus;*<br>• Large shallow inlets and bays;<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• Reefs; and<br>• Submerged or partially submerged sea caves. |
| **Berwyn a Mynyddoedd de Clwyd/ Berwyn and South Clwyd Mountains SAC** | • Blanket bogs (* if active bog);<br>• Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*);<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• European dry heaths;<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• Transition mires and quaking bogs. |
| **Birklands and Bilhaugh SAC** | • Old acidophilous oak woods with *Quercus robur* on sandy plains. |
| **Blackstone Point SAC** | • *Rumex rupestris.* |
| **Blean Complex SAC** | • Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*. |
| **Border Mires, Kielder - Butterburn SAC** | • Blanket bogs (* if active bog);<br>• European dry heaths; |

| Site | Interest Features |
|---|---|
| | • Northern Atlantic wet heaths with *Erica tetralix;*<br>• Petrifying springs with tufa formation (*Cratoneurion*); and<br>• Transition mires and quaking bogs. |
| **Borders Woods SAC** | • *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Borrowdale Woodland Complex SAC** | • Bog woodland;<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• Siliceous rocky slopes with chasmophytic vegetation. |
| **Bracket`s Coppice SAC** | • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); and<br>• *Myotis bechsteini.* |
| **Braunton Burrows SAC** | • Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Humid dune slacks;<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• *Petalophyllum ralfsii;* and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes). |
| **Breckland SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• European dry heaths;<br>• Inland dunes with open *Corynephorus* and *Agrostis* grasslands;<br>• Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation;<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Triturus cristatus.* |
| **Bredon Hill SAC** | • *Limoniscus violaceus.* |
| **Breney Common and Goss and Tregoss Moors SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia;*<br>• European dry heaths;<br>• Northern Atlantic wet heaths with *Erica tetrali*; and<br>• Transition mires and quaking bogs. |
| **Briddlesford Copses SAC** | • *Myotis bechsteini.* |
| **Brown Moss SAC** | • *Luronium natans.* |
| **Burnham Beeches SAC** | • Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*). |
| **Butser Hill SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Taxus* baccata woods of the British Isles. |

| Site | Interest Features |
|---|---|
| **Calf Hill and Cragg Woods SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*); and<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. |
| **Cannock Chase SAC** | • European dry heaths; and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Cannock Extension Canal SAC** | • *Luronium natans.* |
| **Cardiff Beech Woods SAC** | • *Asperulo-Fagetum* beech forests; and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Carrine Common SAC** | • European dry heaths; and<br>• Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix.* |
| **Castle Eden Dene SAC** | • *Taxus baccata* woods of the British Isles. |
| **Castle Hill SAC** | • *Gentianella anglica; and*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Cerne and Sydling Downs SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia;* and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Chesil and the Fleet SAC** | • Annual vegetation of drift lines;<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Coastal lagoons;<br>• Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*); and<br>• Perennial vegetation of stony banks. |
| **Chilmark Quarries SAC** | • *Barbastella barbastellus;*<br>• *Myotis bechsteini;*<br>• *Rhinolophus ferrumequinum;* and<br>• *Rhinolophus hipposideros.* |
| **Chilterns Beechwoods SAC** | • *Asperulo-Fagetum* beech forests;<br>• *Lucanus cervus; and*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Clints Quarry SAC** | • *Triturus cristatus.* |
| **Coed y Cerrig SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*). |
| **Cothill Fen SAC** | • Alkaline fens; and<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae,* |

| Site | Interest Features |
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| | *Salicion albae*). |
| **Cotswold Beechwoods SAC** | • *Asperulo-Fagetum* beech forests; and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Craven Limestone Complex SAC** | • Active raised bogs;<br>• Alkaline fens;<br>• *Austropotamobius pallipes;*<br>• Calaminarian grasslands of the *Violetalia calaminariae;*<br>• *Cottus gobio;*<br>• *Cypripedium calceolus;*<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• Limestone pavements;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Petrifying springs with tufa formation (*Cratoneurion*);<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Crookhill Brick Pit SAC** | • *Triturus cristatus.* |
| **Crowdy Marsh SAC** | • Transition mires and quaking bogs. |
| **Culm Grasslands SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia;*<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Cumbrian Marsh Fritillary Site SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia.* |
| **Cwm Clydach Woodlands / Coedydd Cwm Clydach SAC** | • *Asperulo-Fagetum* beech forests; and<br>• Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*). |
| **Dartmoor SAC** | • Blanket bogs (* if active bog);<br>• *Coenagrion mercuriale;*<br>• European dry heaths;<br>• *Lutra lutra;*<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• *Salmo salar.* |
| **Dawlish Warren SAC** | • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Humid dune slacks;<br>• *Petalophyllum ralfsii;* and |

| Site | Interest Features |
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| | • Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'). |
| **Dee Estuary/ Aber Dyfrdwy SAC** | • Annual vegetation of drift lines;<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Embryonic shifting dunes;<br>• Estuaries;<br>• Fixed coastal dunes with herbaceous vegetation ('grey dunes');<br>• Humid dune slacks;<br>• *Lampetra fluviatilis;*<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• *Petalophyllum ralfsii;*<br>• *Petromyzon marinus;*<br>• *Salicornia* and other annuals colonizing mud and sand;<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'); and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Deeside and Buckley Newt Sites SAC** | • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• *Triturus cristatus.* |
| **Denby Grange Colliery Ponds SAC** | • *Triturus cristatus.* |
| **Devil`s Dyke SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Dew`s Ponds SAC** | • *Triturus cristatus.* |
| **Dixton Wood SAC** | • *Limoniscus violaceus.* |
| **Dogden Moss SAC** | • Active raised bogs. |
| **Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC** | • Alkaline fens.<br>• Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);<br>• Bog woodland;<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;*<br>• *Coenagrion mercuriale;*<br>• Depressions on peat substrates of the *Rhynchosporion;*<br>• Embryonic shifting dunes;<br>• European dry heaths;<br>• Humid dune slacks;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old acidophilous oak woods with *Quercus robur* on sandy plains;<br>• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*);<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'); |

| Site | Interest Features |
|---|---|
| | • Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix; and*<br>• *Triturus cristatus.* |
| **Dorset Heaths SAC** | • Alkaline fens;<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;*<br>• *Coenagrion mercurial;*<br>• Depressions on peat substrates of the *Rhynchosporion;*<br>• European dry heaths;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old acidophilous oak woods with *Quercus robur* on sandy plains; and<br>• *Triturus cristatus.* |
| **Dover to Kingsdown Cliffs SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Downton Gorge SAC** | • *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Drigg Coast SAC** | • Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Embryonic shifting dunes;<br>• Estuaries;<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Humid dune slacks;<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• *Salicornia* and other annuals colonizing mud and sand; and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’). |
| **Drostre Bank SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*); and<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). |
| **Duddon Mosses SAC** | • Active raised bogs; and<br>• Degraded raised bogs still capable of natural regeneration. |
| **Duncton to Bignor Escarpment SAC** | • *Asperulo-Fagetum* beech forests. |
| **Dungeness SAC** | • Annual vegetation of drift lines;<br>• Perennial vegetation of stony banks; and<br>• *Triturus cristatus.* |
| **Dunraven Bay SAC** | • *Rumex rupestris.* |
| **Durham Coast SAC** | • Vegetated sea cliffs of the Atlantic and Baltic Coasts. |

| Site | Interest Features |
|---|---|
| **East Devon Pebblebed Heaths SAC** | • *Coenagrion mercurial;*<br>• European dry heaths; and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **East Hampshire Hangers SAC** | • *Asperulo-Fagetum* beech forests;<br>• *Gentianella anglica;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• *Taxus baccata* woods of the British Isles; and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Ebernoe Common SAC** | • Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*);<br>• *Barbastella barbastellus;* and<br>• *Myotis bechsteini.* |
| **Eller`s Wood and Sand Dale SAC** | • Petrifying springs with tufa formation (*Cratoneurion*); and<br>• *Vertigo geyeri.* |
| **Emer Bog SAC** | • Transition mires and quaking bogs. |
| **Ensor`s Pool SAC** | • *Austropotamobius pallipes.* |
| **Epping Forest SAC** | • Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*);<br>• European dry heaths;<br>• *Lucanus cervus;* and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Essex Estuaries SAC** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Estuaries;<br>• Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*);<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• *Salicornia* and other annuals colonizing mud and sand;<br>• Sandbanks which are slightly covered by sea water all the time; and<br>• *Spartina* swards (*Spartinion maritimae*). |
| **Eversden and Wimpole Woods SAC** | • *Barbastella barbastellus.* |
| **Exmoor and Quantock Oakwoods SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• *Barbastella barbastellus;*<br>• *Lutra lutra;*<br>• *Myotis bechsteini;* and<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. |

| Site | Interest Features |
|---|---|
| **Exmoor Heaths SAC** | • Alkaline fens;<br>• Blanket bogs (* if active bog);<br>• European dry heaths;<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Fal and Helford SAC** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Estuaries;<br>• Large shallow inlets and bays;<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• Reefs;<br>• *Rumex rupestris;* and<br>• Sandbanks which are slightly covered by sea water all the time. |
| **Fen Bog SAC** | • Transition mires and quaking bogs. |
| **Fenland SAC** | • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;*<br>• *Cobitis taenia;*<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); and<br>• *Triturus cristatus.* |
| **Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses SAC** | • Active raised bogs; and<br>• Degraded raised bogs still capable of natural regeneration. |
| **Fens Pools SAC** | • *Triturus cristatus.* |
| **Flamborough Head SAC** | • Reefs;<br>• Submerged or partially submerged sea caves; and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Folkestone to Etchinghill Escarpment SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Fontmell and Melbury Downs SAC** | • *Gentianella anglica;* and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Ford Moss SAC** | • Active raised bogs. |
| **Gang Mine SAC** | • Calaminarian grasslands of the *Violetalia calaminariae.* |
| **Godrevy Head to St Agnes SAC** | • European dry heaths;<br>• *Gentianella anglica;* and |

| Site | Interest Features |
|---|---|
| | • Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix.* |
| **Granllyn SAC** | • *Triturus cristatus.* |
| **Great Yews SAC** | • *Taxus baccata* woods of the British Isles. |
| **Grimsthorpe SAC** | • *Gentianella anglica;* and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Hackpen Hill SAC** | • *Gentianella anglica;* and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Halkyn Mountain/ Mynydd Helygain SAC** | • Calaminarian grasslands of the *Violetalia calaminariae;*<br>• European dry heaths;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Triturus cristatus.* |
| **Harbottle Moors SAC** | • European dry heaths. |
| **Hartslock Wood SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Taxus baccata* woods of the British Isles. |
| **Hastings Cliffs SAC** | • Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Hatfield Moor SAC** | • Degraded raised bogs still capable of natural regeneration. |
| **Helbeck and Swindale Woods SAC** | • *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Hestercombe House SAC** | • *Rhinolophus hipposideros.* |
| **Holme Moor and Clean Moor SAC** | • Alkaline fens;<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; and<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) |
| **Holnest SAC** | • *Triturus cristatus.* |
| **Humber Estuary SAC** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Coastal lagoons;<br>• Dunes with *Hippopha rhamnoides;*<br>• Embryonic shifting dunes;<br>• Estuaries;<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’); |

| Site | Interest Features |
|---|---|
| | • *Halichoerus grypus;*<br>• *Lampetra fluviatilis;*<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• *Petromyzon marinus;*<br>• *Salicornia* and other annuals colonizing mud and sand;<br>• Sandbanks which are slightly covered by sea water all the time; and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'). |
| **Ingleborough Complex SAC** | • Alkaline fens;<br>• Blanket bogs (* if active bog);<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Limestone pavements;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Petrifying springs with tufa formation (*Cratoneurion*);<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Isle of Portland to Studland Cliffs SAC** | • Annual vegetation of drift lines;<br>• *Gentianella anglica;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Isle of Wight Downs SAC** | • European dry heaths;<br>• *Gentianella anglica;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Isles of Scilly Complex SAC** | • *Halichoerus grypus;*<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• Reefs;<br>• *Rumex rupestris;* and<br>• Sandbanks which are slightly covered by sea water all the time. |
| **Johnstown Newt Sites SAC** | • *Triturus cristatus.* |
| **Kenfig/ Cynffig SAC** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Fixed coastal dunes with herbaceous vegetation ('grey dunes');<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• Humid dune slacks;<br>• *Liparis loeselii;* and |

| Site | Interest Features |
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| | • *Petalophyllum ralfsii.* |
| **Kennet and Lambourn Floodplain SAC** | • *Vertigo moulinsiana.* |
| **Kennet Valley Alderwoods SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*). |
| **Kingley Vale SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Taxus baccata* woods of the British Isles. |
| **Kirk Deighton SAC** | • *Triturus cristatus.* |
| **Lake District High Fells SAC** | • Alkaline fens;<br>• Alpine and Boreal heaths;<br>• Blanket bogs (* if active bog);<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• *Drepanocladus (Hamatocaulis) vernicosus;*<br>• European dry heaths;<br>• Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels;<br>• *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles;<br>• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea;*<br>• Siliceous alpine and boreal grasslands;<br>• Siliceous rocky slopes with chasmophytic vegetation;<br>• Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*); and<br>• Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe). |
| **Lewes Downs SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) |
| **Little Wittenham SAC** | • *Triturus cristatus.* |
| **Llangorse Lake/ Llyn Syfaddan SAC** | • Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation. |
| **Lower Bostraze and Leswidden SAC** | • *Marsupella profunda.* |
| **Lower Derwent Valley SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*); and<br>• *Lutra lutra.* |

| Site | Interest Features |
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| **Lundy SAC** | • *Halichoerus grypus;*<br>• Reefs;<br>• Sandbanks which are slightly covered by sea water all the time; and<br>• Submerged or partially submerged sea caves. |
| **Lydden and Temple Ewell Downs SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Lyppard Grange Ponds SAC** | • *Triturus cristatus.* |
| **Manchester Mosses SAC** | • Degraded raised bogs still capable of natural regeneration. |
| **Mells Valley SAC** | • Caves not open to the public;<br>• *Rhinolophus ferrumequinum;* and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Mendip Limestone Grasslands SAC** | • Caves not open to the public;<br>• European dry heaths;<br>• *Rhinolophus ferrumequinum;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Mendip Woodlands SAC** | • *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Minsmere to Walberswick Heaths and Marshes SAC** | • Annual vegetation of drift lines;<br>• European dry heaths; and<br>• Perennial vegetation of stony banks. |
| **Mole Gap to Reigate Escarpment SAC** | • *Asperulo-Fagetum* beech forests;<br>• European dry heaths;<br>• *Myotis bechsteini;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.);<br>• *Taxus baccata* woods of the British Isles; and<br>• *Triturus cristatus.* |
| **Montgomery Canal SAC** | • *Luronium natans.* |
| **Moor House - Upper** | • Alkaline fens; |

| Site | Interest Features |
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| **Teesdale SAC** | • Alpine and Boreal heaths;<br>• Alpine pioneer formations of the *Caricion bicoloris-atrofuscae;*<br>• Blanket bogs (* if active bog);<br>• Calaminarian grasslands of the *Violetalia calaminariae;*<br>• Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*);<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• European dry heaths;<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels;<br>• *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Limestone pavements;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Mountain hay meadows;<br>• Petrifying springs with tufa formation (*Cratoneurion*);<br>• *Saxifraga hirculus;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• Siliceous alpine and boreal grasslands;<br>• Siliceous rocky slopes with chasmophytic vegetation;<br>• Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*); and<br>• *Vertigo genesii.* |
| **Morecambe Bay Pavements SAC** | • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;*<br>• European dry heaths;<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Limestone pavements;<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles;<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• *Taxus baccata* woods of the British Isles;<br>• *Tilio-Acerion* forests of slopes, screes and ravines; and<br>• *Vertigo angustior.* |
| **Morecambe Bay SAC** | • Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Coastal lagoons;<br>• Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Embryonic shifting dunes;<br>• Estuaries;<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Humid dune slacks;<br>• Large shallow inlets and bays; |

| Site | Interest Features |
|---|---|
| | • Mudflats and sandflats not covered by seawater at low tide;<br>• Perennial vegetation of stony banks;<br>• Reefs;<br>• *Salicornia* and other annuals colonizing mud and sand;<br>• Sandbanks which are slightly covered by sea water all the time;<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'); and<br>• *Triturus cristatus.* |
| **Mottey Meadows SAC** | • Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*). |
| **Mottisfont Bats SAC** | • *Barbastella barbastellus.* |
| **Naddle Forest SAC** | • European dry heaths;<br>• Northern Atlantic wet heaths with *Erica tetralix; and*<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. |
| **Nene Washes SAC** | • *Cobitis taenia.* |
| **Newham Fen SAC** | • Alkaline fens. |
| **Newlyn Downs SAC** | • European dry heaths;<br>• Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix.* |
| **Norfolk Valley Fens SAC** | • Alkaline fens;<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*).<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae.*<br>• European dry heaths<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• *Vertigo angustior;* and<br>• *Vertigo moulinsiana.* |
| **North Downs Woodlands SAC** | • *Asperulo-Fagetum* beech forests;<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Taxus baccata* woods of the British Isles. |
| **North Meadow and Clattinger Farm SAC** | • Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*). |
| **North Norfolk Coast SAC** | • Coastal lagoons;<br>• Embryonic shifting dunes;<br>• Fixed coastal dunes with herbaceous vegetation ('grey dunes');<br>• Humid dune slacks; |

| Site | Interest Features |
|---|---|
| | • *Lutra lutra;*<br>• Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*);<br>• Perennial vegetation of stony banks;<br>• *Petalophyllum ralfsii;* and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'). |
| **North Northumberland Dunes SAC** | • Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Embryonic shifting dunes;<br>• Fixed coastal dunes with herbaceous vegetation ('grey dunes');<br>• Humid dune slacks;<br>• *Petalophyllum ralfsii; and*<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'). |
| **North Pennine Dales Meadows SAC** | • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); and<br>• Mountain hay meadows. |
| **North Pennine Moors SAC** | • Alkaline fens;<br>• Blanket bogs (* if active bog);<br>• Calaminarian grasslands of the *Violetalia calaminariae;*<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• European dry heaths;<br>• *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles;<br>• Petrifying springs with tufa formation (*Cratoneurion*);<br>• *Saxifraga hirculus;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• Siliceous alpine and boreal grasslands;<br>• Siliceous rocky slopes with chasmophytic vegetation; and<br>• Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*). |
| **North Somerset and Mendip Bats SAC** | • Caves not open to the public;<br>• *Rhinolophus ferrumequinum;*<br>• *Rhinolophus hipposideros;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **North York Moors SAC** | • Blanket bogs (* if active bog);<br>• European dry heaths;<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Oak Mere SAC** | • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*); and<br>• Transition mires and quaking bogs. |

| Site | Interest Features |
|---|---|
| **Orfordness - Shingle Street SAC** | • Annual vegetation of drift lines;<br>• Coastal lagoons; and<br>• Perennial vegetation of stony banks. |
| **Orton Pit SAC** | • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.; and<br>• *Triturus cristatus.* |
| **Ouse Washes SAC** | • *Cobitis taenia.* |
| **Overstrand Cliffs SAC** | • Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Ox Close SAC** | • Calaminarian grasslands of the *Violetalia calaminariae;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Oxford Meadows SAC** | • *Apium repens;* and<br>• Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*). |
| **Parkgate Down SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Paston Great Barn SAC** | • *Barbastella barbastellus.* |
| **Pasturefields Salt Marsh SAC** | • Inland salt meadows. |
| **Peak District Dales SAC** | • Alkaline fens;<br>• *Austropotamobius pallipes;*<br>• Calaminarian grasslands of the *Violetalia calaminariae;*<br>• Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*);<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• *Cottus gobio;*<br>• European dry heaths;<br>• *Lampetra planeri;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Penhale Dunes SAC** | • Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• *Gentianella anglica;*<br>• Humid dune slacks;<br>• *Petalophyllum ralfsii;*<br>• *Rumex rupestris;* and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’). |

| Site | Interest Features |
|---|---|
| **Peter`s Pit SAC** | • *Triturus cristatus* |
| **Pewsey Downs SAC** | • *Gentianella anglica;* and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Phoenix United Mine and Crow`s Nest SAC** | • Calaminarian grasslands of the *Violetalia calaminariae* |
| **Plymouth Sound and Estuaries SAC** | • *Alosa alosa;*<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Estuaries;<br>• Large shallow inlets and bays;<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• Reefs;<br>• *Rumex rupestris;* and<br>• Sandbanks which are slightly covered by sea water all the time. |
| **Polruan to Polperro SAC** | • European dry heaths;<br>• *Rumex rupestris;* and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Portholme SAC** | • Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) |
| **Prescombe Down SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia;*<br>• *Gentianella anglica;* and<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Quants SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia.* |
| **Queendown Warren SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Raeburn Flow SAC** | • Active raised bogs; and<br>• Degraded raised bogs still capable of natural regeneration. |
| **Rex Graham Reserve SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Rhos Goch SAC** | • Active raised bogs;<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• Bog woodland;<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); and<br>• Transition mires and quaking bogs. |

| Site | Interest Features |
|---|---|
| **Richmond Park SAC** | • *Lucanus cervus.* |
| **River Avon SAC** | • *Cottus gobio;*<br>• *Lampetra planeri;*<br>• *Petromyzon marinus;*<br>• *Salmo salar;*<br>• *Vertigo moulinsiana;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Axe SAC** | • *Cottus gobio;*<br>• *Lampetra planeri;*<br>• *Petromyzon marinus;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Camel SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• *Cottus gobio;*<br>• European dry heaths;<br>• *Lutra lutra;*<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• *Salmo salar.* |
| **River Clun SAC** | • *Margaritifera margaritifera* |
| **River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC** | • *Cottus gobio;*<br>• *Lampetra fluviatilis;*<br>• *Lampetra planeri;*<br>• *Luronium natans;*<br>• *Lutra lutra;*<br>• *Petromyzon marinus;*<br>• *Salmo salar;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Derwent and Bassenthwaite Lake SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia;*<br>• *Lampetra fluviatilis;*<br>• *Lampetra planeri;*<br>• *Luronium natans;*<br>• *Lutra lutra;*<br>• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea;*<br>• *Petromyzon marinus;*<br>• *Salmo salar;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-* |

| Site | Interest Features |
|---|---|
| | *Batrachion* vegetation. |
| **River Derwent SAC** | • *Cottus gobio;*<br>• *Lampetra fluviatilis;*<br>• *Lutra lutra;*<br>• *Petromyzon marinus;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Eden SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• *Austropotamobius pallipes;*<br>• *Cottus gobio;*<br>• *Lampetra fluviatilis;*<br>• *Lampetra planeri;*<br>• *Lutra lutra;*<br>• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea;*<br>• *Petromyzon marinus;*<br>• *Salmo salar;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Ehen SAC** | • *Margaritifera margaritifera;* and<br>• *Salmo salar.* |
| **River Itchen SAC** | • *Austropotamobius pallipes;*<br>• *Coenagrion mercuriale;*<br>• *Cottus gobio;*<br>• *Lampetra planeri;*<br>• *Lutra lutra;*<br>• *Salmo salar;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Kent SAC** | • *Austropotamobius pallipes;*<br>• *Cottus gobio;*<br>• *Margaritifera margaritifera;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Lambourn SAC** | • *Cottus gobio;*<br>• *Lampetra planeri;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Mease SAC** | • *Austropotamobius pallipes;*<br>• *Cobitis taenia;* |

| Site | Interest Features |
|---|---|
| | • *Cottus gobio;*<br>• *Lutra lutra;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Tweed SAC** | • *Lampetra fluviatilis;*<br>• *Lampetra planeri;*<br>• *Lutra lutra;*<br>• *Petromyzon marinus;*<br>• *Salmo salar;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Usk/ Afon Wysg SAC** | • *Alosa alosa;*<br>• *Alosa fallax;*<br>• *Cottus gobio;*<br>• *Lampetra fluviatilis;*<br>• *Lampetra planeri;*<br>• *Lutra lutra;*<br>• *Petromyzon marinus;*<br>• *Salmo salar; and*<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Wensum SAC** | • *Austropotamobius pallipes;*<br>• *Cottus gobio;*<br>• *Lampetra planeri;*<br>• *Vertigo moulinsiana;* and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **River Wye/ Afon Gwy SAC** | • *Alosa alosa;*<br>• *Alosa fallax;*<br>• *Austropotamobius pallipes;*<br>• *Cottus gobio;*<br>• *Lampetra fluviatilis;*<br>• *Lampetra planeri;*<br>• *Lutra lutra;*<br>• *Petromyzon marinus;*<br>• *Salmo salar;*<br>• Transition mires and quaking bogs; and<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. |
| **Rixton Clay Pits SAC** | • *Triturus cristatus.* |

| Site | Interest Features |
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| **Rochdale Canal SAC** | • *Luronium natans.* |
| **Rodborough Common SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Roman Wall Loughs SAC** | • Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation. |
| **Rook Clift SAC** | • *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Rooksmoor SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia; and*<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). |
| **Roudsea Wood and Mosses SAC** | • Active raised bogs;<br>• Degraded raised bogs still capable of natural regeneration;<br>• *Taxus baccata* woods of the British Isles; and<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Roydon Common and Dersingham Bog SAC** | • Depressions on peat substrates of the *Rhynchosporion;*<br>• European dry heaths; and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Salisbury Plain SAC** | • *Euphydryas (Eurodryas, Hypodryas) aurinia;*<br>• *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Saltfleetby-Theddlethorpe Dunes and Gibraltar Point SAC** | • Dunes with *Hippopha rhamnoides;*<br>• Embryonic shifting dunes;<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Humid dune slacks; and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’). |
| **Sandwich Bay SAC** | • Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Embryonic shifting dunes;<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Humid dune slacks; and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (’white dunes’). |
| **Sefton Coast SAC** | • Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);<br>• Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Embryonic shifting dunes;<br>• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Humid dune slacks;<br>• *Petalophyllum ralfsii;*<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’); and |

| Site | Interest Features |
|---|---|
| | • *Triturus cristatus.* |
| **Severn Estuary/ Môr Hafren SAC** | • *Alosa fallax;*<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Estuaries;<br>• *Lampetra fluviatilis;*<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• *Petromyzon marinus;*<br>• Reefs; and<br>• Sandbanks which are slightly covered by sea water all the time. |
| **Shortheath Common SAC** | • Bog woodland;<br>• European dry heaths; and<br>• Transition mires and quaking bogs. |
| **Sidmouth to West Bay SAC** | • Annual vegetation of drift lines;<br>• *Tilio-Acerion* forests of slopes, screes and ravines; and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Simonside Hills SAC** | • Blanket bogs (* if active bog); and<br>• European dry heaths. |
| **Singleton and Cocking Tunnels SAC** | • *Barbastella barbastellus;* and<br>• *Myotis bechsteini.* |
| **Skipwith Common SAC** | • European dry heaths; and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Solent and Isle of Wight Lagoons SAC** | • Coastal lagoons. |
| **Solent Maritime SAC** | • Annual vegetation of drift lines;<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Coastal lagoons;<br>• Estuaries;<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• Perennial vegetation of stony banks;<br>• *Salicornia* and other annuals colonizing mud and sand;<br>• Sandbanks which are slightly covered by sea water all the time;<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes');<br>• *Spartina* swards (*Spartinion maritimae*); and<br>• *Vertigo moulinsiana.* |
| **Solway Firth SAC** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Estuaries;<br>• Fixed coastal dunes with herbaceous vegetation ('grey dunes'); |

| Site | Interest Features |
|---|---|
| | • *Lampetra fluviatilis;*<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• Perennial vegetation of stony banks;<br>• *Petromyzon marinus;*<br>• Reefs;<br>• *Salicornia* and other annuals colonizing mud and sand; and<br>• Sandbanks which are slightly covered by sea water all the time. |
| **Solway Mosses North SAC** | • Active raised bogs; and<br>• Degraded raised bogs still capable of natural regeneration. |
| **South Dartmoor Woods SAC** | • European dry heaths; and<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. |
| **South Devon Shore Dock SAC** | • *Rumex rupestris;* and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **South Hams SAC** | • Caves not open to the public;<br>• European dry heaths;<br>• *Rhinolophus ferrumequinum;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• *Tilio-Acerion* forests of slopes, screes and ravines; and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **South Pennine Moors SAC** | • Blanket bogs (* if active bog);<br>• European dry heaths;<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• Transition mires and quaking bogs. |
| **South Solway Mosses SAC** | • Active raised bogs; and<br>• Degraded raised bogs still capable of natural regeneration. |
| **South Wight Maritime SAC** | • Reefs;<br>• Submerged or partially submerged sea caves; and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **St Abb's Head to Fast Castle SAC** | • Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **St Albans Head to Durlston Head SAC** | • *Gentianella anglica;*<br>• *Rhinolophus ferrumequinum;*<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |

| Site | Interest Features |
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| **St Austell Clay Pits SAC** | • *Marsupella profunda.* |
| **Staverton Park and The Thicks, Wantisden SAC** | • Old acidophilous oak woods with *Quercus robur* on sandy plains. |
| **Stodmarsh SAC** | • *Vertigo moulinsiana.* |
| **Strensall Common SAC** | • European dry heaths; and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Subberthwaite, Blawith and Torver Low Commons SAC** | • Depressions on peat substrates of the *Rhynchosporion;*<br>• Transition mires and quaking bogs. |
| **Sugar Loaf Woodlands SAC** | • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. |
| **Tanat and Vyrnwy Bat Sites/ Safleoedd Ystlumod Tanat ac Efyrnwy SAC** | • *Rhinolophus hipposideros.* |
| **Tarn Moss SAC** | • Transition mires and quaking bogs. |
| **Thanet Coast SAC** | • Reefs;<br>• Submerged or partially submerged sea caves. |
| **The Broads SAC** | • Alkaline fens;<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• *Anisus vorticulus;*<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;*<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• *Liparis loeselii;*<br>• *Lutra lutra;*<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation;<br>• Transition mires and quaking bogs; and<br>• *Vertigo moulinsiana.* |
| **The Lizard SAC** | • Dry Atlantic coastal heaths with *Erica vagans;*<br>• European dry heaths;<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• Mediterranean temporary ponds; |

| Site | Interest Features |
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| | • Northern Atlantic wet heaths with *Erica tetralix; and*<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **The Mens SAC** | • Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*); and<br>• *Barbastella barbastellus.* |
| **The New Forest SAC** | • Alkaline fens;<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• *Asperulo-Fagetum* beech forests;<br>• Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*);<br>• Bog woodland;<br>• *Coenagrion mercuriale;*<br>• Depressions on peat substrates of the *Rhynchosporion;*<br>• European dry heaths;<br>• *Lucanus cervus;*<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Northern Atlantic wet heaths with *Erica tetralix;*<br>• Old acidophilous oak woods with *Quercus robur* on sandy plains;<br>• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea;*<br>• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*);<br>• Transition mires and quaking bogs; and<br>• *Triturus cristatus.* |
| **The Stiperstones and The Hollies SAC** | • European dry heaths;<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. |
| **The Wash and North Norfolk Coast SAC** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• Coastal lagoons;<br>• Large shallow inlets and bays;<br>• *Lutra lutra;*<br>• Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*);<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• *Phoca vitulina;*<br>• Reefs;<br>• *Salicornia* and other annuals colonizing mud and sand; and<br>• Sandbanks which are slightly covered by sea water all the time. |
| **Thorne Moor SAC** | • Degraded raised bogs still capable of natural regeneration. |
| **Thrislington SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Thursley, Ash,** | • Depressions on peat substrates of the *Rhynchosporion;* |

| Site | Interest Features |
|---|---|
| **Pirbright and Chobham SAC** | • European dry heaths; and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Tintagel-Marsland-Clovelly Coast SAC** | • European dry heaths;<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts. |
| **Tregonning Hill SAC** | • *Marsupella profunda.* |
| **Tweed Estuary SAC** | • Estuaries;<br>• *Lampetra fluviatilis;*<br>• Mudflats and sandflats not covered by seawater at low tide; and<br>• *Petromyzon marinus.* |
| **Tyne and Allen River Gravels SAC** | • Calaminarian grasslands of the *Violetalia calaminariae.* |
| **Tyne and Nent SAC** | • Calaminarian grasslands of the *Violetalia calaminariae.* |
| **Ullswater Oakwoods SAC** | • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. |
| **Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC** | • Blanket bogs (* if active bog);<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• Caves not open to the public;<br>• Degraded raised bogs still capable of natural regeneration;<br>• European dry heaths;<br>• *Rhinolophus hipposideros; and*<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Walton Moss SAC** | • Active raised bogs; and<br>• Degraded raised bogs still capable of natural regeneration. |
| **Wast Water SAC** | • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea.* |
| **Waveney and Little Ouse Valley Fens SAC** | • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;*<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); and<br>• *Vertigo moulinsiana.* |
| **West Dorset Alder Woods SAC** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• *Euphydryas (Eurodryas, Hypodryas) aurinia;*<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Old acidophilous oak woods with *Quercus robur* on sandy plains; and<br>• *Triturus cristatus.* |

| Site | Interest Features |
|---|---|
| **West Midlands Mosses SAC** | • Natural dystrophic lakes and ponds; and<br>• Transition mires and quaking bogs. |
| **Wimbledon Common SAC** | • European dry heaths;<br>• *Lucanus cervus;* and<br>• Northern Atlantic wet heaths with *Erica tetralix.* |
| **Windsor Forest and Great Park SAC** | • Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*);<br>• *Limoniscus violaceus;* and<br>• Old acidophilous oak woods with *Quercus robur* on sandy plains. |
| **Winterton - Horsey Dunes SAC** | • Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);<br>• Embryonic shifting dunes;<br>• Humid dune slacks; and<br>• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'). |
| **Witherslack Mosses SAC** | • Active raised bogs; and<br>• Degraded raised bogs still capable of natural regeneration. |
| **Woolmer Forest SAC** | • Depressions on peat substrates of the *Rhynchosporion;*<br>• European dry heaths;<br>• Natural dystrophic lakes and ponds;<br>• Northern Atlantic wet heaths with *Erica tetralix;* and<br>• Transition mires and quaking bogs. |
| **Wormley Hoddesdonpark Woods SAC** | • Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli.* |
| **Wye and Crundale Downs SAC** | • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites). |
| **Wye Valley and Forest of Dean Bat Sites/ Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena SAC** | • *Rhinolophus ferrumequinum;* and<br>• *Rhinolophus hipposideros.* |
| **Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy SAC** | • *Asperulo-Fagetum* beech forests;<br>• *Rhinolophus hipposideros;* and<br>• *Taxus baccata* woods of the British Isles.<br>• *Tilio-Acerion* forests of slopes, screes and ravines. |
| **Yewbarrow Woods SAC** | • *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and |

| Site | Interest Features |
|---|---|
| | • *Taxus baccata* woods of the British Isles. |
| **Arun Valley SCI** | • *Anisus vorticulus* |
| **Bolton Fell Moss SCI** | • Degraded raised bogs still capable of natural regeneration. |
| **Hamford Water SCI** | • *Gortyna borelii lunata.* |
| **Lands End and Cape Bank SCI** | • Reefs. |
| **Lizard Point SCI** | • Reefs. |
| **Lyme Bay and Torbay SCI** | • Reefs; and<br>• Submerged or partially submerged sea caves. |
| **Margate and Long Sands SCI** | • Sandbanks which are slightly covered by sea water all the time. |
| **Pevensey Levels SCI** | • *Anisus vorticulus.* |
| **Shell Flat and Lune Deep SCI** | • Reefs; and<br>• Sandbanks which are slightly covered by sea water all the time. |
| **Start Point to Plymouth Sound & Eddystone SCI** | • Reefs. |
| **Studland to Portland SCI** | • Reefs. |
| **Tankerton Slopes and Swalecliffe SCI** | • *Gortyna borelii lunata.* |
| **Abberton Reservoir SPA** | • *Anas clypeata;*<br>• *Anas crecca;*<br>• *Anas Penelope;*<br>• *Anas strepera;*<br>• *Aythya farina;*<br>• *Aythya fuligula;*<br>• *Bucephala clangula;*<br>• *Cygnus olor;*<br>• *Fulica atra;*<br>• *Phalacrocorax carbo;* and<br>• *Podiceps cristatus.* |
| **Alde-Ore Estuary SPA** | • *Circus aeruginosus;*<br>• *Larus fuscus;*<br>• *Philomachus pugnax;*<br>• *Sterna albifrons;*<br>• *Sterna sandvicensis;* and<br>• *Tringa tetanus.* |
| **Arun Valley SPA** | • *Cygnus columbianus bewickii.* |

| Site | Interest Features | |
|---|---|---|
| **Ashdown Forest SPA** | • *Caprimulgus europaeus;* and | • *Sylvia undata.* |
| **Avon Valley SPA** | • *Anas strepera;* and | • *Cygnus columbianus bewickii.* |
| **Benacre to Easton Bavents SPA** | • *Botaurus stellaris;*<br>• *Circus aeruginosus;* and | • *Sterna albifrons.* |
| **Benfleet and Southend Marshes SPA** | • *Branta bernicla bernicla;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus;* | • *Charadrius hiaticula;* and<br>• *Pluvialis squatarola.* |
| **Berwyn SPA** | • *Circus cyaneus;*<br>• *Falco columbarius;* | • *Falco peregrinus;* and<br>• *Milvus milvus.* |
| **Blackwater Estuary (Mid-Essex Coast Phase 4) SPA** | • *Aythya farina;*<br>• *Branta bernicla bernicla;*<br>• *Calidris alpina alpina;*<br>• *Circus cyaneus;* | • *Limosa limosa islandica;*<br>• *Pluvialis squatarola;* and<br>• *Sterna albifrons.* |
| **Bowland Fells SPA** | • *Circus cyaneus;*<br>• *Falco columbarius;* and | • *Larus fuscus.* |
| **Breckland SPA** | • *Burhinus oedicnemus;*<br>• *Caprimulgus europaeus;* and | • *Lullula arborea.* |
| **Breydon Water SPA** | • *Cygnus columbianus bewickii;*<br>• *Philomachus pugnax;*<br>• *Pluvialis apricaria;* | • *Recurvirostra avosetta;*<br>• *Sterna hirundo;* and<br>• *Vanellus vanellus.* |
| **Broadland SPA** | • *Anas clypeata;*<br>• *Anas penelope;*<br>• *Anas strepera;*<br>• *Botaurus stellaris;*<br>• *Circus aeruginosus;* | • *Circus cyaneus;*<br>• *Cygnus columbianus bewickii;*<br>• *Cygnus cygnus;* and<br>• *Philomachus pugnax.* |
| **Castle Loch, Lochmaben SPA** | • *Anser brachyrhynchus.* | |
| **Chesil Beach and The Fleet SPA** | • *Branta bernicla bernicla.* | |
| **Chew Valley Lake SPA** | • *Anas clypeata.* | |
| **Chichester and Langstone Harbours SPA** | • *Anas acuta;*<br>• *Anas clypeata;*<br>• *Anas crecca;* | • *Limosa lapponica;*<br>• *Mergus serrator;*<br>• *Numenius arquata;* |

| Site | Interest Features | |
|---|---|---|
| | • *Anas penelope;*<br>• *Arenaria interpres;*<br>• *Branta bernicla bernicla;*<br>• *Calidris alba;*<br>• *Calidris alpina alpina;*<br>• *Charadrius hiaticula;* | • *Pluvialis squatarola;*<br>• *Sterna albifrons;*<br>• *Sterna hirundo;*<br>• *Sterna sandvicensis;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Colne Estuary (Mid-Essex Coast Phase 2) SPA** | • *Aythya farina;*<br>• *Branta bernicla bernicla;*<br>• *Charadrius hiaticula;* | • *Circus cyaneus;*<br>• *Sterna albifrons;* and<br>• *Tringa tetanus.* |
| **Coquet Island SPA** | • *Sterna dougallii;*<br>• *Sterna hirundo;* | • *Sterna paradisaea;* and<br>• *Sterna sandvicensis.* |
| **Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA** | • *Branta bernicla bernicla;* and | • *Circus cyaneus.* |
| **Deben Estuary SPA** | • *Branta bernicla bernicla;* and | • *Recurvirostra avosetta.* |
| **Dengie (Mid-Essex Coast Phase 1) SPA** | • *Branta bernicla bernicla;*<br>• *Calidris canutus;* | • *Circus cyaneus;* and<br>• *Pluvialis squatarola.* |
| **Din Moss - Hoselaw Loch SPA** | • *Anser anser [Iceland/UK/Ireland];* and | • *Anser brachyrhynchus.* |
| **Dorset Heathlands SPA** | • *Caprimulgus europaeus;*<br>• *Circus cyaneus;*<br>• *Falco columbarius;* | • *Lullula arborea;* and<br>• *Sylvia undata.* |
| **Duddon Estuary SPA** | • *Anas acuta;*<br>• *Calidris canutus,* | • *Sterna sandvicensis,* and<br>• *Tringa tetanus.* |
| **Dungeness to Pett Level SPA** | • *Anas clypeata;*<br>• *Cygnus columbianus bewickii;*<br>• *Larus melanocephalus;* | • *Sterna albifrons;* and<br>• *Sterna hirundo.* |
| **East Devon Heaths SPA** | • *Caprimulgus europaeus;* and | • *Sylvia undata.* |
| **Exe Estuary SPA** | • *Branta bernicla bernicla;*<br>• *Calidris alpina alpina;*<br>• *Haematopus ostralegus;*<br>• *Limosa limosa islandica;* | • *Pluvialis squatarola;*<br>• *Podiceps auritus;* and<br>• *Recurvirostra avosetta.* |
| **Farne Islands SPA** | • *Sterna hirundo;*<br>• *Sterna paradisaea;* and | • *Sterna sandvicensis.* |

| Site | Interest Features | |
|---|---|---|
| **Flamborough Head and Bempton Cliffs SPA** | • *Rissa tridactyla.* | |
| **Foulness (Mid-Essex Coast Phase 5) SPA** | • *Branta bernicla bernicla;*<br>• *Calidris canutus;*<br>• *Charadrius hiaticula;*<br>• *Circus cyaneus;*<br>• *Haematopus ostralegus;*<br>• *Limosa lapponica;* | • *Pluvialis squatarola;*<br>• *Sterna albifrons;*<br>• *Sterna hirundo;*<br>• *Sterna sandvicensis;* and<br>• *Tringa tetanus.* |
| **Gibraltar Point SPA** | • *Calidris alba;*<br>• *Limosa lapponica;* | • *Pluvialis squatarola;* and<br>• *Sterna albifrons.* |
| **Great Yarmouth North Denes SPA** | • *Sterna albifrons.* | |
| **Greenlaw Moor SPA** | • *Anser brachyrhynchus.* | |
| **Hamford Water SPA** | • *Anas crecca;*<br>• *Branta bernicla bernicla;*<br>• *Charadrius hiaticula;*<br>• *Limosa limosa islandica;*<br>• *Pluvialis squatarola;* | • *Recurvirostra avosetta;*<br>• *Sterna albifrons;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Holburn Lake and Moss SPA** | • *Anser anser [Iceland/UK/Ireland].* | |
| **Hornsea Mere SPA** | • *Anas strepera;* and | • *Cygnus olor.* |
| **Humber Estuary SPA** | • *Anas crecca;*<br>• *Anas penelope;*<br>• *Anas platyrhynchos;*<br>• *Arenaria interpres;*<br>• *Aythya ferina;*<br>• *Aythya marila;*<br>• *Branta bernicla bernicla;*<br>• *Bucephala clangula;*<br>• *Circus aeruginosus;*<br>• *Circus cyaneus;* | • *Haematopus ostralegus;*<br>• *Limosa lapponica;*<br>• *Numenius arquata;*<br>• *Numenius phaeopus;*<br>• *Philomachus pugnax;*<br>• *Pluvialis apricaria;*<br>• *Sterna albifrons;*<br>• *Tadorna tadorna;*<br>• *Tringa nebularia;* and<br>• *Vanellus vanellus.* |
| **Isles of Scilly SPA** | • *Hydrobates pelagicus;* and | • *Larus fuscus.* |
| **Langholm - Newcastleton Hills** | • *Circus cyaneus.* | |

| Site | Interest Features | |
|---|---|---|
| **SPA** | | |
| **Lee Valley SPA** | • *Anas clypeata;*<br>• *Anas strepera;* and | • *Botaurus stellaris.* |
| **Leighton Moss SPA** | • *Botaurus stellaris;* and | • *Circus aeruginosus.* |
| **Lindisfarne SPA** | • *Anas penelope;*<br>• *Anser anser [Iceland/UK/Ireland];*<br>• *Branta bernicla hrota [Svalbard/Denmark/UK];*<br>• *Calidris alba;*<br>• *Calidris alpina alpina;*<br>• *Charadrius hiaticula;*<br>• *Clangula hyemalis;*<br>• *Cygnus cygnus;*<br>• *Limosa lapponica;* | • *Melanitta nigra;*<br>• *Mergus serrator;*<br>• *Pluvialis apricaria;*<br>• *Pluvialis squatarola;*<br>• *Somateria mollissima;*<br>• *Sterna albifrons;*<br>• *Sterna dougallii;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Liverpool Bay / Bae Lerpwl SPA** | • *Gavia stellate;* and | • *Melanitta nigra.* |
| **Lower Derwent Valley SPA** | • *Anas clypeata;*<br>• *Anas crecca;*<br>• *Anas penelope;* | • *Cygnus columbianus bewickii;*<br>• *Philomachus pugnax;* and<br>• *Pluvialis apricaria.* |
| **Marazion Marsh SPA** | • *Acrocephalus paludicola;* and | • *Botaurus stellaris.* |
| **Martin Mere SPA** | • *Anas acuta;*<br>• *Anas penelope;*<br>• *Anser brachyrhynchus;* | • *Cygnus columbianus bewickii;*<br>• *Cygnus cygnus.* |
| **Medway Estuary and Marshes SPA** | • *Anas acuta;*<br>• *Anas clypeata;*<br>• *Anas crecca;*<br>• *Anas penelope;*<br>• *Anas platyrhynchos;*<br>• *Arenaria interpres;*<br>• *Aythya ferina;*<br>• *Branta bernicla bernicla;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus;*<br>• *Charadrius hiaticula;*<br>• *Circus cyaneus;*<br>• *Cygnus columbianus bewickii;* | • *Falco columbarius;*<br>• *Gavia stellata;*<br>• *Haematopus ostralegus;*<br>• *Limosa limosa islandica;*<br>• *Numenius arquata;*<br>• *Phalacrocorax carbo;*<br>• *Pluvialis squatarola;*<br>• *Podiceps cristatus;*<br>• *Sterna albifrons;*<br>• *Sterna hirundo;*<br>• *Tadorna tadorna;*<br>• *Tringa nebularia;* and<br>• *Tringa tetanus.* |

| Site | Interest Features | |
|---|---|---|
| **Mersey Estuary SPA** | • *Anas acuta;*<br>• *Anas crecca;*<br>• *Anas penelope;*<br>• *Calidris alpina alpina;*<br>• *Charadrius hiaticula;*<br>• *Limosa limosa islandica;* | • *Numenius arquata;*<br>• *Pluvialis apricaria;*<br>• *Pluvialis squatarola;*<br>• *Podiceps cristatus;*<br>• *Tadorna tadorna;* and<br>• *Vanellus vanellus.* |
| **Mersey Narrows and North Wirral Foreshore SPA** | • *Calidris alba;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus islandica;*<br>• *Haematopus ostralegus;*<br>• *Larus minutus;* | • *Limosa lapponica;*<br>• *Phalacrocorax carbo;*<br>• *Pluvialis squatarola;* and<br>• *Tringa tetanus.* |
| **Minsmere-Walberswick SPA** | • *Anas crecca;*<br>• *Anser albifrons albifrons;*<br>• *Botaurus stellaris;*<br>• *Caprimulgus europaeus;* | • *Circus aeruginosus;*<br>• *Circus cyaneus;*<br>• *Recurvirostra avosetta;* and<br>• *Sterna albifrons.* |
| **Morecambe Bay SPA** | • *Anas acuta;*<br>• *Anser brachyrhynchus;*<br>• *Arenaria interpres;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus;*<br>• *Charadrius hiaticula;*<br>• *Haematopus ostralegus;* | • *Limosa lapponica;*<br>• *Numenius arquata;*<br>• *Pluvialis squatarola;*<br>• *Sterna sandvicensis;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Nene Washes SPA** | • *Anas acuta;*<br>• *Anas crecca;*<br>• *Anas penelope;* | • *Anas querquedula;*<br>• *Cygnus columbianus bewickii;* and<br>• *Limosa limosa limosa.* |
| **New Forest SPA** | • *Caprimulgus europaeus;*<br>• *Circus cyaneus;*<br>• *Falco subbuteo;*<br>• *Lullula arborea;* | • *Pernis apivorus;*<br>• *Phylloscopus sibilatrix;* and<br>• *Sylvia undata.* |
| **North Norfolk Coast SPA** | • *Anas penelope;*<br>• *Anser brachyrhynchus;*<br>• *Botaurus stellaris;*<br>• *Branta bernicla bernicla;*<br>• *Calidris canutus;* | • *Circus aeruginosus;*<br>• *Sterna albifrons;*<br>• *Sterna hirundo* and;<br>• *Sterna sandvicensis.* |
| **North Pennine Moors SPA** | • *Circus cyaneus;*<br>• *Falco columbarius;* | • *Falco peregrinus;* and<br>• *Pluvialis apricaria.* |
| **North York Moors** | • *Falco columbarius;* and | • *Pluvialis apricaria.* |

| Site | Interest Features | |
|---|---|---|
| **SPA** | | |
| **Northumbria Coast SPA** | • *Arenaria interpres;*<br>• *Calidris maritima;* and | • *Sterna albifrons.* |
| **Ouse Washes SPA** | • *Anas acuta;*<br>• *Anas crecca;*<br>• *Anas penelope;*<br>• *Anas platyrhynchos;*<br>• *Anas querquedula;*<br>• *Aythya ferina;*<br>• *Aythya fuligula;*<br>• *Circus cyaneus;* | • *Cygnus columbianus bewickii;*<br>• *Cygnus cygnus;*<br>• *Cygnus olor;*<br>• *Fulica atra;*<br>• *Limosa limosa limosa;*<br>• *Phalacrocorax carbo;* and<br>• *Philomachus pugnax.* |
| **Outer Thames Estuary SPA** | • *Gavia stellata.* | |
| **Pagham Harbour SPA** | • *Branta bernicla bernicla;*<br>• *Philomachus pugnax;* | • *Sterna albifrons;* and<br>• *Sterna hirundo.* |
| **Peak District Moors (South Pennine Moors Phase 1) SPA** | • *Asio flammeus;*<br>• *Falco columbarius;* and | • *Pluvialis apricaria.* |
| **Poole Harbour SPA** | • *Larus melanocephalus;*<br>• *Limosa limosa islandica;*<br>• *Recurvirostra avosetta;* | • *Sterna hirundo;* and<br>• *Tadorna tadorna.* |
| **Porton Down SPA** | • *Burhinus oedicnemus.* | |
| **Portsmouth Harbour SPA** | • *Branta bernicla bernicla;*<br>• *Calidris alpina alpina;* | • *Limosa limosa islandica;* and<br>• *Mergus serrator.* |
| **Ribble and Alt Estuaries SPA** | • *Anas acuta;*<br>• *Anas crecca;*<br>• *Anas penelope;*<br>• *Anser brachyrhynchus;*<br>• *Aythya marila;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus;*<br>• *Charadrius hiaticula;*<br>• *Cygnus columbianus bewickii;*<br>• *Cygnus cygnus;*<br>• *Haematopus ostralegus;*<br>• *Larus fuscus;* | • *Limosa lapponica;*<br>• *Limosa limosa islandica;*<br>• *Melanitta nigra;*<br>• *Numenius arquata;*<br>• *Numenius phaeopus;*<br>• *Phalacrocorax carbo;*<br>• *Philomachus pugnax;*<br>• *Pluvialis apricaria;*<br>• *Pluvialis squatarola;*<br>• *Sterna hirundo;*<br>• *Tadorna tadorna;* and<br>• *Vanellus vanellus.* |

| Site | Interest Features | |
|---|---|---|
| | • *Larus ridibundus;* | |
| **Rutland Water SPA** | • *Anas clypeata;*<br>• *Anas crecca;*<br>• *Anas penelope;*<br>• *Anas strepera;*<br>• *Aythya fuligula;* | • *Bucephala clangula;*<br>• *Cygnus olor;*<br>• *Fulica atra;*<br>• *Mergus merganser;* and<br>• *Podiceps cristatus.* |
| **Salisbury Plain SPA** | • *Burhinus oedicnemus;*<br>• *Circus cyaneus;* | • *Coturnix coturnix;* and<br>• *Falco subbuteo.* |
| **Sandlings SPA** | • *Caprimulgus europaeus;* and | • *Lullula arborea.* |
| **Severn Estuary SPA** | • *Anas strepera;*<br>• *Anser albifrons albifrons;*<br>• *Calidris alpina alpina;* | • *Cygnus columbianus bewickii;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Solent and Southampton Water SPA** | • *Anas crecca;*<br>• *Branta bernicla bernicla;*<br>• *Charadrius hiaticula;*<br>• *Larus melanocephalus;*<br>• *Limosa limosa islandica;* | • *Sterna albifrons;*<br>• *Sterna dougallii;*<br>• *Sterna hirundo;* and<br>• *Sterna sandvicensis.* |
| **Somerset Levels and Moors SPA** | • *Anas crecca;*<br>• *Cygnus columbianus bewickii;* | • *Pluvialis apricaria;* and<br>• *Vanellus vanellus.* |
| **South Pennine Moors Phase 2 SPA** | • *Asio flammeus;*<br>• *Falco columbarius;* and | • *Pluvialis apricaria.* |
| **South West London Waterbodies SPA** | • *Anas clypeata;* and | • *Anas strepera.* |
| **St Abb's Head to Fast Castle SPA** | • *Alca torda;*<br>• *Larus argentatus;*<br>• *Phalacrocorax aristotelis;* | • *Rissa tridactyla;* and<br>• *Uria aalge.* |
| **Stodmarsh SPA** | • *Anas clypeata;*<br>• *Anas penelope;*<br>• *Anas platyrhynchos;*<br>• *Anser albifrons albifrons;*<br>• *Aythya ferina;*<br>• *Aythya fuligula;* | • *Botaurus stellaris;*<br>• *Circus cyaneus;*<br>• *Gallinago gallinago;*<br>• *Rallus aquaticus;* and<br>• *Vanellus vanellus.* |
| **Stour and Orwell Estuaries SPA** | • *Anas acuta;*<br>• *Anas penelope;*<br>• *Anas strepera;*<br>• *Arenaria interpres;* | • *Limosa limosa islandica;*<br>• *Numenius arquata;*<br>• *Phalacrocorax carbo;*<br>• *Pluvialis apricaria;* |

| Site | Interest Features | |
|---|---|---|
| | • *Aythya marila;*<br>• *Branta bernicla bernicla;*<br>• *Bucephala clangula;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus;*<br>• *Cygnus olor;* | • *Pluvialis squatarola;*<br>• *Podiceps cristatus;*<br>• *Recurvirostra avosetta;*<br>• *Tadorna tadorna;* and<br>• *Vanellus vanellus.* |
| **Tamar Estuaries Complex SPA** | • *Egretta garzetta;* and | • *Recurvirostra avosetta.* |
| **Teesmouth and Cleveland Coast SPA** | • *Anas clypeata;*<br>• *Anas crecca;*<br>• *Calidris alba;*<br>• *Calidris canutus;*<br>• *Phalacrocorax carbo;* | • *Sterna albifrons;*<br>• *Sterna sandvicensis;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Thames Basin Heaths SPA** | • *Caprimulgus europaeus;*<br>• *Lullula arborea;* and | • *Sylvia undata.* |
| **Thames Estuary and Marshes SPA** | • *Calidris alpina alpina;*<br>• *Calidris canutus;*<br>• *Charadrius hiaticula;*<br>• *Circus cyaneus;* | • *Limosa limosa islandica;*<br>• *Pluvialis squatarola;*<br>• *Recurvirostra avosetta;* and<br>• *Tringa tetanus.* |
| **Thanet Coast and Sandwich Bay SPA** | • *Arenaria interpres;*<br>• *Pluvialis apricaria;* and | • *Sterna albifrons.* |
| **The Dee Estuary SPA** | • *Anas acuta;*<br>• *Anas crecca;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus;*<br>• *Haematopus ostralegus;*<br>• *Limosa lapponica;*<br>• *Limosa limosa islandica;* | • *Numenius arquata;*<br>• *Pluvialis squatarola;*<br>• *Sterna albifrons;*<br>• *Sterna hirundo;*<br>• *Sterna sandvicensis;* and<br>• *Tadorna tadorna.* |
| **The Swale SPA** | • *Anas crecca;*<br>• *Anas strepera;*<br>• *Branta bernicla bernicla;*<br>• *Calidris alpina alpina;*<br>• *Charadrius hiaticula;* | • *Haematopus ostralegus;*<br>• *Numenius arquata;*<br>• *Pluvialis squatarola;* and<br>• *Tringa tetanus.* |
| **The Wash SPA** | • *Anas acuta;*<br>• *Anas penelope;*<br>• *Anas strepera;*<br>• *Anser brachyrhynchus;* | • *Haematopus ostralegus;*<br>• *Limosa lapponica;*<br>• *Limosa limosa islandica;*<br>• *Melanitta nigra;* |

| Site | Interest Features | |
|---|---|---|
| | • *Arenaria interpres;*<br>• *Branta bernicla bernicla;*<br>• *Bucephala clangula;*<br>• *Calidris alba;*<br>• *Calidris alpina alpina;*<br>• *Calidris canutus;*<br>• *Cygnus columbianus bewickii;* | • *Numenius arquata;*<br>• *Pluvialis squatarola;*<br>• *Sterna albifrons;*<br>• *Sterna hirundo;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Thorne and Hatfield Moors SPA** | • *Caprimulgus europaeus.* | |
| **Thursley, Hankley and Frensham Commons (Wealden Heaths Phase 1) SPA** | • *Caprimulgus europaeus;*<br>• *Lullula arborea;* and | • *Sylvia undata.* |
| **Upper Nene Valley Gravel Pits SPA** | • *Anas clypeata;*<br>• *Anas penelope;*<br>• *Anas platyrhynchos;*<br>• *Anas strepera;*<br>• *Aythya ferina;*<br>• *Aythya fuligula;* | • *Botaurus stellaris;*<br>• *Fulica atra;*<br>• *Phalacrocorax carbo;*<br>• *Pluvialis apricaria;*<br>• *Podiceps cristatus;* and<br>• *Vanellus vanellus.* |
| **Upper Solway Flats and Marshes SPA** | • *Anas acuta;*<br>• *Anas clypeata;*<br>• *Anas crecca;*<br>• *Anser brachyrhynchus;*<br>• *Arenaria interpres;*<br>• *Aythya marila;*<br>• *Branta leucopsis [Svalbard/Denmark/UK];*<br>• *Bucephala clangula;*<br>• *Calidris alba;*<br>• *Calidris alpina alpina;* | • *Calidris canutus;*<br>• *Cygnus cygnus;*<br>• *Haematopus ostralegus;*<br>• *Limosa lapponica;*<br>• *Numenius arquata;*<br>• *Pluvialis apricaria;*<br>• *Pluvialis squatarola;*<br>• *Tadorna tadorna;* and<br>• *Tringa tetanus.* |
| **Walmore Common SPA** | • *Cygnus columbianus bewickii.* | |
| **Wealden Heaths Phase 2 SPA** | • *Caprimulgus europaeus;*<br>• *Lullula arborea;* | • *Sylvia undata.* |
| **Abberton Reservoir Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. | |
| **Alde–Ore Estuary** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. Communities; | |

| Site | Interest Features |
|---|---|
| **Ramsar** | • Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Arun Valley Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. Communities;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity; and<br>• Crit. 5 - regularly supports 20,000 or more waterbirds. |
| **Avon Valley Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Benfleet and Southend Marshes Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Breydon Water Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Broadland Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. Communities; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Castle Loch, Lochmaben Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Chesil Beach and The Fleet Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge;<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds; and<br>• Crit. 8 - important source of food for fishes, spawning ground, nursery and/or migration path. |

| Site | Interest Features |
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| **Chichester and Langstone Harbours Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Chippenham Fen Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |
| **Colne Estuary (Mid-Essex Coast Phase 2) Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 3 – suports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Deben Estuary Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Dengie (Mid-Essex Coast Phase 1) Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Dersingham Bog Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |
| **Din Moss – Hoselaw Loch Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Dorset Heathlands Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |

| Site | Interest Features |
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| **Duddon Estuary Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Esthwaite Water Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |
| **Exe Estuary Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Foulness (Mid-Essex Coast Phase 5) Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Gibraltar Point Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Greenlaw Moor Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Hamford Water Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Holburn Lake and Moss Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Humber Estuary Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds;<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds; and |

| Site | Interest Features |
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| | • Crit. 8 - important source of food for fishes, spawning ground, nursery and/or migration path. |
| **Irthinghead Mires Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |
| **Isles of Scilly Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Lee Valley Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Leighton Moss Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types. |
| **Lindisfarne Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Lower Derwent Valley Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Malham Tarn Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |
| **Martin Mere Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Medway Estuary and Marshes Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Mersey Estuary Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Mersey Narrows and North Wirral Foreshore Ramsar** | • Crit. 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of |

| Site | Interest Features |
|---|---|
| | waterbirds. |
| **Midland Meres and Mosses Phase 1 Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |
| **Midland Meres and Mosses Phase 2 Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |
| **Minsmere–Walberswick Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities |
| **Morecambe Bay Ramsar** | • Crit. 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Nene Washes Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **North Norfolk Coast Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Northumbria Coast Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Ouse Washes Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Pagham Harbour Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Pevensey Levels Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |
| **Poole Harbour Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. |

| Site | Interest Features |
|---|---|
| | communities;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Portsmouth Harbour Ramsar** | • Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Redgrave and South Lopham Fens Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |
| **Ribble and Alt Estuaries Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Rostherne Mere Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types. |
| **Roydon Common Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |
| **Rutland Water Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Severn Estuary Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity;<br>• Crit. 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds;<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds; and<br>• Crit. 8 - important source of food for fishes, spawning ground, nursery and/or migration path. |
| **Solent and Southampton Water Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Somerset Levels and** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. |

| Site | Interest Features |
|---|---|
| **Moors Ramsar** | communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **South West London Waterbodies Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Stodmarsh Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |
| **Stour and Orwell Estuaries Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Teesmouth and Cleveland Coast Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Thames Estuary and Marshes Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Thanet Coast and Sandwich Bay Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **The Dee Estuary Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **The New Forest Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |
| **The Swale Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **The Wash Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types;<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional |

| Site | Interest Features |
|---|---|
| | biodiversity;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Thursley and Ockley Bog Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities; and<br>• Crit. 3 - supports populations of plant/animal species important for maintaining regional biodiversity. |
| **Upper Nene Valley Gravel Pits Ramsar** | • Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Upper Solway Flats and Marshes Ramsar** | • Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities;<br>• Crit. 5 - regularly supports 20,000 or more waterbirds; and<br>• Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Walmore Common Ramsar** | • Crit. 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds. |
| **Wicken Fen Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |
| **Woodwalton Fen Ramsar** | • Crit. 1 - sites containing representative, rare or unique wetland types; and<br>• Crit. 2 - supports vulnerable, endangered, or critically endangered species or threatened eco. communities. |

# Appendix B
# Broad Interest Feature Categories

Table B.1 Broad interest feature categories noted in Table 4.1

| Broad Interest feature category | Interest Features |
|---|---|
| **Wetland and riparian habitats** | • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*);<br>• Bog woodland;<br>• Alkaline fens;<br>• Petrifying springs with tufa formation (*Cratoneurion*);<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*;<br>• Depressions on peat substrates of the *Rhynchosporion*;<br>• Transition mires and quaking bogs; Blanket bogs (* if active bog);<br>• Degraded raised bogs still capable of natural regeneration;<br>• Active raised bogs;<br>• Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*);<br>• *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);<br>• Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*;<br>• Northern Atlantic wet heaths with *Erica tetralix*;<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation;<br>• Turloughs;<br>• Mediterranean temporary ponds;<br>• Natural dystrophic lakes and ponds;<br>• Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation;<br>• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;<br>• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*;<br>• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*); and<br>• Machairs (* in Ireland). |
| **Dry woodlands and grasslands** | • *Taxus baccata* woods of the British Isles;<br>• Caledonian forest;<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles;<br>• Old acidophilous oak woods with *Quercus robur* on sandy plains;<br>• *Tilio-Acerion* forests of slopes, screes and ravines;<br>• Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*; |

| Broad Interest feature category | Interest Features |
|---|---|
| | *Asperulo-Fagetum* beech forests;<br>• Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*);<br>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites);<br>• Calaminarian grasslands of the *Violetalia calaminariae*;<br>• *Juniperus communis* formations on heaths or calcareous grasslands;<br>• Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.);<br>• Dry Atlantic coastal heaths with *Erica vagans*;<br>• European dry heaths; and<br>• Inland dunes with open *Corynephorus* and *Agrostis* grasslands. |
| **Upland habitats** | • Siliceous rocky slopes with chasmophytic vegetation;<br>• Calcareous rocky slopes with chasmophytic vegetation;<br>• Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*);<br>• Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*);<br>• Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*;<br>• Mountain hay meadows;<br>• Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels;<br>• Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe);<br>• Alpine and subalpine calcareous grasslands;<br>• Siliceous alpine and boreal grasslands;<br>• Sub-Arctic *Salix* spp. scrub; and<br>• Alpine and Boreal heaths. |
| **Coastal habitats** | • Coastal dunes with *Juniperus* spp.;<br>• Humid dune slacks; Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*);<br>• Dunes with *Hippopha rhamnoides*; Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);<br>• Decalcified fixed dunes with *Empetrum nigrum*; Fixed coastal dunes with herbaceous vegetation (‘grey dunes’);<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’);<br>• Embryonic shifting dunes;<br>• Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*);<br>• Vegetated sea cliffs of the Atlantic and Baltic Coasts; and<br>• Perennial vegetation of stony banks; Annual vegetation of drift lines; Coastal lagoons. |
| **Estuarine and intertidal habitats** | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);<br>• *Spartina* swards (*Spartinion maritimae*);<br>• *Salicornia* and other annuals colonizing mud and sand; |

| Broad Interest feature category | Interest Features | |
|---|---|---|
| | • Large shallow inlets and bays;<br>• Mudflats and sandflats not covered by seawater at low tide; and<br>• Estuaries. | |
| **Marine habitats** | • Submerged or partially submerged sea caves;<br>• Submarine structures made by leaking gases;<br>• Reefs; and<br>• Sandbanks which are slightly covered by sea water all the time. | |
| **Diadramous fish** | • *Salmo salar;*<br>• *Alosa fallax;*<br>• *Alosa alosa;* | • *Lampetra fluviatilis;* and<br>• *Petromyzon marinus.* |
| **Non-migratory wetland and riparian plants, fish and invertebrates** | • *Anisus vorticulus;*<br>• *Gortyna borelii lunata;*<br>• *Liparis loeselii;*<br>• *Najas flexilis;*<br>• *Luronium natans;*<br>• *Apium repens;*<br>• *Saxifraga hirculus;*<br>• *Cottus gobio;*<br>• *Cobitis taenia;* | • *Lampetra planeri;*<br>• *Austropotamobius pallipes;*<br>• *Euphydryas (Eurodryas, Hypodryas) aurinia;*<br>• *Coenagrion mercuriale;*<br>• *Margaritifera margaritifera;*<br>• *Vertigo moulinsiana;*<br>• *Vertigo genesii;*<br>• *Vertigo angustior;* and<br>• *Vertigo geyeri.* |
| **Sessile or limited-range terrestrial species** | • *Cypripedium calceolus;*<br>• *Gentianella anglica;*<br>• *Rumex rupestris;*<br>• *Trichomanes speciosum;*<br>• *Petalophyllum ralfsii;*<br>• *Drepanocladus (Hamatocaulis) vernicosus;* | • *Marsupella profunda;*<br>• *Buxbaumia viridis;*<br>• *Triturus cristatus;*<br>• *Lucanus cervus;* and<br>• *Limoniscus violaceus.* |
| **Terrestrial mammals** | • *Lutra lutra;*<br>• *Myotis bechsteini;*<br>• *Barbastella barbastellus;* | • *Rhinolophus ferrumequinum;* and<br>• *Rhinolophus hipposideros.* |
| **Marine mammals** | • *Phoca vitulina;*<br>• *Halichoerus grypus;* | • *Tursiops truncatus;*<br>• *Phocoena phocoena.* |
| **Wetland / estuarine birds** | • *Branta bernicla bernicla;*<br>• *Branta bernicla hrota* [Canada/Ireland];<br>• *Calidris alpina alpina;*<br>• *Calidris canutus islandica;*<br>• *Limosa limosa islandica;* | • *Rallus aquaticus;*<br>• *Mergus merganser;*<br>• *Mergus serrator;*<br>• *Bucephala clangula;*<br>• *Clangula hyemalis;* |

| Broad Interest feature category | Interest Features | |
|---|---|---|
| | • *Limosa limosa limosa;*<br>• *Calidris alpina schinzii;*<br>• *Anser albifrons flavirostris;*<br>• *Anser albifrons albifrons;*<br>• *Arenaria interpres;*<br>• *Tringa nebularia;*<br>• *Tringa totanus;*<br>• *Numenius arquata;*<br>• *Numenius phaeopus;*<br>• *Limosa lapponica;*<br>• *Philomachus pugnax;*<br>• *Calidris maritima;*<br>• *Calidris alba;*<br>• *Calidris canutus;*<br>• *Vanellus vanellus;*<br>• *Pluvialis squatarola;*<br>• *Pluvialis apricaria;*<br>• *Charadrius morinellus;*<br>• *Charadrius hiaticula;*<br>• *Recurvirostra avosetta;*<br>• *Haematopus ostralegus;*<br>• *Fulica atra;*<br>• *Crex crex;*<br>• *Porzana porzana;* | • *Aythya marila;*<br>• *Aythya fuligula;*<br>• *Aythya ferina;*<br>• *Anas clypeata;*<br>• *Anas querquedula;*<br>• *Anas acuta;*<br>• *Anas platyrhynchos;*<br>• *Anas crecca;*<br>• *Anas strepera;*<br>• *Anas penelope;*<br>• *Tadorna tadorna;*<br>• *Branta leucopsis* [Eastern Greenland/Scotland/Ireland]*;*<br>• *Anser anser* [Iceland/UK/Ireland]*;*<br>• *Anser brachyrhynchus;*<br>• *Anser fabalis fabalis;*<br>• *Cygnus cygnus;*<br>• *Cygnus columbianus bewickii;*<br>• *Cygnus olor;*<br>• *Egretta garzetta;*<br>• *Botaurus stellaris;*<br>• *Podiceps auritus;*<br>• *Podiceps cristatus;*<br>• *Gavia arctica;* and<br>• *Gavia stellate.* |
| **Other birds** | • *Loxia scotica;*<br>• *Troglodytes troglodytes fridariensis;*<br>• *Pyrrhocorax pyrrhocorax;*<br>• *Phylloscopus sibilatrix;*<br>• *Sylvia undata;*<br>• *Acrocephalus paludicola;*<br>• *Lullula arborea;*<br>• *Caprimulgus europaeus;*<br>• *Asio flammeus;*<br>• *Fratercula arctica;*<br>• *Alca torda;*<br>• *Uria aalge;* | • *Stercorarius parasiticus;*<br>• *Phalaropus lobatus;*<br>• *Tringa glareola;*<br>• *Gallinago gallinago;*<br>• *Burhinus oedicnemus;*<br>• *Coturnix coturnix;*<br>• *Tetrao urogallus;*<br>• *Falco peregrinus;*<br>• *Falco subbuteo;*<br>• *Falco columbarius;*<br>• *Pandion haliaetus;*<br>• *Aquila chrysaetos;* |

| Broad Interest feature category | Interest Features | |
|---|---|---|
| | • *Sterna albifrons;*<br>• *Sterna paradisaea;*<br>• *Sterna hirundo;*<br>• *Sterna dougallii;*<br>• *Sterna sandvicensis;*<br>• *Rissa tridactyla;*<br>• *Larus marinus;*<br>• *Larus argentatus;*<br>• *Larus fuscus;*<br>• *Larus canus;*<br>• *Larus ridibundus;*<br>• *Larus minutus;*<br>• *Larus melanocephalus;*<br>• *Catharacta skua;* | • *Circus cyaneus;*<br>• *Circus aeruginosus;*<br>• *Milvus milvus;*<br>• *Pernis apivorus;*<br>• *Melanitta fusca;*<br>• *Melanitta nigra;*<br>• *Somateria mollissima;*<br>• *Phalacrocorax aristotelis;*<br>• *Phalacrocorax carbo;*<br>• *Morus bassanus;*<br>• *Oceanodroma leucorhoa;*<br>• *Hydrobates pelagicus;*<br>• *Puffinus puffinus;* and<br>• *Fulmarus glacialis.* |


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