Department for
Business, Energy
& Industrial Strategy

HABITATS REGULATIONS ASSESSMENT REPORT

Habitats Regulations Assessment of National Policy Statement for Geological Disposal Infrastructure

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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 National Policy Statement).

The purpose of the National Policy Statement is 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, and the deep boreholes necessary to characterise the geology at potential sites, in England. The National Policy Statement provides the high level assessment principles against which development consent order applications will be considered. It is non-site specific.

Screening

The 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 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 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 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 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 then been undertaken.

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 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 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, irreplaceable habitats including ancient woodland and ancient and veteran trees, 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 National Policy Statement). The National Policy Statement also sets out a range of mitigation and conservation measures that should be taken into account by the developer.

However, the 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 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 National Policy Statement operates at, and policy statements to that effect would exceed the provisions of the Habitats Regulations. The HRA of the draft National Policy Statement proposed additions to the text to supplement the information on the policy framework for European sites, and to clarify HRA procedures. The suggested changes did not, however, exclude the possibility of adverse effects. In consequence, 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 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 either: (i) not provide any additional certainty that adverse effects on European sites could be avoided or reduced, compared to the current National Policy Statement; and/or (ii) not be feasible; and/or (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 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 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 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 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.

1. Introduction

Background

1.1. The UK Government is committed to the policy of geological disposal of higher activity radioactive waste for the reasons set out in the Committee on Radioactive Waste Management's (CoRWM) 'Recommendations to Government'[1], subsequent UK Government policy documents[2] and the technical, ethical and legal need for the long term, safe and secure management of the UK's higher activity radioactive waste.

1.2. The 2014 White Paper 'Implementing Geological Disposal'[3] (the '2014 White Paper') set out the UK Government's intention to amend the Planning Act 2008[4] (the Planning Act) to bring Geological Disposal Facilities (GDFs) for radioactive waste, and the deep boreholes[5] 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.

1.3. The Infrastructure Planning (Radioactive Waste Geological Disposal Facilities) Order 2015[6], which came into force on 27 March 2015, amended the Planning Act to extend the categories of nationally significant infrastructure projects to include development relating to geological disposal.

1.4. The Government has also taken forward work on a NPS in respect of geological disposal infrastructure in England (as defined by section 30A of the Planning Act). In January 2018, the Government published a draft NPS[7] for geological disposal infrastructure. As required by the Planning Act, the draft NPS has been subject to both public consultation and parliamentary scrutiny.

1.5. The purpose of the NPS is 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 for the development of a GDF, and the deep boreholes necessary to characterise the geology at potential sites, in England. The Secretary of State will be required to determine any applications for development consent in accordance with the NPS, unless certain other criteria (set out in the Planning Act) apply. The NPS is non-site specific and provides the high level assessment principles against which applications for development consent will be considered.

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

[2] 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

[3] 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

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

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

[6] 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

[7] BEIS (2018), 'Draft National Policy Statement For Geological Disposal Infrastructure A framework document for planning decisions on nationally significant infrastructure', available online at: https://www.gov.uk/government/consultations/national-policy-statement-for-geological-disposal-infrastructure

1.6. 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[8].

Habitats Regulations Assessment

1.7. 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[9] or a European offshore marine site[10] (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)[11]). The process by which the requirements of regulations 105 and 107 are met is generally known as Habitats Regulations Assessment (HRA)[12].

1.8. The assessment and HRA Report have been completed by Wood Environment & Infrastructure Solutions UK Limited (Wood[13]) on behalf of BEIS.

[8] In so far as the context permits or requires, a reference to the European Union includes a reference to the European Atomic Energy Community.
[9] 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. National Planning Policy Framework (NPPF) paragraph 176; 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 176; EN-1 does not).
[10] 'European offshore marine sites' are defined by regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017; these regulations cover waters (and hence sites) over 12 nautical miles from the coast.
[11] 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.
[12] 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.
[13] Formerly Amec Foster Wheeler Environment and Infrastructure UK Ltd (Amec Foster Wheeler)

Consultation

1.9. The Government consulted on the draft NPS between 25 January 2018 and 19 April 2018. The consultation included an Appraisal of Sustainability[14] and the HRA[15].

1.10. In total, the Government received 86 individual UK responses to the consultation from a range of organisations and members of the public. In addition, there were 350 campaign responses from members of the German public. The responses raised a number of points regarding the draft NPS and the accompany assessment, which have been summarised[16].

1.11. Respondent views on the HRA of the draft NPS ranged from those who provided broad support to those that disagreed with the conclusions of the HRA. Some respondents recognised and concurred that the HRA was appropriate given the absence of detailed information on the project(s) that would come forward in any particular geographical area. Others expressed the view that the HRA should have considered the effect of potential accidents and pollution of radioactive waste on the environment and habitats. In this regard, it is noted that paragraph 4.2.5 of the NPS states "Pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, applicants should ensure that the expected effects deriving from the vulnerability of the geological disposal facility development to risks of major accidents and/or disasters are considered. Where these effects fall outside the remit of the Examining Authority, they will be considered by the independent regulators. The applicant should make reference to the safety case, in which consideration is given to major accidents and/or disasters in the Environmental Statement".

Purpose of this report

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

1.13. It should be noted that the 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 NPS policies and objectives, aiming to identify measures that can be incorporated into the NPS to avoid, reduce or mitigate adverse effects. The assessment is therefore specific to the NPS. BEIS notes that 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

[14] BEIS (2018), 'Appraisal of Sustainability Report: Appraisal of Sustainability of the National Policy Statement for Geological Disposal Infrastructure', available online at: https://www.gov.uk/government/consultations/national-policy-statement-for-geological-disposal-infrastructure

[15] BEIS (2018), 'Habitats Regulations Assessment Report: Habitats Regulations Assessment of National Policy Statement for Geological Disposal Infrastructure', available online at https://www.gov.uk/government/consultations/national-policy-statement-for-geological-disposal-infrastructure

[16] BEIS (2019) 'Summary Of Responses To The Consultation: Draft National Policy Statement For Geological Disposal Infrastructure', available on line at: https://www.gov.uk/government/consultations/national-policy-statement-for-geological-disposal-infrastructure

Planning Act[17], and so this assessment does not remove the need for future project-level HRAs of any geological disposal infrastructure that may be proposed.

1.14. In addition, section 5(3) of the Planning Act 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 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[18] (the SEA Regulations). The AoS for the NPS is reported separately from the HRA, although the conclusions of the HRA have helped to inform the appraisal findings.

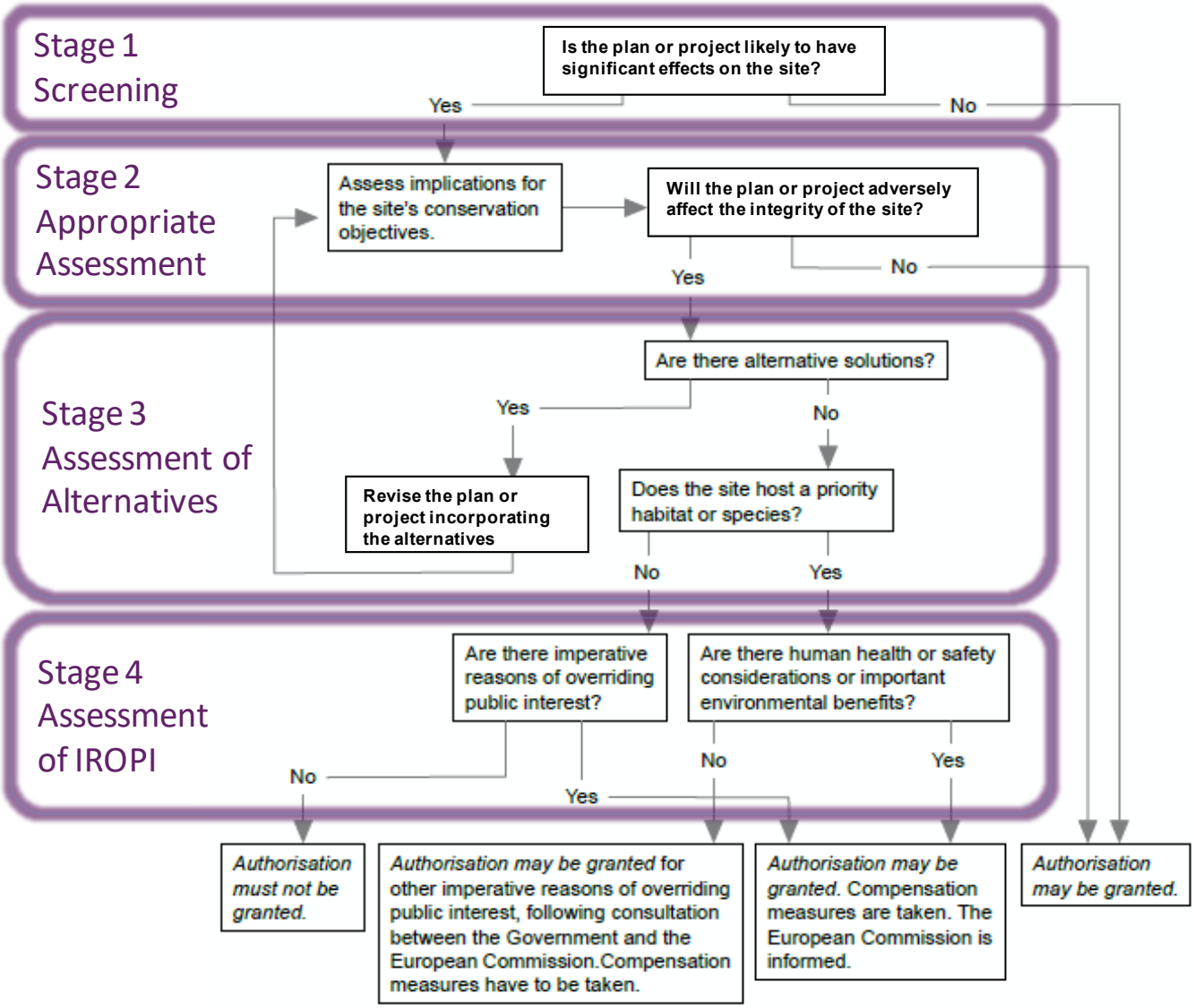
[17] The Planning Act 2008, available online at: http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1
[18] The Environmental Assessment of Plans and Programmes Regulations 2004 S.I. 2004 No. 1633, available online at: http://www.legislation.gov.uk/uksi/2004/1633/pdfs/uksi_20041633_en.pdf

2. HRA of the NPS

HRA overview

2.1. 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[19] 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



[19] 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

2.2. 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[20]. It should be noted that recent case law[21] has altered the accepted treatment of 'mitigation' and 'avoidance' measures at the screening stage; this has also indirectly reinforced the interpretation of the 'screening' test as a low-bar 'trigger' for 'appropriate assessment'.

2.3. If 'no significant effect' cannot be established, then '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, and to the plan or policy that is being assessed.

2.4. 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[22].

2.5. 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 (regulation 107); if no alternatives are available, then a case for authorising the plan for 'imperative reasons of overriding public importance' may be made.

Guidance

2.6. 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[23]. However, the HRA of the NPS is based on case-practice established through the HRAs of similar non-site specific NPSs and the following general guidance:

[20] 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.
[21] Case C 323/17 Judgment of the Court (Seventh Chamber) of 12 April 2018 (request for a preliminary ruling from the High Court (Ireland) – Ireland) - People Over Wind, Peter Sweetman v Coilte Teoranta (generally referred to as 'People over Wind'). This has altered how avoidance and mitigation measures are accounted for by the HRA. The 'People Over Wind' judgment states that "…it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site"; this contrasts with established practice in this area (based on the "Dilly Lane" judgment) where avoidance and mitigation measures have typically been accounted for during screening.
[22] Although it is important to be mindful of the 'People over Wind' judgment and the need to ensure that necessary mitigation or avoidance measures are considered and tested through an 'appropriate assessment' stage rather than through an extended or iterative screening exercise.
[23] 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

- 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 (2018) *The Habitats Regulations Handbook* [online]. Available at: http://www.dtapublications.co.uk/handbook/;
- European Commission (2001). Assessment of plans and projects significantly affecting Natura 2000 sites[24]: 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 92/43/EEC. European Commission, Brussels;
- 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; and
- The Planning Inspectorate (2017) Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects [online]. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/06/Advice-note-10v4.pdf.

The NPS for Geological Disposal Infrastructure

Introduction

2.7. The 2014 White Paper[25] on the long-term management of higher activity radioactive waste set out the UK Government's intention to produce an NPS to help guide applications for the development of GDFs. The 2014 White Paper identified 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."

2.8. This section expands on the description above, providing further detail in respect of the policy context, the need for geological disposal infrastructure, nationally significant

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".

[24] 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)).

[25] 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

infrastructure projects and the scope and contents of the NPS for Geological Disposal Infrastructure.

Government policy on management of higher activity radioactive waste

2.9. 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.

2.10. In July 2006, CoRWM recommended[26] 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. In June 2013, CoRWM issued a statement reiterating its commitment to geological disposal[27].

2.11. In October 2006, the UK Government and the devolved administrations published a response broadly accepting these recommendations[28]. After public consultation, two subsequent White Papers published in 2008 confirmed the Government's commitment to geological disposal for legacy waste[29] 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[30].

2.12. 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 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.

[26] 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

[27] 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

[28] 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

[29] 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

[30] 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

2.13. In line with this, the Nuclear Decommissioning Authority (NDA)[31] and Radioactive Waste Management (RWM)[32] continue to review appropriate solutions including learning from and engaging with overseas programmes, which could have the potential to improve the long-term management of some of the UK's higher activity radioactive wastes. At the moment, no credible alternatives have emerged that would accommodate all of the categories of waste in the inventory for disposal[33] and it is clear that a geological disposal facility will remain necessary for some types of higher activity radioactive waste.

2.13.1. In December 2018 the UK Government published an updated framework for the long-term management of higher activity waste, Implementing Geological Disposal – Working with Communities[34]. This document replaces the 2014 White Paper (Implementing Geological Disposal – A framework for the long term management of higher activity radioactive waste[35]) in England. It provides updates on the actions set out in the 2014 White Paper, including the policy on how the Government will work with communities to identify a suitable location for a GDF. The policy on working with communities set out in the 2018 document applies to the Government's designated delivery body for its programme of geological disposal, RWM; however, the NPS is standalone and applies to any developer wishing to apply for development consent for geological disposal infrastructure.

2.14. 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 NPS).

What is geological disposal?

2.15. Geological disposal involves isolating radioactive waste deep inside a suitable rock volume to ensure that no harmful quantities of radioactivity ever reach the surface environment.

2.16. This is achieved through the use of multiple barriers[36] that work together to provide protection over hundreds of thousands of years. The multiple barriers that provide safety for geological disposal are a combination of the following:

- form of the radioactive waste itself - for example, high level waste that arises initially as a liquid is converted into a durable, stable, solid glass form before storage and disposal;
- packaging of the waste;
- engineered barriers (buffer) that protect the waste packages and limit the movement of radionuclides if they are released from the waste packages;

[31] NDA (2018), 'NDA Radioactive waste management strategy', available online at: https://www.gov.uk/government/consultations/nda-radioactive-waste-management-strategy
[32] RWM (2017), 'Geological Disposal: Review of Alternative Radioactive Waste Management Options', available at: https://rwm.nda.gov.uk/publication/geological-disposal-review-of-alternative-radioactive-waste-management-options/
[33] RWM (2018), 'Inventory for geological disposal: Main Report', available online: https://www.gov.uk/government/publications/2016-inventory-for-geological-disposal
[34] BEIS (2018) 'Implementing Geological Disposal – Working with Communities', available online: https://www.gov.uk/government/publications/implementing-geological-disposal-working-with-communities-long-term-management-of-higher-activity-radioactive-waste
[35] BEIS (2014) 'Implementing Geological Disposa', available online at: https://www.gov.uk/government/publications/implementing-geological-disposal
[36] RWM (2017) 'The Multi-Barrier Approach', Science file, October 2017, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/654537/3._The_multi-barrier_approach_Proof_6__1_.pdf

- engineered features of the facility that the waste packages are placed in; and
- stable geological setting (rock) in which the facility is sited.

2.17. A GDF 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 and could be separated by a distance of several kilometres.

2.18. 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.

The need for geological disposal infrastructure

2.19. 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.

2.20. Significant amounts of higher activity radioactive waste already exist, as a result of a wide range of activities. It is currently being stored safely on an interim basis at licensed nuclear sites across the UK. More waste will arise as existing nuclear facilities reach the end of their lifetime and are decommissioned and cleaned up, as well as through the operation and decommissioning of any new nuclear power stations.

2.21. Interim storage provides a temporary, safe and secure environment for higher activity radioactive waste. It is not, however, a permanent solution.

2.22. Higher activity radioactive waste needs to be isolated from people and the surface environment for periods of time that are very long in comparison with human lifespans but are short on geological timescales. Geological disposal can provide this long-term isolation; radioactivity decays naturally over time, so radioactive waste is managed in appropriate facilities to ensure that no harmful quantities of radioactivity ever reach the surface environment

2.23. 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 and at the moment, no credible alternatives have emerged that could accommodate the categories of waste required.

2.24. The UK Government considers that geological disposal of higher activity radioactive waste will ensure that people and the environment are protected from the radiological and other hazards of that waste over the long term and that the burden of dealing with the waste does not fall on future generations, and so will assist the UK in complying with its legal obligations[37].

2.25. 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 NPS.

2.26. The need for deep boreholes is driven by technical requirements and form part of a wider integrated programme of site characterisation which is required for any geological disposal facility development. They are defined as nationally significant infrastructure in the Planning Act.

[37] Council Directive 2011/70/Euratom, recital 23, July 2011. To the extent that these obligations under the Spent Fuel and Radioactive Waste Directive cease to be legally binding on the UK following its departure from the EU, the UK will continue to be subject to other spent fuel and radioactive waste obligations as a Contracting Party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention).

2.27. 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

2.28. The Planning Act 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. As part of this process, the applicant should consider whether the proposed nationally significant infrastructure project should be considered as Environmental Impact Assessment[38] development under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the Environmental Impact Assessment Regulations). 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[39].

2.29. 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 Planning Inspector or a panel of three or more Planning 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.

2.30. Part 3 of the Planning Act lists the projects that are to be determined as nationally significant infrastructure projects. In March 2015, The Infrastructure Planning (Radioactive Waste Geologic Disposal Facilities) Order 2015[40] 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.

2.31. In addition to development consent under the Planning Act, 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 be responsible for regulating the environmental aspects of the development (e.g. during the operation of the facility, managing the impacts of any discharges from the facility and the required monitoring, and overseeing that standards to protect people and the environment are met for surrender of the environmental permit once the facility is closed).

2.32. 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,

[38] Planning Inspectorate (December 2017), '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/2017/12/Advice-note-7.pdf

[39] Planning Inspectorate (November 2017), 'Habitats Regulations Assessment: Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects', available online at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/06/Advice-note-10v4.pdf

[40] 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

disposal of radioactive waste will not be allowed without the appropriate environmental permit.

2.33. 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.

2.34. 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

2.35. 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.

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

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

The NPS for Geological Disposal Infrastructure

What is the purpose of the NPS?

2.38. The purpose of the NPS is 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 for the development of a GDF, and the deep boreholes necessary to characterise the geology at potential sites, in England. The Secretary of State will be required to determine any applications for development consent in accordance with the NPS, unless certain other criteria (set out in the Planning Act) apply. 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 developers on the relevant infrastructure, generic impacts and general siting considerations that may be needed 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?

2.39. The NPS provides 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 in England, and beneath the seabed in waters adjacent to England up to the seaward limits of the territorial sea.

2.40. The NPS is non-site specific and so does not include candidate sites. 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.

2.41. Radioactive waste management is a devolved policy issue. 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. This NPS only applies to proposals for development in England and the Secretary of State will not decide applications for development in other parts of the UK. Scotland has a different policy for the long-term management of higher activity radioactive waste. Notwithstanding, relevant Scottish and Welsh information has been considered in the preparation of this HRA, 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?

2.42. 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 of 30A of the Planning Act. As defined in the Planning Act, geological disposal infrastructure comprises a facility in England (or within England's

territorial waters[41] up to the seaward limits of the territorial sea) that meets the following conditions:

- the main purpose of the facility is expected to be the final disposal of radioactive waste;
- 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[42].

2.43. As well as the facility itself, deep boreholes are also included within the Planning Act as geological disposal infrastructure. This is defined as the construction of one or more boreholes, and the carrying out of any associated excavation, construction or building work, where:

- the borehole or boreholes will be constructed, and any associated excavation, construction or building work will be carried out, in England or waters adjacent to England up to the seaward limit of the territorial sea; and
- 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 geological disposal facility[43].

2.44. 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 radioactive waste GDF itself. Applications for development consent for these projects may also include 'associated development' within the meaning of the Planning Act[44]. 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?

2.45. 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:

- high level waste arising from the reprocessing of spent nuclear fuel at Sellafield;
- intermediate level waste arising from existing nuclear licensed sites, and defence, medical, industrial, research and educational activities;
- the small proportion of low level waste that is not suitable for disposal in the national Low Level Waste Repository (LLWR);

[4141] Territorial waters refer to any area of water over which a state has jurisdiction. In the UK this is up to twelve nautical miles (22km).
[42] See section 30A (1) and (2), Planning Act 2008.
[43] See section 30A (4) and (5), Planning Act 2008.
[44] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/192681/Planning_Act_2008_-_Guidance_on_associated_development_applications_for_major_infrastructure_projects.pdf

- 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 - 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.

2.46. The volumes of these wastes (known as the 'inventory for disposal') have been made publicly available via the UK Radioactive Waste Inventory[45]. The Inventory for Geological Disposal[46] details what waste from the UK Radioactive Waste Inventory is destined for geological disposal.

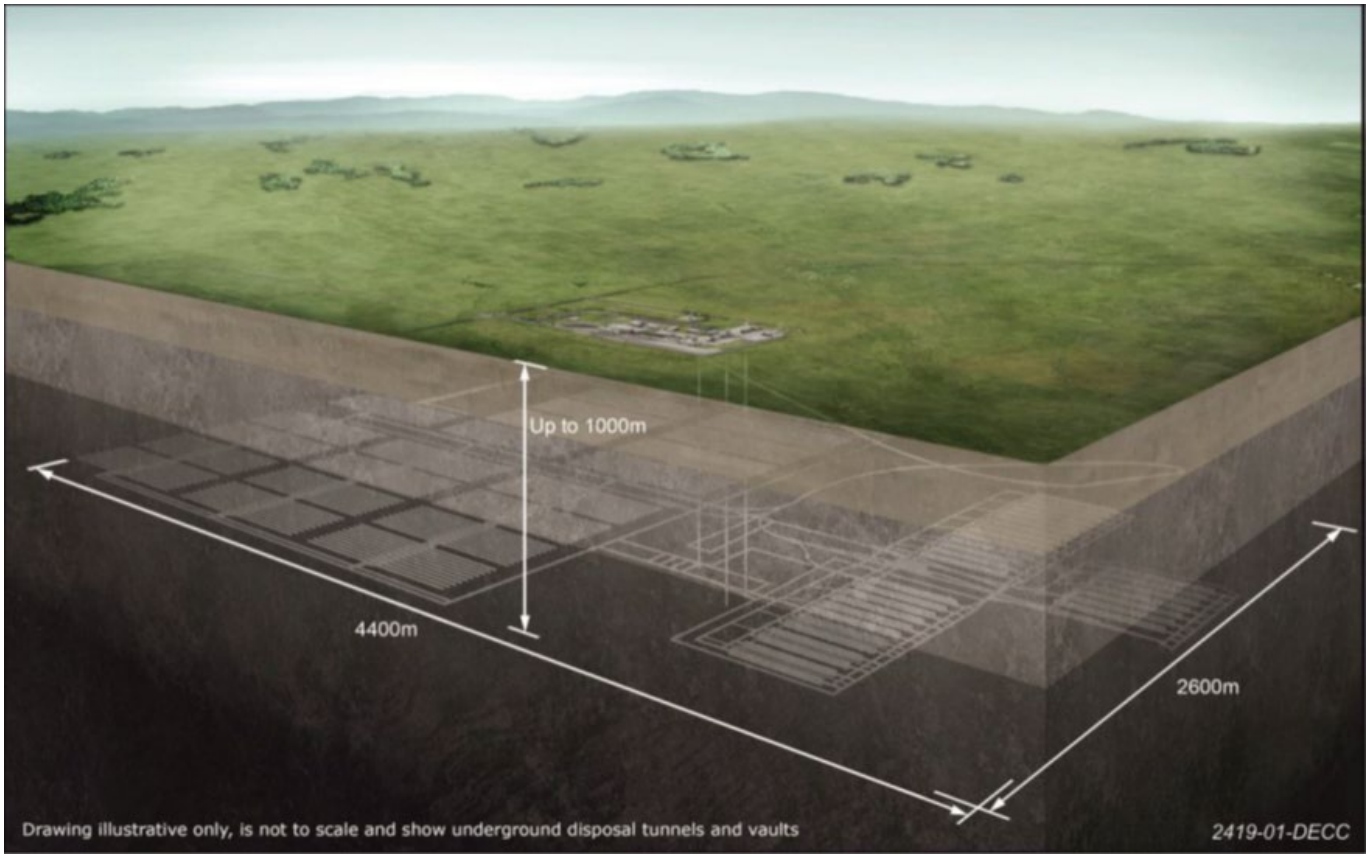
2.47. In an application for development consent for a geological disposal facility, the developer should provide a statement setting out the nature and amount of waste expected to be disposed of at the relevant site.

What could a GDF look like?

2.48. **Figure 2.2** 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.

[45] The UK's Radioactive Waste Inventory, available online at: https://ukinventory.nda.gov.uk
[46] Radioactive Waste Management (2018), 'Inventory for geological disposal: Main Report', available online: https://www.gov.uk/government/publications/2016-inventory-for-geological-disposal

Figure 2.2 Illustrative diagram of a geological disposal facility



2.49. 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.

2.50. 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.

2.51. 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.

The NPS for Geological Disposal Infrastructure

2.52. The 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 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 Environmental Impact Assessment Regulations[47] and the Habitats Regulations[48]. 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;
  - Historic Environment;
  - 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, 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.

[47] The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/572), available online: http://www.legislation.gov.uk/uksi/2017/572/contents/made

[48] The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017 available online at https://www.legislation.gov.uk/uksi/2017/1012/contents/made and http://www.legislation.gov.uk/uksi/2017/1013/contents/made respectively.

HRA of the NPS

What can be assessed, and how?

2.53. The NPS 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. The HRA must therefore assess the likely effects and outcomes of the NPS with a particular focus on:

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

2.54. The HRA of the 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'[49] 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 NPS which will ensure that it cannot adversely affect any European sites.

In combination effects

2.55. 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 NPS.

2.56. The AoS identified a number of policies, plans and programmes which could operate cumulatively with the NPS. However, due to the strategic nature of the 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

[49] 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'.

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.

2.57. 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 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.

3. Screening

Overview

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

- whether the plan or policy 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. A European site or its features must be both exposed and sensitive to the environmental changes that could occur as a result of the NPS implementation for significant effects to be a possibility. If there is no exposure or no sensitivity then there will be 'no effects' (as opposed to 'no significant effects') and hence no possibility of 'in combination' effects. However, at the screening stage, the 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 NPS

3.3. The 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.

3.4. With regard to biodiversity, the 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 (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, irreplaceable habitats including ancient woodland and ancient and veteran trees, 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 NPS) and that the "Secretary of State must comply with the Habitats Regulations when considering development, where that development is likely to have a significant effect on a habitat site" (paragraph 5.4.10 of the NPS).

Assumptions

3.5. The NPS recognises that separate regulation under the pollution control framework or other consenting and licensing regimes will also apply, and that geological disposal infrastructure NSIPs may require a number of separate consents or be subject to other regulatory regimes. The NPS indicates that the Secretary of State should work on the assumption that, in terms of the control and enforcement, the relevant pollution control regime will be properly applied and enforced, and that decisions under the Planning Act should complement but not duplicate those taken under the relevant pollution control regime (paragraph 4.7.5 of the NPS). The Secretary of State should not refuse consent on the basis of regulated impacts unless there is good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted (paragraph 2.4.9 of the NPS).

3.6. The HRA necessarily makes a similar assumption – i.e. that all normal licensing and consenting procedures will be employed at scheme delivery, including HRA, and that these consenting and licensing regimes will be fully effective. The HRA cannot assume that these regimes will not function as intended.

3.7. However, it should be noted that a recent CJEU judgment in a case known as 'People Over Wind'[50] has altered how avoidance and mitigation measures are accounted for by the HRA. The 'People Over Wind' judgment states that "…*it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site*". This contrasts with established practice in this area (based on the "Dilly Lane" judgment[51]) where avoidance and mitigation measures have typically been accounted for during screening.

3.8. There is currently little information on the practical implementation of the 'People over Wind' judgment, particularly for plan- or NPS-level HRA, although broad guidance has been issued by the Planning Inspectorate (PINS)[52]. Generally, high-level HRAs have often assumed that established best-practice avoidance and mitigation measures would be employed throughout scheme design and construction to safeguard environmental receptors (including European site interest features), and so accounted for this at the screening stage when considering whether sites or features are potentially exposed to environmental changes. However, it is arguable that an assumption such as this, albeit in relation to a lower-tier plan or project that would itself be subject to HRA, might constitute an 'avoidance measure' that the NPS is effectively relying on to ensure that significant effects do not occur. In this instance, therefore, no assumptions regarding established best-practice avoidance and mitigation measures are taken into account at screening, but are instead introduced at the 'appropriate assessment' stage (if required).

3.9. 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.

[50] Case C-323/17 Judgment of the Court (Seventh Chamber) of 12 April 2018 (request for a preliminary ruling from the High Court (Ireland) – Ireland) - People Over Wind, Peter Sweetman v Coilte Teoranta

[51] Hart District Council v Secretary of State for Communities and Local Government [2008] EWHC 1204

[52] PINS Note 05/2018: *Consideration of avoidance and reduction measures in Habitats Regulations Assessment: People over Wind, Peter Sweetman v Coillte Teoranta.*

Screening European Sites

3.10. **Paragraph 1.8** of this report sets out those designated nature conservation sites included under the term 'European site' to which screening will apply. **Table 3.1** provides a summary of these different European sites and the numbers of the site in the UK.

Table 3.1 Summary of European site designations

Designation	Long Form	Description	No. in UK*
SAC	Special Area of Conservation	Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive (*Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora)*. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds). Of the Annex I habitat types, 78 are believed to occur in the UK. Of the Annex II species, 43 are native to, and normally resident in, the UK.	658
SCI	Site of Community Importance	Sites of Community Importance (SCIs) are sites that have been adopted by the European Commission but not yet formally designated by the government of each country. Although not formally designated they are nevertheless fully protected by the Habitats Directive and the *Conservation of Habitats and Species Regulations 2017.*	9
cSAC	Candidate Special Area of Conservation	Candidate SACs (cSACs) are sites that have been submitted to the European Commission, but not yet formally adopted as SCIs. Although these sites are still undergoing designation and adoption they are nevertheless fully protected by the Habitats Directive and the *Conservation of Habitats and Species Regulations 2017.*	1
pSAC	Possible Special Area of Conservation	Sites that have been formally advised to UK Government, but not yet submitted to the European Commission. As a matter of policy the Governments in England, Scotland and Wales extend the same protection to these sites in respect of new development as that afforded to SACs.	0
dSAC	Draft Special Area of Conservation	Areas that have been formally advised to UK government as suitable for selection as SACs, but have not been formally approved by government as sites for public consultation. These are not protected (unless covered by some other designation) although the statutory authorities will usually take into account the proposed reasons for designation when considering potential impacts on them.	Not stated
SPA	Special Protection Area	Designated under *EU Council Directive 79/409/EEC on the Conservation of Wild Birds* (the 'old Wild Birds Directive') and *Directive 2009/147/EC on the Conservation of Wild Birds* (the 'new Wild Birds Directive, which repeals the 'old Wild Birds Directive'),and protected by Article 6 of *Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora.* These directives are implemented in the UK through the *Wildlife & Countryside Act 1981* (as amended), the *Conservation of Habitats and Species Regulations 2017* (as amended), the *Wildlife (Northern Ireland) Order 1985*, the *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985* and *The Conservation (Natural Habitats, &C.) (Northern Ireland) Regulations 1995* (as amended) and the *Conservation of Offshore Marine Habitats and Species Regulations 2017*	274**
pSPA	Potential SPA	These are sites that are still undergoing designation and have not been designated by the Secretary of State; however, ECJ case law indicates that these sites are protected under Article 4(4) of *Directive 2009/147/EC* , and as a matter of policy the Governments in England, Scotland and Wales extend the same protection to these sites in respect of new development as that afforded to SPAs.	1
Ramsar	Ramsar	The *Convention on Wetlands of International Importance especially as Waterfowl Habitat* (Ramsar Convention or Wetlands Convention) was adopted in Ramsar, Iran in February 1971. The UK ratified the Convention in 1976. As a matter of policy the Governments in England, Scotland and Wales extend the same protection to listed	175***

Designation	Long Form	Description	No. in UK*
		Ramsar sites in respect of new development as that afforded to SPAs and SACs.	

*Based on JNCC data (JNCC (2019) SACs in the United Kingdom [online]. Available online at: http://jncc.defra.gov.uk/page-1458, JNCC (2019) Special Protection Areas (SPAs): UK [online]. Available online: http://jncc.defra.gov.uk/page-1400 and JNCC (2018) UK Ramsar sites [online]. Available online: http://jncc.defra.gov.uk/page-1388)
**Excludes subsumed sites which have not been formally declassified
*** The total includes 19 sites in overseas territories

3.11. Sites and features are usually 'screened out' either because they will not be exposed to the environmental changes associated with a scheme, or because the features will not be sensitive to those changes.

Exposure of sites to significant effects

3.12. The NPS provides 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 in England, and beneath the seabed in waters adjacent to England up to the seaward limits of the territorial sea.

3.13. 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 that feature is sensitive to needs to occur, and then the feature needs to be exposed to that change.

3.14. The principal characteristics of any geological disposal infrastructure are summarised in **Section 2** of this report. In consequence, it is possible that the construction, operation and decommissioning/closure of geological disposal infrastructure consented under the NPS could lead to European sites being exposed to a wide range of effects, arising from:

- direct physical changes to the environment;
- disturbance / displacement (noise, vibration, visual);
- changes in water quality;
- changes in surface or groundwater hydrology;
- toxic and non-toxic contamination;
- air quality; and
- constraining future habitat changes.

3.15. For example, most works associated with the site investigation or the construction of the GDF would have direct physical effects, which may have direct or secondary effects on European sites, for example, either direct loss of part or whole of a European site, or direct loss of habitats or features that are critical to the maintenance of interest features of the European site e.g. foraging habitats, roost sites or breeding sites.

3.16. However, 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.

3.17. Based on the information available in the NPS; comparison with other major infrastructure projects; and analysis of the interest features of the UK European sites, it is considered unlikely that '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 NPS; this is used as the basis for scoping the HRA[53]. 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 kilometre, based on Scottish Natural Heritage guidance[54] (Greylag goose, Pink-footed goose, Barnacle goose, Osprey).

3.18. 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**.

3.19. 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.

3.20. 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

[53] 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".

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

European site. **On this basis, and consistent with the stages of the HRA process, appropriate assessment is required**.

Relevance to future projects

3.21. The HRA screening assessment for the NPS is undertaken at a strategic level, based on the assumptions for geological disposal infrastructure that are set out in the 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 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 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 NPS cannot be ruled out. The impacts of the 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 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 NPS; and, subsequently
- a review of the content and scope of the 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[55] (SI) or construction, operation and decommissioning of the GDF, on a 'high'(H), 'moderate'(M) or 'low' (L) qualitative risk scale[56]. As a general rule, if significant effects on a European site cannot be avoided

[55] Site investigation works include deep investigative boreholes.
[56] 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).

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.

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: • 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:
	  • impacts on geomorphological processes; and
	  • 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:
	  • removal of foraging habitats, roost sites or breeding sites;
	  • removal of habitats that facilitate or allow daily or seasonal species movements; and
	  • removal of habitats that support meta-populations[57] of species in association with European sites.
	• Habitat loss and fragmentation may displace species and increase competition for resources in other European sites.
		Wetland/estuarine birds; oher birds; terrestrial mammals; marine mammals; diadramous[58] fish; some non-migratory wetland and riparian plants, fish and invertebrates.	L	H	L	L

Disturbance / displacement	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	Wetland/estuarine birds; Other birds; terrestrial mammals;	M	H	L	L

[57] 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.

[58] 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			
(noise, vibration, visual)	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: • noise from plant or personnel; • vibration from plant, particularly in the water environment; • visual disturbance of species due to plant or personnel movements; and • site lighting displacing species from preferred commuting routes or foraging areas.	marine mammals and diadramous fish.				
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: • eutrophication of waterbodies leading to changes in habitats; • 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 • 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: • groundwater dependent terrestrial ecosystems such as fens; • rivers and associated species, where flow timing and duration as well as volume are significant; • inundation communities and habitats dependent on surface water flooding, such as floodplain meadows or wet woodlands; • communities dependent on locally impeded drainage (e.g. mires); and • species dependent on freshwater flows (obviously fish and aquatic species, but potentially some coastal birds). 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 impact. The GDF could: • require ground-water or surface-water abstraction for construction or operation, which may affect groundwater dependent terrestrial ecosystems or local watercourses;	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			
	• interrupt surface, subsurface or groundwater drainage and flow paths and hence alter flows or water tables supporting dependent terrestrial, aquatic or coastal ecosystems; and • 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: • contamination of soils and groundwater by construction-derived pollutants such as fuel or lubricants, affecting dependent habitats and species; • sediment-heavy run-off affecting local watercourses and features relied on by certain species (e.g. gravels used for spawning by fish); and • 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: • 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 • 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 advantage of the increased amounts of available nitrogen. 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.	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			
	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[59] 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 offsite, 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 NPS components

Assessment of adverse effects

4.10. The content of the 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:

[59] 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 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 categorically 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 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 measure included in other plans to be ignored.

Draft NPS Recommendations

4.13. The HRA of the Draft NPS proposed additions to the NPS text to supplement the information on the policy framework for European sites, and to clarify HRA procedures. The suggested changes did not, however, exclude the possibility of adverse effects.

4.1. In reviewing the proposed changes, and mindful of the Secretary of State's responsibilities, the Government has accepted some of the recommendations, but not all. The Government felt that the NPS as drafted provided sufficiently clear information relating to the need for a site-specific HRA to accompany any development consent application for geological disposal infrastructure. In particular, with regards to the impacts in Chapter 5, the revised NPS has incorporated some additional requirements that were highlighted through the public consultation: however the level of detail required is in line with other NPSs. It was felt that sufficient clarity was available as to what would be expected in any site-specific HRA.

Conclusion

4.2. 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 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. **In consequence, the appropriate assessment concluded that it was not possible to rule out the possibility that any European site in England (and some in Soctland and Wales) could, in theory, be potentially vulnerable to adverse effects as a result of the development of geological disposal infrastructure anticipated by the NPS.**

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[60] 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[61]. In October 2006, the UK Government and the devolved administrations published a response broadly accepting these recommendations[62]. After public consultation, two subsequent White Papers published in 2008 confirmed the Government's commitment to geological disposal for legacy waste[63] 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[64]. In June 2013, CoRWM issued a statement reiterating its

[60] 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.
[61] 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
[62] 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
[63] 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
[64] 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[65], stating that "The aim should be to progress to disposal as soon as practicable, consistent with developing and maintaining public and stakeholder confidence". The UK Government remains committed[66,67] 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 NPS).

5.4. The primary objective of the NPS is the: "implementation of government policy on geological disposal for higher activity radioactive waste and the need for such infrastructure" (paragraph 1.12.1). 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[68]. 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"[69].

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.

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[65] 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

[66] 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

[67] BEIS (2018), 'Implementing Geological Disposal – Working With Communities: An updated framework for the long-term management of higher activity radioactive waste', available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/766643/Implementing_Geological_Disposal_-_Working_with_Communities.pdf

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

[69] 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

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
- 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)[70] and Radioactive Waste Management (RWM)[71] continue to review appropriate solutions including learning from and engaging with overseas programmes, which could have the potential to improve the long-term management of some of the UK's higher activity radioactive wastes. At the moment, no credible alternatives have emerged that would accommodate all of the categories of waste in the inventory for disposal[72] and it is clear that a geological disposal facility will remain necessary for some types of higher activity radioactive waste.

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

[70] NDA (2018), 'NDA Radioactive waste management strategy', available online at: https://www.gov.uk/government/consultations/nda-radioactive-waste-management-strategy
[71] RWM (2017), 'Geological Disposal: Review of Alternative Radioactive Waste Management Options', available at: https://rwm.nda.gov.uk/publication/geological-disposal-review-of-alternative-radioactive-waste-management-options/
[72] RWM (2018), 'Inventory for geological disposal: Main Report', available online: https://www.gov.uk/government/publications/2016-inventory-for-geological-disposal

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 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 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. 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 either: (i) not provide any additional certainty that adverse effects on European sites could be avoided or reduced, compared to the current National Policy Statement; and/or (ii) not be feasible; and/or (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 alternatives solutions in respect of the NPS that would be less damaging to European sites**.

5.30. It is the view of Government that the 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. 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 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 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 NPS, whilst delivering the policy objective. As the 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 either: (i) not provide any additional certainty that adverse effects on European sites could be avoided or reduced, compared to the current NPS; and/or (ii) not be feasible; and/or (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 6.8, 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. These requirements should be read in conjunction with paragraph 4.3.4 of the NPS which states that: “If it is impossible to rule out that a proposed development might have an adverse effect on the integrity of a habitat site, the Secretary of State may still grant development consent where all of the following conditions are satisfied:

- there are no alternative solutions to the issue which the proposed development is designed to address.
- there are imperative reasons of overriding public interest for the development.
- adequate timely compensatory measures will be put in place to ensure the overall coherence of the network of protected sites is maintained.”

Project-level HRA

6.14. The HRA of the 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. They are 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 will combine a grant of planning permission with a range of other separate consents, such as 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 Directive 2011/92/EU (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), and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
GDF	Geological Disposal Facility. 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 of radioactivity ever reach the surface environment. The development of a geological disposal facility will be a major infrastructure project of national significance. It will provide a permanent solution for the UK's existing higher activity radioactive waste (including anticipated waste from new nuclear power stations).
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 92/433/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 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 and revised in 2018, 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).
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.
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	Strategic Environmental Assessment. An iterative process to identify, describe and evaluate the likely significant effects of a plan or programme (and any reasonable alternatives). It is undertaken in compliance with Directive 2001/42/EC and UK implementing 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 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*) • Estuaries • 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*) • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *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 • *Trichomanes speciosum*
Arun Valley SACCI	• *Anisus vorticulus*
Asby Complex SAC	• Alkaline fens Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* • *Drepanocladus (Hamatocaulis) vernicosus* • European dry heaths • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • Limestone pavements • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Petrifying springs with tufa formation (*Cratoneurion*) • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Vertigo geyeri*
Ashdown Forest SAC	• European dry heaths • Northern Atlantic wet heaths with *Erica tetralix* • *Triturus cristatus*
Aston Rowant SAC	• *Asperulo-Fagetum* beech forests • *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) • *Tilio-Acerion* forests of slopes, screes and ravines
Barnack Hills and Holes SAC	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)

Site	Interest Features
Bassurelle Sandbank SAC	• Sandbanks which are slightly covered by sea water all the time
Baston Fen SAC	• *Cobitis taenia*
Bath and Bradford-on-Avon Bats SAC	• *Myotis bechsteini* • *Rhinolophus ferrumequinum* • *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) • *Triturus cristatus*
Beer Quarry and Caves SAC	• *Myotis bechsteini* • *Rhinolophus ferrumequinum* • *Rhinolophus hipposideros*
Benacre to Easton Bavents Lagoons SAC	• Coastal lagoons
Berwickshire and North Northumberland Coast SAC	• *Halichoerus grypus* • Large shallow inlets and bays • Mudflats and sandflats not covered by seawater at low tide • Reefs • Submerged or partially submerged sea caves
Berwyn a Mynyddoedd de Clwyd/ Berwyn and South Clwyd Mountains SAC	• Blanket bogs (* if active bog) • Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) • Calcareous rocky slopes with chasmophytic vegetation • European dry heaths • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • 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*
Bolton Fell Moss SCISAC	• Degraded raised bogs still capable of natural regeneration
Border Mires, Kielder - Butterburn SAC	• Blanket bogs (* if active bog) • European dry heaths • Northern Atlantic wet heaths with *Erica tetralix*

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

Site	Interest Features
	• Northern Atlantic wet heaths with *Erica tetralix*
Cannock Extension Canal SAC	• *Luronium natans*
Cardiff Beech Woods SAC	• *Asperulo-Fagetum* beech forests • *Tilio-Acerion* forests of slopes, screes and ravines
Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC	• *Alosa alosa* • *Alosa fallax* • *Lampetra fluviatilis* • *Petromyzon marinus* • *Lutra lutra* • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Estuaries • Large shallow inlets and bays • Mudflats and sandflats not covered by seawater at low tide • Salicornia and other annuals colonizing mud and sand • Sandbanks which are slightly covered by sea water all the time
Carrine Common SAC	• European dry heaths • 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* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
Cerne and Sydling Downs SAC	• *Euphydryas (Eurodryas, Hypodryas) aurinia* • 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 • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Coastal lagoons • Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) • Perennial vegetation of stony banks
Chilmark Quarries SAC	• *Barbastella barbastellus* • *Myotis bechsteini* • *Rhinolophus ferrumequinum* • *Rhinolophus hipposideros*
Chilterns Beechwoods SAC	• *Asperulo-Fagetum* beech forests • *Lucanus cervus* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)

Site	Interest Features
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 • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)
Cotswold Beechwoods SAC	• *Asperulo-Fagetum* beech forests • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
Craven Limestone Complex SAC	• Active raised bogs • Alkaline fens • *Austropotamobius pallipes* • Calaminarian grasslands of the *Violetalia calaminariae* • *Cottus gobio* • *Cypripedium calceolus* • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • Limestone pavements • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Petrifying springs with tufa formation (*Cratoneurion*) • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *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* • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • 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 • 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) • *Coenagrion mercuriale* • European dry heaths • *Lutra lutra* • Northern Atlantic wet heaths with *Erica tetralix* • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • *Salmo salar*

Site	Interest Features
Dawlish Warren SAC	• Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • *Petalophyllum ralfsii* • Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’)
Dee Estuary/ Aber Dyfrdwy SAC	• Annual vegetation of drift lines • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Embryonic shifting dunes • Estuaries • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • *Lampetra fluviatilis* • Mudflats and sandflats not covered by seawater at low tide • *Petalophyllum ralfsii* • *Petromyzon marinus* • *Salicornia* and other annuals colonizing mud and sand • Shifting dunes along the shoreline with *Ammophila arenaria* (’white dunes’) • 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 • *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 • Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) • Bog woodland • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* • *Coenagrion mercuriale* • Depressions on peat substrates of the *Rhynchosporion* • Embryonic shifting dunes • European dry heaths • Humid dune slacks • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Northern Atlantic wet heaths with *Erica tetralix* • Old acidophilous oak woods with *Quercus robur* on sandy plains • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)

Site	Interest Features
	• Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') • Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix* • *Triturus cristatus*
Dorset Heaths SAC	• Alkaline fens • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* • *Coenagrion mercurial* • Depressions on peat substrates of the *Rhynchosporion* • European dry heaths • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Northern Atlantic wet heaths with *Erica tetralix* • Old acidophilous oak woods with *Quercus robur* on sandy plains • *Triturus cristatus*
Dover to Kingsdown Cliffs SAC	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • 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*) • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) • Embryonic shifting dunes • Estuaries • Fixed coastal dunes with herbaceous vegetation ('grey dunes') • Humid dune slacks • Mudflats and sandflats not covered by seawater at low tide • *Salicornia* and other annuals colonizing mud and sand • 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*) • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
Duddon Mosses SAC	• Active raised bogs • Degraded raised bogs still capable of natural regeneration
Duncton to Bignor Escarpment SAC	• *Asperulo-Fagetum* beech forests
Dungeness SAC	• Annual vegetation of drift lines • Perennial vegetation of stony banks • *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* • European dry heaths • Northern Atlantic wet heaths with *Erica tetralix*
East Hampshire Hangers SAC	• *Asperulo-Fagetum* beech forests • *Gentianella anglica* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Taxus baccata* woods of the British Isles • *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*) • *Barbastella barbastellus* • *Myotis bechsteini*
Eller`s Wood and Sand Dale SAC	• Petrifying springs with tufa formation (*Cratoneurion*) • *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*) • European dry heaths • *Lucanus cervus* • Northern Atlantic wet heaths with *Erica tetralix*
Essex Estuaries SAC	• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Estuaries • Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) • Mudflats and sandflats not covered by seawater at low tide • *Salicornia* and other annuals colonizing mud and sand • Sandbanks which are slightly covered by sea water all the time • *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*) • *Barbastella barbastellus* • *Lutra lutra* • *Myotis bechsteini* • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
Exmoor Heaths SAC	• Alkaline fens • Blanket bogs (* if active bog)

Site	Interest Features
	• European dry heaths • Northern Atlantic wet heaths with *Erica tetralix* • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • Vegetated sea cliffs of the Atlantic and Baltic Coasts
Fal and Helford SAC	• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Estuaries • Large shallow inlets and bays • Mudflats and sandflats not covered by seawater at low tide • Reefs • *Rumex rupestris* • 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* • *Cobitis taenia* • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • *Triturus cristatus*
Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses SAC	• Active raised bogs • Degraded raised bogs still capable of natural regeneration
Fens Pools SAC	• *Triturus cristatus*
Flamborough Head SAC	• Reefs • Submerged or partially submerged sea caves • 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* • 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 • *Gentianella anglica* • 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* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)

Site	Interest Features
Hackpen Hill SAC	• *Gentianella anglica* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
Haisborough, Hammond and Winterton SAC	• *Sandbanks which are slightly covered by sea water all the time* • *Reefs* • *Phocoena phocoena* • *Halichoerus grypus*
Halkyn Mountain/ Mynydd Helygain SAC	• Calaminarian grasslands of the *Violetalia calaminariae* • European dry heaths • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Triturus cristatus*
Hamford Water SCISAC	• *Gortyna borelii lunata*
Harbottle Moors SAC	• European dry heaths
Hartslock Wood SAC	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *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 • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* • *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*) • Coastal lagoons • Dunes with *Hippopha rhamnoides* • Embryonic shifting dunes • Estuaries • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • *Halichoerus grypus* • *Lampetra fluviatilis* • Mudflats and sandflats not covered by seawater at low tide • *Petromyzon marinus*

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

Site	Interest Features
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) • *Taxus baccata* woods of the British Isles
Kirk Deighton SAC	• *Triturus cristatus*
Lake District High Fells SAC	• Alkaline fens • Alpine and Boreal heaths • Blanket bogs (* if active bog) • Calcareous rocky slopes with chasmophytic vegetation • *Drepanocladus (Hamatocaulis) vernicosus* • European dry heaths • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels • *Juniperus communis* formations on heaths or calcareous grasslands • Northern Atlantic wet heaths with *Erica tetralix* • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* • Siliceous alpine and boreal grasslands • Siliceous rocky slopes with chasmophytic vegetation • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) • Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)
Lands End and Cape Bank SCISAC	• Reefs
Lewes Downs SAC	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
Limestone Coast of South West Wales/ Arfordir Calchfaen de Orllewin Cymru SAC	• Vegetated sea cliffs of the Atlantic and Baltic Coasts • Fixed coastal dunes with herbaceous vegetation ("grey dunes") • European dry heaths • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • Caves not open to the public • Submerged or partially submerged sea caves • *Rhinolophus ferrumequinum* • *Petalophyllum ralfsii* • *Gentianella anglica*
Little Wittenham SAC	• *Triturus cristatus*

Site	Interest Features
Lizard Point SCISAC	• Reefs
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*) • Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) • *Lutra lutra*
Lundy SAC	• *Halichoerus grypus* • Reefs • Sandbanks which are slightly covered by sea water all the time • 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)
Lyme Bay and Torbay SCISAC	• Reefs • Submerged or partially submerged sea caves
Lyppard Grange Ponds SAC	• *Triturus cristatus*
Manchester Mosses SAC	• Degraded raised bogs still capable of natural regeneration
Margate and Long Sands SCISAC	• Sandbanks which are slightly covered by sea water all the time
Mells Valley SAC	• Caves not open to the public • *Rhinolophus ferrumequinum* • 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 • European dry heaths • *Rhinolophus ferrumequinum* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *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 • European dry heaths • Perennial vegetation of stony banks
Mole Gap to Reigate Escarpment SAC	• *Asperulo-Fagetum* beech forests • European dry heaths

Site	Interest Features
	• *Myotis bechsteini* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* pp) • *Taxus baccata* woods of the British Isles • *Triturus cristatus*
Montgomery Canal SAC	• *Luronium natans*
Moor House - Upper Teesdale SAC	• Alkaline fens • Alpine and Boreal heaths • Alpine pioneer formations of the *Caricion bicoloris-atrofuscae* • Blanket bogs (* if active bog) • Calaminarian grasslands of the *Violetalia calaminariae* • Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) • Calcareous rocky slopes with chasmophytic vegetation • European dry heaths • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels • *Juniperus communis* formations on heaths or calcareous grasslands • Limestone pavements • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Mountain hay meadows • Petrifying springs with tufa formation (*Cratoneurion*) • *Saxifraga hirculus* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • Siliceous alpine and boreal grasslands • Siliceous rocky slopes with chasmophytic vegetation • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) • *Vertigo genesii*
Morecambe Bay Pavements SAC	• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* • European dry heaths • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • *Juniperus communis* formations on heaths or calcareous grasslands • Limestone pavements • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Taxus baccata* woods of the British Isles • *Tilio-Acerion* forests of slopes, screes and ravines • *Vertigo angustior*

Site	Interest Features
Morecambe Bay SAC	• Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Coastal lagoons • Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) • Embryonic shifting dunes • Estuaries • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • Large shallow inlets and bays • Mudflats and sandflats not covered by seawater at low tide • Perennial vegetation of stony banks • Reefs • *Salicornia* and other annuals colonizing mud and sand • Sandbanks which are slightly covered by sea water all the time • Shifting dunes along the shoreline with *Ammophila arenaria* (’white dunes’) • *Triturus cristatus*
Mottey Meadows SAC	• Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Mottisfont Bats SAC	• *Barbastella barbastellus*
Naddle Forest SAC	• European dry heaths • Northern Atlantic wet heaths with *Erica tetralix* • 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 • Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*
Norfolk Valley Fens SAC	• Alkaline fens • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* • European dry heaths • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Northern Atlantic wet heaths with *Erica tetralix* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Vertigo angustior* • *Vertigo moulinsiana*
North Downs Woodlands SAC	• *Asperulo-Fagetum* beech forests • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)

Site	Interest Features
	• *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 • Embryonic shifting dunes • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • *Lutra lutra* • Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) • Perennial vegetation of stony banks • *Petalophyllum ralfsii* • Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’)
North Norfolk Sandbanks and Saturn Reef SAC	• Sandbanks which are slightly covered by sea water all the time • Reefs
North Northumberland Dunes SAC	• Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) • Embryonic shifting dunes • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • *Petalophyllum ralfsii* • 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*) • Mountain hay meadows
North Pennine Moors SAC	• Alkaline fens • Blanket bogs (* if active bog) • Calaminarian grasslands of the *Violetalia calaminariae* • Calcareous rocky slopes with chasmophytic vegetation • European dry heaths • *Juniperus communis* formations on heaths or calcareous grasslands • Northern Atlantic wet heaths with *Erica tetralix* • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • Petrifying springs with tufa formation (*Cratoneurion*) • *Saxifraga hirculus* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • Siliceous alpine and boreal grasslands • Siliceous rocky slopes with chasmophytic vegetation • 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 • *Rhinolophus ferrumequinum*

Site	Interest Features
	• *Rhinolophus hipposideros* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Tilio-Acerion* forests of slopes, screes and ravines
North York Moors SAC	• Blanket bogs (* if active bog) • European dry heaths • Northern Atlantic wet heaths with *Erica tetralix*
Oak Mere SAC	• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) • Transition mires and quaking bogs
Orfordness - Shingle Street SAC	• Annual vegetation of drift lines • Coastal lagoons • Perennial vegetation of stony banks
Orton Pit SAC	• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • *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* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Tilio-Acerion* forests of slopes, screes and ravines
Oxford Meadows SAC	• *Apium repens* • 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 • *Austropotamobius pallipes* • Calaminarian grasslands of the *Violetalia calaminariae* • Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) • Calcareous rocky slopes with chasmophytic vegetation • *Cottus gobio* • European dry heaths • *Lampetra planeri* • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) • *Tilio-Acerion* forests of slopes, screes and ravines

Site	Interest Features
Penhale Dunes SAC	• Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • *Gentianella anglica* • Humid dune slacks • *Petalophyllum ralfsii* • *Rumex rupestris* • Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’)
Peter`s Pit SAC	• *Triturus cristatus*
Pevensey Levels SCISAC	• *Anisus vorticulus*
Pewsey Downs SAC	• *Gentianella anglica* • 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* • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Estuaries • Large shallow inlets and bays • Mudflats and sandflats not covered by seawater at low tide • Reefs • *Rumex rupestris* • Sandbanks which are slightly covered by sea water all the time
Polruan to Polperro SAC	• European dry heaths • *Rumex rupestris* • 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* • *Gentianella anglica* • 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 • 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

Site	Interest Features
	• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) • Bog woodland • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Transition mires and quaking bogs
Richmond Park SAC	• *Lucanus cervus*
River Avon SAC	• *Cottus gobio* • *Lampetra planeri* • *Petromyzon marinus* • *Salmo salar* • *Vertigo moulinsiana* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Axe SAC	• *Cottus gobio* • *Lampetra planeri* • *Petromyzon marinus* • 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*) • *Cottus gobio* • European dry heaths • *Lutra lutra* • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • *Salmo salar*
River Clun SAC	• *Margaritifera margaritifera*
River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC	• *Cottus gobio* • *Lampetra fluviatilis* • *Lampetra planeri* • *Luronium natans* • *Lutra lutra* • *Petromyzon marinus* • *Salmo salar* • 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* • *Lampetra fluviatilis* • *Lampetra planeri* • *Luronium natans* • *Lutra lutra*

Site	Interest Features
	• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* • *Petromyzon marinus* • *Salmo salar* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Derwent SAC	• *Cottus gobio* • *Lampetra fluviatilis* • *Lutra lutra* • *Petromyzon marinus* • 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*) • *Austropotamobius pallipes* • *Cottus gobio* • *Lampetra fluviatilis* • *Lampetra planeri* • *Lutra lutra* • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* • *Petromyzon marinus* • *Salmo salar* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Ehen SAC	• *Margaritifera margaritifera* • *Salmo salar*
River Itchen SAC	• *Austropotamobius pallipes* • *Coenagrion mercuriale* • *Cottus gobio* • *Lampetra planeri* • *Lutra lutra* • *Salmo salar* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Kent SAC	• *Austropotamobius pallipes* • *Cottus gobio* • *Margaritifera margaritifera* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Lambourn SAC	• *Cottus gobio* • *Lampetra planeri*

Site	Interest Features
	• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Mease SAC	• *Austropotamobius pallipes* • *Cobitis taenia* • *Cottus gobio* • *Lutra lutra* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Tweed SAC	• *Lampetra fluviatilis* • *Lampetra planeri* • *Lutra lutra* • *Petromyzon marinus* • *Salmo salar* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Usk/ Afon Wysg SAC	• *Alosa alosa* • *Alosa fallax* • *Cottus gobio* • *Lampetra fluviatilis* • *Lampetra planeri* • *Lutra lutra* • *Petromyzon marinus* • *Salmo salar* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Wensum SAC	• *Austropotamobius pallipes* • *Cottus gobio* • *Lampetra planeri* • *Vertigo moulinsiana* • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
River Wye/ Afon Gwy SAC	• *Alosa alosa* • *Alosa fallax* • *Austropotamobius pallipes* • *Cottus gobio* • *Lampetra fluviatilis* • *Lampetra planeri* • *Lutra lutra* • *Petromyzon marinus* • *Salmo salar* • Transition mires and quaking bogs

Site	Interest Features
	• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
Rixton Clay Pits SAC	• *Triturus cristatus*
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* • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
Roudsea Wood and Mosses SAC	• Active raised bogs • Degraded raised bogs still capable of natural regeneration • *Taxus baccata* woods of the British Isles • *Tilio-Acerion* forests of slopes, screes and ravines
Roydon Common and Dersingham Bog SAC	• Depressions on peat substrates of the *Rhynchosporion* • European dry heaths • Northern Atlantic wet heaths with *Erica tetralix*
Salisbury Plain SAC	• *Euphydryas (Eurodryas, Hypodryas) aurinia* • *Juniperus communis* formations on heaths or calcareous grasslands • 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* • Embryonic shifting dunes • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’)
Sandwich Bay SAC	• Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) • Embryonic shifting dunes • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • Shifting dunes along the shoreline with *Ammophila arenaria* (’white dunes’)
Sefton Coast SAC	• Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) • Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) • Embryonic shifting dunes • Fixed coastal dunes with herbaceous vegetation (‘grey dunes’) • Humid dune slacks • *Petalophyllum ralfsii* • Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’)

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

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

Site	Interest Features
St Austell Clay Pits SAC	• *Marsupella profunda*
Start Point to Plymouth Sound & Eddystone SCISAC	• Reefs
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 • Northern Atlantic wet heaths with *Erica tetralix*
Studland to Portland SCISAC	• Reefs
Subberthwaite, Blawith and Torver Low Commons SAC	• Depressions on peat substrates of the *Rhynchosporion* • 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*
Tankerton Slopes and Swalecliffe SCISAC	• *Gortyna borelii lunata*
Tarn Moss SAC	• Transition mires and quaking bogs
Thanet Coast SAC	• Reefs • Submerged or partially submerged sea caves
The Broads SAC	• Alkaline fens • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) • *Anisus vorticulus* • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • *Liparis loeselii* • *Lutra lutra* • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation • Transition mires and quaking bogs • *Vertigo moulinsiana*
The Lizard SAC	• Dry Atlantic coastal heaths with *Erica vagans* • European dry heaths

Site	Interest Features
	• Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp • Mediterranean temporary ponds • Northern Atlantic wet heaths with *Erica tetralix* • 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*) • *Barbastella barbastellus*
The New Forest SAC	• Alkaline fens • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) • *Asperulo-Fagetum* beech forests • Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) • Bog woodland • *Coenagrion mercuriale* • Depressions on peat substrates of the *Rhynchosporion* • European dry heaths • *Lucanus cervus* • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Northern Atlantic wet heaths with *Erica tetralix* • Old acidophilous oak woods with *Quercus robur* on sandy plains • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) • Transition mires and quaking bogs • *Triturus cristatus*
The Stiperstones and The Hollies SAC	• European dry heaths • 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*) • Coastal lagoons • Large shallow inlets and bays • *Lutra lutra* • Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) • Mudflats and sandflats not covered by seawater at low tide • *Phoca vitulina* • Reefs • *Salicornia* and other annuals colonizing mud and sand • 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)

Site	Interest Features
Thursley, Ash, Pirbright and Chobham SAC	• Depressions on peat substrates of the *Rhynchosporion* • European dry heaths • Northern Atlantic wet heaths with *Erica tetralix*
Tintagel-Marsland-Clovelly Coast SAC	• European dry heaths • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • Vegetated sea cliffs of the Atlantic and Baltic Coasts
Tregonning Hill SAC	• *Marsupella profunda*
Tweed Estuary SAC	• Estuaries • *Lampetra fluviatilis* • Mudflats and sandflats not covered by seawater at low tide • *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) • Calcareous rocky slopes with chasmophytic vegetation • Caves not open to the public • Degraded raised bogs still capable of natural regeneration • European dry heaths • *Rhinolophus hipposideros* • *Tilio-Acerion* forests of slopes, screes and ravines
Walton Moss SAC	• Active raised bogs • 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* • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • *Vertigo moulinsiana*
West Dorset Alder Woods SAC	• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) • *Euphydryas (Eurodryas, Hypodryas) aurinia* • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Old acidophilous oak woods with *Quercus robur* on sandy plains • *Triturus cristatus*
West Midlands Mosses SAC	• Natural dystrophic lakes and ponds • Transition mires and quaking bogs

Site	Interest Features
Wight-Barfleur Reef SAC	• Reefs
Wimbledon Common SAC	• European dry heaths • *Lucanus cervus* • 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*) • *Limoniscus violaceus* • Old acidophilous oak woods with *Quercus robur* on sandy plains
Winterton - Horsey Dunes SAC	• Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) • Embryonic shifting dunes • Humid dune slacks • Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')
Witherslack Mosses SAC	• Active raised bogs • Degraded raised bogs still capable of natural regeneration
Woolmer Forest SAC	• Depressions on peat substrates of the *Rhynchosporion* • European dry heaths • Natural dystrophic lakes and ponds • Northern Atlantic wet heaths with *Erica tetralix* • 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* • *Rhinolophus hipposideros*
Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy SAC	• *Asperulo-Fagetum* beech forests • *Rhinolophus hipposideros* • *Taxus baccata* woods of the British Isles • *Tilio-Acerion* forests of slopes, screes and ravines
Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay SAC	• Sandbanks which are slightly covered by sea water all the time • Mudflats and sandflats not covered by seawater at low tide • Large shallow inlets and bays • Reefs • Submerged or partially submerged sea caves
Yewbarrow Woods SAC	• *Juniperus communis* formations on heaths or calcareous grasslands

Site	Interest Features
	• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • *Taxus baccata* woods of the British Isles
Bristol Channel Approaches / Dynesfeydd Môr Hafren SCI	• *Phocoena phocoena*
Southern North Sea SCI	• *Phocoena phocoena*

Site	Interest Feature	
Abberton Reservoir SPA	• *Anas clypeata* • *Anas crecca* • *Anas penelope* • *Anas strepera* • *Aythya farina* • *Aythya fuligula*	• *Bucephala clangula;* • *Cygnus olor;* • *Fulica atra;* • *Phalacrocorax carbo;* and • *Podiceps cristatus.*
Alde-Ore Estuary SPA	• *Circus aeruginosus* • *Larus fuscus* • *Philomachus pugnax*	• *Sterna albifrons;* • *Sterna sandvicensis;* and • *Tringa tetanus.*
Arun Valley SPA	• *Cygnus columbianus bewickii*	
Ashdown Forest SPA	• *Caprimulgus europaeus*	• *Sylvia undata.*
Avon Valley SPA	• *Anas strepera*	• *Cygnus columbianus bewickii.*
Bae Caerfyrddin/ Carmarthen Bay SPA	• *Melanitta nigra*	
Benacre to Easton Bavents SPA	• *Botaurus stellaris* • *Circus aeruginosus*	• *Sterna albifrons.*
Benfleet and Southend Marshes SPA	• *Branta bernicla bernicla* • *Calidris alpina alpina* • *Calidris canutus*	• *Charadrius hiaticula;* and • *Pluvialis squatarola.*
Berwyn SPA	• *Circus cyaneus* • *Falco columbarius*	• *Falco peregrinus;* and • *Milvus milvus.*
Blackwater Estuary (Mid-Essex Coast Phase 4) SPA	• *Aythya farina* • *Branta bernicla bernicla* • *Calidris alpina alpina* • *Circus cyaneus*	• *Limosa limosa islandica;* • *Pluvialis squatarola;* and • *Sterna albifrons.*
Bowland Fells SPA	• *Circus cyaneus* • *Falco columbarius*	• *Larus fuscus.*

Site	Interest Feature	
Breckland SPA	• *Burhinus oedicnemus* • *Caprimulgus europaeus*	• *Lullula arborea.*
Breydon Water SPA	• *Cygnus columbianus bewickii* • *Philomachus pugnax* • *Pluvialis apricaria*	• *Recurvirostra avosetta;* • *Sterna hirundo;* and • *Vanellus vanellus.*
Broadland SPA	• *Anas clypeata* • *Anas penelope* • *Anas strepera* • *Botaurus stellaris* • *Circus aeruginosus*	• *Circus cyaneus;* • *Cygnus columbianus bewickii;* • *Cygnus cygnus;* and • *Philomachus pugnax.*
Castle Loch, Lochmaben SPA	• *Anser brachyrhynchus*	
Chesil Beach and The Fleet SPA	*Sterna albifrons* *Anas penelope*	
Chew Valley Lake SPA	• *Anas clypeata*	
Chichester and Langstone Harbours SPA	• *Anas acuta* • *Anas clypeata* • *Anas crecca* • *Anas penelope* • *Arenaria interpres* • *Branta bernicla bernicla* • *Calidris alba* • *Calidris alpina alpina* • *Charadrius hiaticula*	• *Limosa lapponica;* • *Mergus serrator;* • *Numenius arquata;* • *Pluvialis squatarola;* • *Sterna albifrons;* • *Sterna hirundo;* • *Sterna sandvicensis;* • *Tadorna tadorna;* and • *Tringa tetanus.*
Colne Estuary (Mid-Essex Coast Phase 2) SPA	• *Aythya farina* • *Branta bernicla bernicla* • *Charadrius hiaticula*	• *Circus cyaneus;* • *Sterna albifrons;* and • *Tringa tetanus.*
Coquet Island SPA	• *Sterna dougallii* • *Sterna hirundo*	• *Sterna paradisaea;* and • *Sterna sandvicensis.*
Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA	• *Branta bernicla bernicla*	
Deben Estuary SPA	• *Branta bernicla bernicla*	• *Recurvirostra avosetta.*
Dengie (Mid-Essex Coast Phase 1) SPA	• *Branta bernicla bernicla* • *Calidris canutus*	• *Circus cyaneus;* and • *Pluvialis squatarola.*
Din Moss - Hoselaw Loch SPA	• *Anser anser [Iceland/UK/Ireland]*	• *Anser brachyrhynchus.*

Site	Interest Feature	
Dorset Heathlands SPA	• *Caprimulgus europaeus* • *Circus cyaneus* • *Falco columbarius*	• *Lullula arborea;* and • *Sylvia undata.*
Dungeness, Romney Marsh and Rye Bay SPA	• *Anas clypeata* • *Circus cyaneus* • *Philomachus pugnax* • *Larus melanocephalus* • *Sterna sandvicensis* • *Sterna hirundo* • *Sterna albifrons*	• *Acrocephalus paludicola* • *Cygnus columbianus bewickii* • *Botaurus stellaris* • *Pluvialis apricaria* • *Circus aeruginosus* • *Recurvirostra avosetta*
East Devon Heaths SPA	• *Caprimulgus europaeus*	• *Sylvia undata.*
Exe Estuary SPA	• *Branta bernicla bernicla* • *Calidris alpina alpina* • *Haematopus ostralegus* • *Limosa limosa islandica*	• *Pluvialis squatarola;* • *Podiceps auritus;* and • *Recurvirostra avosetta.*
Falmouth Bay to St Austell Bay SPA	• *Gavia arctica* • *Gavia immer*	• *Podiceps auritus*
Farne Islands SPA	• *Sterna hirundo* • *Sterna paradisaea*	• *Sterna sandvicensis* • *Uria aalge*
Firth of Forth SPA	• *Charadrius hiaticula* • *Arenaria interpres* • *Melanitta fusca* • *Pluvialis apricaria* • *Aythya marila* • *Clangula hyemalis* • *Limosa lapponica* • *Melanitta nigra* • *Tringa totanus* • *Calidris canutus* • *Anser brachyrhynchus* • *Sterna sandvicensis* • *Phalacrocorax carbo* • *Anas platyrhynchos*	• *Anas penelope* • *Tadorna tadorna* • *Somateria mollissima* • *Mergus serrator* • *Podiceps auritus* • *Vanellus vanellus* • *Bucephala clangula* • *Gavia stellata* • *Numenius arquata* • *Pluvialis squatarola* • *Podiceps cristatus* • *Calidris alpina alpina* • *Haematopus ostralegus*
Flamborough & Filey Coast SPA	• *Uria aalge* • *Alca torda*	• *Morus bassanus* • *Rissa tridactyla*

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

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

European Sites Potentially Vulnerable to Effects of the NPS

Site	Interest Feature	
Mersey Estuary SPA	• *Anas acuta* • *Anas crecca* • *Anas penelope* • *Calidris alpina alpina* • *Charadrius hiaticula* • *Limosa limosa islandica*	• *Numenius arquata;* • *Pluvialis apricaria;* • *Pluvialis squatarola;* • *Podiceps cristatus;* • *Tadorna tadorna;* and • *Vanellus vanellus.*
Mersey Narrows and North Wirral Foreshore SPA	• *Calidris alba* • *Calidris alpina alpina* • *Calidris canutus islandica* • *Haematopus ostralegus* • *Larus minutus*	• *Limosa lapponica;* • *Phalacrocorax carbo;* • *Pluvialis squatarola;* and • *Tringa tetanus.*
Minsmere-Walberswick SPA	• *Anas crecca* • *Anser albifrons albifrons* • *Botaurus stellaris* • *Caprimulgus europaeus*	• *Circus aeruginosus;* • *Circus cyaneus;* • *Recurvirostra avosetta;* and • *Sterna albifrons.*
Morecambe Bay and Duddon Estuary SPA	• *Egretta garzetta* • *Cygnus cygnus* • *Anser brachyrhynchus* • *Tadorna tadorna* • *Haematopus ostralegus* • *Charadrius hiaticula* • *Pluvialis apricaria* • *Pluvialis squatarola* • *Calidris canutus* • *Calidris alba* • *Calidris alpina alpina* • *Philomachus pugnax* • *Limosa limosa islandica*	• *Limosa lapponica* • *Numenius arquata* • *Tringa totanus* • *Arenaria interpres* • *Larus melanocephalus* • *Larus fuscus* • *Larus argentatus* • *Sterna sandvicensis* • *Sterna hirundo* • *Sterna albifrons* • *Anas acuta* • *Larus fuscus*
Nene Washes SPA	• *Anas acuta* • *Anas crecca* • *Anas penelope*	• *Anas querquedula;* • *Cygnus columbianus bewickii;* and • *Limosa limosa limosa.*
New Forest SPA	• *Caprimulgus europaeus* • *Circus cyaneus* • *Falco subbuteo* • *Lullula arborea*	• *Pernis apivorus;* • *Phylloscopus sibilatrix;* and • *Sylvia undata.*

Site	Interest Feature	
North Norfolk Coast SPA	• *Anas penelope* • *Anser brachyrhynchus* • *Botaurus stellaris* • *Branta bernicla bernicla* • *Calidris canutus*	• *Circus aeruginosus;* • *Sterna albifrons;* • *Sterna hirundo* and; • *Sterna sandvicensis.*
North Pennine Moors SPA	• *Circus cyaneus* • *Falco columbarius*	• *Falco peregrinus;* and • *Pluvialis apricaria.*
North York Moors SPA	• *Falco columbarius*	• *Pluvialis apricaria.*
Northumberland Marine SPA	• *Sterna sandvicensis* • *Sterna hirundo* • *Sterna paradisaea* • *Sterna dougallii*	• *Sterna albifrons* • *Fratercula arctica* • *Uria aalge*
Northumbria Coast SPA	• *Arenaria interpres* • *Calidris maritima*	• *Sterna albifrons.*
Ouse Washes SPA	• *Anas acuta* • *Anas crecca* • *Anas penelope* • *Anas platyrhynchos* • *Anas querquedula* • *Aythya ferina* • *Aythya fuligula* • *Circus cyaneus*	• *Cygnus columbianus bewickii;* • *Cygnus cygnus;* • *Cygnus olor;* • *Fulica atra;* • *Limosa limosa limosa;* • *Phalacrocorax carbo;* and • *Philomachus pugnax.*
Outer Thames Estuary SPA	• *Sterna albifrons* • *Sterna hirundo*	• *Gavia stellata*
Pagham Harbour SPA	• *Branta bernicla bernicla* • *Philomachus pugnax*	• *Sterna albifrons;* and • *Sterna hirundo.*
Peak District Moors (South Pennine Moors Phase 1) SPA	• *Asio flammeus* • *Falco columbarius*	• *Pluvialis apricaria.*
Poole Harbour SPA	• *Larus melanocephalus* • *Limosa limosa islandica* • *Recurvirostra avosetta* • *Sterna sandvicensis*	• *Sterna hirundo;* • *Tadorna tadorna* • *Egretta garzetta* • *Platalea leucorodia leucorodia.*
Porton Down SPA	• *Burhinus oedicnemus*	
Portsmouth Harbour SPA	• *Branta bernicla bernicla* • *Calidris alpina alpina*	• *Limosa limosa islandica;* and • *Mergus serrator.*

Site	Interest Feature	
Ribble and Alt Estuaries SPA	• *Anas acuta* • *Anas crecca* • *Anas penelope* • *Anser brachyrhynchus* • *Aythya marila* • *Calidris alpina alpina* • *Calidris canutus* • *Charadrius hiaticula* • *Cygnus columbianus bewickii* • *Cygnus cygnus* • *Haematopus ostralegus* • *Larus fuscus* • *Larus ridibundus*	• *Limosa lapponica;* • *Limosa limosa islandica;* • *Melanitta nigra;* • *Numenius arquata;* • *Numenius phaeopus;* • *Phalacrocorax carbo;* • *Philomachus pugnax;* • *Pluvialis apricaria;* • *Pluvialis squatarola;* • *Sterna hirundo;* • *Tadorna tadorna;* and • *Vanellus vanellus.*
Rutland Water SPA	• *Anas clypeata* • *Anas crecca* • *Anas penelope* • *Anas strepera* • *Aythya fuligula*	• *Bucephala clangula;* • *Cygnus olor;* • *Fulica atra;* • *Mergus merganser;* and • *Podiceps cristatus.*
Salisbury Plain SPA	• *Burhinus oedicnemus* • *Circus cyaneus*	• *Coturnix coturnix;* and • *Falco subbuteo.*
Sandlings SPA	• *Caprimulgus europaeus*	• *Lullula arborea.*
Severn Estuary SPA	• *Anas strepera* • *Anser albifrons albifrons* • *Calidris alpina alpina*	• *Cygnus columbianus bewickii;* • *Tadorna tadorna;* and • *Tringa tetanus.*
Solent and Southampton Water SPA	• *Anas crecca* • *Branta bernicla bernicla* • *Charadrius hiaticula* • *Larus melanocephalus* • *Limosa limosa islandica*	• *Sterna albifrons;* • *Sterna dougallii;* • *Sterna hirundo;* and • *Sterna sandvicensis.*
Somerset Levels and Moors SPA	• *Anas crecca* • *Cygnus columbianus bewickii*	• *Pluvialis apricaria;* and • *Vanellus vanellus.*
South Pennine Moors Phase 2 SPA	• *Asio flammeus* • *Falco columbarius*	• *Pluvialis apricaria.*
South West London Waterbodies SPA	• *Anas clypeata*	• *Anas strepera.*
St Abb's Head to Fast Castle SPA	• *Alca torda* • *Larus argentatus* • *Phalacrocorax aristotelis*	• *Rissa tridactyla;* and • *Uria aalge.*

Site	Interest Feature	
Stodmarsh SPA	• *Anas clypeata* • *Anas penelope* • *Anas platyrhynchos* • *Anser albifrons albifrons* • *Aythya ferina* • *Aythya fuligula*	• *Botaurus stellaris;* • *Circus cyaneus;* • *Gallinago gallinago;* • *Rallus aquaticus;* and • *Vanellus vanellus.*
Stour and Orwell Estuaries SPA	• *Anas acuta* • *Anas penelope* • *Anas strepera* • *Arenaria interpres* • *Aythya marila* • *Branta bernicla bernicla* • *Bucephala clangula* • *Calidris alpina alpina* • *Calidris canutus* • *Cygnus olor*	• *Limosa limosa islandica;* • *Numenius arquata;* • *Phalacrocorax carbo;* • *Pluvialis apricaria;* • *Pluvialis squatarola;* • *Podiceps cristatus;* • *Recurvirostra avosetta;* • *Tadorna tadorna;* and • *Vanellus vanellus.*
Tamar Estuaries Complex SPA	• *Egretta garzetta*	• *Recurvirostra avosetta.*
Teesmouth and Cleveland Coast SPA	• *Anas clypeata* • *Anas crecca* • *Calidris alba* • *Calidris canutus* • *Phalacrocorax carbo*	• *Sterna albifrons;* • *Sterna sandvicensis;* • *Tadorna tadorna;* and • *Tringa tetanus.*
Thames Basin Heaths SPA	• *Caprimulgus europaeus* • *Lullula arborea*	• *Sylvia undata.*
Thames Estuary and Marshes SPA	• *Calidris alpina alpina* • *Calidris canutus* • *Charadrius hiaticula* • *Circus cyaneus*	• *Limosa limosa islandica;* • *Pluvialis squatarola;* • *Recurvirostra avosetta;* and • *Tringa tetanus.*
Thanet Coast and Sandwich Bay SPA	• *Arenaria interpres* • *Pluvialis apricaria*	• *Sterna albifrons.*
The Dee Estuary SPA	• *Anas acuta* • *Anas crecca* • *Calidris alpina alpina* • *Calidris canutus* • *Haematopus ostralegus* • *Limosa lapponica* • *Limosa limosa islandica*	• *Numenius arquata;* • *Pluvialis squatarola;* • *Sterna albifrons;* • *Sterna hirundo;* • *Sterna sandvicensis;* and • *Tadorna tadorna.*

Site	Interest Feature	
The Swale SPA	• *Anas crecca* • *Anas strepera* • *Branta bernicla bernicla* • *Calidris alpina alpina* • *Charadrius hiaticula*	• *Haematopus ostralegus;* • *Numenius arquata;* • *Pluvialis squatarola;* and • *Tringa tetanus.*
The Wash SPA	• *Anas acuta* • *Anas penelope* • *Anas strepera* • *Anser brachyrhynchus* • *Arenaria interpres* • *Branta bernicla bernicla* • *Bucephala clangula* • *Calidris alba* • *Calidris alpina alpina* • *Calidris canutus* • *Cygnus columbianus bewickii*	• *Haematopus ostralegus;* • *Limosa lapponica;* • *Limosa limosa islandica;* • *Melanitta nigra;* • *Numenius arquata;* • *Pluvialis squatarola;* • *Sterna albifrons;* • *Sterna hirundo;* • *Tadorna tadorna;* and • *Tringa tetanus.*
Thorne and Hatfield Moors SPA	• *Caprimulgus europaeus*	
Thursley, Hankley and Frensham Commons (Wealden Heaths Phase 1) SPA	• *Caprimulgus europaeus* • *Lullula arborea*	• *Sylvia undata.*
Upper Nene Valley Gravel Pits SPA	• *Anas clypeata* • *Anas penelope* • *Anas platyrhynchos* • *Anas strepera* • *Aythya ferina* • *Aythya fuligula*	• *Botaurus stellaris;* • *Fulica atra;* • *Phalacrocorax carbo;* • *Pluvialis apricaria;* • *Podiceps cristatus;* and • *Vanellus vanellus.*
Upper Solway Flats and Marshes SPA	• *Anas acuta* • *Anas clypeata* • *Anas crecca* • *Anser brachyrhynchus* • *Arenaria interpres* • *Aythya marila* • *Branta leucopsis [Svalbard/Denmark/UK]* • *Bucephala clangula* • *Calidris alba* • *Calidris alpina alpina*	• *Calidris canutus;* • *Cygnus cygnus;* • *Haematopus ostralegus;* • *Limosa lapponica;* • *Numenius arquata;* • *Pluvialis apricaria;* • *Pluvialis squatarola;* • *Tadorna tadorna;* and • *Tringa tetanus.*
Walmore Common SPA	• *Cygnus columbianus bewickii*	

Site	Interest Feature
Wealden Heaths Phase 2 SPA	• *Caprimulgus europaeus* • *Lullula arborea* • *Sylvia undata.*

Site	Interest Feature
Abberton Reservoir Ramsar	• Crit 5 - regularly supports 20,000 or more waterbirds • Crit 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds
Alde–Ore Estuary Ramsar	• Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco Communities • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • 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 • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds
Avon Valley Ramsar	• Crit 1 - sites containing representative, rare or unique wetland types • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge • Crit 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds • Crit 8 - important source of food for fishes, spawning ground, nursery and/or migration path
Chichester and Langstone Harbours Ramsar	• Crit 1 - sites containing representative, rare or unique wetland types • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 3 – suports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity
Duddon Estuary Ramsar	• Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge • Crit 5 - regularly supports 20,000 or more waterbirds • Crit 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds
Dungeness, Romney Marsh and Rye Bay Ramsar	• Crit 1 - sites containing representative, rare or unique wetland types • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 5 - regularly supports 20,000 or more waterbirds
Esthwaite Water Ramsar	• Crit 1 - sites containing representative, rare or unique wetland types • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge • 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 • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds • Crit 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • 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 • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • Crit 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds
Midland Meres and Mosses Phase 1 Ramsar	• Crit 1 - sites containing representative, rare or unique wetland types • 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 • 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 • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • 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 • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 4 - supports plant/animal species at a critical stage in their life cycles, or provides refuge • Crit 5 - regularly supports 20,000 or more waterbirds • Crit 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 5 - regularly supports 20,000 or more waterbirds • Crit 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds

Somerset Levels and Moors Ramsar	• Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 2 - supports vulnerable, endangered, or critically endangered species or threatened eco communities • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • Crit 3 - supports populations of plant/animal species important for maintaining regional biodiversity • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • 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 • Crit 5 - regularly supports 20,000 or more waterbirds • 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 • 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 • 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*); • Bog woodland; • Alkaline fens; • Petrifying springs with tufa formation (*Cratoneurion*); • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; • Depressions on peat substrates of the *Rhynchosporion*; • Transition mires and quaking bogs; Blanket bogs (* if active bog); • Degraded raised bogs still capable of natural regeneration; • Active raised bogs; • Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*); • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); • Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*; • Northern Atlantic wet heaths with *Erica tetralix*; • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; • Turloughs; • Mediterranean temporary ponds; • Natural dystrophic lakes and ponds; • Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation; • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.; • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*; • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*); and • Machairs (* in Ireland).
Dry woodlands and grasslands	• *Taxus baccata* woods of the British Isles; • Caledonian forest; • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; • Old acidophilous oak woods with *Quercus robur* on sandy plains; • *Tilio-Acerion* forests of slopes, screes and ravines; • Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*; *Asperulo-Fagetum* beech forests;

Broad Interest feature category	Interest Features
	• Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*); • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); • Calaminarian grasslands of the *Violetalia calaminariae*; • *Juniperus communis* formations on heaths or calcareous grasslands; • Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.); • Dry Atlantic coastal heaths with *Erica vagans*; • European dry heaths; and • Inland dunes with open *Corynephorus* and *Agrostis* grasslands.
Upland habitats	• Siliceous rocky slopes with chasmophytic vegetation; • Calcareous rocky slopes with chasmophytic vegetation; • Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*); • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*); • Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*; • Mountain hay meadows; • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels; • Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe); • Alpine and subalpine calcareous grasslands; • Siliceous alpine and boreal grasslands; • Sub-Arctic *Salix* spp. scrub; and • Alpine and Boreal heaths.
Coastal habitats	• Coastal dunes with *Juniperus* spp.; • Humid dune slacks; Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*); • Dunes with *Hippopha rhamnoides*; Atlantic decalcified fixed dunes (*Calluno-Ulicetea*); • Decalcified fixed dunes with *Empetrum nigrum*; Fixed coastal dunes with herbaceous vegetation (‘grey dunes’); • Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’); • Embryonic shifting dunes; • Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*); • Vegetated sea cliffs of the Atlantic and Baltic Coasts; and • Perennial vegetation of stony banks; Annual vegetation of drift lines; Coastal lagoons.
Estuarine and intertidal habitats	• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); • *Spartina* swards (*Spartinion maritimae*); • *Salicornia* and other annuals colonizing mud and sand; • Large shallow inlets and bays; • Mudflats and sandflats not covered by seawater at low tide; and • Estuaries.

Broad Interest feature category	Interest Features	
Marine habitats	• Submerged or partially submerged sea caves; • Submarine structures made by leaking gases; • Reefs; and • Sandbanks which are slightly covered by sea water all the time.	
Diadramous fish	• *Salmo salar;* • *Alosa fallax;* • *Alosa alosa;*	• *Lampetra fluviatilis;* and • *Petromyzon marinus.*
Non-migratory wetland and riparian plants, fish and invertebrates	• *Anisus vorticulus;* • *Gortyna borelii lunata;* • *Liparis loeselii;* • *Najas flexilis;* • *Luronium natans;* • *Apium repens;* • *Saxifraga hirculus;* • *Cottus gobio;* • *Cobitis taenia;*	• *Lampetra planeri;* • *Austropotamobius pallipes;* • *Euphydryas (Eurodryas, Hypodryas) aurinia;* • *Coenagrion mercuriale;* • *Margaritifera margaritifera;* • *Vertigo moulinsiana;* • *Vertigo genesii;* • *Vertigo angustior;* and • *Vertigo geyeri.*
Sessile or limited-range terrestrial species	• *Cypripedium calceolus;* • *Gentianella anglica;* • *Rumex rupestris;* • *Trichomanes speciosum;* • *Petalophyllum ralfsii;* • *Drepanocladus (Hamatocaulis) vernicosus;*	• *Marsupella profunda;* • *Buxbaumia viridis;* • *Triturus cristatus;* • *Lucanus cervus;* and • *Limoniscus violaceus.*
Terrestrial mammals	• *Lutra lutra;* • *Myotis bechsteini;* • *Barbastella barbastellus;*	• *Rhinolophus ferrumequinum;* and • *Rhinolophus hipposideros.*
Marine mammals	• *Phoca vitulina;* • *Halichoerus grypus;*	• *Tursiops truncatus;* • *Phocoena phocoena.*
Wetland / estuarine birds	• *Branta bernicla bernicla;* • *Branta bernicla hrota* [Canada/Ireland]; • *Calidris alpina alpina;* • *Calidris canutus islandica;* • *Limosa limosa islandica;* • *Limosa limosa limosa;* • *Calidris alpina schinzii;* • *Anser albifrons flavirostris;* • *Anser albifrons albifrons;* • *Arenaria interpres;*	• *Rallus aquaticus;* • *Mergus merganser;* • *Mergus serrator;* • *Bucephala clangula;* • *Clangula hyemalis;* • *Aythya marila;* • *Aythya fuligula;* • *Aythya ferina;* • *Anas clypeata;* • *Anas querquedula;*

Broad Interest feature category	Interest Features	
	• *Tringa nebularia;* • *Tringa totanus;* • *Numenius arquata;* • *Numenius phaeopus;* • *Limosa lapponica;* • *Philomachus pugnax;* • *Calidris maritima;* • *Calidris alba;* • *Calidris canutus;* • *Vanellus vanellus;* • *Pluvialis squatarola;* • *Pluvialis apricaria;* • *Charadrius morinellus;* • *Charadrius hiaticula;* • *Recurvirostra avosetta;* • *Haematopus ostralegus;* • *Fulica atra;* • *Crex crex;* • *Porzana porzana;*	• *Anas acuta;* • *Anas platyrhynchos;* • *Anas crecca;* • *Anas strepera;* • *Anas penelope;* • *Tadorna tadorna;* • *Branta leucopsis* [Eastern Greenland/Scotland/Ireland]*;* • *Anser anser* [Iceland/UK/Ireland]*;* • *Anser brachyrhynchus;* • *Anser fabalis fabalis;* • *Cygnus cygnus;* • *Cygnus columbianus bewickii;* • *Cygnus olor;* • *Egretta garzetta;* • *Botaurus stellaris;* • *Podiceps auritus;* • *Podiceps cristatus;* • *Gavia arctica;* and • *Gavia stellate.*
Other birds	• *Loxia scotica;* • *Troglodytes troglodytes fridariensis;* • *Pyrrhocorax pyrrhocorax;* • *Phylloscopus sibilatrix;* • *Sylvia undata;* • *Acrocephalus paludicola;* • *Lullula arborea;* • *Caprimulgus europaeus;* • *Asio flammeus;* • *Fratercula arctica;* • *Alca torda;* • *Uria aalge;* • *Sterna albifrons;* • *Sterna paradisaea;* • *Sterna hirundo;* • *Sterna dougallii;* • *Sterna sandvicensis;* • *Rissa tridactyla;* • *Larus marinus;* • *Larus argentatus;*	• *Stercorarius parasiticus;* • *Phalaropus lobatus;* • *Tringa glareola;* • *Gallinago gallinago;* • *Burhinus oedicnemus;* • *Coturnix coturnix;* • *Tetrao urogallus;* • *Falco peregrinus;* • *Falco subbuteo;* • *Falco columbarius;* • *Pandion haliaetus;* • *Aquila chrysaetos;* • *Circus cyaneus;* • *Circus aeruginosus;* • *Milvus milvus;* • *Pernis apivorus;* • *Melanitta fusca;* • *Melanitta nigra;* • *Somateria mollissima;* • *Phalacrocorax aristotelis;*

Broad Interest feature category	Interest Features	
	• *Larus fuscus;* • *Larus canus;* • *Larus ridibundus;* • *Larus minutus;* • *Larus melanocephalus;* • *Catharacta skua;*	• *Phalacrocorax carbo;* • *Morus bassanus;* • *Oceanodroma leucorhoa;* • *Hydrobates pelagicus;* • *Puffinus puffinus;* and • *Fulmarus glacialis.*

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