



Department for  
Energy Security  
& Net Zero

# AoS and HRA of the Fusion National Policy Statement

AoS Scoping Report - Appendix B

# Biodiversity and Ecosystems

## Introduction to the baseline information and overview of the interaction with the NPS

Biodiversity is the variety of life in all its forms and encompasses all species of plants and animals, the genetic diversity they contain and the complex ecosystems of which they are a part. Although there is some uncertainty about the scope and scale of the development enabled by the Fusion Energy NPS, if the technology is successful it has the potential for a range of impacts on the natural environment and biodiversity including loss of habitat and species, disturbance, pollution, habitat fragmentation / severance / isolation, obstructions, changes to terrestrial microclimates and changes to coastal and marine processes due to construction, operation and decommissioning activities associated with fusion energy infrastructure.

The most important areas of biodiversity are protected for their intrinsic ecological value, at international, national and local levels. At the very highest international level, protection is provided across a network of sites designated as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar sites and those areas which are candidates for designation as such.

Nationally, sites can be designated as Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Marine Conservation Zones (MCZs), with Marine Protected Areas (MPAs) being a term used to describe the network of Habitat Regulation Assessment (HRA) sites, SSSIs and MCZs in the English and Welsh marine environment. At a local level, there are notably a great many areas designated as Local Nature Reserves (LNRs) by Local Authorities, or further areas designated on a local basis such as Key Wildlife Sites and Local Wildlife Sites. Since January 2020 following the final withdrawal of the UK from the European Union (EU), the UK continues to keep these national sites as designated areas of protection to ensure continued protection of the most important natural environment areas.

Outside of those designated areas, there are also wider ecological and nature recovery networks, areas of Ancient Woodland as well as individual features that can be important in their own right, such as; ancient and veteran Trees, ponds, riparian habitat, peatlands, native woodlands, saltmarsh and sea grass meadows, plus traditionally managed habitats such as hedgerows, hay meadows, heathlands, orchards and so on. Even areas not immediately important to biodiversity such as brownfield sites, can become unexpected high value habitats. All these features provide habitats for a multitude of species and can be irreplaceable in their own right.

Biodiversity does not exist in isolation – it provides wider benefits to society a fact which is increasingly recognised through the concept of Natural Capital, with people and communities benefitting for example through access to green space and nature. There is also increasing recognition of the need to not just halt biodiversity loss, but to reverse this through Biodiversity Net Gain (BNG), with an overall UK goal of reversing the decline in species abundance by the end of 2030, and then increasing abundance by at least 10% to exceed 2022 levels by 2042 to align with the Environment Act (2021) targets.

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Special Protection Areas (SPAs)	<p>SPAs are protected areas for birds in the UK classified under:</p> <ul style="list-style-type: none"> <li>the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);</li> <li>The Conservation (Natural Habitats &amp;c.) Regulations 1994 (as amended) in Scotland;</li> <li>the Conservation (Natural Habitats &amp;c.) (Northern Ireland) Regulations 1995 (as amended) in Northern Ireland; and</li> <li>the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.<sup>1</sup></li> </ul> <p>SPAs are of national and international conservation importance.</p> <p>As the second update following the UK’s exit from the EU in 2020, April 2023 saw no updates to the network.<sup>2</sup></p> <p>The locations of SPAs are shown in the maps in Appendices C.1. and C.2. for England and Wales respectively.</p>			
	The Joint Nature Conservation Committee records total counts of SPAs across the UK. A check of the	The Joint Nature Conservation Committee records total counts of SPAs across the UK. A check of the	The Joint Nature Conservation Committee records total counts of SPAs across the UK. A check of the	The Joint Nature Conservation Committee records total counts of SPAs across the UK. A

<sup>1</sup> Joint Nature Conservation Committee (2023) Classified Special Protection Areas (SPAs) in the UK. Available: [Special Protection Areas | JNCC - Adviser to Government on Nature Conservation](#).

<sup>2</sup> Joint Nature Conservation Committee (2023) Classified Special Protection Areas (SPAs) in the UK. Available: [Special Protection Areas | JNCC - Adviser to Government on Nature Conservation](#).

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 82 SPAs in England, covering an area of 972,335 ha. There is one SPA site crossing the England / Scotland border (135,750 ha). There are also two SPA sites across the England / Wales border (38,811 ha), two sites classified as England / offshore (747,933 ha), and one site classified as England / Wales / Offshore (251,709 ha)<sup>3</sup>. SPAs in England are predominantly located in coastal and estuarine areas, with various sites distributed inland. Currently, there are 46</p>	<p>JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 17 SPAs in Wales, covering an area of 342,141 ha. There are also two sites crossing the England / Wales border (38,811 ha), one classified as England / Wales / Offshore (251,709 ha) and one classified as Wales / Offshore (166,747 ha)<sup>4</sup>. SPAs are located in coastal and estuarine areas of Wales, with several situated in the central and northern highlands. Currently, there are 10 SPAs with marine components designated partly or</p>	<p>JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 160 SPAs in Scotland, covering an area of 1,707,241 ha. There is also one site crossing the England / Scotland border (135,750 ha)<sup>5</sup> and three classified as Scotland / Offshore (1,012,805 ha). SPAs are distributed widely throughout Scotland, with large concentrations in coastal and estuarine areas, islands and uplands.</p>	<p>check of the JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 16 SPAs in Northern Ireland, covering an area of 113,982 ha<sup>6</sup>. SPAs in Northern Ireland are primarily located in coastal and estuarine areas.</p>

<sup>3</sup> Joint Nature Conservation Committee (2023) Classified Special Protection Areas (SPAs) in the UK. Available: [Special Protection Areas | JNCC - Adviser to Government on Nature Conservation](#)

<sup>4</sup> Joint Nature Conservation Committee (2023) Classified Special Protection Areas (SPAs) in the UK. Available: [Special Protection Areas | JNCC - Adviser to Government on Nature Conservation](#)

<sup>5</sup> Joint Nature Conservation Committee (2023) Classified Special Protection Areas (SPAs) in the UK. Available: [Special Protection Areas | JNCC - Adviser to Government on Nature Conservation](#)

<sup>6</sup> Joint Nature Conservation Committee (2023) Classified Special Protection Areas (SPAs) in the UK. Available: [Special Protection Areas | JNCC - Adviser to Government on Nature Conservation](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>SPAs with marine components designated partly or wholly within English waters. A total of 3 SPAs with marine components are located within both English and Welsh waters.</p>	<p>wholly within Welsh waters.</p>		
	<p>Supporting trend data:</p> <p>In the UK, the first SPAs were identified and classified in the early to mid-1980s. Classification has since progressed, with regular updating of both the number of classified SPAs and those that are in process of being classified (pSPA).</p> <p>With respect to Article 10, the UKs 11th Article 12 UK Birds Directive Report (2019)<sup>7</sup> Work has continued to consolidate and improve surveillance of birds in the UK (both terrestrial and marine environments), co-funded monitoring schemes made possible through government and non-government sectors working in partnership. Particular emphasis has been given to maintaining levels of surveillance in times of economic constraint which is essential to maintain basic levels of data collection of value for both bird conservation and the wider environmental monitoring needs.</p> <p>Future monitoring programmes for marine birds have now been recommended and if approved it will be implemented during 2019-2025 reporting period. Considerable emphasis has been given to the development and implementation of agri-environment schemes (AES) to address declines of formerly-common farmland birds. Implementation of plans under the UK Biodiversity Action Planning<sup>8</sup> process have helped reverse the formerly negative national trends for several species and continues to through the Action for Birds in England programme.</p>			

<sup>7</sup> Joint Nature Conservation Committee (2023) Special protection Areas. Available: [Article 12 UK Birds Directive Report \(2019\) Annex A- General Report](#)

<sup>8</sup> Joint Nature Conservation Committee (2023) UK Biodiversity Action Plan. Available: [UK BAP | JNCC - Adviser to Government on Nature Conservation](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Special Areas of Conservation (SAC)	<p>SACs are now part of the newly formed national site network along with SPAs. Prior to the UK’s exit from the EU at the end of 2020, SPAs and SACs were part of the Natura 2000 network. Following Brexit, JNCC continue to periodically update the datasets<sup>9</sup>.</p> <ul style="list-style-type: none"> <li>• SACs are protected areas in the UK designated under:</li> <li>• the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters),</li> <li>• the Conservation (Natural Habitats &amp;c.) Regulations 1994 (as amended) in Scotland,</li> <li>• the Conservation (Natural Habitats, &amp;c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland, and</li> <li>• the Conservation of Offshore Marine Habitats and Species Regulations 2017 in the UK offshore area<sup>10</sup>.</li> </ul> <p>SACs are of national and international conservation importance.</p> <p>As the second update following the UK’s exit from the EU in 2020, April 2023 saw an update covering three sites and including amendments to three existing SACs in Scotland, including Hascosay, Insh Marshes and Inverpolly SACs.</p> <p>The locations of SACs are shown in the maps in Appendices C.1. and C.2. for England and Wales respectively.</p>			
	The Joint Nature Conservation	The Joint Nature Conservation	The Joint Nature Conservation	The Joint Nature Conservation

<sup>9</sup> Joint Nature Conservation Committee (2023) Changes to the UK network of SACs. Available: [UK SAC changes | JNCC - Adviser to Government on Nature Conservation](#)

<sup>10</sup> Joint Nature Conservation Committee (2023) Special Areas of Conservation (SAC). Available: [Special Areas of Conservation | JNCC - Adviser to Government on Nature Conservation](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Committee records total counts of SPAs across the UK. A check of the JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 242 SACs, covering an area of 1,068,558 ha. There are three SACs crossing the England / Scotland border (112,770 ha) and seven across the England / Wales border (95,182 ha)<sup>11</sup>. Additionally, there are three SACs which are classified as England / Offshore (3,795,179 ha) and one classified as England / Wales / Offshore (584,989 ha). SACs are widely distributed throughout England; however the highest concentrations</p>	<p>Committee records total counts of SPAs across the UK. A check of the JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 85 SACs in Wales, covering an area of 590,915 ha. There are seven across the England / Wales border (95,182 ha), one classified as England / Wales / Offshore (584,989 ha) and one classified as Wales / Offshore (1,062,562 ha)<sup>12</sup>. SACs are widely distributed throughout Wales. There are also currently 12 SACs with marine components designated partly or wholly within Welsh waters.</p>	<p>Committee records total counts of SPAs across the UK. A check of the JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 238 SACs in Scotland, covering an area of 2,288,674 ha. There are three SACs crossing the England / Scotland border (112,770 ha) and two classified as Scotland / Offshore (182,232 ha). SACs in Scotland are widely and densely distributed throughout the country. Large concentrations are found in coastal and highland areas.</p>	<p>Committee records total counts of SPAs across the UK. A check of the JNCC register (July 2023) finds a second update to the register has been made in April 2023 recording 57 SACs in Northern Ireland, covering an area of 85,871 ha. There is also one SAC classified as Northern Ireland / Offshore (160,367 ha)<sup>13</sup>. SACs are widely distributed throughout Northern Ireland, with the largest being situated around the coast and border with the Republic of Ireland.</p>

<sup>11</sup> Joint Nature Conservation Committee (2023) Special Areas of Conservation (SAC). Available: [Special Areas of Conservation | JNCC - Adviser to Government on Nature Conservation](#)

<sup>12</sup> Joint Nature Conservation Committee (2023) Special Areas of Conservation (SAC). Available: [Special Areas of Conservation | JNCC - Adviser to Government on Nature Conservation](#)

<sup>13</sup> Joint Nature Conservation Committee (2023) Special Areas of Conservation (SAC). Available: [Special Areas of Conservation | JNCC - Adviser to Government on Nature Conservation](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>correspond with the more remote rural and upland locations. There are also currently 37 SACs with marine components designated partly or wholly within English waters. A further 3 SACs with marine components are located within both English and Welsh waters.</p>			
	<p>Supporting trend data:</p> <p>Member States of the European Union are required to report every six years on the conservation status of habitats and species listed on the annexes of the Habitats Directive. Although the UK has now withdrawn from the European Union, monitoring still takes place to provide key data for a report every six years.</p> <p>In general, the status of UK habitats of European importance declined over the reporting period 2007 – 2013 and were identified to have improved in the most recent assessment in 2019. In 2007, 26% of UK habitats listed in Annex I of the EU Habitats Directive were in favourable conservation status, this figure increased to 39% in 2013, before decreasing to 35% in 2019. The conservation status of 18% of the habitats was unfavourable-improving in 2007, it decreased to 10% in 2013 and 5% in 2019. The conservation status of 14% of the habitats was unfavourable-declining in 2007, this decreased to 15% in 2013 and 17% in 2019<sup>14</sup>.</p>			

<sup>14</sup> Joint Nature Conservation Committee (2023) Special Areas of Conservation (SAC). Available: [UKBI - C3b. European species | JNCC - Adviser to Government on Nature Conservation](#)



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Ramsar Sites	<p>Ramsar Sites are wetlands of international importance that have been designated under the criteria of the Ramsar Convention on Wetlands for containing representative, rare or unique wetland types or for their importance in conserving biological diversity<sup>15</sup>.</p> <p>Ramsar sites are of national and international importance. In the UK, the first Ramsar Sites were designated in 1976. Since then, many more have been designated. Compared to many countries, the UK has a relatively large number of Ramsar Sites, but they tend to be smaller in size<sup>16</sup>. As a party to the Ramsar Convention, the UK are required to submit a report to the Ramsar Secretariat every three years.</p> <p>The locations of Ramsar sites are shown in the maps in Appendices C.1. and C.2. for England and Wales respectively.</p>			
	<p>The Joint Nature Conservation Committee records total counts of Ramsar Sites across the UK. A check of the JNCC register (July 2023) finds this was last updated in January 2022. It records 68 Ramsar sites in England, totalling an area of 327,025 ha. There are three sites crossing the England / Wales border (40,553 ha total) and</p>	<p>The Joint Nature Conservation Committee records total counts of Ramsar Sites across the UK. A check of the JNCC register (July 2023) finds this was last updated in January 2022. It records 7 Ramsar sites in Wales, totalling an area of 11,366 ha. There were three sites crossing the England / Wales border, totalling 40,553 ha<sup>18</sup>. Ramsar</p>	<p>The Joint Nature Conservation Committee records total counts of Ramsar Sites across the UK. A check of the JNCC register (July 2023) finds this was last updated in January 2022. It records 50 Ramsar sites in Scotland, totalling an area of 326,720 ha. There is one site crossing the England / Scotland border (43,637 ha)<sup>19</sup>.</p>	<p>The Joint Nature Conservation Committee records total counts of Ramsar Sites across the UK. A check of the JNCC register (July 2023) finds this was last updated in January 2022. It records 20 Ramsar sites in Northern Ireland, totalling an area of 88,392 ha<sup>20</sup>. Ramsar sites in Northern Ireland are</p>

<sup>15</sup> Joint Nature Conservation Committee (2023) Ramsar convention. Available: [Ramsar Convention | JNCC - Adviser to Government on Nature Conservation](#)

<sup>16</sup> Joint Nature Conservation Committee (2023) UK Ramsar sites. Available: [Ramsar Sites | JNCC - Adviser to Government on Nature Conservation](#)

<sup>18</sup> Joint Nature Conservation Committee (2023) UK Ramsar sites. Available: [Ramsar Sites | JNCC - Adviser to Government on Nature Conservation](#)

<sup>19</sup> Joint Nature Conservation Committee (2023) UK Ramsar sites. Available: [Ramsar Sites | JNCC - Adviser to Government on Nature Conservation](#)

<sup>20</sup> Joint Nature Conservation Committee (2023) UK Ramsar sites. Available: [Ramsar Sites | JNCC - Adviser to Government on Nature Conservation](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>one site crossing the England / Scotland border (43,637 ha)<sup>17</sup>. Ramsar sites in England are predominantly located in coastal and estuarine areas, however there are smaller sites distributed inland throughout the country.</p>	<p>sites are located in coastal and estuarine areas of Wales, with several situated in the central and northern highlands.</p>	<p>Ramsar sites in Scotland are primarily located in coastal and estuarine areas, with various lochs being designated, particularly in the far north off the country.</p>	<p>primarily located in coastal and estuarine areas.</p> <p>There are 3 sites in Northern Ireland which have been proposed:<sup>21</sup></p> <p>Teal Lough (198.22 ha)</p> <p>Derryleckagh (42.41 ha)</p> <p>Dundrum Bay (N/A ha)</p>
	Supporting trend data is not available.			
Biodiversity & Ecosystems: National Nature Reserves (NNRs) and Local Nature Reserves (LNRs)	<p>NNRs contain examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in the UK. They are managed to conserve their habitats or to provide special opportunities for scientific study of the habitats communities and species represented within them. In addition, they may be managed to provide public recreation that is compatible with their natural heritage interests.</p> <p>NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981. In Northern Ireland, Nature Reserves are designated under the Nature Conservation and Amenity Lands Act (Northern Ireland) 1985. In Scotland, whilst Scottish Natural Heritage (SNH) remains</p>			

<sup>17</sup> Joint Nature Conservation Committee (2023) UK Ramsar sites. Available: [Ramsar Sites | JNCC - Adviser to Government on Nature Conservation](#)

<sup>21</sup> Joint Nature Conservation Committee (2023) UK Ramsar sites. Available: [Ramsar Sites | JNCC - Adviser to Government on Nature Conservation](#)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>the statutory designating authority, decisions to declare new NNR are shared with a Partnership Group of interested organisations<sup>22</sup>.</p> <p>NNRs are of national conservation importance.</p> <p>The locations of NNRs are shown in the maps in Appendices C.1. and C.2. for England and Wales respectively.</p> <p>Local Nature Reserves (LNRs) are a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949 by principal local authorities<sup>23</sup>. Parish and Town Councils can also declare LNRs, but they must have the powers to do so delegated to them by a principal local authority. In Northern Ireland, LNRs are known as statutory nature reserves (NR) as declared under the Amenity Lands Act (NI) 1965. LNRs are places with wildlife or geological features that are of special interest locally. They offer people opportunities to study or learn about nature or simply to enjoy it. They range from windswept coastal headlands, ancient woodlands and flower-rich meadows to former inner-city railways, long abandoned landfill sites and industrial areas now re-colonised by wildlife.</p>			
	<p>Natural England records total counts of Ramsar Sites across England. A check of the register (July 2023) finds this was last updated in May 2023. It records 221 NNRs, totalling an area of over 105,000 ha<sup>24</sup>. The largest is The Wash covering almost 8,800</p>	<p>Natural Resources Wales records total counts of Ramsar Sites across Wales. A check of the register (July 2023) finds this was last updated in June 2023. It records 76 NNRs in Wales. These cover a wide range of habitats from high mountains, peat bogs and</p>	<p>There are 43 NNRs in Scotland, totalling an area of 154,250 ha<sup>28</sup>. The largest is Mar Lodge Estate at 29,324, and the smallest at less than 7 ha is Corrieshalloch Gorge. NNRs within Scotland cover a wide variety of Scotland's habitats and species from pine forest</p>	<p>There are 12 NNRs in Northern Ireland, totalling an area of 1,800 ha. These are concentrated in the east and north east of the country. They contain a wide range of species,</p>

<sup>22</sup> NatureScot (2023). National Nature Reserves in Scotland. Available: [National Nature Reserves | NatureScot](#)

<sup>23</sup> Greenspace Information for Greater London (GiGL) (2023) Statutory Designations. Available: [Statutory Designations - GiGL](#)

<sup>24</sup> Joint Nature Conservation Committee (2023) National Nature Reserves in England. Available: [National Nature Reserves in England - GOV.UK \(www.gov.uk\)](#)

<sup>28</sup> Scotland's National Nature Reserves (2021) What are National Nature Reserves?. Available: <https://www.nnr.scot/About>

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	<p>hectares, while Dorset's Horn Park Quarry is the smallest at 0.32 ha<sup>25</sup>. NNRs are widely distributed throughout England.</p> <p>As of November 2021, there are 1,680 LNRs in England.</p>	<p>woodlands, to sand dunes, mud flats and remote off-shore islands<sup>26</sup>.</p> <p>There are approximately 74 LNRs in Wales, designated by the Countryside Council for Wales<sup>27</sup>.</p>	<p>to blanket bog, from seabird colonies to mountain plants. NNRs are distributed throughout Scotland, with larger concentrations within the north of the country.</p> <p>There are 75 LNRs in Scotland, usually close to towns and cities. The most recent LNR designation was the extension to Stevenston Beach LNR in North Ayrshire in June 2019.</p>	<p>communities and geology<sup>29</sup>.</p> <p>There are 37 statutory nature reserves (the equivalent of a LNR) in Northern Ireland covering 3,300 ha.</p>
	Supporting trend data not available.			
Biodiversity & Ecosystems: Sites of Special Scientific Interest (SSSI) (England, Scotland and Wales) and Areas of Special Scientific Interest (ASSI) (Northern Ireland)	SSSIs are designated in accordance with the duties in law placed upon each of the country nature conservation bodies (CNCBs) to notify as a SSSI any area of land which, in its opinion, is of special interest by reason of any of its flora, fauna, geological, geomorphological or physiographical features <sup>30</sup> . SSSIs were originally notified under the National Parks and Access to the Countryside Act 1949, and then were re-notified under the Wildlife and Countryside Act 1981. The guidelines set out to primarily help CNCB staff in the selection of biological SSSIs,			

<sup>25</sup> Natural England (2023) National Nature Reserves in England. Available: <https://www.gov.uk/government/collections/national-nature-reserves-in-england>

<sup>26</sup> Natural Resources Wales (2023) National Nature Reserves. Available: <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/national-nature-reserves/?lang=en>

<sup>27</sup> [Local Nature Reserves in Wales \(2023\) - a Freedom of Information request to Countryside Council for Wales - WhatDoTheyKnow](#)

<sup>29</sup> Northern Ireland Environment Agency (2017) NIEA Policy position statement on National Nature Reserves. Available: <https://www.daera-ni.gov.uk/publications/niea-policy-position-statement-statutory-nature-reserves>.

<sup>30</sup> Joint Nature Conservation Committee (2023) SSSI Guidelines. Available: [Guidelines for selection of SSSIs | JNCC - Adviser to Government on Nature Conservation](#)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>but also as a public statement of the selection principles for all interested parties. Part 1 of the guidelines sets out general principles from which the evaluation and selection procedures and have been developed, as well as explaining background issues and concepts. Part 2 presents the detailed and specific guidance for each of the main habitat types and species groups.</p> <p>In Northern Ireland, Areas of Special Scientific Interest (ASSIs) are also protected areas representing the best of their wildlife and geological sites that make a considerable contribution to the conservation of our most valuable natural places.<sup>31</sup></p> <p>SSSIs / ASSIs are of national conservation importance.</p> <p>The locations of SSSIs and ASSIs are shown in the maps in Appendices C.1. and C.2. for England and Wales respectively.</p>			
	<p>As of February 2023, there are 4,127 SSSIs in England, with approximately 13,000 features of interest which identify a diversity of habitats, geology and wildlife<sup>32</sup>. Some of these sites correspond with other designations, such as</p>	<p>There are more than 1,000 SSSIs in Wales, covering about 12% of the country’s surface area<sup>33</sup>. Some of these sites correspond with other designations, such as SACs, SPAs and NNRs. SSSIs are widespread throughout the whole of Wales, and</p>	<p>As of August 2020, there were 1,422 SSSIs in Scotland covering about 13% of the country’s surface area<sup>34</sup>. Some of these sites correspond with other designations, such as SACs, SPAs and NNRs. SSSIs are widespread throughout</p>	<p>There are 394 ASSIs in Northern Ireland<sup>35</sup>. ASSIs are widespread throughout the whole of Northern Ireland and cover a wide variety of habitats and geological features.</p>

<sup>31</sup> Department of Agriculture, Environment and Rural Affairs (2016) Areas of Special Scientific Interest. Available: [Areas of Special Scientific Interest | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](https://www.daera-ni.gov.uk/areas-of-special-scientific-interest)

<sup>32</sup> Natural England (2016) Designated Sites View. Available: [Designated Sites View \(naturalengland.org.uk\)](https://www.naturalengland.org.uk/Designated-Sites-View)

<sup>33</sup> Natural Resources Wales (2023) Site of Special Scientific Interest (SSSIs). Available: [Natural Resources Wales / Types of protected areas of land and sea](https://www.naturalresources.wales/types-of-protected-areas-of-land-and-sea)

<sup>34</sup> NatureScot (2020) Sites of Special Scientific Interest (SSSIs) . Available: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/sites-special-scientific-interest-sssis>

<sup>35</sup> Department of Agriculture, Environment and Rural Affairs (2016) Areas of Special Scientific Interest. Available: [Areas of Special Scientific Interest | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](https://www.daera-ni.gov.uk/areas-of-special-scientific-interest)

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	SACs, SPAs and NNRs. SSSIs are widespread throughout the whole of England, and cover a wide variety of habitats and geological features.	cover a wide variety of habitats and geological features. (NRW 2016)	the whole of Scotland, and cover a wide variety of habitats and geological features.	
	<p>Supporting Trend Data:</p> <p>The four country nature conservation bodies (Natural England, Natural Resources Scotland, Scottish Natural Heritage and the Department of Agriculture, Environment and Rural Affairs, Northern Ireland) produced a revised Common Standards Monitoring Statement in October 2019 (further updated in 2022). This revised statement aims to address site monitoring priorities to incorporate the large amount of information available through new monitoring methods such as satellite imagery and eDNA. These techniques will work alongside traditional field-based monitoring and the Common Standards Monitoring guidance to provide more options for monitoring the UK’s protected sites.<sup>36</sup></p> <p>Condition of English SSSIs across each habitat is discussed in National Statistics (except bracken). Apart from mountain heath and willow scrub sub-habitat, each sub-habitat has seen an increase in the unfavourable condition of their SSSIs, between 2012 and 2018<sup>37</sup>.</p> <p>Based on data assembled from April 1998 to March 2005, blanket bogs have the greatest percentage of SSSI and ASSI sites in favourable condition and the lowest percentage in unfavourable condition, at 58% and 27% respectively. No SSSI data for Wales were reported therefore percentages were unknown<sup>38</sup>.</p>			

<sup>36</sup> Joint Nature Conservation Committee (2023) Common Standards Monitoring Statement. Available: [Common Standards Monitoring | JNCC - Adviser to Government on Nature Conservation](#)

<sup>37</sup> UK Natural Capital: mountains, moorland and heath accounts (2023) Table 3. Available: [UK natural capital - Office for National Statistics \(ons.gov.uk\)](#)

<sup>38</sup> UK Natural Capital: mountains, moorland and heath accounts (2023) Table 3. Available: [UK natural capital - Office for National Statistics \(ons.gov.uk\)](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Marine Conservation Zones (MCZs)	<p>MCZs are a type of marine protected area that can be designated in English, Welsh and Northern Irish territorial and offshore waters.<sup>39</sup> They are established under the Marine and Coastal Access Act (2009). In Northern Ireland, MCZs are designated under the Marine Act (Northern Ireland) (2013)<sup>40</sup>.</p> <p>MCZs are of national conservation importance.</p> <p>The locations of MCZs are shown in the maps in Appendices C.1. and C.2. for England and Wales respectively.</p>			
	<p>There are 89 MCZs within English waters. These are located in coastal and offshore locations and are designated for a range of habitats, wildlife conservation and geological features<sup>41</sup>.</p>	<p>There is one MCZ in Welsh waters, Skomer, covering 130.2 ha. Skomer MCZ is situated around the island of Skomer and the Marloes Peninsula in Pembrokeshire, south west Wales. Skomer MCZ has species and habitats of national and international importance. These include grey seal, pink seafan, sponge communities, eelgrass</p>	<p>This designation is not applicable to Scotland, see NCMPAs.</p>	<p>There are five MCZs in Northern Irish waters<sup>43</sup>:</p> <p>Strangford Lough;</p> <p>Carlingford Lough (NB this area is adjacent to the border with the Republic of Ireland);</p> <p>Outer Belfast Lough;</p> <p>Waterfoot; and</p> <p>Rathlin.</p>

<sup>39</sup> Joint Nature Conservation Committee (2019) Marine Conservation Zones. Available: [Marine Conservation Zones | JNCC - Adviser to Government on Nature Conservation](#)

<sup>40</sup> Joint Nature Conservation Committee (2019) Marine Conservation Zones. Available: [Marine Conservation Zones | JNCC - Adviser to Government on Nature Conservation](#)

<sup>41</sup> Joint Nature Conservation Committee (2021) Marine Conservation Zones. Available: <https://jncc.gov.uk/our-work/marine-conservation-zones/>

<sup>43</sup> Department of Agriculture, Environment and Rural Affairs. Marine Conservation Zones. Available: [Marine Conservation Zones | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
		<p>and algal communities<sup>42</sup>.</p> <p>In addition, the Welsh Government, with support from NRW and JNCC and other stakeholders are currently working to identify a small number of possible Marine Conservation Zones thus fulfilling a 2017 Ministerial commitment to meet national and international obligations to complete the network of Marine Protected Areas, informed by the 2016 Welsh MPA network assessment.</p>		
	<p>Supporting Trend Data:</p> <p>Grey seal pups saw a slight increase in 2022 compared to the previous year in Skomer MCZ. Average Scallop density has had a 12.4-fold density increase since 2000<sup>44</sup>. No available trend data found for England, Scotland, or Northern Ireland.</p>			

<sup>42</sup> Natural Resources Wales (2016) Skomer Marine Conservation Zone. Available: [Natural Resources Wales / Skomer Marine Conservation Zone](#)

<sup>44</sup> Natural Resources Wales (2023) Skomer Marine Conservation Zone. Available: [Skomer Marine Conservation Zone Annual Report 2022/23 \(cyfoethnaturiol.cymru\)](#)



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Nature Conservation Biodiversity & Ecosystems: Marine Protected Areas (NCMPAs) / Marine Protected Areas (MPAs)	<p>NCMPAs are designated by Scottish Natural Heritage through the Marine (Scotland) Act (2010) and the Marine and Coastal Access Act (2009). NCMPAs have been formally adopted as OSPAR MPAs, which contribute to the network of sites across the North-east Atlantic Ocean. The same is true of existing marine Natura sites – marine SACs and marine SPAs.<sup>45</sup></p> <p>NCMPAs are of national conservation importance.</p> <p>The purpose of an MPA is to protect and recover rare, threatened and important habitats and species from damage caused by human activities. In England and Wales, MPAs are designated to protect specific habitats or species (also known as ‘features’) and have conservation objectives which state what conservation outcomes the MPA is designed to achieve.</p>			
	<p>There are 178 MPAs in English waters, covering 51% of inshore and 37% of offshore waters.</p>	<p>Wales has 139 MPAs covering 69% of inshore waters (up to 12 nautical miles).</p>	<p>A total of 35 NCMPAs have been designated in Scotland’s seas and give much-needed spatial protection to a wide range of marine wildlife, habitats and geology not previously covered by the network.<sup>46</sup></p>	<p>In Northern Ireland, MPAs are covered through by designations SAC, SPA, Coastal ASSI, MCZ and Ramsar sites.</p>
	<p>Supporting trend data not available.</p>			
Biodiversity & Ecosystems: Highly Protected Marine Areas (HPMAs)	<p>Highly Protected Marine Areas (HPMAs) are areas of the sea designated for the protection and recovery of marine ecosystems. They prohibit extractive, destructive, and depositional uses,</p>			

<sup>45</sup> NatureScot (2023) OSPAR and the Scottish MPA Project. Available: [OSPAR Marine Protected Areas | NatureScot](#)

<sup>46</sup> NatureScot (2023) Scotland’s Marine Protected Area Network. Available: [Scotland’s Marine Protected Area network | NatureScot](#)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>allowing only non-damaging levels of other activities to the extent permitted by international law.</p> <p>By setting aside some areas of sea with high levels of protection, HPMAs will allow nature to recover to a more natural state, allowing ecosystems to thrive. Their key purpose is biodiversity recovery. Government responded to the recommendations of the Benyon Review and committed to designate a number of pilot HPMAs in English waters. Government will use powers under the Marine and Coastal Access Act (2009) to bring forward pilot HPMA. Three candidate pilot HPMA, two in offshore waters and one in inshore waters, were designated by Defra as HPMA in June 2023. HPMA in offshore waters: Dolphin Head HPMA and North East of Farnes Deep HPMA; HPMA in inshore waters: Allonby Bay</p> <p>The Scottish Government will choose the HPMA in 2026, and expects them to cover about ten per cent of Scottish waters.</p> <p>HPMA do not exist in Wales and Northern Ireland.</p>			
<p>Biodiversity &amp; Ecosystems: Ancient Woodland</p>	<p>Ancient Woodland is land that has had continuous woodland cover since at least 1600AD (England and Wales) and 1750AD (Scotland) and is identified within the Ancient Woodland Inventory. As Ancient Woodlands have developed over such long timescales, they have unique features such as relatively undisturbed soils and communities of plants and animals that depend on the stable conditions that Ancient Woodland provides. These are often rare and vulnerable species.</p> <p>There are four types of Ancient Woodland classification in England, Wales and Scotland; Ancient Semi-Natural Woodlands, Plantations on Ancient Woodland Sites, Ancient Wood Pasture and Parkland, and Infilled Ancient Wood Pasture and Parkland. Ancient semi-natural woods are woods that have developed naturally and may have existed since woodland first colonised the UK after the last glaciation. Plantations on Ancient Woodland sites are ancient woods that were felled and planted with non-native trees.<sup>47</sup></p>			
	<p>The Ancient Woodland Inventory for England</p>	<p>The Ancient Woodland Inventory 2011</p>	<p>Native woodlands occur in most of mainland</p>	<p>The Inventory of Ancient and Long-</p>

<sup>47</sup> Woodland Trust (2023) Ancient Woodland – British Habitats. Available: [Ancient Woodland - British Habitats - Woodland Trust](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>identifies 215, 156 ha of ancient semi-natural woodland and 149,733 ha of plantations on ancient woodland sites<sup>48</sup>. Ancient Woodland sites are scattered throughout England, with the densest concentrations being in the southeast. Over 70% of the total number of ancient woodlands are less than 5 ha in size.</p>	<p>indicates that there are around 95,000ha of Ancient Woodland in Wales<sup>49</sup>.</p>	<p>Scotland and on several islands. Over 8,000 woods are identified as native woods of ancient origin in the Scottish Natural Heritage (SNH) Woodland Inventory, but most are very small. Altogether this woodland covers only a tiny portion (1%) of the land, only one fifth is currently protected as nature reserves or SSSIs.</p>	<p>Established Woodland<sup>50</sup> for Northern Ireland identifies 2,374 sites, totalling 9,964ha. Of this, only 151ha is classified as Ancient Woodland (present since 1600AD) with 5,662ha classified as Long-Established Woodland, 3,269ha as Possibly Ancient Woodland, 882ha of Probably Ancient Woodland.</p>
	<p>Huge areas of ancient woodland remain in critical or threatened condition with restoration progress being slow through plantation on ancient woodlands sites (PAWS) being on private land. Only 7.2% (21,547 ha) of these have had the Woodland Trust assess their condition.<sup>51</sup></p> <p>Since 2010, over 27,000 ha of plantations on ancient woodland sites in England have been brought into restoration improving their ecological condition. Although progress has been made on protection and habitat loss, there is still much more to do<sup>52</sup>.</p>			

<sup>48</sup> DEFRA (2022) Keepers of time: Ancient and native woodland and trees policy in England. Available: [Keepers of time: ancient and native woodland and trees policy in England \(publishing.service.gov.uk\)](#)

<sup>49</sup> Natural Resources Wales (2023) Ancient Woodland Inventory. Available: [Natural Resources Wales / Ancient Woodland Inventory](#)

<sup>50</sup> Woodland Trust (2023) Ancient Tree Inventory. Available: [Back on the Map - Ancient Tree Inventory \(woodlandtrust.org.uk\)](#)

<sup>51</sup> Woodland Trust (2021) State of UK's Woods and Trees 2021. Available: [State of the UK's Woods and Trees 2021 \(woodlandtrust.org.uk\)](#)

<sup>52</sup> DEFRA (2022) Keepers of time: Ancient and native woodland and trees policy in England. Available: [Keepers of time: ancient and native woodland and trees policy in England \(publishing.service.gov.uk\)](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Priority Habitats	UK BAP (Biodiversity Action Plan) priority habitats cover a wide range of semi-natural habitat types and were those that were identified as being the most threatened and requiring conservation action due to their decline, rarity and importance. The list contains 65 priority habitats, which span terrestrial, freshwater, and marine environments. <sup>53</sup>			
	There are 56 habitats recognised as being of ‘principal importance’ for the conservation of biological diversity in England under section 41 of the Natural Environment and Rural Communities Act 2006. <sup>54</sup>	There are 55 priority habitats identified in Wales under the Environment (Wales) Act 2016. <sup>55</sup>	The Scottish Biodiversity List identifies 41 priority habitats. <sup>56</sup>	There are 51 priority habitats identified in Northern Ireland. <sup>57</sup>
	The UK BAP describes current and potential threats to each of the 65 priority habitats. Habitat Action Plans provide a framework for action to protect the habitats and conserve biodiversity. <sup>53</sup>			
Biodiversity & Ecosystems: Chalk Rivers	A chalk stream is broadly defined as one that derives most of its flow from chalk-fed groundwater, and it exhibits – in varying degrees depending on the particular geology of a given valley – the ‘classic’ chalk stream characteristics of alkaline, crystal-clear water, flowing consistently and equably over clean gravel beds. <sup>58</sup>			

<sup>53</sup> Joint Nature Conservation Committee (2011) UK Biodiversity Action Plan Priority Habitat Descriptions. Available: [UK Biodiversity Action Plan: Priority Habitat Descriptions \(Updated December 2011\) \(jncc.gov.uk\)](#)

<sup>54</sup> Department for Environment, Food & Rural Affairs (2012) England Biodiversity Indicators 2a Extent and condition of priority habitats. Available: [2a Extent and condition of priority habitats.pdf \(publishing.service.gov.uk\)](#)

<sup>55</sup> Welsh Government (2016) Environment (Wales) Act 2016 Section 7. Available: [masterss7habitatslistmay 2016.pdf](#)

<sup>56</sup> NatureScot (2022) The Scottish Biodiversity List. Available: [Scottish Biodiversity List.xls \(live.com\)](#)

<sup>57</sup> DAERA (2017) Priority Habitats: Advice for planning officers and applicants seeking planning permission for land which may impact on priority habitats. Available: [standing\\_advice\\_13\\_priority\\_habitats\\_final\\_2017.pdf \(qub.ac.uk\)](#)

<sup>58</sup> WWF (2014) The State of England’s Chalk Streams. Available: [wwf\\_chalkstreamreport\\_final\\_lr.pdf](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>There are approximately 35 chalk rivers and major tributaries ranging from 20 to 90 kilometres in length. They are located in south and east England. 224 chalk streams have been identified.<sup>58</sup></p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>
	<p>Only 12 out of England’s 224 chalk streams are protected and of these only 15% (by length) are classed as adequately protected and meeting conservation objectives; half are classed as unlikely to meet conservation targets without changes to management or external pressures. More than three-quarters – 77% – are failing to meet the required Good status. The key pressures causing failure are: physical modification(e.g. for historic land drainage and industry), over abstraction (particularly for public water supply), pollution from sewage works, septic tanks and agriculture. With growing pressure from climate change, population growth and new and expanding populations of invasive non-native species, ensuring no further deterioration from the current meagre baseline will be challenging without a step change in management.<sup>58</sup></p>			
<p>Biodiversity &amp; Ecosystems: Biosphere Reserves</p>	<p>Biosphere reserves are ‘learning places for sustainable development’. They are sites for testing interdisciplinary approaches to understanding and managing changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity. They are places that provide local solutions to global challenges. Biosphere reserves include terrestrial, marine and coastal ecosystems<sup>59</sup>. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) Man and the Biosphere (MAB) programme comprises a World Network of Biosphere Reserves .</p> <p>Biosphere Reserves are comprised of three interrelated zones:</p>			

<sup>59</sup> UNESCO 2023) What are Biosphere Reserves? Available: What are Biosphere Reserves? (unesco.org)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>The Core Area (protected: the ‘natural’ state of the region’s ecosystems).</p> <p>The Buffer Zone (conserves the core area, and can accommodate positive human engagement, including research, education, training, tourism, extensive agriculture, or sustainable forestry).</p> <p>The Transition Area (where most of the region’s people live and work, using the natural resources in a sustainable manner).</p> <p>Biosphere Reserves are non-statutory.</p> <p>The locations of Biosphere Reserves are shown in the maps in Appendices C.1. and C.2. for England and Wales respectively.</p>			
	<p>There are two Biosphere Reserves in England.</p> <p>The Brighton and Lewes Downs Biosphere reserve covers almost 400km<sup>2</sup> of land and sea between the River Adur and the River Ouse, bringing together the three environments of countryside, coast, and city &amp; towns under one united approach<sup>60</sup>.</p> <p>The North Devon Biosphere Reserve</p>	<p>There is one Biosphere Reserve in Wales, Biosffer Dyfi.</p> <p>The area around the River Dyfi (West Wales) is a special place for its people, It measures 840 square km<sup>2</sup>. It hosts some of the finest and most inspiring landscapes and wildlife areas in Europe, as well as a passionate community that care strongly about their</p>	<p>There are two Biosphere Reserves in Scotland.</p> <p>Galloway and Southern Ayrshire covering 526,888 ha, which was granted Biosphere status in recognition of the special natural qualities that characterise the area. It is home to 95,000 people who work together to improve life</p>	<p>There are no Biosphere Reserves in Northern Ireland.</p>

<sup>60</sup> Brighton and Lewes Downs Biosphere (2017) Brighton and Lewes Downs Biosphere. Available: <http://biospherehere.org.uk/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	covers 3,300km <sup>2</sup> of land and sea. The reserve extends from the catchments of the Rivers Taw and Torridge and out to the island of Lundy, with its core at Braunton Burrows sand dune system.	magnificent surroundings <sup>61</sup> .	whilst caring for the natural environment <sup>62</sup> .  The newly designated area of Wester Ross extends 529,904 ha from the tip of Knoydart northwards to Achiltibuie and the Summer Isles, including population centres in Kyle of Lochalsh, Lochcarron, Gairloch and Ullapool. The new designation replaces an earlier one for Beinn Eighe – a much smaller area that was managed solely for nature conservation, research and education <sup>63</sup> .	
	Supporting trend data is not available.			
Biodiversity & Ecosystems: Biodiversity status	Biodiversity is the variety of all life on Earth: genes, species and ecosystems. It includes all species of animals and plants, and the natural systems that support them. The UK biodiversity indicators have been developed in a co-operative fashion, with input from government,			

<sup>61</sup> UNESCO (2023) Dyfi Biosphere. Available: [UNESCO Dyfi Biosphere, Mid wales](#)

<sup>62</sup> UNESCO (2020) Galloway and Southern Ayrshire Biosphere Reserve Available: [Galloway and Southern Ayrshire Biosphere Reserve, United Kingdom \(unesco.org\)](#)

<sup>63</sup> UNESCO (2020) Wester Ross Biosphere Reserve. Available: [Galloway and Southern Ayrshire Biosphere Reserve, United Kingdom \(unesco.org\)](#)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>statutory agencies and public bodies, non-governmental organisations, and academic institutes<sup>64</sup>.</p> <p>Supporting Trend Data:</p> <p>Between 1970 and 2019, populations of breeding farmland and woodland birds decreased 45% and 25% respectively and the population index for breeding water and wetland birds was 14% lower than in 1975<sup>65</sup>. The population of breeding seabirds is also in long-term decline, being 24% lower in 2019 than in 1986<sup>66</sup>. By 2021, the index of relative abundance of priority species in the UK had declined to 37% of its base-line value in 1970, a statistically significant decrease<sup>67</sup>.</p> <p>Long-term data is not available, however in 2007, 5% of UK habitats listed on Annex I of the Habitats Directive were in favourable conservation status, decreasing to 3% in 2013, before increasing again to 8% in 2019. The number of habitats classified as unfavourable improving decreased to 31% in 2013 and 20% in 2019 from 48% in 2007<sup>68</sup>. Improvement was seen in the number of habitats assessed as unfavourable declining, with a 17% decrease between 2007 and 2019. 48% of UK habitats of European importance are assessed as being unfavourable stable<sup>69</sup>.</p>			

<sup>64</sup> Joint Nature Conservation Committee (2023) UK Biodiversity Indicators. Available: [UK Biodiversity Indicators | JNCC - Adviser to Government on Nature Conservation](#)

<sup>65</sup> Joint Nature Conservation Committee (2022) C5. Birds of the wider countryside and at sea. Available: [UKBI - C5. Birds of the wider countryside and at sea | JNCC - Adviser to Government on Nature Conservation](#)

<sup>66</sup> Joint Nature Conservation Committee (2022) C5. Birds of the wider countryside and at sea. Available: [UKBI - C5. Birds of the wider countryside and at sea | JNCC - Adviser to Government on Nature Conservation](#)

<sup>67</sup> Joint Nature Conservation Committee (2022) C4 Species Abundance. Available: [UKBI - C4a. Species - abundance | JNCC - Adviser to Government on Nature Conservation](#)

<sup>68</sup> Joint Nature Conservation Committee (2020) C3 European Habitats. Available: [UKBI - C3a. European habitats | JNCC - Adviser to Government on Nature Conservation](#)

<sup>69</sup> Joint Nature Conservation Committee (2020) C3 European Habitats. Available: [UKBI - C3a. European habitats | JNCC - Adviser to Government on Nature Conservation](#)



Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Some aspects do show improvement. The area of land in higher-level or targeted agri-environment schemes was 3.6 million hectares in 2020, an increase of 3.3 million hectares since 1992<sup>70</sup>.</p> <p>There has also been a positive trend towards a greater proportion of fish stocks being sustainably harvested in both the long and short-term, however substantial further improvement in stock status are needed to ensure all UK fish stocks are fished sustainably and attain biomass levels that maintain full reproductive capacity<sup>71</sup>.</p> <p>Habitat areas at risk from acid and nitrogen deposition have declined over the longer term (2010 to 2019), however reduction below critical loads does not mean immediate ecosystem recovery due to a time-lag before the chemical environment, and flora and fauna recover<sup>72</sup>.</p> <p>Biodiversity is under pressure from development and increasing population, in addition to climate change. Overall climate change could lead to:</p> <ul style="list-style-type: none"> <li>Changes in phenology (including changes in the timings of seasonal events causing loss of synchronicity and increased competitive advantage for some species at the expense of others);</li> <li>Shifts in suitable climate conditions for individual species leading to change in species distribution, abundance and range;</li> <li>Changes in the community structure and ecosystem function of habitats which species occupy;</li> <li>Changes to the composition and structure of plant and animal communities (including arrival of non-natives, loss of native species and increase in pest species);</li> </ul>			

<sup>70</sup> Joint Nature Conservation Committee (2021) B1 Agri-environment schemes. Available: [UKBI - B1a. Agri-environment schemes | JNCC - Adviser to Government on Nature Conservation](#)

<sup>71</sup> Joint Nature Conservation Committee (2021) B2 Sustainable Fisheries. Available: [UKBI - B2. Sustainable fisheries | JNCC - Adviser to Government on Nature Conservation](#)

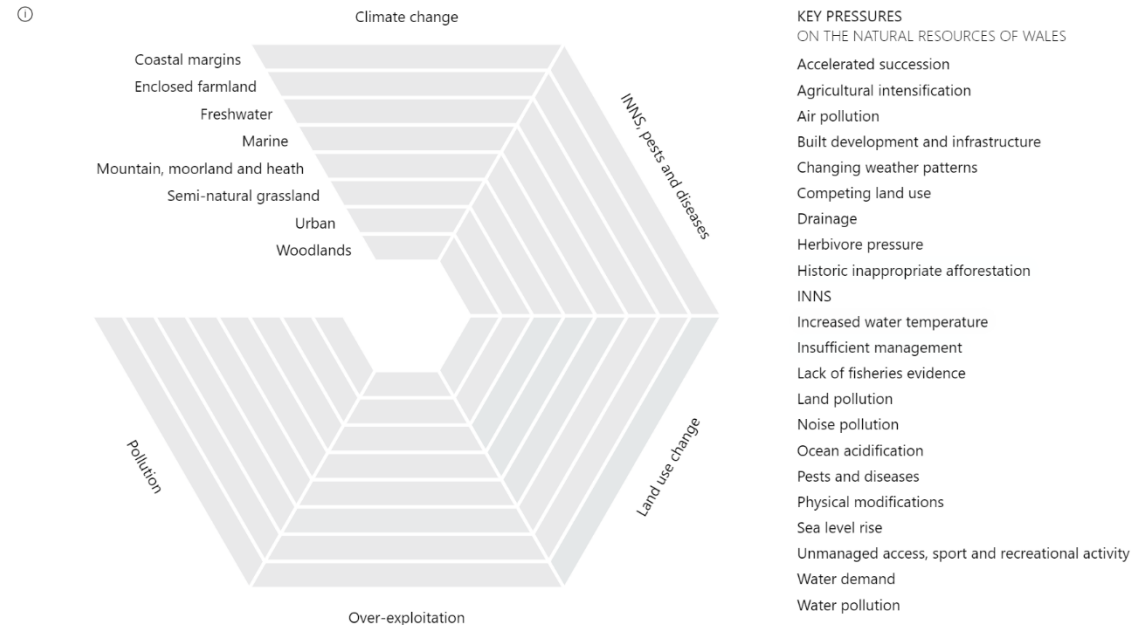
<sup>72</sup> <https://jncc.gov.uk/our-work/ukbi-b5a-air-pollution/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Changes to habitats and ecosystems, such as altered water regimes, increased rates of decomposition in bogs and higher growth rates in forests; and</p> <p>Loss of physical space due to sea level rise and increased storminess<sup>73</sup>.</p>			

<sup>73</sup> Joint Nature Conservation Committee (2010) Biodiversity and Climate Change. Available: [Biodiversity and Climate Change - a summary of impacts in the UK \(jncc.gov.uk\)](http://jncc.gov.uk)

It is also worth noting the following infographics which detail opportunities for action and key pressures and impacts that exist. The State of Natural Resources Report (SoNaRR)<sup>74</sup> for Wales has identified the following impacts and pressures:



<sup>74</sup> Natural Resources Wales (2020) SoNARR2020. Available: [Natural Resources Wales / SoNaRR2020: Natural resource registers](https://www.naturalresources.wales/so-narr-2020)

Sustainability Topic / Baseline

England

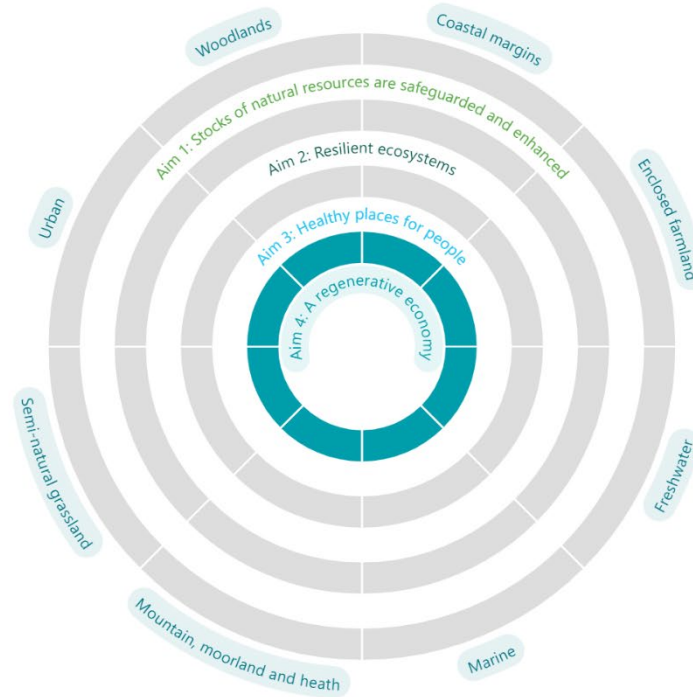
Wales

Scotland

Northern Ireland

Key impacts and pressures:

①



OPPORTUNITIES FOR ACTION  
TO HELP WALES TOWARDS ACHIEVING SMNR

- Access to nature
- Community engagement
- Dietary change
- Education and awareness
- Energy efficiency
- Habitat adaptation
- Habitat creation
- Habitat protection
- Habitat restoration
- Improve species diversity
- Integrated plans and strategies
- Nature based solutions
- Payment for ecosystem services
- Pollution management
- Renewable energy
- Research and technology
- Soil protection
- Sustainable agriculture and forestry
- Sustainable construction
- Sustainable transport
- Water efficiency

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Opportunities for action:</p> <p>The State of Nature 2019<sup>75</sup> report presents an overview of how the nation’s wildlife is faring, looking back over 50 years of monitoring to see how nature has changed in the UK. As well as this long-term view, the report focuses on what has happened in the past decade, and whether things are getting better or worse for nature. In addition, we have assessed the pressures that are acting upon nature, and the responses being made, collectively, to counter these pressures.</p> <p>The State of Nature 2019 report uses data collected by tens of thousands of expert volunteers, analysed using rigorous statistical methods to report on the state of nature across the UK and in the UK’s Crown Dependencies and Overseas Territories and at the scale of the UK’s constituent nations. Further information on the state of nature in the UK, including details of the data and analyses underpinning findings, can be found in the UK State of Nature 2019 report<sup>76</sup>.</p> <p>UK</p> <p>The indicator for 696 terrestrial and freshwater species shows a significant decline of 13% in average abundance since 1970, and has fallen by 6% over the past 10 years. Within this indicator, more species have decreased than increased. Since 1970, 41% of species have decreased and 26% have increased in abundance, with the remaining 33% showing little change. Over the past 10 years, 44% of species have decreased and 36% have increased in abundance, with 20% showing little change.</p>			

<sup>75</sup> [https://www.rspb.org.uk/globalassets/images/campaigning-and-positions/let-nature-sing/birdsong-takeover/pdf/sonr/rspb\\_state-of-nature\\_summary-report\\_uk.pdf](https://www.rspb.org.uk/globalassets/images/campaigning-and-positions/let-nature-sing/birdsong-takeover/pdf/sonr/rspb_state-of-nature_summary-report_uk.pdf)

<sup>76</sup> [www.nbn.org.uk/stateofnature2019](http://www.nbn.org.uk/stateofnature2019)

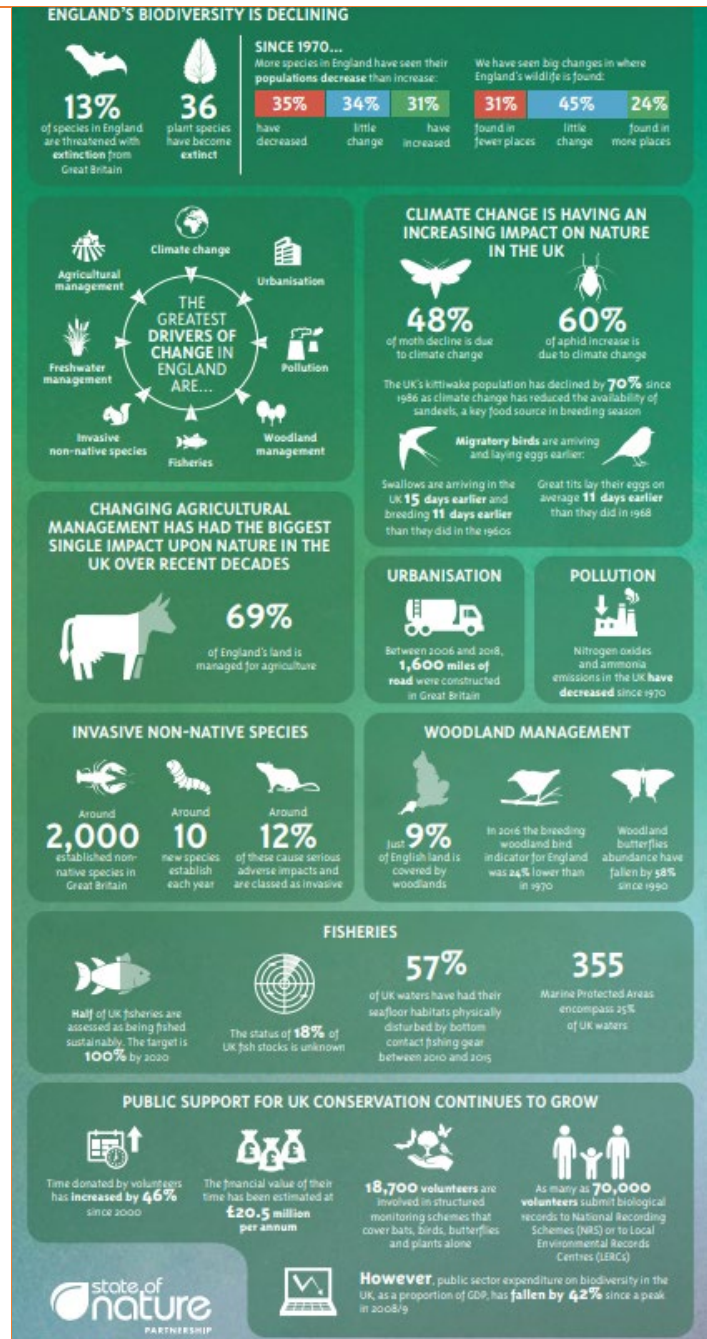
Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>The UK’s wildlife is undergoing rapid changes in abundance; the proportion of species defined as showing strong changes in abundance – either increases or decreases – rose from 33% over the long term to 53% over the past 10 years.</p> <p>Long-term decreases in average abundance in butterflies since 1976 (16%) and moths since 1970 (25%) have not slowed. The mammal indicator shows little change since 1994; while an increase of 43% in the bird indicator has been driven by recovery of some species from very low numbers, conservation successes and colonising species, as well as increasing numbers of wintering waterbirds. These increases mask abundance declines in common and widespread breeding species; the total number of breeding birds in the UK fell by 44 million between 1967 and 2009.</p> <p>Our indicator of average species’ distribution, covering 6,654 terrestrial and freshwater species over a broad range of taxonomic groups, has fallen by 5% since 1970. Because species tend to decline in abundance before they disappear from a site, this change could reflect more severe underlying abundance declines that we are currently unable to quantify. Within this indicator, more species have decreased than increased. Since 1970, 27% of species have decreased and 21% have increased in distribution, with 52% showing little change. Over the past 10 years, 37% of species have decreased and 30% have increased in distribution, with 33% showing little change.</p> <p>The UK’s wildlife is undergoing rapid changes in distribution; the proportion of species defined as showing strong changes in distribution – either increases or decreases – rose from 17% over the long term to 39% over the past 10 years. Of the 8,431 species that have been assessed using the IUCN Regional Red List criteria, and for which sufficient data were available, 1,188 (15%) are currently threatened with extinction from Great Britain and 2% are already extinct.</p> <p>In all four nations, biodiversity is declining as shown below.</p>			

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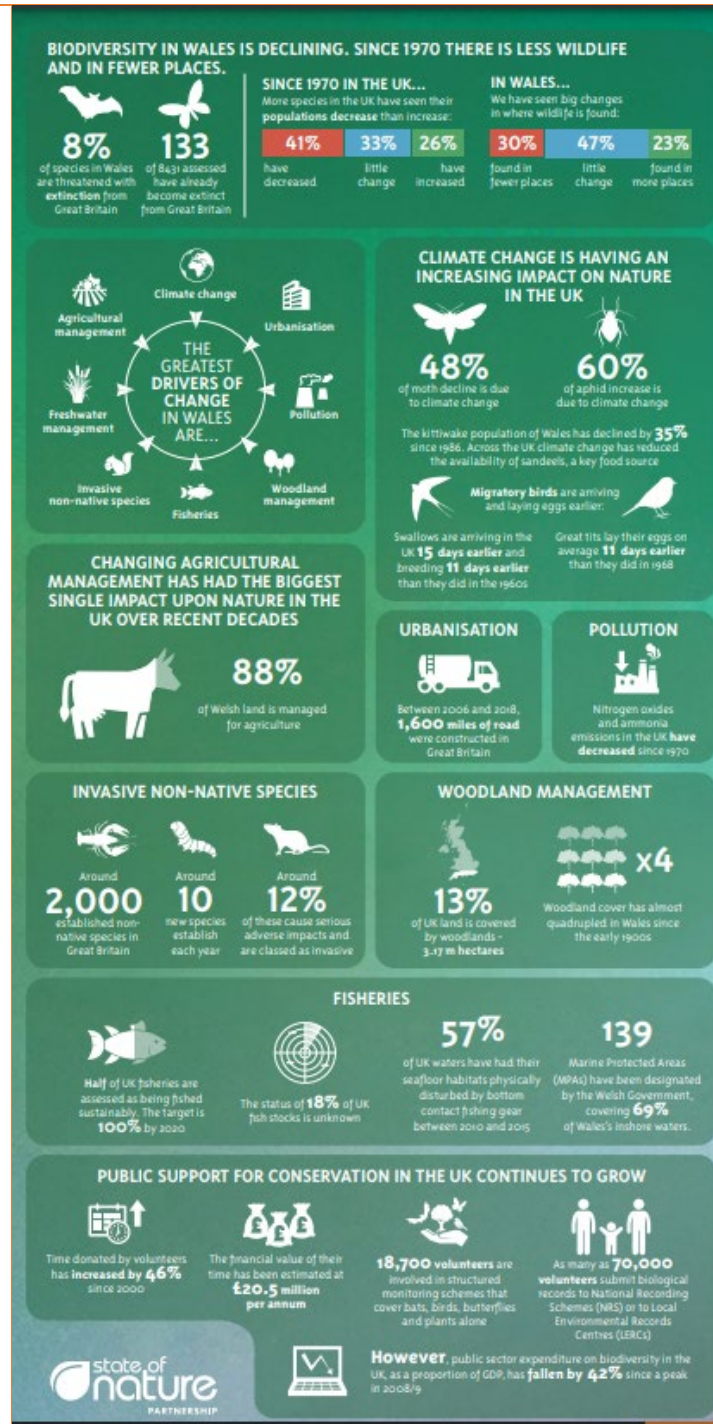
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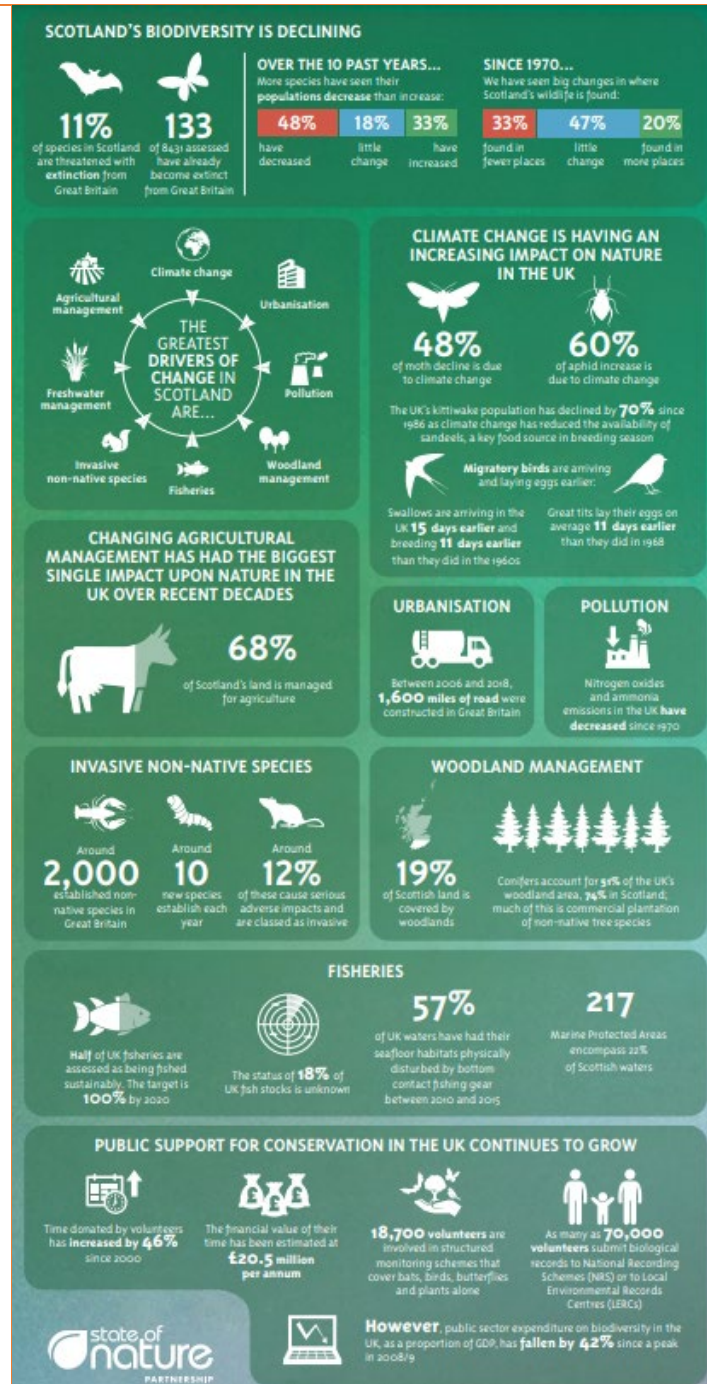
Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland

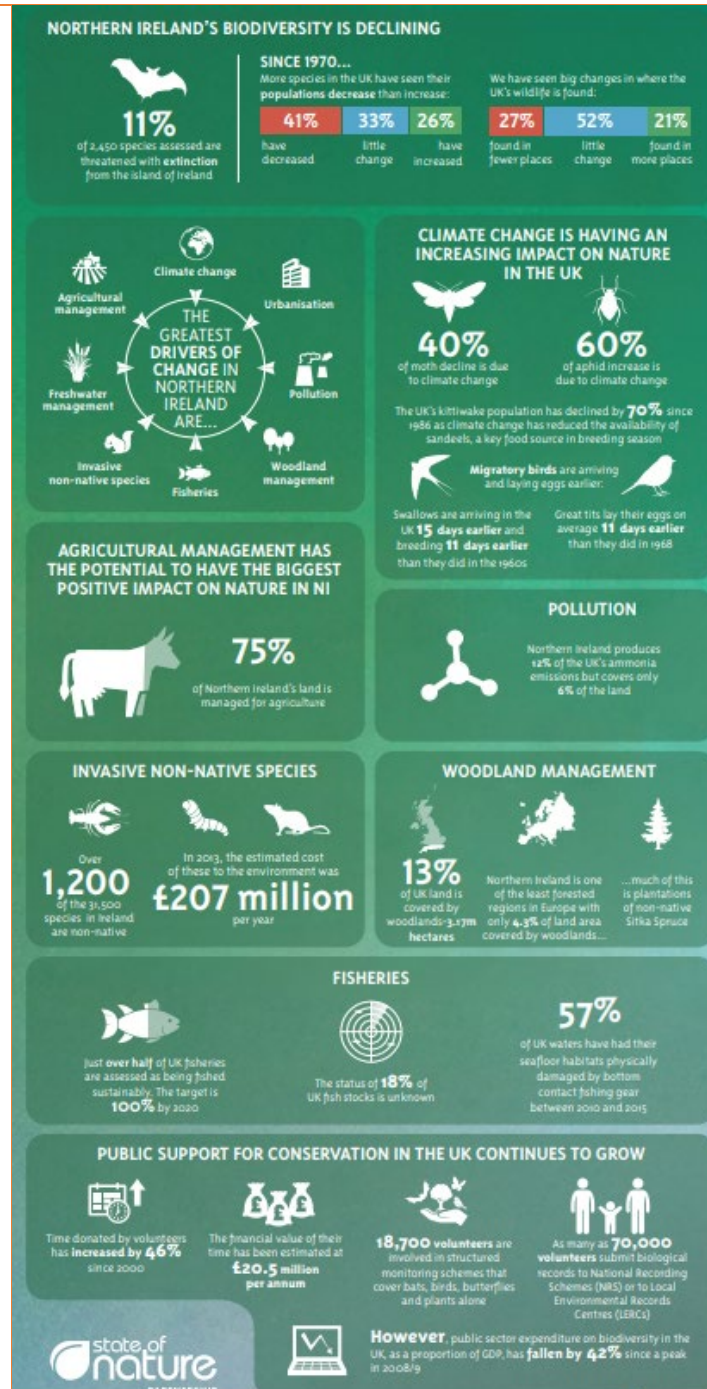
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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Protected species	<p>Many species of plants and animals in England and often their supporting features and habitats are protected and assessments must be undertaken to establish whether a planning application would harm or disturb a protected species.</p> <p>European protected species are those protected by the Habitats Directive (as implemented under the relevant regulations in the UK). Article 12 of the Directive sets out the protection that member states should afford to protected animal species and Article 13 does the same but for plants. European protected species include some widespread and familiar UK species such as otters, great crested newts and all species of bat.</p> <p>For most other protected species, the most important legislation in England, Wales and Scotland is the Wildlife and Countryside Act 1981, as amended. In Northern Ireland, similar protection is provided by The Wildlife (Northern Ireland) Order 1985 and in Ireland by Wildlife Act 1976.</p> <p>Protected species are likely to be present at the habitats set out in Table below<sup>77</sup>.</p>			

<sup>77</sup> <https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications>

Habitat, building or land	Species to look for
Ancient or veteran trees or those with significant decay features	Bats, breeding birds, dormice
Cellars, ice houses, old mines and caves	Bats
Buildings with <a href="#">features suitable for bats</a> , or large gardens in suburban and rural areas	Bats, breeding birds, badgers, reptiles and great crested newts
Traditional timber-framed building (such as a barn or oast house)	Bats, breeding birds including barn owls
Lakes, rivers and streams (on the land or nearby)	Breeding birds, fish, otters, water voles and white-clawed crayfish
Heathland on, nearby or linked to the site (by similar habitat)	Breeding birds, badgers, dormice, reptiles, invertebrates, natterjack toads and protected plants
Meadows, grassland, parkland and pasture on the land or linked to the site (by similar habitat)	Bats, badgers, breeding birds, great crested newts, invertebrates, reptiles and protected plants
Ponds or slow-flowing water bodies (like ditches) on the site, or within 500m and linked by semi-natural habitat such as parks or heaths	Breeding birds, fish, great crested newts, water voles, invertebrates and white-clawed crayfish
Rough grassland and previously developed land (brownfield sites), on or next to the site	Breeding bird, reptiles, invertebrate and protected plants
Woodland, scrub and hedgerows on, or next to the site	Bats, breeding birds, badgers, dormice, invertebrates, great crested newts, reptiles and protected plants
Coastal habitats	Breeding birds, fish, natterjack toads, otters and invertebrates

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Marine Mammals	<p>Most recent data available on the populations of marine mammals in the OSPAR region III Celtic Seas (OSPAR 2016) indicates that generally populations of cetaceans and seals have been increasing, however some populations have remained stable, including species such as bottlenose dolphins and harbour porpoise. Within this region, dolphins, porpoises and grey seals are impacted through fisheries by-catch. Across the Celtic Seas region, grey seals and harbour seals are generally counted every five years (the minimum to assess their status), though in some regions such as the Moray Firth and the East Coast of Scotland they are counted annually. Other marine mammals have little systematic recording and are infrequently assessed through combined aerial and ship surveys. The most recent of these aerial and ship surveys, the SCANS-III in 2016, yielded population abundance estimates for harbour porpoise, common dolphin, striped dolphin, white-beaked dolphin, bottlenose dolphin, fin whale, minke whale, pilot whale, sperm whale and beaked whales. However, Irish waters were not covered by the SCANS III survey. The latest report (June 2021) provides new estimates of abundance which will be integral to cetacean assessments undertaken for the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) quality status report and for the UK Marine Strategy assessments of Good Environmental Status. The latest report (June 2021) provides new estimates of abundance which will be integral to cetacean assessments undertaken for the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) quality status report and for the UK Marine Strategy assessments of Good Environmental Status (GES). Marine mammals may become entangled in ropes and nets from fishing practices in coastal waters to the west of Scotland and in the Minches there is concern about entanglement of minke whales, which are important to the local economy, through marine wildlife watching.</p>			
Biodiversity & Ecosystems: Seabed habitats	<p>Significant damage has occurred to shallow sediment and seafloor habitats as a result of bottom-contacting fishing practices, especially beam trawling (OSPAR 2017). Around the UK, coastal and offshore seabed sediment habitats such as sands and muds are impacted by a range of activities, however the spatial extent of damage generated by bottom trawling activity, which may damage ecosystem functioning, is considered to be the main source of pressure on benthic environments with an appropriate indicator developed for the updated assessment of GES (Defra 2022). In 2018, the levels of physical damage to soft sediment habitats were consistent with the achievement of GES in UK waters to the West of the Celtic Seas, but not in the Celtic Seas or in the Greater North Sea.</p>			

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Seabirds	<p>Along the eastern coast of the UK, some seabirds have continued to decline in numbers, and experience poor or failed breeding, possibly due to the combined effects of climate change and fishing on key species (e.g. sandeels). Fish discards from trawling may have contributed to elevated population sizes in some species. However, the implementation of the discard ban (UK Technical Conservation and Landing Obligation (discard ban) Regulations 2021), is expected to impact those seabird species that exploit this resource, e.g. herring gull, lesser black-backed gull, great black-backed gull, great skua, northern gannet, northern fulmar and black-legged kittiwake (JNCC 2020). While the wider seabird population trends for 2000-2018 still show an increase for some species, e.g. northern gannet, black-headed gull and razorbill, there is still a general decline in several recorded species, most notably Arctic skua, black-legged kittiwake, northern fulmar, little tern and European shag. In some cases, this decline may be slowing and populations may be stabilising, albeit at numbers lower than that seen from the last census; the publication of final results from the Seabirds Count census (2015-2022) later in 2023<sup>78</sup> will provide a clearer understanding of seabird populations around the UK and Ireland.</p> <p>Declines in seabird breeding numbers have also been observed to the West of Scotland associated with predation by introduced mammals and food supply shortages, the latter of which may be due in part to climate change, although eradication programmes of introduced predators on some islands is providing respite for seabirds vulnerable to predation. While insufficient data makes it difficult to produce population trends for some species from Northern Ireland, a pattern of decline for some species e.g. northern fulmar, is evident, with (severe) weather, predation and food shortages cited as reasons for poor breeding or breeding failures. However, relative to overall UK trends, populations of some species, notably blacklegged kittiwake, are stable (British Trust for Ornithology, 2020).</p> <p>Populations of some waterbird species continue to decline, with numbers reduced at principal sites (those supporting more than 75,000 birds) on both the east and west coasts of the UK. Climate change is thought to be one of the biggest drivers of broad scale changes in wintering numbers and distributions; milder weather around the Baltic is likely shortening time many species spend in the UK, low numbers and poorer breeding success could be the result of adverse weather at breeding locations in Russia, while climate change is also thought to be leading to short-stopping in migration journeys of some species (e.g. European white fronted</p>			

<sup>78</sup> [Seabirds Count | JNCC - Adviser to Government on Nature Conservation](#)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Biodiversity & Ecosystems: Fish Stocks	<p>goose and goldeneye) and influencing colonisation by egrets. At a site-specific level, pressures such as coastal human disturbance and development at estuaries can affect numbers (Frost et al. 2020).</p> <p>The latest updated assessment towards achieving good environmental status was produced in 2019 (Defra) and reported that demersal fish communities were recovering from over-exploitation in the past, but GES had not yet been achieved in either the Greater North Sea or the Celtic Seas, nor would be achieved for all fish communities by 2020. A partial assessment of pelagic shelf fish did not provide a clear result. ICES advise that several North Sea stocks are harvested unsustainably (e.g. cod, whiting, haddock, mackerel, and blue whiting). However, in both regions, recent trends in the number of sensitive species increasing in abundance suggest an improving situation and further decline in the population abundance of sensitive fish species has been halted (OSPAR Intermediate Assessment, 2017)<sup>79</sup>.</p>			
Biodiversity & Ecosystems: Nature Recovery Network	<p>The Nature Recovery Network (NRN) will be a national network of wildlife-rich places. The NRN is a major commitment in the government’s 25 Year Environment Plan, the Environment Act 2021, and part of the forthcoming Nature Strategy.</p> <p>Establishing the NRN will:</p> <ul style="list-style-type: none"> <li>• Enhance sites designated for nature conservation and other wildlife-rich places - newly created and restored wildlife-rich habitats, corridors and stepping stones will help wildlife populations to grow and move</li> <li>• Improve the landscape’s resilience to climate change, providing natural solutions to reduce carbon and manage flood risk, and sustaining vital ecosystems such as improved soil, clean water and clean air</li> <li>• Reinforce the natural and cultural diversity of our landscapes, and protect our historic natural environment</li> <li>• Enable us to enjoy and connect with nature where we live, work and play - benefiting our health and wellbeing.</li> </ul>			

<sup>79</sup> <https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/biodiversity-status/fish-and-food-webs/recovery-sensitive-fish/>



Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>The aim is to use maps and data to identify priorities for nature’s recovery. Locally developed strategies, LNRS, will be introduced to help plan, prioritise and target action and investment in nature at a regional level across England. These Recovery Strategies will include a map of existing areas important for nature and identify areas the opportunity areas for nature.</p> <p>As described below the legislative and mapped picture remains incomplete across the UK, however progress is evident across a number of areas. See the Wildlife Trusts<sup>80</sup>, the West of England Nature Partnership<sup>81</sup> the Wildlife Trust for Beds, Cambs and Northants<sup>82</sup> and WildOxfordshire<sup>83</sup> as examples of draft and published outputs that begin to take shape.</p>			
	<p>In England, the UK Government’s Environmental Improvement Plan 2023 (the first revision of the 25 Year Environment Plan (2018)), and the Environment Act (2021) both promote and support the development of a Nature Recovery Network for England, and there will be a legal requirement to create Local Nature Recovery Strategies. The strategies are a new system of maps and proposed actions for</p>	<p>The Welsh Government’s Nature Recovery Action Plan for Wales has as one of its five themes, “Maintaining and Enhancing Resilient Ecological Networks”. The plan identifies a broad range of initiatives, including mapping opportunities for the restoration of habitat.</p>	<p>RSPB Scotland, the Scottish Wildlife Trust and WWF Scotland launched in 2020 the Nature Recovery Plan which sets out 11 transformative actions for nature’s recovery in Scotland. This includes linking up wild places by delivering a Scottish Nature Network.</p>	<p>In partnership with the Northern Ireland Environment Agency (NIEA), RSPB NI, National Trust and Woodland Trust, the Ulster Wildlife Trust is creating the first set of habitat network maps for Northern Ireland to better understand the current habitat cover, its level of connectivity and to identify where there is potential to make more space for nature. The mapping will also explore what</p>

<sup>80</sup> <https://www.wildlifetrusts.org/nature-recovery-map>

<sup>81</sup> <https://wennp.org.uk/nature-recovery-network/>

<sup>82</sup> <https://www.wildlifebcn.org/nature-recovery-network-maps>

<sup>83</sup> <https://www.wildoxfordshire.org.uk/biodiversity/draft-map-of-oxfordshires-nature-recovery-network/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	nature's recovery, and each strategy will include a set of agreed local priorities for helping nature and improving the wider environment.			30 by 30 could look like for Northern Ireland, and how this could create the backbone of Nature Recovery Networks
Biodiversity & Ecosystems: Climate change adaptation risks and opportunities for biodiversity	<p>Supporting Trend Data:</p> <p>Overall scoring of the current risks and opportunities to overall aims and objectives of Natural England<sup>84</sup>. This includes the Impact (I) and Likelihood (L) ratings and assessment of medium- and long-term risks using two horizons of 2030 and 2050. To follow CCC advice of assessing risks to 4°C and planning adaptation to 2°C; UKCP18 projections considering RCP 2.6 as a low emissions scenario and RCP8.5 as a high emissions scenario. This overall risk assessment demonstrates the significant impacts we expect in the medium term, on a pathway for stabilising global warming below 2°C by 2100. Our adaptation plan actions outlined in the next section are designed to be the first step to dealing with these risks over the next five years. However, the plan will require regular reappraisal in response to the developing risks and impacts of climate change on our work. Many of these risks are interrelated due to the nature of climate change impacts on the natural environment. Addressing these risks and opportunities in an integrated way is also reflected in our adaptation actions.</p> <p>If international efforts to limit global temperatures rises are not successful and we continue on a pathway to 4°C global warming at the end of century we are likely to experience severe impacts to our aims in both the medium and long term. Adapting to these impacts is beyond the scope of this adaptation plan, which would require more urgent and significant action.</p>			

<sup>84</sup> Natural England (2021). Climate change risk assessment and adaptation plan. Available: <https://nepubprod.appspot.com/publication/4891702237331456/>

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<b>Risks</b>			
	<b>Medium term risk</b>		<b>Long term risk</b>	
		<b>RCP 2.6</b>	<b>RCP 8.5</b>	<b>RCP 2.6</b>
		<b>RCP8.5</b>		<b>RCP8.5</b>
<b>Risks to the viability of the Nature Recovery Network and the recovery of threatened species and habitats</b>	9 moderate I – moderate L– possible	12 major I – major L– possible	16 major I - major L - likely	20 severe I – major L – almost certain
<b>Risks to the status of protected sites for biodiversity and geodiversity</b>	12 major I - moderate L - likely	16 major I - major L - likely	16 major I - major L - likely	20 severe I – major L – almost certain
<b>Risks to the ability of the SSSI network, MPAs, NNRs and protected landscapes to adapt to climate change</b>	12 major I - moderate L - likely	16 major I - major L - likely	16 major I - major L - likely	20 severe I – major L – almost certain

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
<b>Risks to natural capital and its contribution to agriculture, fisheries and sustainable development including farm advice and net gain</b>	12 major I - moderate L - likely	16 major I - major L - likely	16 major I - major L - likely	20 severe I – major L – almost certain
<b>Risks to the viability of natural areas for people to access and connect with nature</b>	3 minor I - minimal L - possible	6 moderate I - minor L - possible	12 major I - moderate L - likely	16 major I - major L - likely
<b>Risks and opportunities for Natural England’s role as a leader in nature recovery and climate change.</b>	3 minor I - minimal L - possible	6 moderate I - minor L - possible	12 major I - moderate L - likely	16 major I - major L - likely
<b>Risks and opportunities for different species and habitats under changing climatic conditions.</b>	10 major I – minor L – almost certain	15 major I – moderate L – almost certain	15 major I – moderate L – almost certain	20 severe I – major L – almost certain

# Water Quality Resources

## Introduction to the baseline information and overview of interaction with the NPS

The UK Centre for Ecology and Hydrology notes that water is a resource on which all life depends and that efficient management of water is critical to addressing the competing demands of industry, agriculture and energy production while sustaining flows and quality for natural ecosystems. This is particularly pressing as demand is further compounded by population growth, land-use and climate change. Development enabled by the Fusion Energy NPS has the potential to increase pressures on the water environment through abstraction, discharges and pollution.

For the purposes of taking a holistic approach to management of water resources and to address the pressures on the water environment, under the Water Framework Directive (WFD), the UK has been divided into a series of River Basin Districts (RBD). As with most water bodies, there are a range of significant water management issues manifested across RBD, with pollution from infrastructure being of note.

The mechanisms protecting the quality or quantity of water under the WFD also protect surface and groundwater bodies from which raw water for drinking water supplies is abstracted.

The number of waterbodies assessed each year varies and has decreased from 10,761 in 2009 to 9,300 in 2018. There was a small decrease in the overall number of water bodies awarded high or good surface water status between 2009 and 2018. In 2018, 35% of surface water bodies assessed under the WFD in the UK were in high or good status. This reflects very little change from 36% of surface water bodies assessed in 2009 and 37% in 2013. It is anticipated that overall water quality will improve as the UK aims to ensure that the objectives of the WFD (all aquatic ecosystems and terrestrial ecosystems and wetlands to reach good chemical and ecological status by 2027).

England and Wales also has over 500 designated Bathing Waters designated under the Bathing Water Regulations 2013.

Under the WFD, there is a requirement for measures to promote use of water efficiently and in a way that can sustain future supplies.

Climate change and a growing population will increase pressure on water resources and strategic approaches to managing such issues will need to be developed.

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Water Quality and Resources: Protection of waterbodies	<p>The WFD is transposed into UK law through the following regulations: The Water Environment (WFD) (England and Wales) Regulations 2017 for England and Wales; the Water Environment and Water Services (Scotland) Act 2003 (WEWS Act) and The Water Environment (WFD) Regulations (Northern Ireland) 2017) for Northern Ireland.</p> <p>The purpose of the Directive is to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. Groundwater is an important natural resource that supports river flows as well as ecological diversity in rivers, lakes and wetlands. It is also available for use, across the United Kingdom, for water supply by abstraction from boreholes, wells and springs.</p> <p>The UK aims to ensure that all aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands reach ‘good’ chemical and ecological status by 2027.</p> <p>The WFD specifies the quality elements that can be used to assess the surface water status of a water body. Quality elements can be biological (e.g. fish, invertebrates, plants), chemical (e.g. heavy metals, pesticides, nutrients) or indicators of the condition of the habitats and water flows and levels (e.g. presence of barriers to fish migration, modelled lake level data) (JNCC 2021).<sup>85</sup></p>			
	The latest data available (2020) finds that, in England, the quality status of water bodies assessed under the WFD were <sup>86</sup> :	The latest data available (2020) finds that, in Wales, the quality status of water bodies assessed under the WFD were <sup>88</sup> :	The latest data available (2020) finds that, in Scotland, the quality status of water bodies assessed under the WFD were <sup>90</sup> :	The latest data available (2020) finds that, in Northern Ireland, the quality status of water bodies assessed under the WFD were <sup>92</sup> :

<sup>85</sup> Joint Nature Conservation Committee (2021) B7. Surface water status. Available: [UKBI - B7. Surface water status | JNCC - Adviser to Government on Nature Conservation](#)

<sup>86</sup> Joint Nature Conservation Committee (2021) B7. Surface water status. Available: [UKBI - B7. Surface water status | JNCC - Adviser to Government on Nature Conservation](#)

<sup>88</sup> Joint Nature Conservation Committee (2021) B7. Surface water status. Available: [UKBI - B7. Surface water status | JNCC - Adviser to Government on Nature Conservation](#)

<sup>90</sup> Joint Nature Conservation Committee (2021) B7. Surface water status. Available: [UKBI - B7. Surface water status | JNCC - Adviser to Government on Nature Conservation](#)

<sup>92</sup> Joint Nature Conservation Committee (2021) B7. Surface water status. Available: [UKBI - B7. Surface water status | JNCC - Adviser to Government on Nature Conservation](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Lakes:	Lakes:	Lakes:	Lakes:
	High – 0%	High – 1%	High – 31%	High – 0%
	Good – 14%	Good – 19%	Good – 38%	Good – 24%
	Moderate – 74%	Moderate – 67%	Moderate – 20%	Moderate – 29%
	Poor – 11%	Poor – 13%	Poor – 10%	Poor – 33%
	Bad – 1%	Bad – 0%	Bad – 1%	Bad – 14%
	Rivers and Canals:	Rivers and Canals:	Rivers and Canals:	Rivers and Canals:
	High – 0%	High – 0%	High – 8%	High – 0%
	Good – 16%	Good – 44%	Good – 47%	Good – 31%
	Moderate – 62%	Moderate – 47%	Moderate – 28%	Moderate – 57%
	Poor – 19%	Poor – 8%	Poor – 15%	Poor – 9%
	Bad – 3%	Bad – 1%	Bad – 3%	Bad – 2%
	Estuaries and Coastal:	Estuaries and Coastal:	Estuaries and Coastal:	Estuaries and Coastal:
	High – 0%	High – 2%	High – 30%	High – 0%
	Good – 29%	Good – 22%	Good – 68%	Good – 40%

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Moderate – 65%	Moderate – 75%	Moderate – 1%	Moderate – 56%
	Poor – 3%	Poor – 2%	Poor – 0%	Poor – 4%
	Bad – 3%	Bad – 0%	Bad – 0%	Bad – 0%
	As of 2015, in England, the quality status of groundwater bodies assessed under the WFD were <sup>87</sup> :	As of 2015, in Wales, the quality status of groundwater bodies assessed under the WFD were <sup>89</sup> :	As of 2020, in Scotland, the quality status of groundwater bodies assessed under the WFD were <sup>91</sup> :	As of 2020, in Northern Ireland, the quality status of groundwater bodies assessed under the WFD were <sup>93</sup> :
	Quantitative Status:	Quantitative Status:	Overall Status:	Overall Status:
	Good - 69%	Good - 100%	Good – 84.12%	Good - 63%
	Poor – 31%	Poor – 0%	Poor – 15.88%	Poor – 12%
	Chemical Status:	Chemical Status:		
	Good – 53%	Good – 58%		

<sup>87</sup> Environment Agency (2015) Update to the river basin management plans in England. Available:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/514944/National\\_evidence\\_and\\_data\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/514944/National_evidence_and_data_report.pdf)

<sup>89</sup> Natural Resources Wales (2015) River Basin Planning Progress Report for Wales. Available: <https://cdn.cyfoethnaturiol.cymru/media/676155/progress-report-for-wales-2009-2015-english.pdf?mode=pad&rnd=131596369400000000>

<sup>91</sup> Scottish Environment Protection Agency (2021) Current Condition. Available: [RBMP3 \(sepa.org.uk\)](https://www.sepa.org.uk)

<sup>93</sup> Department of Agriculture, Environment and Rural Affairs (2021) Northern Ireland Water Framework Directive Groundwater Status Update 2020 – Statistics Report. Available: <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Northern%20Ireland%20Water%20Framework%20Directive%20Groundwater%20Update%202020.pdf>



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Poor – 47%	Poor – 42%		
	<p>Supporting Trend Data:</p> <p>The number of waterbodies assessed each year varies and has decreased from 10,835 in 2009 to 9,300 in 2020. There was a small decrease in the overall number of water bodies awarded high or good surface water status between 2009 and 2020. In 2020, 35.7% of surface water bodies assessed under the WFD in the UK were in high or good status. This reflects very little change from 36% of surface water bodies assessed in 2009 and 36.5% in 2013<sup>94</sup>.</p>			
Water Quality and Resources:  River Basin Management Plans	<p>River basin management plans (RBMPs) set out how organisations, stakeholders and communities will work together to improve the water environment. A RBD covers an entire river system, including river, lake, groundwater, estuarine and coastal water bodies. RBD RBMPs are designed to protect and improve the quality of the water environment. Good quality water is essential for wildlife, agriculture and businesses to thrive. It boosts regeneration (both structural and economic), recreation and tourism.</p>			
	<p>As of 2021, in England there are eight river basin district RBMPs covering the Anglian, Humber, Northumbria, North West, Severn, South East, South West and Thames river basin districts. The Environment Agency must review and update RBMPs every six years, and consultation on revised draft RBMPs concluded April</p>	<p>In Wales RBMPs are updated on a six yearly cycle and are prepared in consultation with a wide range of organisations and individuals. The Western Wales and River Dee 2021-2027 RBMPs were published in July 2022</p>	<p>In December 2021 SEPA published the final River Basin Management Plan for Scotland 2021-2027 and the River Basin Management Plan for the Solway Tweed River Basin District 2021-2027. These plans set out a range of actions to address significant problems affecting water quality, physical condition, water resources and the migration</p>	<p>In 2009 the first set of River Basin Management Plans (RBMP) as required by the regulations were published for each River Basin District within Northern Ireland. The Plans identified where the water environment is in good or excellent condition and set out objectives for improvement or prevention of deterioration. In 2015 the second set of RBMPs were</p>

<sup>94</sup> Joint Nature Conservation Committee (2022) Surface Water Status – Datasheet. Available: [UK Biodiversity Indicators 2022. Indicator B7: Surface water status | JNCC Resource Hub](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	2022. Implementation of these plans is purported to enhance nature and the natural water assets of the river basin districts that are the foundation of everyone's wealth, health and wellbeing, and the things people value, including culture and wildlife.	noting that the River Dee is a cross-border Plan <sup>95</sup> .	of wild fish. It focuses on reducing resource use, eliminating waste and restoration of natural capital.	published which outlined the changes and progress made since the previous cycle. These cover the North Eastern, North Western and Neagh Bann river basin districts. Note the 2021-2027 RBMPs are not yet available.
Water Quality and Resources: Eutrophication of marine waters	The UK has mostly achieved its aim of Good Environmental Status for eutrophication. The majority of UK waters do not experience significant eutrophication – the eutrophication problems are restricted to a small number of areas in coastal waters, primarily estuaries and embayments with restricted water circulation. In a limited number of areas on the north east and southern coasts of the UK and on the south-west coasts of England and Wales and in Northern Ireland, inputs of nutrients of anthropogenic origin (notably nitrate and phosphate from agriculture and urban waste water sources) have resulted in nutrient enrichment in some small estuaries and bays. In general, changes in nitrogen and phosphorus inputs, concentrations of contaminants, chlorophyll concentrations and oxygen levels show improvements. Where measures have been taken to reduce nutrient inputs, it may take a long time to result in the desired outcome due to time lags between taking measures and change in the large reservoirs of nitrogen that have built up in soils and ground-waters in previous decades. However, the existing programmes for assessing the eutrophication status for coastal and marine waters developed under the WFD and the OSPAR Convention have to a large extent already been applied successfully with the UK largely achieving GES in the latest 2018 assessment <sup>96</sup> .			
Water Quality and Resources:	The UK has largely achieved its aim of GES for contaminants. The updated assessment of achieving GES with respect to descriptor 8 (Defra 2019) indicates that concentrations of hazardous substances in the Celtic Seas and the Greater North Sea and their biological effects are generally meeting agreed target thresholds which means they			

<sup>95</sup> Natural Resources Wales (2022) Dee and Western Wales river basin management plans 2021-2027. Available: [Natural Resources Wales / Dee and Western Wales river basin management plans 2021-2027](#)

<sup>96</sup> United Kingdom Marine Monitoring and Assessment Strategy (2018) Eutrophication. Available: <https://moat.cefas.co.uk/pressures-from-human-activities/eutrophication/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Hazardous substances in marine waters	<p>are at levels that should not cause harm to sea life (89% for contaminant concentrations and 96% for biological effects)<sup>97</sup>.</p> <p>Highly persistent legacy chemicals are the cause of the few failures, mainly in coastal waters close to polluted sources. Heavy metals (mercury, cadmium, and lead), polycyclic aromatic hydrocarbons (PAHs), organotins and synthetic substances such as polychlorinated biphenyls (PCBs) and polybrominated diphenyl ethers (PBDEs) are routinely measured for OSPAR. Measurements focus on marine sediments and on organisms in which these contaminants tend to accumulate or through which they biomagnify up the food chain. Contaminant concentrations have continued to decrease in the majority of areas assessed within the OSPAR area. Although concentrations are generally below levels likely to harm marine species, they mostly have not yet reduced to background levels. Concerns remain in some localised areas with respect to high levels of mercury, lead, and certain PCB compounds and locally increasing concentrations of PAHs and cadmium in open waters<sup>98</sup>.</p>			
Water Quality and Resources:	<p>The Bathing Water Regulations 2013 (which extend to England and Wales) transposed the Bathing Directive 2006 (2006/7/EC).).</p>			
Bathing Water Quality	<p>Bathing water regulations are devolved and administered in England by the Department of Environment, Food and Rural Affairs, in Scotland by the Scottish Government, in Wales by Welsh Government and in Northern Ireland by the Department of Agriculture, Environment and Rural Affairs.</p> <p>Water quality at designated bathing water sites in England is assessed by the Environment Agency, to ensure that the Bathing Water Regulations 2013 are complied with<sup>99</sup>. From May to September, weekly assessments measure current water quality, and at a number of sites daily pollution risk forecasts are issued. Annual ratings classify each site as excellent, good, sufficient or poor based on sampling data taken over a period of up to four years.</p>			
	In England, the classifications of bathing waters assessed under the	In Wales, 106 designated bathing waters were sampled and classified	As of 2022 there were 87 designated bathing waters in Scotland. The quality status	In Northern Ireland, there are 26 bathing water sites. As of 2022, the quality status of

<sup>97</sup> Department for Environment, Food and Rural Affairs (2019) Marine Strategy Part One: UK updated assessment and Good Environmental Status. Available: [Marine Strategy Part One: UK updated assessment and Good Environmental Status \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

<sup>98</sup> OSPAR Assessment Portal (2017) Contaminant concentrations are decreasing, but concerns remain. Available: <https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/key-messages-and-highlights/contaminant-concentrations-are-decreasing-concerns-remain/>

<sup>99</sup> Department for Environment, Food & Rural Affairs (2023) Bathing Waters. Available: [Bathing waters - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

Appendix B – AoS Scoping Report for NPS EN-8

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Bathing Water Regulations 2013 during the 2022 bathing season were<sup>100</sup>:</p> <p>Excellent – 302</p> <p>Good – 87</p> <p>Sufficient – 18</p> <p>Poor – 12</p> <p>Unassessed due to access issues - 2</p> <p>The first river was designated as a bathing water in 2021.</p>	<p>during the 2022 bathing season. The quality status of bathing water areas assessed under the Bathing Waters Regulations 2013 were<sup>101</sup>:</p> <p>Excellent – 85</p> <p>Good – 16</p> <p>Sufficient – 4</p> <p>Poor - 1</p> <p>In 2022, 105 of the 106 designated bathing waters met the minimum water quality standards set by the Bathing Water Regulations. 1 bathing water did not achieve the standard and was classified as Poor.</p>	<p>of bathing water areas assessed under the Bathing Waters (Scotland) Regulations 2008 were<sup>102</sup>:</p> <p>Excellent – 38 (44%)</p> <p>Good – 35 (40%)</p> <p>Sufficient – 12 (14%)</p> <p>Poor – 2 (2%)</p>	<p>bathing water areas assessed against The Quality of Bathing Water Regulations (Northern Ireland) 2008 were<sup>103</sup>:</p> <p>Excellent – 21</p> <p>Good – 3</p> <p>Poor – 1</p> <p>Sufficient – 1</p>

Supporting Trend Data:

2015 was the first year of implementing the new classification system for bathing water quality. The results of these are not directly comparable to years prior to this. In general, there has been significant improvements in bathing water quality since recording began in 1988. During the 2022 bathing season, 72.1% of beaches and inland waters

<sup>100</sup> The Environment Agency (2023) Bathing Water Data. Available: <http://environment.data.gov.uk/bwq/profiles/data.html?country=England>

<sup>101</sup> Natural Resources Wales (2022) Wales Bathing Water Report 2022. Available: [Wales bathing water report 2022 \(cyfoethnaturiol.cymru\)](https://www.naturalresources.wales/wales-bathing-water-report-2022)

<sup>102</sup> Scottish Environment Protection Agency (2023) Current Classifications. Available: <https://www2.sepa.org.uk/bathingwaters/Classifications.aspx>

<sup>103</sup> Department of Agriculture, Environment and Rural Affairs (2023) Bathing Water Quality. Available: [About bathing water quality | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](https://www.daera-ni.gov.uk/about-bathing-water-quality)

## Appendix B – AoS Scoping Report for NPS EN-8

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>in England met the ‘Excellent’ standard, the highest since the introduction of more stringent standards in 2015. However, 97.1% of bathing waters passed the water quality standards in 2022, which compares to a 99% passing rate in 2021<sup>104</sup>.</p> <p>In Wales, results of the 2022 bathing season remain similar to the 2021 season<sup>105</sup>. As of 2022, in Scotland, bathing water quality has significantly improved since 2015, with the number of ‘Poor’ classifications reducing from 18% to 2%, and the number sites reaching ‘Excellent’ status has increased from 21% to 44%<sup>106</sup>. As of 2022, bathing Water quality in Northern Ireland has improved overall when compared to the previous year, and the highest ever number has met the ‘Excellent’ standard<sup>107</sup>.</p>			

<sup>104</sup> The Environment Agency (2022) 97% of English bathing waters meet required water quality standards. Available: [97% of English bathing waters meet required water quality standards - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/97-of-english-bathing-waters-meet-required-water-quality-standards)

<sup>105</sup> Natural Resources Wales (2022) Wales Bathing Water Report 2022. Available: [Wales bathing water report 2022 \(cyfoethnaturiol.cymru\)](https://www.naturalresources.wales/wales-bathing-water-report-2022)

<sup>106</sup> Scottish Environment Protection Agency (2023) Current Classifications. Available: <https://www2.sepa.org.uk/bathingwaters/Classifications.aspx>

<sup>107</sup> Department of Agriculture, Environment and Rural Affairs (2022) Northern Ireland’s Bathing Waters show overall improvement in 2022. Available: [Northern Ireland’s Bathing Waters show overall improvement in 2022 | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](https://www.daera-ni.gov.uk/news/northern-ireland-s-bathing-waters-show-overall-improvement-in-2022)

# Adaptation to Climate Change

## Introduction to the baseline information and overview of interaction with the NPS

The UK Met Office notes that climate change is already having visible effects through warming, changing rainfall patterns and raising sea levels and predicts warmer and wetter winters, hotter and drier summers and more frequent and intense weather extremes. By 2070 the Met Office projects winters of between 1 and 4.5 degrees Celsius warmer and up to 30% wetter. In respect of summers, these are projected to be up to 6 degrees Celsius warmer and up to 60% drier. Heavy rainfall is also more likely, noting that since 1998 the UK has seen six of the ten wettest years on record.<sup>108</sup>

Flood risk and coastal change are intrinsically linked with climate change and the UK Climate Change Risk Assessment (CCRA) notes that climate change will increase sea level and associated coastal flooding and erosion, as well as altering rainfall patterns leading to changes in river, surface water and groundwater flooding.

Flooding poses a significant risk to people, communities and the built environment with approximately 1.9 million people across the UK currently living in areas at significant risk from either river, coastal or surface water flooding.

Infrastructure services are increasingly at risk from river, surface water and groundwater flooding, and despite progress in installing flood defences, these alone will not keep the risk from flooding at today's level into the future and will require action to increase resilience. Development enabled by the Fusion Energy NPS must therefore be mindful of increasing flood risk and coastal changes, accelerated by climate change.

In respect of coastal environments, these naturally adapt to sea level rise by retreating landwards. Mudflats, wetlands, beaches and sand dunes provide natural protection against flooding, whilst also being some of Britain's most important natural habitats. The Committee on Climate Change notes<sup>109</sup> however that much of the UK's shorelines the coast's natural protective mechanisms are being squeezed between rising sea levels and human development. In respect of planning, the Committee highlights the need to re-emphasise the value of these environments and ensure they play a larger part in the adaptation plans for the future.

The CCC note it is almost certain that England will have to adapt to at least 1m of sea level rise at some point in the future. Some model projections indicate that this will happen over the next 80 years. Coastal structures being built today need to be ready to cope with these rates of sea level rise and it is imperative that development enabled by the Fusion Energy NPS is tested against these demands.

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<sup>108</sup> <https://www.metoffice.gov.uk/weather/climate-change/effects-of-climate-change>

<sup>109</sup> <https://www.theccc.org.uk/publication/managing-the-coast-in-a-changing-climate/>

## Appendix B – AoS Scoping Report for NPS EN-8

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Adaptation to climate change: Climate Projections	<p>The UK Climate Projections (UKCP18) and the State of the UK Climate reports (published annually) identify the following observed trends which are attributed to climate change<sup>110</sup>:</p> <p>The temperature in the UK in the most recent decade (2008-2017) has been on average 0.3 °C higher than the 1981-2010 average and 0.8 °C higher than the 1961-1990, with all of the top 10 warmest years occurring since 1990<sup>111</sup>.</p> <p>The sea surface temperature around the UK coast for the most recent decade, 2008-2017, is 0.6 °C higher<sup>112</sup> than the 1961-1990 average.</p> <p>Over the last 250 years in England and Wales, there has also been a slight trend for increased rainfall in winter and decreased rainfall in summer.</p> <p>All regions of the UK have experienced an increase in the amount of winter rain that falls in heavy downpours.</p> <p>Sea levels around the UK have risen by about 1.4mm/year over the 20th century, although recent rates are slightly higher than this. Note that sea level rise will not be at a constant rate around the coast – local geomorphological conditions will dictate precise levels.</p> <p>The UKCP18 projects the following changes within the UK by the 2080-2099 decades, relative to a 1981-2000 baseline, with a medium emissions scenario<sup>113</sup>:</p> <ul style="list-style-type: none"> <li>• Average summer temperatures across the UK will increase by 1.2 – 4.5 °C ;</li> </ul>			

<sup>110</sup> Lowe, J. A., et al. (2018): UK Climate Projections 18 Science Overview Report, Met Office, Exeter, UK. Available:

<https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Overview-report.pdf>

<sup>111</sup> Murphy, J.M., et al. (2018): UK Climate Projections 18 Land Projections: Science Report, Met Office, Exeter, UK. Available:

<https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Land-report.pdf>

<sup>112</sup> 112 Kendon, M., McCarthy, M., Jevrejeva, S., Matthews, A., and Legg, T. (2018): State of the UK Climate 2018, International Journal of Climatology, 38(S2).

Available: <https://rmets.onlinelibrary.wiley.com/toc/10970088/2018/38/S2>

<sup>113</sup> Palmer, M., et al. (2018): UK Climate Projections 18 Marine Report, Met Office, Exeter, UK. Available:

<https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-marine-report-updated.pdf>

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland																																																																															
	<ul style="list-style-type: none"> <li>• Average summer rainfall will likely decrease, with projections ranging between -46 – +2%;</li> <li>• Average winter rainfall will likely increase, with projections ranging between -9 – +38%, and;</li> <li>• Sea levels in London will rise by 60 cm.</li> </ul> <p>To provide context of how climate change may be manifested in individual regions, taking the north west region as an example, significant impacts across a range of sectors including health, infrastructure, economy and biodiversity are anticipated as a result of future changes in climate. Specifically, cold related illnesses and mortality are likely to decrease due to milder winter however, the number of incidents of food poisoning, heat stress and heat related deaths may increase in summer. Domestic energy use may decrease in winter due to higher temperatures however it may increase during summer months as refrigeration and air conditioning demand increases. Wetter winters and more intense rainfall events throughout the year may result in a higher risk of flooding from rivers.</p> <p>National key findings for temperature, precipitation and sea level rise for the different emissions scenarios are also detailed within UKCP18 as follows:</p>																																																																																		
	<table border="1"> <thead> <tr> <th rowspan="2">Variable</th> <th colspan="5">Annual Temperature Change (°C)</th> <th colspan="5">Winter precipitation change (%)</th> <th colspan="5">Summer precipitation change (%)</th> </tr> <tr> <th>5<sup>th</sup></th> <th>10<sup>th</sup></th> <th>50<sup>th</sup></th> <th>90<sup>th</sup></th> <th>95<sup>th</sup></th> <th>5<sup>th</sup></th> <th>10<sup>th</sup></th> <th>50<sup>th</sup></th> <th>90<sup>th</sup></th> <th>95<sup>th</sup></th> <th>5<sup>th</sup></th> <th>10<sup>th</sup></th> <th>50<sup>th</sup></th> <th>90<sup>th</sup></th> <th>95<sup>th</sup></th> </tr> </thead> <tbody> <tr> <td>High emissions</td> <td>0.7</td> <td>0.9</td> <td>1.8</td> <td>2.7</td> <td>3.0</td> <td>-5</td> <td>-5</td> <td>7</td> <td>21</td> <td>25</td> <td>-35</td> <td>-31</td> <td>-15</td> <td>0</td> <td>3</td> </tr> <tr> <td>Medium emissions</td> <td>0.5</td> <td>0.7</td> <td>1.4</td> <td>2.3</td> <td>2.5</td> <td>-10</td> <td>-7</td> <td>4</td> <td>17</td> <td>21</td> <td>-30</td> <td>-26</td> <td>-13</td> <td>2</td> <td>6</td> </tr> <tr> <td>Low emissions</td> <td>0.3</td> <td>0.5</td> <td>1.2</td> <td>2.0</td> <td>2.3</td> <td>-8</td> <td>-5</td> <td>5</td> <td>16</td> <td>19</td> <td>-28</td> <td>-24</td> <td>-11</td> <td>1</td> <td>5</td> </tr> </tbody> </table>				Variable	Annual Temperature Change (°C)					Winter precipitation change (%)					Summer precipitation change (%)					5 <sup>th</sup>	10 <sup>th</sup>	50 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	5 <sup>th</sup>	10 <sup>th</sup>	50 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	5 <sup>th</sup>	10 <sup>th</sup>	50 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	High emissions	0.7	0.9	1.8	2.7	3.0	-5	-5	7	21	25	-35	-31	-15	0	3	Medium emissions	0.5	0.7	1.4	2.3	2.5	-10	-7	4	17	21	-30	-26	-13	2	6	Low emissions	0.3	0.5	1.2	2.0	2.3	-8	-5	5	16	19	-28	-24	-11	1	5
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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland																
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Adaptation to climate change:	The latest Climate Change projections from the UK Met Office forecast a rise in sea level, increased winter precipitation and an increase in the frequency and intensity of extreme rainfall events, which will further increase flood risk in the UK <sup>114</sup> .																			
Flood Risk	In 2022, the UK Climate Change Risk Independent Assessment (CCRA3) Summary for England <sup>115</sup> estimated that there were 2.5 million properties at risk of flooding from rivers and the sea, 3.2 million at risk of surface water flooding and	In 2022, the UK CCRA3 Summary for Wales <sup>119</sup> estimated that there were 148,000 people at significant risk of flooding in Wales (1 in 1000-year return period, 46,000 of these from fluvial, 10,000 from coastal and	In 2022, the UK Climate Change Risk Independent Assessment (CCRA3) Summary for Scotland <sup>124</sup> estimated that there were 284,000 properties at risk of flooding in Scotland (1:200-year return period). This equates to 1,554,000 people	In 2022, the UK Climate Change Risk Independent Assessment (CCRA3) Summary for Northern Ireland <sup>129</sup> estimated that there were 45,000 properties at risk of significant flooding in Northern Ireland (1 in 100-year return period for fluvial																

<sup>114</sup> Met Office (2022) UK Climate Projections: Headline Findings. Available: [ukcp18\\_headline\\_findings\\_v4\\_aug22.pdf \(metoffice.gov.uk\)](https://www.metoffice.gov.uk/ukcp18-headline-findings-v4-aug22.pdf)

<sup>115</sup> Sustainability West Midlands (2022) Evidence for the third UK Climate Risk Assessment (CCRA3): Summary for England. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-England-Summary-Final.pdf>

<sup>119</sup> Dr. Alan Netherwood. Netherwood Sustainable Futures (2022) Evidence for the third UK Climate Risk Assessment (CCRA3): Summary for Wales. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-Wales-Summary-Final.pdf>

<sup>124</sup> Sniffer (2022) Evidence for the third UK Climate Risk Assessment (CCRA3): Summary for Scotland. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-Scotland-Summary-Final-1.pdf>

<sup>129</sup> Climate Northern Ireland (2022) Evidence for the third UK Climate Risk Assessment (CCRA3): Summary for Northern Ireland. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-Northern-Ireland-Summary-Final.pdf>

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>660,000 properties at risk of all three in England (1 in 1000-year return period). This equates to 1,554,000 people at significant risk of flooding in England.</p> <p>Assuming no population growth and a continuation of current levels of adaptation, by the 2050s the projected number of people at 1:75 or greater risk rises to around 1.7 million under a 2 degree scenario and 2.2 million for a 4 degree scenario.<sup>116</sup></p> <p>Considerable advances have been made regarding the strategic management of flood risk at national and local</p>	<p>91,000 from surface water flooding<sup>120</sup>.</p> <p>Assuming no population growth and a continuation of current levels of adaptation, by the 2080s, the projections from the CCRA suggest 142,000 people under a 2 degree scenario and 209,000 people under a 4 degree scenario would be living in areas of Wales at a 1-in-75 or greater chance of flooding in any given year.<sup>121</sup></p> <p>Considerable advances have been made regarding the strategic management of flood risk at national and local levels since CCRA2 and</p>	<p>at significant risk of flooding in Scotland, 46,000 of these from fluvial, 13,000 from coastal and 95,000 from surface water flooding<sup>125</sup>.</p> <p>Assuming no population growth and a continuation of current levels of adaptation, by the 2050s the projected number of people at 1:75 or greater risk in Scotland rises by 10% to 220,000 under a 2 degree scenario and by 21% to 242,000 for a 4 degree scenario.<sup>126</sup></p> <p>Assets and networks across infrastructure sectors are already exposed to a high likelihood of river and surface</p>	<p>and 1 in 200-year return period for coastal and surface water). This equates to 33,000 people at significant risk of flooding, 10,000 of these from fluvial, 1,000 from coastal and 22,000 from surface water flooding.</p> <p>By the 2050s the projected number of people at 1:75 or greater risk rises to 67,000 under a 2 degree scenario and 76,000 for a 4 degree scenario, assuming a continuation of the current level of adaptation and not including population growth.<sup>130</sup></p>

<sup>116</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for England. Available: [UK-CCRA-2017-England-National-Summary-1.pdf \(theccc.org.uk\)](https://www.theccc.org.uk/wp-content/uploads/2017/06/UK-CCRA-2017-England-National-Summary-1.pdf)

<sup>120</sup> Sari Kovats & Rachel Brisley (2022) UK Climate Risk Independent Assessment (CCRA3) Technical Report. Chapter 5: Health, Communities and the Built Environment. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Chapter-5-FINAL.pdf>

<sup>121</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for Wales. Available: [UK-CCRA-2017-Wales-National-Summary.pdf \(theccc.org.uk\)](https://www.theccc.org.uk/wp-content/uploads/2017/06/UK-CCRA-2017-Wales-National-Summary.pdf)

<sup>125</sup> Sari Kovats & Rachel Brisley (2022) UK Climate Risk Independent Assessment (CCRA3) Technical Report. Chapter 5: Health, Communities and the Built Environment. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Chapter-5-FINAL.pdf>

<sup>126</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for Scotland. Available: [UK-CCRA-2017-Scotland-National-Summary.pdf \(theccc.org.uk\)](https://www.theccc.org.uk/wp-content/uploads/2017/06/UK-CCRA-2017-Scotland-National-Summary.pdf)

<sup>130</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for Northern Ireland. Available: [UK-CCRA-2017-Northern-Ireland-National-Summary.pdf \(theccc.org.uk\)](https://www.theccc.org.uk/wp-content/uploads/2017/06/UK-CCRA-2017-Northern-Ireland-National-Summary.pdf)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>levels since CCRA2 and whilst flood events have occurred, a larger number of properties have been protected than affected. Despite this, the number of assets and length of existing infrastructure networks located in areas exposed to a high risk of coastal, river, and surface water flooding is projected to increase with climate change, including in areas previously not at risk.<sup>117</sup></p> <p>Global average sea level rose by 15cm over the 20th century, with levels around the English coastline on average broadly mirroring the global picture. Relative sea levels have risen more in the south than the north of the UK, due to the added</p>	<p>whilst flood events have occurred, a larger number of properties have been protected than affected. Despite this, the number of assets and length of existing infrastructure networks located in areas exposed to a high risk of river or surface water flooding is projected to increase with climate change, including in areas previously not at risk.<sup>122</sup></p> <p>Between 50cm and 1 meter of sea level rise is expected over the course of the rest of the century, increasing the likelihood of a severe 1-in-100 year coastal flood in west Wales to between a 1-in-10 and 1-in-20 annual chance. The number of assets and length of existing infrastructure networks</p>	<p>water flooding. The risk of river and surface water flooding is expected to rise, as patterns of rainfall become more intense. Western areas of Scotland in particular could be subject to significant increases in heavy winter rainfall. Scotland has significant infrastructure assets located in coastal areas and so potentially exposed to flooding from the sea. The number of assets and length of existing infrastructure networks located in areas exposed to a high risk of coastal, river or surface water flooding is projected to significantly increase with climate change.<sup>127</sup></p> <p>By the 2080s, in Scotland, between 20cm and 60cm of</p>	<p>Assets and networks across all infrastructure sectors are already exposed to river and surface water flooding, with some located in areas that are exposed to a significant level of risk (defined as a 1 in 75 or greater annual chance). The risk of river and surface water flooding is expected to rise, as patterns of rainfall become more intense.<sup>131</sup></p> <p>This century, in Northern Ireland, between 20cm and less than 40cm of sea level rise is expected. The number of assets and length of existing infrastructure networks located in areas exposed to a high risk of flooding from the sea is</p>

<sup>117</sup> Sustainability West Midlands (2022) Evidence for the third UK Climate Risk Assessment (CCRA3): Summary for England. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-England-Summary-Final.pdf>

<sup>122</sup> Dr. Alan Netherwood. Netherwood Sustainable Futures (2022) Evidence for the third UK Climate Risk Assessment (CCRA3): Summary for Wales. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-Wales-Summary-Final.pdf>

<sup>127</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for Scotland. Available: [UK-CCRA-2017-Scotland-National-Summary.pdf \(theccc.org.uk\)](https://www.theccc.org.uk/wp-content/uploads/2017/06/UK-CCRA-2017-Scotland-National-Summary.pdf)

<sup>131</sup> Climate Northern Ireland (2022) Evidence for the third UK Climate Risk Assessment (CCRA3): Summary for Northern Ireland. Available at: <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-Northern-Ireland-Summary-Final.pdf>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	influence of post-glacial rebound. Between 50cm and 1 meter of sea level rise from 1990 levels is expected over the course of the rest of the century, increasing the likelihood of a severe 1-in-100 year coastal flood to between a 1-in-10 and 1-in-20 annual chance. <sup>118</sup>	located in areas exposed to a high risk of flooding from the sea is projected to significantly increase with climate change. <sup>123</sup>	sea level rise is expected, increasing the likelihood of a severe 1-in-100 year coastal flood to between a 1-in-20 and 1-in-60 annual chance. <sup>128</sup>	projected to increase with climate change. <sup>132</sup>
<p>Flood Risk Management Strategies have been developed for England, Scotland, Wales and NI. These strategic plans explain the objectives and the measures needed to manage flood risk at a national and local level<sup>133</sup>. The UK Climate Change Risk Assessment 2017 states that more ambitious approaches to adaptation could offset increases in expected annual flood damage if global warming is limited to 2°C. However, within this national projection local impacts will vary considerably. Improving protection for some communities will be possible whilst others will face the prospect of significantly increased risks. This will affect property values, business revenues and in extreme cases the viability of communities. Risks to communities and local economies are closely linked to the resilience of local infrastructure, in particular energy, transportation and communications systems. Warming of 4°C or more implies inevitable increases in flood risk across all UK regions even in the most ambitious adaptation scenarios considered.<sup>134</sup></p>				

<sup>118</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for England. Available: [UK-CCRA-2017-England-National-Summary-1.pdf \(theccc.org.uk\)](#)

<sup>123</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for Wales. Available: [UK-CCRA-2017-Wales-National-Summary.pdf \(theccc.org.uk\)](#)

<sup>128</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for Scotland. Available: [UK-CCRA-2017-Scotland-National-Summary.pdf \(theccc.org.uk\)](#)

<sup>132</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report: Summary for Northern Ireland. Available: [UK-CCRA-2017-Northern-Ireland-National-Summary.pdf \(theccc.org.uk\)](#)

<sup>133</sup> Environment Agency (2022) Flood risk management plans 2021 to 2027. Available: [Flood risk management plans 2021 to 2027 - GOV.UK \(www.gov.uk\)](#)

<sup>134</sup> Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017. Available: [Committee on Climate Change - UK Climate Change Risk Assessment 2017 Synthesis Report - July 2016 \(theccc.org.uk\)](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Adaptation to climate change: Location of Fluvial and Tidal Floodplains & Shoreline Management Plans	<p>In England and Wales, flood risk is assessed under the National Planning Policy Framework (NPPF)<sup>135</sup>. Flood risk from rivers and seas is categorised into three zones<sup>136</sup> for planning purposes (noting that the NPPF further subdivides Flood Zone 3 into 3a and Functional Floodplain 3b (land where water has to flow or be stored in times of flood)):</p> <p>Flood Zone 1 – Land with a less than 0.1% chance of flooding each year.</p> <p>Flood Zone 2 – Land with between a 1% and 0.1% chance of flooding from rivers and between a 0.5% and 0.1% chance of flooding from the sea each year.</p> <p>Flood Zone 3 – Land with a 1% or more chance of flooding from rivers, or a 0.5% or more chance of flooding from the sea.</p> <p>The risk of surface water flooding also needs to be considered<sup>137</sup>:</p> <p>Very low risk area (less than 0.1% (1:1000)) chance of flooding.</p> <p>Low risk area (0.1% to 1% (1:1000 – 1:100)) chance of flooding.</p> <p>Medium risk area (1% to 3.3% (1:100 – 1:30)) chance of flooding.</p> <p>High risk area (3.3% (1:30)) or greater chance of flooding.</p> <p>In Scotland, flood risk (river, tidal and surface water sources) is categorised into three areas<sup>138</sup>:</p>			

<sup>135</sup> National Planning Policy Framework <https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change>

<sup>136</sup> Environment Agency (2021) Flood Zones and What They Mean. Available: <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

<sup>137</sup> Environment Agency (2019) Flood Maps for Planning. Available: <https://flood-map-for-planning.service.gov.uk/location>

<sup>138</sup> Scottish Government (2020) Scottish Planning Policy, A Natural, Resilient Place. Available: <https://www.gov.scot/publications/scottish-planning-policy/pages/7/>

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Little or no risk area (less than 0.1% (1:1000)) chance of flooding.</p> <p>Low to medium risk area (0.1% to 0.5% (1:1000 – 1:200)) chance of flooding.</p> <p>Medium to high risk area (0.5% (1:200)) or greater chance of flooding.</p> <p>The Northern Ireland Flood Risk Assessment Plan (NIFRA) 2018, identified a total of 45 flood risk areas. Out of these, 12 have been identified as Areas of Potential Significant Flood Risk (APSFR) and a further 9 determined Transitional Areas of Potential Significant Flood Risk (TAPSFR)<sup>139</sup>.</p> <p>Estimates of flood risk from different sources across the UK vary, but it is known that the level of risk is substantial – for example in Wales, over 155,000 properties are at risk of flooding from rivers and sea, with approximately 130,000 properties in Wales at risk of surface water flooding (in addition to potentially other flood risks)<sup>140</sup>. Scotland has an estimated 284,000 properties at risk of flooding<sup>141</sup>, England has approximately 5.2 million at risk<sup>142</sup>, while in Northern Ireland, just over 25,000 or approximately 3% of the 861,000 properties in Northern Ireland are located within the 1 in 100yr fluvial floodplain or 1 in 200yr coastal floodplain. In addition, the surface water flood map indicates that around 24,500 or 3% of the properties in Northern Ireland are sited in areas shown to be at risk of flooding from a 1 in 200yr pluvial event with a depth greater than 300mm. Overall, approximately 45,000 or 5% of the properties in Northern Ireland are located within either the 1% AEP fluvial floodplain or the 0.5% AEP coastal floodplain or are sited in areas at risk of flooding from a 0.5% AEP pluvial event with a flood depth greater than 300mm<sup>143</sup>.</p>			

<sup>139</sup> Department for Infrastructure (2018) Northern Ireland Flood Risk Assessment (NIFRA) 2018. Available: <https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/northern-ireland-flood-risk-assessment-report-2018-updated-may2019.pdf>

<sup>140</sup> Welsh Government (2019) Properties at Risk of Flooding in Wales. Available: <https://statswales.gov.wales/Catalogue/Environment-and-Countryside/Flooding>

<sup>141</sup> Scottish Environment Protection Agency (2018) Flood Risk Management in Scotland. Available: [Microsoft Word - NFRA FAQ \(sepa.org.uk\)](https://www.sepa.org.uk/microsoft-word-nfra-faq)

<sup>142</sup> Environment Agency (2020) National Flood and Coastal Erosion Risk Management Strategy for England. Available: [Environment Agency – National Flood and Coastal Erosion Risk Management Strategy for England \(publishing.service.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/434222/Environment_Agency_-_National_Flood_and_Coastal_Erosion_Risk_Management_Strategy_for_England.pdf)

<sup>143</sup> Department for Infrastructure (2018) Northern Ireland Flood Risk Assessment (NIFRA) 2018. Available: [Northern Ireland Flood Risk Assessment \(NIFRA\) 2018 - Revised May 2019 \(infrastructure-ni.gov.uk\)](https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/northern-ireland-flood-risk-assessment-report-2018-updated-may2019.pdf)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Shoreline Management Plans have been developed across England and Wales by Coastal Groups made up of members from local councils and the Environment Agency<sup>144</sup>. The purpose of these plans is to identify the most sustainable approach to managing the flood and coastal erosion risks to the coastline in the<sup>145</sup>:</p> <p>Short term (0 to 20 years in England and 2005-2025 in Wales)</p> <p>Medium term (20 to 50 years in England and 2025-2050 in Wales)</p> <p>Long term (50 to 100 years in England and 2055-2105 in Wales)</p> <p>A total of 22 plans have been developed for England and Wales as follows<sup>146</sup>:</p> <p>SMP 1 – Scottish Border to River Tyne</p> <p>SMP 2 – The Tyne to Flamborough Head</p> <p>SMP 3 – Flamborough Head to Gibraltar Point</p> <p>SMP 4 – Gibraltar Point to Hunstanton</p> <p>SMP 5 – Hunstanton to Kelling hard</p> <p>SMP 6 – Kelling Hard to Lowestoft</p> <p>SMP 7 – Lowestoft to Felixstowe</p> <p>SMP 8 – Essex and South Suffolk</p>			

<sup>144</sup> The Environment Agency (2009) Shoreline Management Plans. Available: [Shoreline management plans \(SMPs\) - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

<sup>145</sup> Natural Resources Wales (2022) Shoreline Management Plans. Available: [Natural Resources Wales / Shoreline Management Plans](https://www.gov.uk/government/publications/shoreline-management-plans-smpls)

<sup>146</sup> Environment Agency (2009) Shoreline Management Plans (SMPs). Available: <https://www.gov.uk/government/publications/shoreline-management-plans-smpls>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>SMP 9 – River Medway and Swale Estuary</p> <p>SMP 10 – Isle of Grain to South Foreland</p> <p>SMP 11 – South Foreland to Beachy Head</p> <p>SMP 12 – Beachy Head to Selsey Bill</p> <p>SMP 13 – Selsey Bill to Hurst Spit</p> <p>SMP 14 – Isle of Wight</p> <p>SMP 15 – Hurst Spit to Durlston Head</p> <p>SMP 16 – Durlston Head to Rame Head</p> <p>SMP 17 – Rame Head to Hartland Point</p> <p>SMP 18 – Hartland Point to Anchor Head</p> <p>SMP 19 – Anchor Head to Lavernock Point</p> <p>SMP 20 – Lavernock Head to Saint Ann’s Head</p> <p>SMP 21 – St. Ann’s Head to Great Ormes Head</p> <p>SMP 22 – Great Ormes Head to Scotland</p> <p>The Shoreline Management Plans propose four different management policies:</p> <p>No active intervention</p>			



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Hold the (existing defence) line</p> <p>Managed realignment</p> <p>Advance the line</p> <p>There is not the same comprehensive approach to Shoreline Management in Scotland, with only a small number of local authorities publishing Shoreline Management Plans, though there is a growing recognition of the need for a more joined up approach to this issue, particularly in light of a changing climate and recent work has informed this process<sup>147</sup>. Northern Ireland also does not have a strategic approach to shoreline management<sup>148</sup>.</p>			
	<p>The National Flood and Coastal Erosion Risk Management Strategy for England identifies that over 5.2 million homes and businesses in England are at risk from flooding and coastal erosion, and over two-thirds of properties in England are served by infrastructure sites and networks located in, or</p>	<p>Flood zones 2 and 3 are located across the whole of Wales. The largest and most extensive of these areas exist in lowland and estuarine regions, such as the River Dee and Severn estuary. Mid Wales and the highland regions, such as Snowdonia and the Brecon Beacons, have</p>	<p>Scotland has an estimated 284,000 properties at risk of any type of flooding<sup>152</sup>. This is more than twice the number identified in the 2015 Flood Risk Management Strategies as there have been major advances in the identification of properties at risk.</p>	<p>There are Significant Flood Risk Areas throughout Northern Ireland, for which detailed mapping is available. The largest of these are located around centres of population, such as Belfast in the east and Londonderry in the west.</p> <p>NB: Other areas of Northern Ireland are likely to be at risk of flooding, although these are not as extensively mapped/assessed due to Significant Flood Risk Areas being allocated on the basis of population density<sup>153</sup>.</p>

<sup>147</sup> Centre of Expertise for Waters (n.d.). Scotland's Coastal Change Assessment. Available: <http://www.dynamiccoast.com/outputs.html>

<sup>148</sup> Northern Ireland Assembly (2015) Shoreline management planning in Northern Ireland. Available: [http://www.niassembly.gov.uk/globalassets/documents/raise/knowledge\\_exchange/briefing\\_papers/series4/2015-04-15-kess-shoreline-management-planning-in-northern-ireland1.pdf](http://www.niassembly.gov.uk/globalassets/documents/raise/knowledge_exchange/briefing_papers/series4/2015-04-15-kess-shoreline-management-planning-in-northern-ireland1.pdf)

<sup>152</sup> Scottish Environment Protection Agency (2018) Flood Risk Management in Scotland. Available: [Microsoft Word - NFRA FAQ \(sepa.org.uk\)](https://www.sepa.org.uk/microsites/nfra/faq)

<sup>153</sup> Department for Infrastructure (2020) Flood Maps NI. Available: <https://www.infrastructure-ni.gov.uk/topics/rivers-and-flooding/flood-maps-ni>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>dependent on others located in, areas at risk of flooding<sup>149</sup>. Flood Zones 2 and 3 are located across the whole of England associated with river and coastal areas. Lowland areas are of particular risk as a consequence of floodplains being associated with the lower reaches of rivers<sup>150</sup>.</p>	<p>less risk of flooding<sup>151</sup>.</p>		
	<p>Supporting Trend Data:</p> <p>As a consequence of climate change (which could lead to increased rainfall, river flows, and higher coastal storm surges), and development pressures, it is likely that flood risk will increase in the future, with potentially the most significant changes likely to happen in the latter half of the century. In England it is estimated that over the next 50 years, without investment in flood defences, the number of properties experiencing a 1% annual likelihood of flooding from rivers and sea would increase from 748,000 to 1.29 million. Similar increases are likely to occur within Scotland, Wales and Northern Ireland<sup>154</sup>.</p>			

<sup>149</sup> Environment Agency (2020) National Flood and Coastal Erosion Risk Management Strategy for England. Available: [Environment Agency – National Flood and Coastal Erosion Risk Management Strategy for England \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/531117/national-flood-and-coastal-erosion-risk-management-strategy-for-england.pdf)

<sup>150</sup> Environment Agency (2023) Flood Map for Planning. Available: [Flood map for planning - GOV.UK \(flood-map-for-planning.service.gov.uk\)](https://floodmapforplanning.service.gov.uk/)

<sup>151</sup> Natural Resources Wales (2023) Flood risk map. Available: <https://naturalresources.wales/evidence-and-data/maps/long-term-flood-risk/?lang=en>

<sup>154</sup> Environment Agency (2014) Flood and coastal erosion risk management. Long-term investment scenarios (LTISA) 2014. Available: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/381939/FCRM Long term investment scenarios.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/381939/FCRM_Long_term_investment_scenarios.pdf)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
<p>Adaptation to climate change:</p> <p>Marine Spatial Plans</p>	<p>Marine planning in the UK has been taking place across different timescales. The first marine plans to be adopted in the UK were the East Inshore and Offshore Marine Plans in 2014 and the Scottish National Marine Plan in 2015, followed by the South Inshore and Offshore Marine Plans in 2018 and the Welsh National Marine Plan (WNMP) in 2019. As of 2023, the government has adopted and published the North East, North West, South East and South West Marine Plans, meaning that all of England’s seas are covered by Marine Plans<sup>155</sup>. The Department of Agriculture, Environment and Rural Affairs (DAERA) continue to develop the remaining plans for the waters of Northern Ireland. In England, all Marine Plans have been adopted and published. The consultation on the Marine Plan for Northern Ireland took place in 2018, but a final plan is yet to be adopted. The remaining plans, like those already adopted, are consistent with the Marine Policy Statement, and have taken a similar approach, presentation (comprising a vision, objectives and general and sectoral policies) and in the approach to policy wording. Marine plans in the UK have, to date, been written at a strategic level which largely consolidates and clarifies existing legal and policy arrangements, albeit with a regional focus, and in most instances do not attempt to be spatially explicit, for example by indicating defined zones for development or where development would be precluded. The plans rather identify potential resource and constraint (including through mapping), with policies that seek to balance environment, economic and social considerations in decision making and consent application. This includes the promotion of certain activities such as offshore wind, or the safeguarding of strategic resources. As these are the first iteration of marine plans, subsequent revisions may be expected to be more explicit<sup>156</sup>.</p>			

<sup>155</sup> Marine Management Organisation (2021) Adoption of Marine Plans marks big step forward for England’s seas. Available: [Adoption of Marine Plans marks big step forward for England’s seas - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/adoption-of-marine-plans-marks-big-step-forward-for-england-s-seas)

<sup>156</sup> Department for Business, Energy and Industrial Strategy (2021) UK Offshore Energy Strategic Environmental Assessment. Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/974180/OESEA4\\_Scoping\\_Document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974180/OESEA4_Scoping_Document.pdf)

# Greenhouse Gas Emissions

## Introduction to the baseline information and overview of interaction with the NPS

Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. However, since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas. Burning fossil fuels generates greenhouse gas (GHG) emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures.

To support international efforts, the UK Climate Change Act (2008) set a legal GHG reduction target of 80% against 1990 levels by 2050. In response to the ambitions of the Paris Agreement, in June 2019 the Climate Change Act was amended to set the overall reduction target by 2050 to at least a 100% reduction in net emissions against 1990 levels, i.e. 'net zero'. 'Net Zero' emissions mean that following all efforts to reduce emissions, the total of active removals of GHGs from the atmosphere offsets any remaining emissions from the rest of the economy. The removals are expected to be important given the difficulty in entirely eliminating emissions from some sectors.

The UK has in place carbon budgets for five-year periods up to 2037 (see Table below). The UK is currently in the fourth carbon budgetary period (2023-2027), the budget for which is 1,950 MtCO<sub>2e</sub>. The UK cannot legally emit more GHGs than this within the budgetary period. The fifth budget is 1,725 MtCO<sub>2e</sub> (2028-32), and the sixth carbon budget is 965 MtCO<sub>2e</sub> (2033-37). The sixth carbon budget was the first one to be set under the UK's net zero target, so it shows a marked reduction in comparison to the 5th budget. Whilst budgets are not set beyond this, there is a legal requirement for the UK to reach 'net zero' emissions by 2050.

The UK Government's carbon budgets (a cap on the amount of GHGs emitted in the UK over a five-year period) up to 2037 are shown below. The UK has so far outperformed its first three budgets. But progress is slowing, and the country is not on track to meet its future budgets or the overall reduction target, according to the 2023 Progress Report to Parliament by the Committee on Climate Change.

Budgetary Period	Carbon Budget (MtCO <sub>2e</sub> )
1st carbon budget (2008 to 2012)	3,018
2nd carbon budget (2013 to 2017)	2,782
3rd carbon budget (2018 to 2022)	2,544
4th carbon budget (2023 to 2027)	1,950
5th carbon budget (2028 to 2032)	1,725
6th carbon budget (2033 to 2037)	965

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Greenhouse gas emissions:	As of 2021, UK total net GHG emissions= 426.51 MtCO <sub>2</sub> e <sup>157</sup> .			
Distribution of greenhouse gas emissions	As of 2021, England net GHG emissions were 315.32 MtCO <sub>2</sub> e and had approximately 73.9% share of total net GHG emissions.	As of 2021, Wales net GHG emissions were 35.98 MtCO <sub>2</sub> e and had approximately 8.4% share of total net GHG emissions.	As of 2021, Scotland net GHG emissions were 40.91 MtCO <sub>2</sub> e and had approximately 9.6% share of total net GHG emissions.	As of 2021, Northern Ireland net GHG emissions were 22.46 MtCO <sub>2</sub> e and had approximately 5.3% share of total net GHG emissions.
	<p>Supporting Trend Data:</p> <p>UK GHG emissions decreased overall from 1990 to 2021 driven largely by a switch from using coal and heavy-emitting fuels in the energy supply and manufacturing industries to lower emission fuels such as natural gas and, more recently, renewable sources. Household emissions that come from heating homes and travelling, for commuting, social, domestic or leisure purposes, have been the largest contributor since 2015 as the emissions from energy supply decreased<sup>158</sup>.</p> <p>In 2019, net territorial emissions in the UK of the basket of seven greenhouse gases covered by the Kyoto Protocol were estimated to be 454.8 million tonnes carbon dioxide equivalent (MtCO<sub>2</sub>e), a decrease of 2.8% compared to the 2018 figure of 468.1 million tonnes and 43.8% lower than they were in 1990<sup>159</sup>.</p> <p>In 2020, net territorial greenhouse gas emissions in the UK were estimated to be 405.5 million tonnes carbon dioxide equivalent (MtCO<sub>2</sub>e), a decrease of 9.5% compared to the 2019 figure of 447.9 million tonnes and 49.7% lower than they were in 1990. The coronavirus (COVID-19) pandemic and the resulting restrictions introduced in 2020 across the</p>			

<sup>157</sup> National Atmospheric Emissions Inventory (2021) Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2021. Available: [https://naei.beis.gov.uk/reports/reports?report\\_id=1110](https://naei.beis.gov.uk/reports/reports?report_id=1110)

<sup>158</sup> <https://climate-change.data.gov.uk/dashboards/emissions>

<sup>159</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/957887/2019\\_Final\\_greenhouse\\_gas\\_emissions\\_statistical\\_release.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957887/2019_Final_greenhouse_gas_emissions_statistical_release.pdf)

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>UK had major impacts on various aspects of society and the economy, which led to a significant decrease in GHG emissions<sup>160</sup>.</p> <p>In 2021, net territorial GHG emissions in the UK were estimated to be 426.5 million tonnes carbon dioxide equivalent (MtCO<sub>2</sub>e), an increase of 5.0% from the 2020 figure of 406.3 million tonnes, but still 5.3% lower than in 2019, the most recent pre-pandemic year<sup>161</sup>.</p> <p>Provisional figures for 2022 show that despite rises in some emissions as the UK continued to recover from the COVID-19 pandemic, 2022 saw another fall in GHG emissions, largely due to a reduction in fuel use to heat buildings. This will largely be because 2022 was considerably warmer than 2021 and higher energy prices may also have been a factor, particularly towards the end of the year. Total GHG emissions are estimated to have decreased by 2.2% to 417.1 million tonnes carbon dioxide equivalent (MtCO<sub>2</sub>e) compared to 2021. Compared to 2019, the most recent pre-pandemic year, 2022 CO<sub>2</sub> emissions are down 7.5% and total GHG emissions are down 7.4%. Total GHG emissions were 48.7% lower than they were in 1990<sup>162</sup>.</p> <p>Emissions of CO<sub>2</sub> are by far the largest component of total UK GHG emissions, of which the largest sources are energy and road transport. Emissions have reduced from 1990 due to fuel switching, structural change, and improvements in end-use efficiency. The strong link between energy and CO<sub>2</sub> emissions means that short term trends can be dominated by UK temperatures. In cold years like 1996 and 2010 there was an increase in demand for power for heating and in warm years like 2011 and 2014 there was a decrease. The second most important source of greenhouse gases is methane (CH<sub>4</sub>). Annual emissions of CH<sub>4</sub> have reduced by over half since 1990. The main sources of CH<sub>4</sub> are agriculture, waste disposal, leakage from the gas distribution system and coal mining. Reductions in CH<sub>4</sub> emissions in the UK are driven by the increased utilisation of methane from landfills, a large decline in UK coal mining, investment in improvements to the natural gas supply infrastructure to reduce leakage and a reduction in livestock numbers. Emissions of nitrous oxide (N<sub>2</sub>O) have also reduced by over half since 1990. Most N<sub>2</sub>O emissions are generated from the agriculture sector, Agriculture sector N<sub>2</sub>O emissions have decreased primarily due to reduced emissions from synthetic fertiliser application. N<sub>2</sub>O is also released during the production of nitric and adipic acid, a significant source in 1990 contributing to approximately half of all N<sub>2</sub>O emissions. Due to a decline in production together with the installation of abatement equipment, the Industrial Processes and Other Product Use (IPPU) sector</p>			

<sup>160</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1051408/2020-final-greenhouse-gas-emissions-statistical-release.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051408/2020-final-greenhouse-gas-emissions-statistical-release.pdf)

<sup>161</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1134664/greenhouse-gas-emissions-statistical-release-2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1134664/greenhouse-gas-emissions-statistical-release-2021.pdf)

<sup>162</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1147372/2022\\_Provisional\\_emissions\\_statistics\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147372/2022_Provisional_emissions_statistics_report.pdf)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>now only contribute around 4% of N2O emissions. The smallest percentage reduction in emissions across the time series is for the F gases: HFCs, PFCs, NF3 and SF6. F-gas emissions have decreased since 1995, due mainly to the fall in F gas manufacture in the UK and the installation of abatement equipment at two of the three UK manufacturers. These emission reductions have been to some extent offset by the increases in the use of HFCs as substitutes for ozone depleting substances, particularly in refrigeration and air conditioning<sup>163</sup>.</p>			
Greenhouse gas emissions:	<p>As of 2021, the UK total net GHG emissions per sector in England were<sup>164</sup>:</p>			
Contribution of sectors to greenhouse gas emissions	<p>Agriculture: 47,906.21 ktCO2e</p> <p>Business: 73,317.19 kt CO2e</p> <p>Energy supply: 86,883.19 ktCO2e</p> <p>Industrial processes: 10,299.85 ktCO2e</p> <p>Public: 7,515.38 ktCO2e</p> <p>Residential: 69,398.95 ktCO2e</p> <p>Transport: 109,452.95 ktCO2e</p> <p>Waste: 18,662.14 ktCO2e</p> <p>Land Use, Land Use Change and Forestry (LULUCF): 1083.15 ktCO2e</p>			
	As of 2021, the total net GHG emissions per sector in England were:	As of 2021, the total net GHG emissions per sector in Wales were:	As of 2021, the total net GHG emissions per sector in Scotland were:	As of 2021, the total net GHG emissions per sector

<sup>163</sup> [UK Greenhouse Gas Inventory, 1990 to 2021 \(defra.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/90422/uk_greenhouse_gas_inventory_1990_to_2021.pdf)

<sup>164</sup> National Atmospheric Emissions Inventory (2021) Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2021. Available: [https://naei.beis.gov.uk/reports/reports?report\\_id=1110](https://naei.beis.gov.uk/reports/reports?report_id=1110)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Agriculture: 28,145.42 ktCO <sub>2</sub> e Business: 55,627.84 kt CO <sub>2</sub> e Energy supply: 57,790.03 ktCO <sub>2</sub> e Industrial processes: 7,358.50 ktCO <sub>2</sub> e Public: 6,124.00 ktCO <sub>2</sub> e Residential: 56,575.14 ktCO <sub>2</sub> e Transport: 89,324.20 ktCO <sub>2</sub> e Waste: 15,220.85 ktCO <sub>2</sub> e LULUCF: - 848.91 ktCO <sub>2</sub> e	Agriculture: 5,736.96 ktCO <sub>2</sub> e Business: 8,808.41 ktCO <sub>2</sub> e Energy Supply: 9,323.49 ktCO <sub>2</sub> e Industrial processes: 2,272.75 ktCO <sub>2</sub> e Public: 334.75 ktCO <sub>2</sub> e Residential: 3,728.63 ktCO <sub>2</sub> e Transport: 5,420.60 ktCO <sub>2</sub> e Waste: 1,104.33 ktCO <sub>2</sub> e LULUCF: - 752.04 ktCO <sub>2</sub> e	Agriculture: 7,825.66 ktCO <sub>2</sub> e Business: 7,730.34 ktCO <sub>2</sub> e Energy Supply: 4,850.48 ktCO <sub>2</sub> e Industrial: 440.00 ktCO <sub>2</sub> e Public: 917.88 ktCO <sub>2</sub> e Residential: 6298.90 ktCO <sub>2</sub> e Transport: 10,948.73 ktCO <sub>2</sub> e Waste: 1,545.09 ktCO <sub>2</sub> e LULUCF: 358.17 ktCO <sub>2</sub> e	in Northern Ireland were <sup>165</sup> : Agriculture: 6,198.17 ktCO <sub>2</sub> e Business: 3,150.58 ktCO <sub>2</sub> e Energy Supply: 3,084.06 ktCO <sub>2</sub> e Industrial: 228.60 ktCO <sub>2</sub> e Public: 138.76 ktCO <sub>2</sub> e Residential: 2,787.27 ktCO <sub>2</sub> e Transport: 3,754.35 ktCO <sub>2</sub> e Waste: 791.87 ktCO <sub>2</sub> e LULUCF: 2,325.92 ktCO <sub>2</sub> e
	Supporting Trend Data:  As of 2021, emissions in the agricultural sector accounted for 11% of UK total net GHG emissions and have declined from 54 MtCO <sub>2</sub> e in 1990 to 48 MtCO <sub>2</sub> e in 2021 (-16%).			

<sup>165</sup> National Atmospheric Emissions Inventory (2021) Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990 – 2021. Available: [https://naei.beis.gov.uk/reports/reports?report\\_id=1110](https://naei.beis.gov.uk/reports/reports?report_id=1110)



Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>As of 2021, emissions in the business sector accounted for 17% of UK total net GHG emissions and have declined from 113 MtCO<sub>2</sub>e in 1990 to 74 MtCO<sub>2</sub>e in 2021 (-35%).</p> <p>As of 2021, emissions in the energy supply sector accounted for 20% of UK total net GHG emissions and have declined from 284 MtCO<sub>2</sub>e in 1990 to 87 MtCO<sub>2</sub>e in 2021 (-69%).</p> <p>As of 2021, emissions in the industrial processes sector accounted for 2.5% of UK total net GHG emissions and have declined from 56 MtCO<sub>2</sub>e in 1990 to 10 MtCO<sub>2</sub>e in 2021 (-82%).</p> <p>As of 2021, emissions in the public sector accounted for 1.8% of UK total net GHG emissions and have declined from 16 MtCO<sub>2</sub>e in 1990 to 7.5 MtCO<sub>2</sub>e in 2020 (-53%).</p> <p>As of 2021, emissions in the residential sector accounted for 16% of UK total net GHG emissions and have declined from 80 MtCO<sub>2</sub>e in 1990 to 67 MtCO<sub>2</sub>e in 2021 (-16%).</p> <p>As of 2021, emissions in the transport sector accounted for 26% of UK total net GHG emissions and have declined from 128 MtCO<sub>2</sub>e in 1990 to 110 MtCO<sub>2</sub>e in 2021 (-14%).</p> <p>As of 2021, emissions in the waste sector accounted for 4.5% of UK total net GHG emissions and have declined from 72 MtCO<sub>2</sub>e in 1990 to 18 MtCO<sub>2</sub>e in 2021 (-75%).</p> <p>As of 2021, emissions in the LULUCF sector accounted for 0.25% of UK total net GHG emissions and have declined from 11 MtCO<sub>2</sub>e in 1990 to 1 MtCO<sub>2</sub>e in 2021 (-90%).</p>			

# Air Quality and Noise

## Introduction to the baseline information and overview of interaction with the NPS

Poor air quality is considered by the UK Government to be ‘the largest environmental risk to public health in the UK’. As well as human health, air pollution also has implications for the natural environment and the economy. Poor air quality can be caused by different pollutants from a variety of sources. Legal limits are placed on pollutants including sulphur dioxide, nitrogen oxides, particulate matter and ozone. The sources of these and other pollutants are a range of natural and anthropogenic, including the combustion of fossil fuels for industrial and domestic processes, incineration of waste, emissions from traffic, chemical and photochemical reactions. The Clean Air Strategy was published in 2019 and raised concerns about those living in deprived communities being most likely to suffer adverse health effects from poor air quality.

Long-term exposure to air pollution reduces life expectancy, mainly due to cardiovascular and respiratory diseases and lung cancer. Short-term exposure can also cause effects on lung function, exacerbation of asthma, increases in respiratory and cardiovascular hospital admissions and mortality<sup>166</sup>. In respect of the environment, air pollution contributes to acidification and eutrophication of soil and watercourses, which impacts on animal and plant life and biodiversity. It also contributes to local ozone production which has public health impacts and damages agricultural crops, forests and plants.

While sound can be important to our daily lives, noise which can be defined as unwanted sound is not always essential. It can be a source of irritation and stress for many people and can damage hearing if it is loud enough. Environmental Protection UK note many people are exposed to stressful levels of noise at home and at work<sup>167</sup>. Road transport is described as the most significant contributor to environmental noise pollution, and the European Environment Agency finds that at least one in five people are exposed to long-term noise levels considered harmful to their health<sup>168</sup>. In many cities, more than half of the population is exposed to road noise levels above the World Health Organisation guidelines for the day-evening-night period.

Given noise’s negative impacts on a large portion of the population, environmental noise alongside air pollution have become significant concern for citizens and policymakers. Development enabled by the proposed Fusion Energy NPS may give rise to noise and air quality impacts, particularly through the construction phase.

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<sup>166</sup> <https://researchbriefings.files.parliament.uk/documents/CBP-9600/CBP-9600.pdf>

<sup>167</sup> <https://www.environmental-protection.org.uk/wp-content/uploads/2021/02/noise-pollution.pdf>

<sup>168</sup> <https://www.eea.europa.eu/en/topics/in-depth/noise#:~:text=Living%20close%20to%20a%20road,and%20cardiovascular%20and%20metabolic%20issue>  
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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Air Quality and Noise:	Since December 1997 each local authority in the UK must review and assess air quality in their area to determine performance against national air quality objectives. Where air quality objectives are not likely to be achieved an AQMA must be declared. AQMAs are typically associated with vehicle emissions, principally oxides of nitrogen (NOx), oxides of sulphur (SO <sub>2</sub> ), particulates (PM <sub>10</sub> ) and Benzene (C <sub>6</sub> H <sub>6</sub> ). As such, AQMAs are predominantly associated with urban areas and the road network <sup>169</sup> .			
Location of Air Quality Management Areas (AQMA)	The locations of AQMAs are shown in Appendix C.1. and C.2. for England and Wales r.			
Air Pollution Information System	<p>The Air Pollution Information System provides a searchable database and information on pollutants and their impacts on habitats and species. The APIS provides pollution impact records for a variety of habitats, ecosystems and species. Each record contains information on key impacts including any critical loads or levels and a full reference list.</p> <p>Defra modelled background pollution maps show concentrations of key air pollutants. There are also local authority specific maps published which provide sector splits and projections.</p>			
	As of 2022, there were 526 AQMAs in England <sup>170</sup> . AQMAs are distributed throughout England, although they are principally located in areas of high population. The largest AQMAs are within major cities, including London, Birmingham, Manchester, Liverpool, Sheffield and Bristol. A significant amount	As of June 2023, there were 44 AQMAs in Wales <sup>171</sup> . These are all located in the south of the country. The largest AQMAs are within Swansea and Port Talbot, on the south coast. Smaller AQMAs are within Cardiff, Newport and the smaller towns within the valleys between the M4 corridor and the Brecon Beacons. These	As of June 2023, there were 34 AQMAs in Scotland <sup>172</sup> . The majority of these are located in the south of the country and are associated with the larger cities of Glasgow, Edinburgh, Falkirk, Perth and Dundee. Outside of these areas, Aberdeen and Inverness, on the east coast, have designated AQMAs. The north,	As of June 2023, there were 19 AQMAs in Northern Ireland <sup>173</sup> . These are located in the east, west south and central regions. The urban areas of Belfast in the east, Newry in the south and Strabane in the west have the largest AQMAs. Smaller AQMAs, associated with congestion in town centres, are located throughout east,

<sup>169</sup> Department for Environment and Rural Affairs (2016) Current AQMAs by Source. Available: <https://uk-air.defra.gov.uk/aqma/summary>

<sup>170</sup> Department for Environment and Rural Affairs (2022) AQMAs interactive map and AQMA Summary Data. Available: <https://uk-air.defra.gov.uk/aqma/maps>

<sup>171</sup> Welsh Government (2021) Air Quality Management Areas. Available: <https://airquality.gov.wales/laqm/air-quality-management-areas>

<sup>172</sup> Scottish Air Quality (2021) Air Quality Management Areas. Available: <http://www.scottishairquality.scot/laqm/aqma>

<sup>173</sup> Department of Agriculture, Environment and Rural Affairs (2021) Northern Ireland Air, Air Quality Management Areas. Available: <https://www.airqualityni.co.uk/laqm/aqma>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	of AQMAs are designated along major trunk roads and are generally associated with areas of high congestion.	small AQMAs are associated with congestion within the town centres.	highlands and west coast do not have any AQMAs.	west and south Northern Ireland.  As the NPS applies to England & Wales only, it is anticipated that there are no implications for the air quality of Northern Ireland in terms of AQMA as these have been declared for the most part in relation to the impact of emissions from road traffic.
	<p>Supporting Trend Data:</p> <p>The quality of our air in the UK has improved considerably over the last decade. Road transport is a key source of many air pollutants, particularly in urban areas. There are two main trends in the transport sector working in opposite directions: new vehicles are becoming individually cleaner in response to European emission standards legislation, but total vehicle kilometres are increasing. Overall emissions of key air pollutants from road transport have fallen by about 50% over the last decade, despite increases in traffic, and are expected to reduce by a further 25% over the next decade. This is mainly a result of progressively tighter vehicle emission and fuel standards agreed at European level and set in UK regulations<sup>174</sup>. Non-exhaust emissions from tyre, brake and road wear are currently unregulated and are becoming the predominate source of air pollution as emissions from vehicle exhausts decrease.</p>			
Air Quality and Noise:	Noise is an inevitable consequence of a mature and vibrant society, but it can have a negative effect on people's quality of life, affecting their health and wellbeing. <sup>175</sup> Noise action plans provide a framework to manage environmental noise and its effects. They also aim to protect quiet areas in agglomerations (large urban areas) where the noise quality is good. The Environmental Noise (England) Regulations covers noise from roads, rail, aviation and industry.			

<sup>174</sup> Department for Environment and Rural Affairs (2011) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland - Volume 1. Available: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1>

<sup>175</sup> Department for Environment, Food & Rural Affairs (2022) Noise management. Available: [Noise management - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/noise-management)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Noise Action Planning Important Areas (NIA)	The regulations seek to manage the impact of environmental noise through the preparation and adoption of strategic noise mapping in relation to agglomerations, major roads, major railways and major airports, every 5 years and the preparation and implementation of Noise Action Plans to manage noise issues in relation to those areas and noise sources.. The Action Plans identify Important Areas (areas exposed to the highest levels of noise) and suggests ways the relevant authorities can reduce these.			
	The Noise Action Plans (Round 3) for England, undertaken in 2017, covers 65 Environmental Noise (England) Regulations agglomerations, major roads and railways. The number of people exposed to noise levels from roads in agglomerations above 55dB for Lden (24-hour period) was 8,071,000 and from railways 1,099,000 people. <sup>176</sup>	The Noise and Soundscape Action Plan 2018-2023 was produced for three agglomerations in Wales. The number of people whose homes are exposed to noise levels above 55 Db for Lden (24-hour period) from major roads, railways and industry, in the Cardiff and Penarth agglomeration was 46,100 people, in the Newport agglomeration 36,100 people, and in the Swansea and Neath Port Talbot agglomeration 46,800. <sup>177</sup>	Round 3 Noise Maps for Scotland were produced in 2016 for major roads, railways, airports and agglomerations. Consolidated noise maps for Edinburgh estimated 253,400 people were exposed to noise levels above 55Db for Lden (24-hour period), 661,500 in Glasgow, 108,400 in Aberdeen and 53,400 in Dundee. <sup>178</sup>  The Noise and Soundscape Action Plan 2018-2023 was produced for three agglomerations in Wales. The number of people whose	Round 3 Noise Maps were produced in 2016 for major roads, railways, airports and agglomerations. Consolidated noise maps for the Belfast agglomeration boundary, including noise levels for roads, railways, industry and Belfast City airport estimated 287,558 people were exposed to noise levels above 50Db for LAeq,16h (07:00-23:00) <sup>180</sup> .

<sup>176</sup> Department for Environment, Food and Rural Affairs (2019) Noise action plan: agglomerations (urban areas). Available: [Noise Action Plan \(2019\): Agglomerations \(Urban Areas\) \(publishing.service.gov.uk\)](#)

<sup>177</sup> Noise and soundscape action plan (2018-2023) <https://www.gov.wales/sites/default/files/publications/2019-04/noise-and-soundscape-action-plan.pdf>

<sup>178</sup> Scotland's Noise (2018) Noise statistics. Available: [Noise statistics | Scotland's noise \(environment.gov.scot\)](#)

<sup>180</sup> Department of Agriculture, Environment and Rural Affairs (2018) Noise mapping and action planning contract round 3 2016/2017 summary report – final. Available: [Round 3 Noise Mapping Technical Report - Industry.PDF \(daera-ni.gov.uk\)](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
			homes are exposed to noise levels above 55 Db for Lden (24-hour period) from major roads, railways and industry, in the Cardiff and Penarth agglomeration was 46,100 people, in the Newport agglomeration 36,100 people, and in the Swansea and Neath Port Talbot agglomeration 46,800. <sup>179</sup>	

<sup>179</sup> Noise and soundscape action plan (2018-2023)  
<https://www.gov.wales/sites/default/files/publications/2019-04/noise-and-soundscape-action-plan.pdf>

# Soil, Geology, Land-use and Contaminated Land

## Introduction to baseline Information and overview of interaction with the NPS

Soil is an important natural capital resource, providing many essential services. The Natural Capital Committee highlights the role of soil in food production, climate regulation, flood risk reduction and water purification. Soils also provide support for buildings, landscapes, and heritage as well as opportunities for engagement with the natural environment.<sup>181</sup> The UK has many different types of soil due to variations in geology, climate, plant and animal ecology and land use. Most soils contain sand, silt, clay, organic matter, water, and air. However, soils are being degraded globally resulting in external costs equivalent to 17% of global GDP, with an estimated cost between £0.9 billion and £1.4 billion per year for England and Wales. The main pressures affecting soils include agriculture, climate change, population growth, and emerging pollutants. The government's Environmental Improvement Plan 2023 (the first revision of the 25 Year Environment Plan (2018)) states we will bring at least 40% of England's agricultural soils into sustainable management by 2028 through our new farming schemes, and up to 60% by 2030, and that steps must be taken towards restoring the UK's soils.<sup>182</sup>

Use of fusion energy enabled by the Fusion Energy NPS could potentially have a negative impact on soil quality. The most significant impact is the potential release of radioactive materials into the soil. If these materials are not properly contained, they can leach into the soil and contaminate it. In addition, for some fusion power plant designs, large amounts of water required for cooling could lead to soil moisture depletion in the surrounding area. This can result in soil erosion, compaction, and degradation of soil structure.

Contaminated land includes land where substances are causing or could cause significant harm to people, property, or protected species; significant pollution of surface waters or groundwater; or harm to people as a result of radioactivity<sup>183</sup>. Many areas of land in the UK have been contaminated by past industrial and other human activities, including former factories, mines, steel mines, refineries, or landfills. Land at these sites could be contaminated by harmful substances such as oils and tars, heavy metals, asbestos, and chemicals. Land contamination may also be caused by current operations or accidental releases of substances to the environment.<sup>184</sup>

The UK contains a diverse range of geological landscapes. UNESCO's Global Geoparks are areas with internationally important rocks and landscapes, all of which are managed responsibly for conservation, education, and sustainable development<sup>185</sup>.

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<sup>181</sup> Natural Capital Committee (2019) Advice on soil management. Available: [Advice on soil management \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/418811/ncc-soil-management-advice.pdf)

<sup>182</sup> Environment Agency (2019) The state of the environment: soil. Available: [The state of the environment soil \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/418811/ncc-soil-management-advice.pdf)

<sup>183</sup> UK Government (2021) Contaminated land. Available: [Contaminated land: Overview - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/topics/contaminated-land)

<sup>184</sup> 184 NetRegs Contaminated land (Accessed 31/07/2023) Available: [Contaminated land | NetRegs | Environmental guidance for your business in Northern Ireland & Scotland](https://www.netregs.gov.uk/contaminated-land)

<sup>185</sup> British Geological Survey (2023) Geoparks. Available: [Geoparks - British Geological Survey \(bgs.ac.uk\)](https://www.bgs.ac.uk/geoparks)

Land and its many uses provide the bedrock of the UK and the foundation for the population's wellbeing, prosperity, and national identity. Factors driving land use change include population and income growth, climate change, and new technologies. Approximately 72% of the UK's land area is used for agriculture<sup>186</sup>. In England and Wales, the quality of agricultural land is graded using the Agricultural Land Classification System. This enables informed decisions over future land use. Sustainable land management has a vital role to play in tackling climate change and adapting to its impacts.

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<sup>186</sup> The Royal Society (2019) Climate change and land: opportunities and challenges for the UK. Available: [Climate change and land: opportunities and challenges for the UK \(royalsociety.org\)](https://royalsociety.org/~/media/royalsociety/201906/Climate-change-and-land-report.pdf)



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Soils, Geology, Landuse and Contaminated Land:  Location of Geological SSSIs / ASSIs	Geological SSSIs / ASSIs are included within the SSSI / ASSI information provided in Biodiversity and Ecology.			
Soils, Geology, Landuse and Contaminated Land:  National Soil Maps	Maps delineating soil types across respective regions have been published and draw from survey work and GIS techniques. In respect of the England and Wales resource the maps include soilscales, developed from the more detailed national soil map and a series of thematic soil properties including carbon, metal binding capacity and native woodland models.			
	NATMAP (National Soil Map) is derived from the National Soil Map for England and Wales and is the product of sixty years of soil survey work in England and Wales. <sup>187</sup> 187 The World Reference Base map for England and Wales is derived from the national soil map at 1:250 000 scale for England and Wales, showing the locations of 13 distinct reference soil groups recognised in England and Wales. <sup>188</sup>	NATMAP (National Soil Map) is derived from the National Soil Map for England and Wales and is the product of sixty years of soil survey work in England and Wales. <sup>189</sup>	National coverage of the main soil types across Scotland mapped originally at 1:250,000 scale. This is an inventory of the soils of Scotland and was intended for use by planners. National Soil Map of Scotland	The World Reference Base map shows the locations of the nine reference soil groups recognised in Northern Ireland. It is derived from the general soil map of Northern Ireland at 1:250 000 scale,

<sup>187</sup> [NATMAP - National Soil Map - data.gov.uk](https://data.gov.uk) Lasted updated on 03 October 2013

<sup>188</sup> [World reference base | UK Soil Observatory | UK Research and Innovation](#)

<sup>189</sup> [NATMAP - National Soil Map - data.gov.uk](https://data.gov.uk) Lasted updated on 03 October 2013

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
				is based on data collected between 1947 and 1984. <sup>190</sup> held by the Agri-Food and Biosciences Institute (AFBI). <sup>191</sup>
Soils, Geology, Landuse and Contaminated Land:  Contaminated Land	<p>Of particular note across England and Wales are the numerous contaminated sites that are a legacy of current or past industrial activities. Typically, contaminated land would be found in urban areas and along major transport links, though many sites are also found in rural or coastal areas. While many sites are known, it is the case that many contaminated sites (their location and the nature of contamination) remain unknown. In England, arsenic, lead and benzo(a)pyrene are the most common substances causing contamination of land identified under Part 2A of the Environmental Protection Act 1990<sup>192</sup>.</p> <p>Across the United Kingdom, land is legally defined as ‘contaminated land’ where substances are causing or could cause<sup>193</sup>:</p> <ul style="list-style-type: none"> <li>• Significant harm to people, property or protected species</li> <li>• Significant pollution of surface waters or groundwater</li> <li>• Harm to people as a result of radioactivity</li> <li>• Some types of contaminated land are classed as ‘special sites’. This includes land that: <ul style="list-style-type: none"> <li>• seriously affects drinking waters, surface waters or important groundwater sources</li> <li>• has been, or is being, used for certain industrial activities, such as oil refining or making explosives</li> </ul> </li> </ul>			

<sup>190</sup> [National Soil Map of Scotland - data.gov.uk](#) Lasted updated on 24 March 2022

<sup>191</sup> [World reference base | UK Soil Observatory | UK Research and Innovation](#)

<sup>192</sup> Environment Agency (2016) Dealing with contaminated land in England. Available:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/513158/State\\_of\\_contaminated\\_land\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/513158/State_of_contaminated_land_report.pdf)

<sup>193</sup> UK Government (2021) Contaminated Land. Available: <https://www.gov.uk/contaminated-land>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<ul style="list-style-type: none"> <li>• is being or has been regulated using a permit issued under the integrated pollution control or pollution prevention and control regimes</li> <li>• has been used to get rid of waste acid tars</li> <li>• is owned or occupied by the Ministry of Defence</li> <li>• is contaminated by radioactivity</li> <li>• is a nuclear site</li> </ul> <p>Determination of contaminated land is made in the UK by a local council or the relevant environment agency and is best identified on a local or regional basis. It is however important to note that there will be lots of brownfield sites which are contaminated and require remediation but have not been formally designated. They will have not been assessed for designation or don't meet the threshold for designation but still pose a risk of pollution and harm.</p> <p>Local authorities maintain the Public Registers for the ordinary contaminated land in their area.</p>			
	<p>In 2005, less than 2% of the land area of England was likely to have been affected by industrial activities of a type that could have caused contamination. A total of 197, out of 326 local councils who responded to this part of the survey reported that they had determined a total of 511 contaminated land sites. Currently 54 determined sites are regulated by the Environment Agency as designated special sites. These contaminated land sites were posing unacceptable risks to human health. Arsenic, lead and benzo(a)pyrene are the most common substances causing contamination<sup>36</sup></p>	<p>In 2005, estimate of around 300,000 hectares of land affected by industrial activity in England and Wales which may be contaminated. A total of 781 sites had been determined as contaminated land under Part 2A in England (659) and Wales (122) by the end of March 2007. Of these, 35 were designated special sites (33 for England and two for</p>	<p>A total of 807 sites (equivalent to 1,864 hectares) of land that was affected by contamination have been remediated via the planning system or through voluntary remediation. An estimated 27,000 inspections of land with the potential to be contaminated have already been or are in the process</p>	<p>Note that in Northern Ireland similar provisions have been made relating to the rest of the UK but as of July 2023 are not yet enacted. Once enacted site inspections will take place to identify and remediate land where contamination is causing</p>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
			Wales). Metal and metalloids plus organic compounds were the most common pollutants identified in the significant pollutant linkages of contaminated land sites. <sup>194</sup>	of being undertaken. The planning system has been identified as the predominant mechanism for dealing with land contamination. <sup>195</sup>
	Supporting trend data is not available.			
Soils, Geology, Landuse and Contaminated Land:  Geoparks	Geoparks are endorsed by UNESCO and are not designated under legislation. They are locally led partnerships within areas of internationally significant geology that work to support sustainable economic development of the area, primarily through geological and eco-tourism <sup>197</sup> .  NB: No mapping data on Geoparks is available.			
	There are currently three Geoparks in England, the English Riviera, located in the south of Devon in the south west, the North Pennines, between	There are currently two Geoparks in Wales, Fforest Fawr, located in the Brecon Beacons in the south, and GeoMon, which	There are currently two Geoparks in Scotland, the North West Highlands, located in the north,	There is currently two Geoparks in Northern Ireland, Cuilcagh Lakeland/Marble

<sup>194</sup> Environment Agency (2009) Dealing with contaminated land in England and Wales. Available:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/313964/geho0109bpha-e-e.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/313964/geho0109bpha-e-e.pdf)

<sup>195</sup> Environment Agency (2009) Dealing with contaminated land in England and Wales. Available:

<https://www.sepa.org.uk/media/28314/dealing-with-land-contamination-in-scotland.pdf>

<sup>196</sup> [Contaminated land | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](http://www.daera-ni.gov.uk)

<sup>197</sup> United Kingdom National Commission for UNESCO (2021) Global Geoparks. Available:

<http://www.unesco.org.uk/designation/geoparks/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland	
	Cumbria and Northumberland in the north, and the Black Country located in the Midlands <sup>198</sup> .		encompasses the island of Anglesey in the north west <sup>199</sup> .	and Geopark Shetland, within the Shetland Islands <sup>200</sup> . Arch Caves, in the south west of the country <sup>201</sup> and Mourne Gullion Strangford in the south east <sup>202</sup>	
	Supporting trend data is not available.				
Soils, Geology, Landuse and Contaminated Land:	Agricultural Land Classification classifies land into categories according to versatility and suitability for growing crops. For planning applications involving agricultural land in all parts of the UK there are statutory requirements to minimise the loss of the best quality agricultural land, and supporting evidence on land quality may have to be produced with an application <b>Error! Bookmark not defined..</b>				
Agricultural Land Classification	Provisional ALC maps grade land according to the severity of environmental constraints on agricultural production, taking into account such factors as soil, gradient, rainfall and altitude. There are five grades, the best being Grade 1, which is land with only very minor limitations, typified by Lincolnshire silt-land. Grade 5 land, with very severe limitations, includes, for example, moorland rough grazing in the south west of England. Land in Grades 1, 2 and Subgrade 3a are classed as		The Welsh ALC system is the same as England's. Agricultural land is graded using the Agricultural Land Classification (ALC) system. This system classifies land into five grades according to the extent to which physical or chemical characteristics impose long term	Scotland's agri land classification system is termed the Land Capability for Agriculture. It recognises seven Classes of land, of which four are subdivided to create a total of 13 Classes and Divisions. Class	There are no published ALC maps for Northern Ireland apart from a very generalised, small scale map within Soil and Environment: Northern Ireland. The ALC system is basically the same

<sup>198</sup> United Kingdom National Commission for UNESCO (2021) Global Geoparks. Available: <http://www.unesco.org.uk/designation/geoparks/>

<sup>199</sup> United Kingdom National Commission for UNESCO (2021) Global Geoparks. Available: <http://www.unesco.org.uk/designation/geoparks/>

<sup>200</sup> United Kingdom National Commission for UNESCO (2021) Global Geoparks. Available: <http://www.unesco.org.uk/designation/geoparks/>

<sup>201</sup> Marble Arch Caves Global Geopark (2021) Our Geopark. Available: <http://www.marblearchcavesgeopark.com/our-global-geopark/>

<sup>202</sup> [Northern Ireland's newest UNESCO Geopark! - Visit Mourne Mountains](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Best and Most Versatile (BMV)<sup>203</sup><b>Error! Bookmark not defined..</b></p> <p>A Green Future: Our 25 Year Plan to improve the Environment 2018 sets out the government’s 25-year plan to improve the health of the environment by using natural resources more sustainably and efficiently, including plans to protect the best agricultural land<sup>203</sup>. The Environmental Improvement Plan 2023 is the first revision of the 25YEP.</p>		<p>limitations on the agricultural use of a site for food production<sup>204</sup>.</p>	<p>1 identifies land with the highest potential flexibility of use and Class 7 is land of very limited agricultural value. The Scottish Government’s National Planning Policy provides continuing protection for agricultural land, as well as other important soil resources, such as peat<sup>205</sup>.</p> <p>as that of England and Wales, subdividing Grades 3 into A and B, with Grades 1, 2 and 3A being classed as BMV<sup>204</sup>.</p>

<sup>203</sup> Department for Environment, Food & Rural Affairs and The Rt Hon Michael Gove MP (2018) 25 Year Environment Plan. Available: [25 Year Environment Plan - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/728222/25-Year-Environment-Plan.pdf)

<sup>204</sup> Natural England (2021) Guide to assessing development proposals on agricultural land. Available: [Guide to assessing development proposals on agricultural land - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/944222/guide-to-assessing-development-proposals-on-agricultural-land.pdf)

<sup>205</sup> Scotland’s Soils (2017) National scale land capability for agriculture. Available: [National scale land capability for agriculture | Scotland's soils \(environment.gov.scot\)](https://www.environment.gov.scot/resources/publications/national-scale-land-capability-for-agriculture)

# Historic Environment

## Introduction to the baseline information and overview of interaction with the NPS

Historic environments refer to surviving physical remains of interactions between people and places through time, such as places of worship, former industrial assets, and battlefields. If these environments hold value for future generations, they are referred to as "heritage assets". Historic environments can be onshore or offshore, visible, buried or submerged.

Should the proposed Fusion Energy NPS enable development of new fusion energy infrastructure, there is the potential for this infrastructure to cause direct disturbance or loss of heritage assets. Furthermore, new infrastructure could have visual, noise or pollution impacts on the landscapes surrounding heritage assets.

Heritage sites that have globally important cultural or natural interest are designated as World Heritage Sites. There are 28 World Heritage Sites across the UK, which all require appropriate management and protection measures.

There are a multitude of other designations for historic environments in the UK. For buildings and monuments these designations include Scheduled Monuments, Listed Buildings and Conservation Areas, and Areas of Architectural Importance. The designations for parks and landscapes include Historic Parks, Registered Parks and Gardens, and Registered Historic Landscapes. In seascapes, Protected Wrecks designation is given to sites identified as being likely to contain the remains of an important vessel or its contents.

There are also wider frameworks such as Historic Landscape Characterisation and the register of Heritage at Risk. The former of which provides a method for identification of Historic Landscape Types. The later identifies assets that have been assessed and found to be at risk.

The aim of all of these designations is to protect the varied nature of historic environments across the UK.

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Historic Environment: World Heritage Sites	World Heritage Sites are designated to meet the UK’s commitments under the World Heritage Convention and the sites are designated for their globally important cultural or natural interest and require appropriate management and protection measures <sup>206</sup> .			
	The location of World Heritage Sites are shown in Appendix C.1. and C.2. for England and Wales respectively.			
	There are 18 World Heritage Sites in England <sup>207</sup> :  Blenheim Palace  Canterbury Cathedral, St Augustine’s Abbey, and St Martin’s Church  City of Bath (also included under “The Great Spa Towns of Europe”)  Cornwall and West Devon Mining Landscape  Derwent Valley Mills  Dorset and East Devon Coast	There are four World Heritage Sites in Wales <sup>208</sup> :  Blaenavon Industrial Landscape  Castles and Town Walls of King Edward in Gwynedd  Pontcysyllte Aqueduct and Canal  The Slate Landscape of Northwest Wales	There are five World Heritage Sites in Scotland <sup>209</sup> :  Heart of Neolithic Orkney  New Lanark  Old and New Towns of Edinburgh  St. Kilda  The Forth Bridge	There is one World Heritage Site in Northern Ireland <sup>210</sup> :  Giant’s Causeway and Causeway Coast

<sup>206</sup> UNESCO (2023) World Heritage Convention - United Kingdom of Great Britain and Northern Ireland. Available: <http://whc.unesco.org/en/statesparties/gb>

<sup>207</sup> UNESCO (2023) World Heritage Convention - United Kingdom of Great Britain and Northern Ireland. Available: <http://whc.unesco.org/en/statesparties/gb>

<sup>208</sup> UNESCO (2023) World Heritage Convention - United Kingdom of Great Britain and Northern Ireland. Available: <http://whc.unesco.org/en/statesparties/gb>

<sup>209</sup> UNESCO (2023) World Heritage Convention - United Kingdom of Great Britain and Northern Ireland. Available: <http://whc.unesco.org/en/statesparties/gb>

<sup>210</sup> UNESCO (2023) World Heritage Convention - United Kingdom of Great Britain and Northern Ireland. Available: <http://whc.unesco.org/en/statesparties/gb>



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Durham Castle and Cathedral</p> <p>Frontiers of the Roman Empire</p> <p>Ironbridge Gorge</p> <p>Jodrell Bank Observatory</p> <p>Maritime Greenwich</p> <p>Palace of Westminster and Westminster Abbey, including Saint Margaret's Church</p> <p>Royal Botanic Gardens, Kew</p> <p>Saltaire</p> <p>Stonehenge, Avebury and Associated Sites</p> <p>Studley Royal Park including the Ruins of Fountains Abbey</p> <p>The English Lake District</p> <p>Tower of London</p>			
	<p>Supporting Trend Data:</p>			

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>The first World Heritage Sites within the UK were designated in 1986. Sites can continue to be nominated, with the last site on the UK mainland being The Slate Landscape of Northwest Wales, designated in 2021. Of all the sites in the UK, none are placed on the List of World Heritage in Danger. The list presently comprises 56 sites in total worldwide. These are sites at which conditions are present to threaten the characteristics for which a site was placed on the World Heritage List<sup>211</sup>.</p>			
Historic Environment: Scheduled Monuments	<p>The purpose of scheduling is to help physically preserve selected ancient monuments of national importance, so that they can be handed on to future generations in situ and as near as possible in the form in which they have been passed down to us today.</p> <p>The condition of Scheduled Monuments is monitored as part of Historic England’s ‘Heritage at Risk’ programme. It is to be noted that the fact that a monument is not designated as a Scheduled Monument does not necessarily imply that it is not potentially of national importance.</p>			
	As of 2023, there are almost 20,000 Scheduled Monuments located throughout England <sup>212</sup> .	As of 2023, there are over 4,000 Scheduled Monuments located throughout Wales <sup>213</sup> .	As of 2023, there are approximately 8,000 Scheduled Monuments located throughout Scotland <sup>214</sup> .	As of 2023, there are over 1,900 Scheduled Monuments located throughout Northern Ireland <sup>215</sup> .
	<p>Supporting Trend Data:</p> <p>Applications for sites to be Scheduled can be made at any time and is an ongoing process. Since 2007 the number of Scheduled Monuments has increased by approximately 2,000 in England, 400 in Wales and 163 in Northern Ireland. Wales has an ongoing planned policy of enhancing the number of sites on the Schedule.</p>			

<sup>211</sup> UNESCO (2023) World Heritage Convention – List of World Heritage in Danger. Available: <https://whc.unesco.org/en/danger/>

<sup>212</sup> Historic England (2023) Scheduled Monuments. Available: <https://www.historicengland.org.uk/listing/what-is-designation/scheduled-monuments/>

<sup>213</sup> Welsh Government (2023) DataMapWales: Scheduled Monuments. Available: [https://datamap.gov.wales/layers/inspire-wg:Cadw\\_SAM](https://datamap.gov.wales/layers/inspire-wg:Cadw_SAM)

<sup>214</sup> Historic Environment Scotland (2020) Designations 2020 Onwards. Available: <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=e8d84fb0-7b16-49cc-a87a-abce00884e10>

<sup>215</sup> Department for Communities (2023) Historic Monuments. Available: <https://www.communities-ni.gov.uk/articles/scheduled-monuments>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
<p>Historic Environment: Listed Buildings and Conservation Areas</p>	<p>Conservation Areas are designated for their special architectural and historic interest. They were first designated in 1967 with now around 10,000 in England<sup>216</sup>, over 600 in Scotland<sup>217</sup>, approximately 60 in Northern Ireland<sup>218</sup> and over 500 in Wales<sup>219</sup>. There are many different types including:</p> <ul style="list-style-type: none"> <li>• the centres of our historic towns and cities</li> <li>• fishing and mining villages</li> <li>• 18th and 19th-century suburbs</li> <li>• model housing estates</li> <li>• country houses set in their historic parks</li> <li>• historic transport links and their environs, such as stretches of canal</li> </ul> <p>Most Conservation Areas are designated by the local planning authority and as such are best identified on a local basis.</p> <p>Listing of buildings is concerned with recognising buildings' special architectural and historic interest, with a view to protecting buildings, under the planning system for future generations to enjoy. All buildings built before 1700 which survive in anything like their original condition are listed, as are most of those built between 1700 and 1840. Particularly careful selection is required for buildings from the period after 1945. Usually, a building has to be over 30 years old to be eligible for listing<sup>220</sup>.</p> <p>There are three categories of listed building:</p> <ul style="list-style-type: none"> <li>• Grade I buildings are of exceptional interest, only 2.5% of listed buildings are Grade I</li> </ul>			

<sup>216</sup> Historic England (2023) What is a Conservation Area? Available: <https://historicengland.org.uk/listing/what-is-designation/local/conservation-areas/>

<sup>217</sup> Historic Environment Scotland (2023) Living in a conservation area. Available: <https://www.historicenvironment.scot/advice-and-support/your-property/owning-a-traditional-property/living-in-a-conservation-area/>

<sup>218</sup> Department for Infrastructure (2023) Conservation Areas Guides (A-Z list). Available: <https://www.infrastructure-ni.gov.uk/articles/conservation-area-guides-z-list>

<sup>219</sup> Welsh Government (2023) Conservation Areas. Available: <https://cadw.gov.wales/advice-support/placemaking/legislation-and-guidance/conservation-areas>

<sup>220</sup> Historic England (2021) Listed Buildings. Available: <https://historicengland.org.uk/listing/what-is-designation/listed-buildings/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<ul style="list-style-type: none"> <li>Grade II* buildings are particularly important buildings of more than special interest; 5.8% of listed buildings are Grade II*</li> <li>Grade II buildings are of special interest; 91.7% of all listed buildings are in this class and it is the most likely grade of listing for a home-owner.</li> </ul> <p>As noted by Historic England, the total number of listed buildings is unknown, but is estimated to be around 400,000 in England<sup>221</sup>. There are over 30,000 in Wales<sup>222</sup>, about 47,000 in Scotland<sup>223</sup> and over 8,900 in Northern Ireland<sup>224</sup>. Due to the numbers, listed buildings are best identified on a local basis.</p>			
Historic Environment:  Historic Battlefields	<p>The purpose of the Register of Historic Battlefields in England is to offer protection through the planning system and to promote a better understanding of their significance and public enjoyment. If the site of a battle is to merit registration it has to have been an engagement of national significance, and to be capable of close definition on the ground. In Scotland, Historic Battlefields are listed in the Inventory of Historic Battlefields. The Inventory of Historic Battlefields in Wales is a non-statutory Inventory which means there is no primary legislation enacted to protect entire battlefields.</p>			
	As of 2023, there are 47 Registered Battlefields within England <sup>225</sup> .	As of 2023, there are over 700 sites on the Inventory of Historic Battlefields in Wales <sup>226</sup> .	As of 2020, there are around 40 Historic Battlefields in Scotland <sup>227</sup> .	There is no formal register of Historic Battlefields in Northern Ireland.
	Supporting Trend Data:			

<sup>221</sup> Historic England (2023) Listed Buildings Identification and Extent. Available: <https://historicengland.org.uk/advice/hpg/has/listed-buildings/#:~:text=There%20are%20around%20400%2C000%20listed,list%20buildings%20are%20Grade%20I>

<sup>222</sup> Welsh Government (2023) DataMapWales: Listed Buildings. Available: [https://datamap.gov.wales/layers/inspire-wg:Cadw\\_ListedBuildings](https://datamap.gov.wales/layers/inspire-wg:Cadw_ListedBuildings)

<sup>223</sup> Historic Environment Scotland (2023) What is Listing? Available: [https://www.historicenvironment.scot/advice-and-support/listing-scheduling-and-designations/listed-buildings/what-is-listing/#listing-exclusions\\_tab](https://www.historicenvironment.scot/advice-and-support/listing-scheduling-and-designations/listed-buildings/what-is-listing/#listing-exclusions_tab)

<sup>224</sup> Department for Communities (2023) Listed Buildings – An Introduction. Available: <https://www.communities-ni.gov.uk/articles/listed-buildings>

<sup>225</sup> Historic England (2023) Registered Battlefields. Available: <https://www.historicengland.org.uk/listing/what-is-designation/registered-battlefields/>

<sup>226</sup> Cadw (2023) Historic Battlefields in Wales. Available: <https://cadw.gov.wales/advice-support/historic-assets/other-historic-assets/historic-battlefields-wales>

<sup>227</sup> Historic Environment Scotland (2020) Designations 2020 Onwards. Available: <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=e8d84fb0-7b16-49cc-a87a-abce00884e10>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Public consultation demonstrated strong public support for the recognition of the importance of Historic Battlefields in Wales and the inventory was only recently created following legislation introduced in 2016.			
Historic Environment:	The purpose of Registers of Historic Parks and Gardens in England is to encourage the protection of gardens, grounds and other open spaces which are of historic importance.			
Registered Parks and Gardens	<p>Historic Environment Scotland maintains the Inventory of Gardens and Designed Landscapes which identifies historic grounds and designed landscapes intentionally laid out for artistic effect.</p> <p>In Wales, Cadw maintains the Register of Parks and Gardens of Special Historic Interest.</p> <p>In Northern Ireland, the Department for Communities maintains the Register of Historic Parks, Gardens and Demesnes.</p> <p>Locations of Parks and Gardens are shown in Appendix C.1. and C.2. for England and Wales respectively.</p>			
	As of 2023, there are over 1,600 Registered Historic Parks and Gardens within England <sup>228</sup> .	As of 2023, there are nearly 400 sites on the Register of Parks and Gardens of Special Historic Interest in Wales <sup>229</sup> .	As of 2019, there are over 300 sites on the Inventory of Gardens and Designed Landscapes within Scotland <sup>230</sup> .	As of 2023, there are around 154 sites on the register of Historic Parks, Gardens and Demesnes in Northern Ireland. Additionally, a further 150 sites have been identified as having a high level of interest and are included as an appendix to the main Register as designated 'Supplementary' sites <sup>231</sup> .

<sup>228</sup> Historic England (2023) Registered Parks & Gardens. Available: <https://www.historicengland.org.uk/listing/what-is-designation/registered-parks-and-gardens/>

<sup>229</sup> Cadw (2023) Registered Historic Parks and Gardens. Available: <https://cadw.gov.wales/advice-support/placemaking/legislation-guidance/registered-historic-parks-and-gardens>

<sup>230</sup> Historic Environment Scotland (2019) Scotland's Inventory of Gardens and Designed Landscapes. Available: <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=7c365ace-e62d-46d2-8a10-a5f700a788f3>

<sup>231</sup> Department for Communities (2023) Historic Parks, Gardens and Demesnes. Available: <https://www.communities-ni.gov.uk/articles/historic-parks-gardens-and-demesnes>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Supporting trend data is not available.			
Historic Environment: Historic Landscape Characterisation	Historic landscape characterisation (HLC) can be used to help secure good quality, well designed and sustainable places. It is a method of identification and interpretation of the varying historic character within an area that looks beyond individual heritage assets as it bridges understanding of the whole landscape and townscape into repeating HLC Types <sup>232</sup> . HLCs are typically held by the relevant local Historic Environment Record in England <sup>233</sup> .			
Historic Environment: Areas of Archaeological Importance	The Ancient Monuments and Archaeological Areas Act 1979 allows the Government to designate as an area of archaeological importance any area which appears to merit treatment as such. In England there are five areas designated as areas of archaeological importance under the Ancient Monuments and Archaeological Areas Act 1979: the historic city centres of Canterbury, Chester, Exeter, Hereford and York <sup>234</sup> .			
Historic Environment: Protected Wrecks	The Protection of Wrecks Act (1973) <sup>235</sup> allows the Government to designate a wreck to prevent uncontrolled interference. Designated sites are identified as being likely to contain the remains of a vessel, or its contents, which are of historical, artistic or archaeological importance <sup>236</sup> .  Locations of Protected Wrecks are shown in Appendix C.1. and C.2. for England and Wales respectively.			
	There are 57 Protected Wreck sites in English waters as of 2023. The majority of	There are six Wrecks of Wales. These are primarily located around the north west	There are 18 Designated Wreck sites in Scottish waters. These are primarily	There is 1 Protected Wreck in Northern Irish waters, La

<sup>232</sup> Historic England (2023) Historic Landscape Characterisation. Available: <https://historicengland.org.uk/research/methods/characterisation/historic-landscape-characterisation/#Section4Text>

<sup>233</sup> Archaeology Data Service (2018) Historic Landscape Characterisation Available: <https://archaeologydataservice.ac.uk/archives/view/HLC/index.cfm>

<sup>234</sup> Historic England (2023) Areas of Archaeological Importance. Available: <https://historicengland.org.uk/advice/hpg/has/archaeologicalimportance/>

<sup>235</sup> UK Government (1973) Protection of Wrecks Act 1973. Available: <https://www.legislation.gov.uk/ukpga/1973/33>

<sup>236</sup> Historic England (2023) Protected Wreck Sites. Available: <https://www.historicengland.org.uk/advice/planning/consents/protected-wreck-sites/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	these are located along the south coast <sup>237</sup> .	and north coast, with one being located off Pembrokeshire in the south west <sup>238</sup> .	located on coastal areas in the north west <sup>239</sup> .	Girona, which is located on the North Antrim coast <sup>240</sup> .
	Supporting trend data is not available.			
Historic Environment: Heritage at Risk	The Heritage at Risk Register includes buildings, places of worship, monuments, parks and gardens, conservation areas, battlefields and wreck sites that are listed and have been assessed and found to be at risk in England <sup>241</sup> .			
Historic Environment: Registered Historic Landscapes	To recognise the value of historic landscapes and to raise awareness of their importance, Cadw has compiled a register of landscapes of historic interest in Wales. Cadw have identified 58 landscapes of outstanding or special historic interest, which are considered to be the best examples of different types of historic landscapes in Wales <sup>242</sup> .			
Historic Environment: Historic Coast	Historic England have developed a series of Historic Seascape Characterisation maps to help describe those historic cultural influences which shape present seascape perceptions across all of England's marine and coastal land. The character assessment and its supporting detail are mapped using a Geographical Information System (GIS) and documented in accompanying texts, using non-specialist language to assist communication <sup>243</sup> .			

<sup>237</sup> Historic England (2023) Protected Wreck Sites. Available: <https://www.historicengland.org.uk/advice/planning/consents/protected-wreck-sites/>

<sup>238</sup> Cadw (2023) Marine historic environment. Available: <https://cadw.gov.wales/advice-support/placemaking/legislation-and-guidance/marine-historic-environment>

<sup>239</sup> Marine Scotland Information (2023) Wrecks (HES). Available: <https://marinescotland.atkinsgeospatial.com/nmpi/default.aspx?layers=1469>

<sup>240</sup> Department for Communities (2023) Shipwrecks. Available: <https://www.communities-ni.gov.uk/articles/shipwrecks-0>

<sup>241</sup> Historic England (2023) Search the Heritage at Risk Register. Available: <https://historicengland.org.uk/advice/heritage-at-risk/search-register/>

<sup>242</sup> Cadw (2023) Registered Historic Landscapes. Available: <https://cadw.gov.wales/advice-support/historic-assets/conservation-areas-and-other-historic-assets/other-historic-assets-0>

<sup>243</sup> [Historic Seascapes: Understanding Whole Areas of Marine Heritage | Historic England](#)

# Landscape

## Introduction to the baseline information and overview of interaction with the NPS

Landscapes can encompass any combination of cultural heritage, geological, wildlife and scenic features. The preservation of the high value landscapes ensures that the social and health benefits they offer are maintained for future generations.

The proposed Fusion Energy NPS may enable development of new fusion energy infrastructure. This new infrastructure would have a variety of impacts on the landscape in which it is built, predominantly visual impacts of new buildings/infrastructure and operational outputs such as visible steam plumes. Visual impacts would be present through construction, operation and decommissioning activities.

There are a variety of methods by which high value landscapes are preserved in the UK. Across England, Wales and Scotland there are 15 National Parks. The purpose of these parks is to conserve and enhance some of the most important landscapes within the countryside, while promoting public enjoyment of them.

The Areas of Outstanding Natural Beauty (AONBs) designation is primarily aimed at conserving natural beauty. Across England, Wales and Northern Ireland there are 46 AONBs. In Scotland, there are 40 National Scenic Areas. This designation is broadly equivalent to AONB and is awarded by Scottish Ministers to landscapes deserving of special protection in the nation's interest.

For coasts in England and Wales there is a further possible designation of Heritage Coast, which seeks to aid local authorities in planning and managing their coastlines. In England and Wales there are 46 Heritage Coasts.

Beyond these designations, there are several National Character Area, National Seascape Character Area or Landscape Character Area assessments and profiles across the UK as well as Local Landscape Character Assessments and Local Landscape Sensitivity Assessments at local level. The purpose of these assessments and profiles is to provide a guidance framework for communities to use when making decisions that impact their local landscapes or seascapes.



## Appendix B – AoS Scoping Report for NPS EN-8

Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Landscape: National Parks	<p>In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them.</p> <p>The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales. In addition, the Environment Act 1995 requires relevant authorities to have regard for nature conservation. Special Acts of Parliament may be used to establish statutory authorities for their management (e.g. the Broads Authority was set up through the Norfolk and Suffolk Broads Act 1988).</p> <p>The National Parks (Scotland) Act 2000 enabled the establishment of National Parks in Scotland. In addition to the two purposes described above, National Parks in Scotland are designated to promote the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. These purposes have equal weight and are to be pursued collectively unless conservation interests are threatened. Where these aims conflict, the relevant National Park authority must prioritise the first of these aims<sup>244</sup>.</p> <p>Note that every National Park is required to prepare and publish a National Park Management Plan which formulates its policy for the management of the relevant National Park and for the carrying out of its functions in relation to that National Park and note needs to be made of these in relation to any National Park that may be affected.</p> <p>Locations of National Parks within England and Wales are shown in Appendix C.1. and C.2. for England and Wales respectively.</p>			
	There are 10 National Parks in England <sup>245</sup> : Broads	There are three National Parks in Wales <sup>246</sup> : Brecon Beacons	There are two National Parks in Scotland <sup>247</sup> : Cairngorms	There are currently no National Parks within Northern Ireland.

<sup>244</sup> NatureScot (2023) National Park. Available: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/national-park>

<sup>245</sup> National Parks UK (2023) Your National Parks. Available: <https://www.nationalparks.uk/parks/>

<sup>246</sup> National Parks UK (2023) Your National Parks. Available: <https://www.nationalparks.uk/parks/>

<sup>247</sup> National Parks UK (2023) Your National Parks. Available: <https://www.nationalparks.uk/parks/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Dartmoor</p> <p>Exmoor</p> <p>Lake District</p> <p>New Forest</p> <p>North York Moors</p> <p>Northumberland</p> <p>Peak District</p> <p>South Downs</p> <p>Yorkshire Dales</p>	<p>Pembrokeshire Coast</p> <p>Snowdonia</p>	<p>Loch Lomond and the Trossachs</p>	
	<p>Supporting Trend Data:</p> <p>The designation of National Parks is an ongoing process with two being added in England since 2008 (South Downs and Broads). Within Northern Ireland there are proposals to create a National Park within the Mourne Mountains<sup>248</sup>.</p>			
<p>Landscape:</p> <p>Areas of Outstanding Natural Beauty (AONBs) and</p>	<p>In England, Wales and Northern Ireland, the primary purpose of the AONB designation is to conserve natural beauty – which by statute includes wildlife, physiographic features and cultural heritage as well as the more conventional concepts of landscape and scenery. Account is taken of the need to safeguard agriculture, forestry and other rural industries and the economic and social needs of local communities. AONBs have equivalent status to National Parks as far as conservation is concerned.</p>			

<sup>248</sup> Northern Ireland Assembly (2008) Potential Impacts of National Parks Designation with Particular Reference to The Proposed Mournes National Park. Available: [http://archive.niassembly.gov.uk/environment/2007mandate/Research/0801National%20Parks%20Mournes\\_.pdf](http://archive.niassembly.gov.uk/environment/2007mandate/Research/0801National%20Parks%20Mournes_.pdf)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
National Scenic Areas	<p>AONBs are designated under the National Parks and Access to the Countryside Act 1949, amended in the Environment Act 1995. The Countryside and Rights of Way Act 2000 clarifies the procedure and purpose of designating AONBs<sup>249</sup>.</p> <p>Originally designated in Northern Ireland under the Amenity Lands Act (Northern Ireland) 1965, AONBs are now designated under the Nature Conservation and Amenity Lands Order (Northern Ireland) 1985<sup>250</sup>.</p> <p>National Scenic Areas (NSAs) are designated by Scottish Ministers as the best of Scotland's landscapes, deserving special protection in the nation's interest. Scottish Ministers in 2010 confirmed 40 NSAs under the provisions of The Town and Country Planning (Scotland) Act 1997 (as amended in 2006) (s.263)<sup>251</sup>. NSAs are broadly equivalent to the AONBs found in England, Wales and Northern Ireland.</p> <p>Locations of AONBs are shown in Appendix C.1. and C.2. for England and Wales respectively.</p>			
	<p>There are 34 AONBs located within England :</p> <p>NB: the Wye Valley is on the England / Wales border.</p> <p>Arnside &amp; Silverdale</p> <p>Blackdown Hills</p> <p>Cannock Chase</p>	<p>There are four AONBs within Wales<sup>252</sup>:</p> <p>Anglesey</p> <p>Clwydian Range and Dee Valley</p> <p>Gower</p> <p>Llyn</p>	<p>There are 40 National Scenic Areas within Scotland<sup>253</sup>:</p> <p>Deeside &amp; Lochnagar</p> <p>Jura</p> <p>Knapdale</p> <p>Kyles of Bute</p>	<p>There are eight AONBs within Northern Ireland<sup>254</sup>:</p> <p>Antrim Coast and Glens</p> <p>Binevenagh</p> <p>Causeway Coast</p> <p>Lagan Valley</p>

<sup>249</sup> Natural England (2018) Areas of outstanding natural beauty (AONBs): designation and management. Available: <https://www.gov.uk/guidance/areas-of-outstanding-natural-beauty-aonbs-designation-and-management>

<sup>250</sup> Department of Agriculture, Environment and Rural Affairs Northern Ireland (2023) Council for Nature Conservation and the Countryside. Available: <https://www.daera-ni.gov.uk/articles/council-nature-conservation-and-countryside>

<sup>251</sup> NatureScot (2023) National Scenic Areas: background, guidance and policy. Available: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/national-scenic-areas/national-scenic-areas-background-guidance>

<sup>252</sup> The National Association of Areas of Outstanding Natural Beauty (2023) Areas of Outstanding Natural Beauty. Available: <http://www.landscapesforlife.org.uk/>

<sup>253</sup> NatureScot (2020) National Scenic Areas of Scotland: maps. Available: <https://www.gov.scot/publications/national-scenic-areas-of-scotland-maps/>

<sup>254</sup> The National Association of Areas of Outstanding Natural Beauty (2023) Areas of Outstanding Natural Beauty. Available: <http://www.landscapesforlife.org.uk/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Chichester Harbour		Loch na Keal, Isle of Mull	Mourne
	Chilterns		Lynn of Lorn	Ring of Gullion
	Cornwall		Scarba, Lunga and the Garvellachs	Sperrin
	Cotswolds		Loch Lomond	Strangford Lough
	Cranborne Chase and West Wiltshire Downs		East Stewartry Coast	
	Dedham Vale		Fleet Valley	
	Dorset		Nith Estuary	
	East Devon		Assynt-Coigach	
	Forest of Bowland		Dornoch Firth	
	High Weald		Glen Affric	
	Howardian Hills		Glen Strathfarrar	
	Isle of Wight		Kintail	
	Isles of Scilly		Knoydart	
	Kent Downs		Kyle of Tongue	
	Lincolnshire Wolds		Loch Shiel	
	Malvern Hills		Morar, Moidart and Ardnamurchan	
	Mendip Hills			

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Nidderdale</p> <p>Norfolk Coast</p> <p>North Devon</p> <p>North Pennines</p> <p>North Wessex Downs</p> <p>Northumberland Coast</p> <p>Quantock Hills</p> <p>Shropshire Hills</p> <p>Solway Coast</p> <p>South Devon</p> <p>Suffolk Coast and Heaths</p> <p>Surrey Hills</p> <p>Tamar Valley</p> <p>Wye Valley (England and Wales)</p>		<p>North-West Sutherland</p> <p>Cuillin Hills</p> <p>Small Isles</p> <p>Trotternish</p> <p>Wester Ross</p> <p>Cairngorm Mountains</p> <p>Ben Nevis Glen Coe</p> <p>North Arran</p> <p>Hoy &amp; West Mainland</p> <p>Loch Tummel</p> <p>River Earn (Comrie to St. Fillans)</p> <p>River Tay (Dunkeld)</p> <p>Loch Rannoch &amp; Glen Lyon</p> <p>Eildon and Leaderfoot</p> <p>Upper Tweeddale</p> <p>Shetland</p> <p>The Trossachs</p>	

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
			<p>South Lewis, Harris and North Uist</p> <p>South Uist Machair</p> <p>St. Kilda</p>	
	Supporting trend data is not available.			
<p>Landscape:</p> <p>Heritage Coasts (England and Wales)</p>	<p>A Heritage Coast is a section of coast exceeding one mile in length that is of exceptionally fine scenic quality, substantially undeveloped and containing features of special significance and interest. The designation is agreed between local authorities and (in England) Natural England or (in Wales) Natural Resources Wales, as an aid to local authorities in planning and managing their coastlines<sup>255</sup>.</p> <p>The locations of Heritage Coasts are shown in Appendix C.1. and C.2. for England and Wales respectively.</p>			
	<p>There are 32 Heritage Coasts located around England<sup>256</sup>:</p> <p>Sussex</p> <p>Pentire - Widemouth</p> <p>Isles Of Scilly</p>	<p>There are 14 Heritage Coasts located around Wales<sup>257</sup>:</p> <p>Aberffraw Bay</p> <p>Ceredigion</p> <p>Dinas Head</p>	<p>There are no areas of Heritage Coast in Scotland.</p>	<p>There are no areas of Heritage Coast in Northern Ireland.</p>

<sup>255</sup> Natural England (2015) Heritage coasts: definition, purpose and Natural England's role. Available: <https://www.gov.uk/government/publications/heritage-coasts-protecting-undeveloped-coast/heritage-coasts-definition-purpose-and-natural-englands-role>

<sup>256</sup> Natural England (2006) Review and evaluation of heritage coasts in England. Available: <https://publications.naturalengland.org.uk/publication/4594438590431232?category=56001>

<sup>257</sup> Welsh Government (2023) Heritage Coasts: Natural Resources Wales. Available: [https://datamap.gov.wales/maps/new?layer=inspire-nrw:NRW\\_HERITAGE\\_COAST#/](https://datamap.gov.wales/maps/new?layer=inspire-nrw:NRW_HERITAGE_COAST#/)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Hartland (Cornwall)	Glamorgan		
	North Norfolk	Gower		
	South Devon	Great Orme		
	Suffolk	Holyhead Mountain		
	Spurn	Llŷn		
	N Yorks & Cleveland Hamstead	Marloes and Dale		
	Purbeck	North Anglesey		
	Tennyson	St Bride's Bay		
	West Dorset	St David's Peninsula		
	Flamborough Head	St Dogmaels and Moylgrove		
	East Devon	South Pembrokeshire		
	Hartland (Devon)			
	Rame Head			
	Lundy			
	Gribbin Head			
	Exmoor			
	The Roseland			

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	St Bees Head The Lizard Northumberland Penwith North Devon Godrevy – Portreath South Foreland St Agnes Dover-Folkestone Trevoise Head Durham			
	Supporting trend data is not available.			
Landscape: Landscape Character Areas	Landscape Character Areas or Landscape Character Assessments encompass various aspects of landscape, biodiversity, heritage, cultural and geological features. These are non-statutory and used as an aid in the planning process and for decision making.			
	Natural England has produced National Character Area Profiles (NCAs) <sup>258</sup> which	Natural Resources Wales uses the LANDMAP tool to evaluate landscape	The Landscape Character Assessment in Scotland over 300 distinct landscape	The Northern Ireland Landscape Character Assessment subdivides the

<sup>258</sup> Natural England (2014) National Character Area profiles: data for local decision making. Available: <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making>



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>divide England into 159 distinct natural areas. Each is defined by a unique combination of landscape, biodiversity, geodiversity, history, and cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries. They can be used for planning and development.</p>	<p>characteristics. This includes geological landscape, landscape habitats, visual and sensory, historic landscape and cultural landscape<sup>259</sup>. Although no specific defined Landscape Character Areas are identified, LANDMAP is used to inform planning, policy and strategies.</p>	<p>character types, which are aggregated into 53 types for a strategic overview. These are used to inform development plans and decision making on proposed developments<sup>260</sup>.</p>	<p>countryside into 130 Landscape Character Areas, each based upon local patterns of geology, landform, land use, cultural and ecological features<sup>261</sup>.</p>
	Supporting trend data is not available.			
<p>Landscape: National Character Area</p>	<p>National Character Areas are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries, making them a good decision-making framework for the natural environment. National Character Area profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain inform the delivery of nature improvement areas and encourage broader partnership working through local nature partnerships.</p> <p>National Seascape Character Areas are also defined to support decision making through the marine planning process. Visual, cultural, historical and archaeological impacts are considered for all coastal areas alongside wider social and economic impacts of development or activity on coastal landscapes and seascapes.</p>			

<sup>259</sup> Natural Resources Wales (2023) LANDMAP – the Welsh landscape baseline. Available: <https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/landmap-the-welsh-landscape-baseline/?lang=en>

<sup>260</sup> NatureScot (2019) Landscape Character Assessment in Scotland. Available: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/landscape-character-assessment-scotland>

<sup>261</sup> Department of Agriculture, Environment and Rural Affairs (2023) Landscape Character of Northern Ireland. Available: <https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>See text for Landscape Character Areas</p> <p>In England four Seascope Character Assessments are published for the north east, north west, south east and south west marine plan areas and comprise marine character areas profiles<sup>262</sup>.</p>	<p>Wales defines 48 National Landscape Character Areas (NLCAs) which highlight what distinguishes one landscape from another, with reference to their regionally distinct natural, cultural and perceptual characteristics<sup>263</sup>.</p> <p>Wales identifies National Marine Character Areas which highlight the key natural, cultural and perceptual influences that make the character of each seascope distinct and unique. Wales inshore waters are divided into 29 Marine Character Areas<sup>264</sup>.</p>	<p>Scotland has a digital map-based national Landscape Character Assessment which shows Landscape Character Types and produced a series of 30 regional LCA studies which identify, map and describe the landscape character of all of Scotland<sup>265</sup>.</p> <p>Coastal Character Assessment is defined in Scotland as the process of identifying and describing Scotland's diverse coasts. Thirteen National Coastal Character Types have been identified, most recently the Orkney and north Caithness characterisation added in 2016<sup>266</sup>.</p>	<p>Northern Ireland provides a strategic overview of the landscape and subdivides the countryside into 26 Regional Landscape Character Areas based upon information on people and place and the combinations of nature, culture and perception which make each part of Northern Ireland unique<sup>267</sup>.</p> <p>NI defines 24 different regional seascope character areas around the coast which describe the key features and characteristics of each seascope character area<sup>268</sup>.</p>

<sup>262</sup> UK Government (2018) Seascope Assessments for North East, North West, South East and South West Marine Plan Areas. Available:

<https://www.gov.uk/government/publications/seascope-assessments-for-north-east-north-west-south-east-south-west-marine-plan-areas-mmo1134>

<sup>263</sup> Natural Resources Wales (2019) National Landscape Character Areas (NLCA). Available: <https://naturalresources.wales/evidence-and-data/maps/nlca/?lang=en>

<sup>264</sup> Natural Resources Wales (2022) Marine Character Areas. Available: <https://naturalresources.wales/evidence-and-data/maps/marine-character-areas/?lang=en>

<sup>265</sup> NatureScot (2019) Landscape Character Assessment in Scotland. Available: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/landscape-character-assessment-scotland>

<sup>266</sup> NatureScot (2023) Coastal Character Assessment. Available: <https://www.nature.scot/professional-advice/landscape/coastal-character-assessment#:~:text=Coastal%20Character%20Assessment%20identifies%2C%20describes,plans%20and%20specific%20development%20proposals>

<sup>267</sup> DAERA (2023) Landscape Character of Northern Ireland. Available: <https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland>

<sup>268</sup> DAERA (2023) Seascope Character Areas. Available: <https://www.daera-ni.gov.uk/articles/seascope-character-areas>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Supporting trend data is not available.			
Landscape: Seascape Character Areas	Seascape Character Areas highlight the key natural, cultural and perceptual influences that make the character of each seascape distinct and unique. Seascape character sets out links between people and their cultures, and places and their natural resources. As such, seascape character is an integrating concept and an essential tool in natural resource planning <sup>269</sup> .			
	In 2018, the Marine Management Organisation required character assessments for the north east, north west, south east and south west marine plan areas to support decision making through the marine planning process. Fifty-three Marine Character Areas have been identified for England <sup>270</sup> .	In 2014, Welsh Government and Natural Resources Wales undertook a Seascape Assessment for the Welsh Inshore Waters. Twenty-nine Marine Character Areas have been identified for Wales <sup>269</sup> .	Thirteen National Coastal Character Types have been identified in Scotland <sup>271</sup> .	In 2013, the Northern Ireland Environment Agency undertook a Regional Seascape Character Assessment of Northern Ireland. Twenty-four different regional seascape character areas have been identified round the coast of Northern Ireland <sup>272</sup> .
Landscape:	The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping some land permanently open around urban areas <sup>273</sup> .			

<sup>269</sup> Natural Resources Wales (2023) Marine character areas. Available: [Natural Resources Wales / Marine Character Areas](#)

<sup>270</sup> Marine Management Organisation (2018) Seascape assessments for North East, North West, South East, South West marine plan areas (MMO1134). Available: [Seascape assessments for North East, North West, South East, South West marine plan areas \(MMO1134\) - GOV.UK \(www.gov.uk\)](#)

<sup>271</sup> NatureScot (2023) Coastal character assessment. Available: [Coastal Character Assessment | NatureScot](#)

<sup>272</sup> Northern Ireland Environment Agency and Department of Environment (2014) Northern Ireland Regional Seascape Character Assessment. Available: [Research and Development Series - 14/01 Northern Ireland Regional Seascape Character Assessment - Part 1 \(daera-ni.gov.uk\)](#)

<sup>273</sup> Department for Levelling Up, Housing and Communities (2012) National planning policy framework. Available: [National Planning Policy Framework - 13. Protecting Green Belt land - Guidance - GOV.UK \(www.gov.uk\)](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Green Belt	<p>England had around 16,382 km<sup>2</sup> of Green Belt land at the end of March 2022, covering 12.6% of England's land area. The Green Belt is clustered around 15 urban cores, the largest of which are London (5,062 km<sup>2</sup>), Merseyside and Greater Manchester (2,489 km<sup>2</sup>), and South and West Yorkshire (including Sheffield, Leeds and Bradford, 2,270 km<sup>2</sup>)<sup>274</sup>.</p>	<p>As of 2018, one Green Belt has been designated in Wales between Newport and Cardiff. Planning Policy Wales (Edition 5) 2012 (PPW) sets the context for managing urban form in Wales by means of Green Belts and Green Wedges. Land within a Green Belt should be protected for a longer period than the current development plan period, whereas Green Wedge policies should be reviewed as part of the development plan review process. Land to the north of Cardiff and land around Swansea are designated as Green Wedges. <sup>275</sup></p>	<p>As of 2018, 13 Green Belts have been designated in Scotland<sup>275</sup>.</p>	<p>As of 2018, Northern Ireland contained 30 Green Belts<sup>275</sup>.</p>
<p>Many local authorities are in the process of carrying out Green Belt reviews as part of their Local Plan or local plan review preparation. These are likely to be concluded within the next few years, allowing the local authorities to set in place policies to release Green Belt land over the next 25-30 years, where 'exceptional circumstances' can be demonstrated.</p>				

<sup>274</sup> House of Commons (2023) Green Belt. Available: [SN00934.pdf \(parliament.uk\)](#)

<sup>275</sup> Landscape Institute (2018) Green Belt Policy. Available: [li-green-belt-briefing-apr-2018.pdf \(windows.net\)](#)

# Communities – Population, Employment and Viability

## Introduction to the baseline information and overview of interaction with the NPS

Consideration of the demographics of the UK population is necessary when exploring opportunities for new fusion energy infrastructure for two key reasons. First, building, operating and decommissioning fusion energy infrastructure for some types of fusion power plants will require a large workforce of skilled workers and extended supply chain but must have regard for proximity to large population centres. Secondly, secure, affordable and low carbon power provided by fusion power plants is considered by government to be essential for a strong UK economy that supports creation of jobs.

The demographics considered here are overall population growth and age structure, location of major population centres and economic activity rates.

Overall UK population was 5.9% higher in mid-2022 when compared with mid-2010, with England's population growing the most (7.5%) over this period and Wales's the least (2.2%). The densest area of population in England is generally the south east, in Wales is the south coast, in Scotland is around Glasgow and Edinburgh and in Northern Ireland is around Belfast and Londonderry.

The proportion of the population considered to be of "working age" (between 15-64) in mid-2021 varied between 62.1% in Wales and 64.8% Scotland. As of March 2023, the unemployment rates varied between 2.4% in Northern Ireland to 4.8% in Wales.

Economic Activity Rates is a measure to incorporate several demographic factors previously discussed, it is a measure of people, who are economically active, expressed as a percentage of all people aged 16-64. The Economic Activity Rates as of March 2023 varied from 74.2% in Northern Ireland up to 79.6% in England. Taking the UK as a whole, the economic activity rates have not varied significantly since 1992.

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Communities – Population, Employment, and Viability:	The population in the UK is measured through the Census. This provides an estimate of the overall population the UK and its distribution within countries and regions. The last Census was undertaken in 2021, although this was delayed to 2022 in Scotland because of the Covid-19 pandemic <sup>276</sup> . The Office for National Statistics (ONS) also provides mid-year population estimates which provide annual and more recent data.			
Population	The population of England in mid-2021 was 56,536,419 which accounts for 84% of the UK's population <sup>277</sup> .	The population of Wales in mid-2021 was 3,105,410 which accounts for 5% of the UK's population <sup>278</sup> .	The population of Scotland in mid-2021 was 5,479,900 which accounts for 8% of the UK's population <sup>279</sup> .	The population of Northern Ireland in June 2019 was 1,904,563 which accounts for 3% of the UK's population <sup>280</sup> .
	Supporting Trend Data:			

<sup>276</sup> Office for National Statistics (2022) Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2021. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>277</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>278</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>279</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>280</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	The UK population at mid-2021 was estimated to be 5.9% greater than the population in mid-2011. Over these 10 years, the population of England increased at the highest rate (6.5%); with Northern Ireland increasing by 5.0%, Scotland by 3.4% and Wales by 1.4% over the same 10 year period <sup>281</sup> .			
Communities – Population, Employment, and Viability:	The densest areas of population within the UK are within towns and cities.			
The location of major settlements and areas of population.	The south east of England, in particular London and the surrounding areas are highly populated. Large urban areas are located along the south coast, including Brighton, Southampton, Portsmouth and Bournemouth. The midlands and north west are also locations of large urban areas, including Birmingham, Leicester, Nottingham, Greater Manchester and Liverpool. The east, north east and south west of England contain fewer major settlements, however large urban areas are located in these regions, including Newcastle,	The most populated area of Wales is the south coast, where the large urban areas of Cardiff, Newport, Bridgend and Swansea are located. The north coast has fewer major urban settlements, however areas of population are present in Rhyl, Colwyn Bay and Bangor. Central and western Wales have smaller towns and villages distributed throughout the regions.  (GIS Mapping)	The largest settlements in Scotland are Glasgow and Edinburgh, both of which are located in the south of the country. The east coast has several areas of population including Aberdeen, Inverness and Dundee. The highland areas and north and west coasts of Scotland are comparatively sparsely populated.  (GIS Mapping)	The major settlements in Northern Ireland are Belfast to the east and Londonderry to the north west. The area surrounding Belfast is particularly densely populated, with smaller urban areas including Bangor, Lisburn and Carrickfergus located in close proximity to Belfast. Smaller towns and villages are distributed through the rest of the country.  (GIS Mapping)

<sup>281</sup> Office for National Statistics (2022) Population estimated for the UK, England, Wales, Scotland and Northern Ireland: mid-2021. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2021>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	Sunderland, Leeds and Bristol.  (GIS Mapping)			
	Supporting trend data is not available.			
Communities – Population, Employment, and Viability:	Using the 2021 Census, the Office for National Statistics compared the age structures of each of the UK countries. Mid-year population estimates provide annual and more recent data. Below population estimates are shown in three categories: 0-14, 15-64 (i.e. working age) and 65+.			
Age Structure – Working age population	In mid-2021, in England, the estimated percentage of the population in each age group was <sup>282</sup> :	In mid-2021, in Wales, the estimated percentage of the	In mid-2021, in Scotland, the estimated percentage of	In mid-2021, in Northern Ireland, the estimated percentage of the

<sup>282</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	0-14: 17.4% 15-64: 64.1% 65+: 18.5%	population in each age group was <sup>283</sup> : 0-14: 16.5% 15-64: 62.1% 65+: 21.4%	the population in each age group was <sup>284</sup> : 0-14: 15.6% 15-64: 64.8% 65+: 19.6%	population in each age group was <sup>285</sup> : 0-14: 19.1% 15-64: 63.6% 65+: 17.3%
	Supporting Trend Data:  In mid-2021, there were 12.5 million people aged 65 years and over (18.7%) and 2.5% were aged 85 years and over <sup>286</sup> . The median age in the UK changed from 39.6 to 40.7 between mid-2011 and mid-2021. The increase in median age over this period was greatest in Northern Ireland, where median age increased by 2.4 years (from 37.4 to 39.8) <sup>287</sup> .			
Communities – Population,	The definition of unemployed people within the UK is specified by the International Labour Organisation. This defines unemployed people as being without a job, having been actively seeking work in the past four weeks and			

<sup>283</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>284</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>285</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>286</sup> Office of National Statistics (2022) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

<sup>287</sup> Office of National Statistics (2022) Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2021. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Employment, and Viability:	are available to start work in the next two weeks, or people who are out of work, have found a job and are waiting to start it in the next two weeks <sup>288</sup> .			
Unemployment	As of March 2023, the unemployment rate in England was 3.8% <sup>289</sup> .	As of March 2023, the unemployment rate in Wales was 4.8% <sup>290</sup> .	As of March 2023, the unemployment rate in Scotland was 3.1% <sup>291</sup> .	As of March 2023, the unemployment rate in Northern Ireland was 2.4% <sup>292</sup> .
Supporting Trend Data:				
<p>The unemployment rate has fluctuated in the UK since 1992. A general decrease in unemployment rates can be seen throughout the UK since the period of economic recession between 2009 and 2012, however this is largely dependent on economic performance.</p> <p>Since the coronavirus pandemic, unemployment rates have begun to increase. However, as this is still ongoing and is seen as temporary, there is still some uncertainty about the accuracy of this data and the effects on unemployment that will be present in the long-term.</p>				
This is a measure of people, who are economically active, expressed as a percentage of all people (aged 16-64).				

<sup>288</sup> Office for National Statistics (2020) A guide to labour market statistics. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/aguidetolabourmarketstatistics#unemployment>

<sup>289</sup> Office for National Statistics (2023) LFS: ILO unemployment rate: England: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/timeseries/ycnl/lms>

<sup>290</sup> Office for National Statistics (2023) LFS: ILO unemployment rate: Wales: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/timeseries/ycnm/lms>

<sup>291</sup> Office for National Statistics (2023) LFS: ILO unemployment rate: Scotland: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/timeseries/ycnn/lms>

<sup>292</sup> Office for National Statistics (2023) LFS: ILO unemployment rate: Northern Ireland: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/timeseries/zsfb/lms>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Communities – Population, Employment, and Viability:	As of March 2023, the economic activity rate in England was 79.6% <sup>293</sup> .	As of March 2023, the economic activity rate in Wales was 75.6% <sup>294</sup> .	As of March 2023, the economic activity rate in Scotland was 77.1% <sup>295</sup> .	As of March 2023, the economic activity rate in Northern Ireland was 74.2% <sup>296</sup> .
Economic Activity Rates	Supporting Trend Data: Economic activity rates in the UK have not varied significantly since 1992.			

<sup>293</sup> Office for National Statistics (2023) LFS: Economic activity rate: England: Aged 16-64: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/lf3l/lms>

<sup>294</sup> Office for National Statistics (2023) LFS: Economic activity rate: Wales: Aged 16-64: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/lf3m/lms>

<sup>295</sup> Office for National Statistics (20213) LFS: Economic activity rate: Scotland: Aged 16-64: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/lf3n/lms>

<sup>296</sup> Office for National Statistics (2023) LFS: Economic activity rate: Northern Ireland: Aged 16-64: All: %: SA. Available:

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/lf5y/lms>

# Communities – Supporting Infrastructure

## Introduction to the baseline information and overview of interaction with the NPS

Consideration of the UK's existing and planned transport network is essential when exploring opportunities for new fusion energy infrastructure. This is because during the construction, operation and decommissioning of some types of fusion power plants, materials will need to be brought to the site and waste materials removed from site. Further to this, a large workforce will need to be able to access the site. Adequate transport links are particularly important during construction, as traditionally very large components (such as the structures for the vacuum vessel and its surrounding structures and systems) are required to be transported to site.

The UK transport links considered here are major airports, ports, road network and rail network. It is noted that smaller transport infrastructure has not been listed here and may be suitable for use by fusion power plants.

Across the UK, typically the rail networks are centred around major cities and some towns, while rural and coastal areas are less well served by rail. The following areas are generally poorly served by rail: remote, rural and coastal areas of England, the far north western regions of Scotland, the central and western regions of Wales and the central and south west regions of Northern Ireland.

Similarly for the road network, all major UK cities are served by motorways and A roads. Areas in England not served by these connections are generally rural and in areas of low population, highland areas and the west coast of Scotland and central and upland regions of Wales. It is considered unlikely that new strategic road networks will be developed.

There are 26 airports in the UK that had over 500,000 terminal passengers in 2022. The majority of these are located in England and Scotland, with Wales and Northern Ireland having one and two respectively. It is not anticipated that new major airports will be developed, although the capacity of some existing sites may be expanded.

There are 33 ports in the UK that handled over two million tonnes of freight in 2021. The majority of these ports are located in England and Scotland. It is considered unlikely that new strategic port development will take place.

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Communities – Supporting Infrastructure: Locations of Strategic Rail Links	<p>The strategic rail network in England is well developed. All major cities are connected as are the majority of significant towns. Extensive rail networks are located around large conurbations such as London and Greater Manchester, with the major cities in the midlands being well connected. Remote, rural and coastal areas are less well served by rail.</p> <p>(GIS mapping)</p>	<p>Both the north and south coast of Wales are well connected by rail, linking the major coastal cities such as Cardiff and Swansea in the south, and Llandudno, Bangor and Holyhead in the north. Few major branch lines extend from these links, and the central and western regions of Wales are comparatively poorly served by rail.</p> <p>(GIS mapping)</p>	<p>The larger cities of Scotland are located in the south of the country and as such, this is where the majority of the strategic rail network is focused. This extends up the east coast to the cities of Dundee, Aberdeen and Inverness. The far north and western regions of Scotland are far less served by rail. This is largely as a result of fewer major urban centres being located in these areas.</p> <p>(GIS mapping)</p>	<p>The strategic rail network in Northern Ireland is concentrated in the east of the country around Belfast and the surrounding cities of Lisburn, Antrim, Bangor and Carrickfergus. The network extends to the north and north west, with Londonderry being the most westerly point. The central and south west regions are poorly served by rail.</p> <p>(GIS mapping)</p>
	<p>Supporting Trend Data:</p> <p>Major new strategic rail projects currently being undertaken in the UK. Upgrades to lines and electrification projects are continually taking place.</p>			
Communities – Supporting Infrastructure: Locations of strategic road networks	<p>The locations of motorways and primary roads are shown in Appendix C.1. and C.2. for England and Wales.</p>			
	<p>England is covered by a comprehensive network of motorways and A roads. All major cities are served by motorways, whilst towns and larger villages are connected by A routes. Areas not</p>	<p>The south and north coast of Wales are the only areas with motorway connections. The remaining regions are serviced by the A road network which links the major towns and villages.</p>	<p>The major cities of Glasgow and Edinburgh are served by the motorway network which extends north to Perth. The west coast has a substantial network of A roads linking the major coastal cities. The</p>	<p>The motorway network in Northern Ireland is focused around Belfast in the east, with two links extending north west and south west. These terminate in Randalstown and Dungannon respectively.</p>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
(motorways and primary roads)	serviced by these connections are generally rural and in areas of low population.  (GIS mapping)	Comparatively the central and upland regions are less provisioned with strategic network links.  (GIS mapping)	A road network in highland areas and the west coast are less extensive, although most towns and large villages are connected.  (GIS mapping)	The remaining regions are well connected by the A road network, which services towns and the majority of larger villages.  (GIS mapping)
Supporting Trend Data:				
The strategic road network in the UK is constantly undergoing maintenance and improvements to improve efficiency, such as managed motorways. It is considered unlikely that significant new strategic road networks will be developed.				
Communities – Supporting Infrastructure:	Major Airports in England with over 500,000 passengers in 2022 are <sup>297</sup> :	The only major airport in Wales is Cardiff <sup>298</sup> .	Major Airports in Scotland with over 500,000 passengers in 2022 are <sup>299</sup> :	Major Airports in Northern Ireland with over 500,000 passengers in 2022 are <sup>300</sup> :
Location of Airports	Heathrow  Gatwick  Manchester  Stansted		Edinburgh  Glasgow  Aberdeen  Inverness	Belfast International  Belfast City (George Best)

<sup>297</sup> Civil Aviation Authority (2022) Annual Airport Data 2022. Available: <https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/uk-airport-data/uk-airport-data-2022/annual-2022/>

<sup>298</sup> Civil Aviation Authority (2022) Annual Airport Data 2022. Available: <https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/uk-airport-data/uk-airport-data-2022/annual-2022/>

<sup>299</sup> Civil Aviation Authority (2022) Annual Airport Data 2022. Available: <https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/uk-airport-data/uk-airport-data-2022/annual-2022/>

<sup>300</sup> Civil Aviation Authority (2022) Annual Airport Data 2022. Available: <https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/uk-airport-data/uk-airport-data-2022/annual-2022/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Luton Birmingham Bristol Newcastle Liverpool (John Lennon) Leeds Bradford East Midlands International London City Doncaster Sheffield (now closed) Bournemouth Southampton				
Supporting Trend Data:  The number of passengers using UK airports has decreased since the Covid-19 pandemic. For example, when the Civil Aviation Authority compared annual 2022 data against 2017 data, the 19 largest airports in 2022 all had more passengers in 2017 <sup>301</sup> .				

<sup>301</sup> Civil Aviation Authority (2022) Annual Airport Data 2022. Available: <https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/uk-airport-data/uk-airport-data-2022/annual-2022/>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	The proposed expansion of London Heathrow Airport is likely to increase airport capacity in the south east of England if approved, in addition to smaller-scale improvements at other airports. It is considered unlikely that other significant new airports will be developed, although capacity may be increased through development at existing sites.			
Communities – Supporting Infrastructure:	Principal ports in England <sup>302</sup> :	Principal ports in Wales are <sup>303</sup> :	Principal ports in Scotland <sup>304</sup> :	Principal ports in Northern Ireland are <sup>305</sup> :
Location of Ports	London Grimsby and Immingham Liverpool Southampton Tees and Hartlepool Felixstowe Dover Medway Rivers Hull and Humber Hull Manchester	Milford Haven Port Talbot Holyhead Newport	Forth Clyde Sullom Voe Glensanda Aberdeen Cairnryan Orkney Loch Ryan	Belfast Warrenpoint Larne

<sup>302</sup> Department for Transport (2023) Maritime Statistics: Interactive Dashboard (2021 data). Available: [UK maritime statistics: interactive dashboard \(dft.gov.uk\)](https://www.gov.uk/government/statistics/uk-maritime-statistics-interactive-dashboard)

<sup>303</sup> Department for Transport (2023) Maritime Statistics: Interactive Dashboard (2021 data). Available: [UK maritime statistics: interactive dashboard \(dft.gov.uk\)](https://www.gov.uk/government/statistics/uk-maritime-statistics-interactive-dashboard)

<sup>304</sup> Department for Transport (2023) Maritime Statistics: Interactive Dashboard (2021 data). Available: [UK maritime statistics: interactive dashboard \(dft.gov.uk\)](https://www.gov.uk/government/statistics/uk-maritime-statistics-interactive-dashboard)

<sup>305</sup> Department for Transport (2023) Maritime Statistics: Interactive Dashboard (2021 data). Available: [UK maritime statistics: interactive dashboard \(dft.gov.uk\)](https://www.gov.uk/government/statistics/uk-maritime-statistics-interactive-dashboard)



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Bristol</p> <p>Heysham</p> <p>Harwich</p> <p>Tyne</p> <p>Portsmouth</p> <p>Plymouth</p> <p>Ipswich</p>			
	<p>Supporting Trend Data:</p> <p>It is considered unlikely that significant new strategic port development will take place.</p>			
Communities – Supporting Infrastructure: Gas Network	<p>The National Transmission System (NTS) transports high pressure natural gas around Great Britain via thousands of miles of pipelines, supplying large end users such as power stations, large industrial plant, whilst it also receives gas injections from the main gas terminals and gas producers. There are eight distribution networks throughout the British Isles which are owned by Cadent, Northern Gas Networks, SGN (formerly Scotia Gas Networks) and Wales &amp; West Utilities.<sup>306</sup></p>			
	<p>Northern Gas Networks distributes gas to the North of England. Cadent distributes gas to North West LDN – London, West of Midlands and East of England. SGN</p>	<p>Wales &amp; West Utilities distributes gas to Wales.<sup>306</sup></p>	<p>SGN distributes gas to Scotland.<sup>306</sup></p>	<p>There are three distribution licensed areas within Northern Ireland. Greater Belfast and Larne distribution licensed area is operated by Phoenix Natural Gas. Ten Towns distribution licensed</p>

<sup>306</sup> Energy Solutions The Gas Network, understanding the regions. (Accessed 14/07/2023) Available: [The Gas Network, understanding the regions | Energy Solutions \(energybrokers.co.uk\)](https://www.energybrokers.co.uk/the-gas-network-understanding-the-regions/)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	distributes gas to the South of England. <sup>306</sup>			area is operated by firmus energy (Distribution). West distribution licensed area is operated by SGN Natural Gas. <sup>307</sup>
	In Quarter 1 2023 gas demand fell by 6.1 per cent compared with the same period last year, despite colder temperatures. This reflects lower consumption by households, industry and other final users that is likely to be driven by higher prices. Gas used for generation also fell, due to reduced electricity demand and strong output from renewable sources. Exports of gas remained substantial and were up 41 per cent compared to Quarter 1 2022 as the UK continued to support the European move away from Russian gas. Export volumes were facilitated by low demand with total imports stable on the same period last year. Imports were broadly stable on last year, with an increase in imports of Liquefied Natural Gas (LNG) offsetting the decrease of gas from Norway. <sup>308</sup>			
Communities – Supporting Infrastructure: HV Electricity Network	The National Grid is a high-voltage electricity transmission network in England and Wales. Electricity is generated at a range of sources including gas fired power stations, wind turbines, nuclear power stations, biomass, coal, solar, imports, hydro and storage. Separate lower voltage local distribution networks connect the electricity directly to homes and businesses. <sup>309</sup>			
	HV electricity networks in England are operated by National Grid.	HV electricity networks in Wales are operated by National Grid.	Scottish Power distribute HV electricity in southern Scotland. Scottish Hydro distribute HV electricity in Northern Scotland and the Scottish isles.	Northern Ireland Electricity Networks (NIE Networks) is the owner of the HV electricity transmission and distribution networks in Northern Ireland. <sup>310</sup>
	Quarter 1 of 2023 saw lower electricity demand and generation compared to Quarter 1 2022. Supply and demand both decreased by 4.5 per cent. In line with this lower demand, generation decreased by 7.4 per cent with a substantial			

<sup>307</sup> Utility Regulator Networks. (Accessed 14/07/2023). Available: [Networks | Utility Regulator \(ureg.gov.uk\)](https://www.ureg.gov.uk/networks)

<sup>308</sup> Department for Energy Security and Net Zero (2023) Energy trends: UK oil and oil products. Available: [Energy Trends June 2023 \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/118444/energy-trends-june-2023)

<sup>309</sup> National Grid Group National Grid Electricity Transmission (Accessed 14/07/2023) Available: [National Grid Electricity Transmission](https://www.nationalgrid.com/uk/electricity-transmission)

<sup>310</sup> NFCC High-voltage networks (national grid) (Accessed 14/07/2023) Available: [High-voltage networks \(national grid\) | NFCC CPO \(ukfrs.com\)](https://www.nfcc.com.uk/high-voltage-networks)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	increase in net imports (up 44 per cent) accounting for the difference. Total imports rose to a record 9.0 TWh, with a record 2.3 TWh from Norway across the North Sea Interconnector. <sup>308</sup>			
Communities – Supporting Infrastructure: Offshore Wind Farms	The UK is the second largest offshore wind (OSW) market in the world. The UK currently has 13.9 GW of offshore wind fully commissioned, a fourfold increase on capacity installed in 2012. There is also a total project pipeline of around 77 GW across 80 projects that are either in construction, consented, in development and planned in future seabed leasing auctions. The UK has the largest offshore wind farm in the world, which is located off the coast of Yorkshire. <sup>311</sup>			
	There are 29 offshore wind farms in England. <sup>311</sup>	There are three operational offshore wind farms off the North Wales coast. <sup>312</sup>	As of 2020, Scotland has six operational offshore windfarms or demonstration projects. <sup>313</sup>	Although there are currently no offshore wind farms in Northern Ireland, The Energy Strategy Action Plan 2022 for Northern Ireland includes Action 14 to develop an action plan to deliver 1GW of offshore wind from 2030. <sup>314</sup>
	Electricity generation from wind power in the UK has increased by 715% from 2009 to 2020. Wind energy generation accounted for 24% of total electricity generation (including renewables and non-renewables) in 2020; with offshore wind accounting for 13% and onshore wind accounting for 11%. <sup>315</sup> In 2022, the British Energy Security Strategy included an ambition to deliver up to 50GW of offshore wind by 2030, including up to 5gw of innovative floating wind, in Great Britain. <sup>316</sup>			
	The UK currently has no fusion power stations. Fusion energy might have an important role to play in delivering our long term objective of a secure, low carbon, affordable, energy future. For fusion energy to reach its full potential,			

<sup>311</sup> Department for Business & Trade Offshore wind (Accessed 14/07/2023) Available: [Offshore wind - great.gov.uk international](https://www.gov.uk/government/news/offshore-wind-growth)

<sup>312</sup> Natural Resources Wales (2023) Offshore wind developments. Available: [Natural Resources Wales / Offshore wind developments](https://www.naturalresources.wales/en/offshore-wind-developments)

<sup>313</sup> NatureScot (2020) Offshore wind energy Available: [Offshore wind energy | NatureScot](https://www.naturescot.gov.uk/offshore-wind-energy)

<sup>314</sup> Northern Ireland Executive (2022) Energy strategy for Northern Ireland. Available: [The Path to Net Zero Energy. Safe. Affordable. Clean. \(economy-ni.gov.uk\)](https://www.economy-ni.gov.uk/the-path-to-net-zero-energy-safe-affordable-clean/)

<sup>315</sup> Office for National Statistics (2021) Wind energy in the UK: June 2021 Available: [Wind energy in the UK - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/economy/energy/wind-energy-in-the-uk)

<sup>316</sup> Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2022) British energy security strategy. Available: [British energy security strategy - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/british-energy-security-strategy)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Communities – Supporting Infrastructure:	significant challenges need to be met, requiring technical developments both in the short term and for the longer term, particularly 2050 and beyond. The Long-term Fusion Energy Strategy outlines government policy to help the UK fusion sector increase its key role in UK electricity provision and the global economy to 2050. <sup>317</sup>			
Fusion Power Stations	There are no fusion power stations operating in the UK.			N/A

<sup>317</sup> [Towards fusion energy: the UK government's fusion strategy \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

# Health and Well-being

## Introduction to the baseline information and overview of interaction with the NPS

Health and well-being is a broad topic that has been taken here to cover the following three elements: the level of risk to physical health posed by radioactivity in food and the environment, mental well-being, and level of deprivation. All of which combine to provide an indication of patterns in UK overall health and well-being. Consideration of patterns in health and well-being across the UK is important when exploring opportunities for new fusion energy infrastructure. First, the potential for discharges from some types of fusion power station to have an impact on the existing levels of radioactivity in surrounding environment must be considered. Additionally, the impacts that new fusion energy infrastructure may have on the local landscape and job opportunities must be considered in terms of the well-being and level of deprivation of the local population.

Radioactivity in Food and the Environment (RIFE) reports are published each year by the various UK environment and food standards agencies and these present an assessment of radioactivity in food and the environment and the public's resultant exposure to radiation. Across the UK, the radiation doses to people living around existing experimental fusion sites from authorised releases of radioactivity (or consumer doses in Northern Ireland) were well below the UK national and European limit of one millisievert (mSv) per year in 2021.

The UK-wide Measuring National Well-Being (MNW) Programme monitors national well-being. In general across the UK, scores relating to feelings of life being worthwhile and overall rated happiness decreased between 2017 and 2022. In general, Northern Ireland scored highest against these indicators. The same decrease was seen for overall mental well-being in the short and long term. The labour market shocks associated with covid-19 were felt more by young people and the lowest paid, the resultant impacts on mental well-being are yet to be explored.

Each nation of the UK has its own index of deprivation. In England, the north west and north east are the most deprived areas. The most deprived areas in Scotland are concentrated around the populated central areas of Glasgow, Edinburgh, Stirling, Perth, Kilmarnock and Dundee. The most deprived areas of Wales are the south east and north east coasts. In Northern Ireland the most deprived areas are the urban centres of Belfast and Derry.

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Health and Well-Being:  Radioactivity levels in the environment	<p>Radiation levels in the UK are monitored regularly. This is undertaken by the Radioactive Incident Monitoring Network (RIMNET), the Environment Agency, Public Health England, the Scottish Environment Protection Agency (SEPA) Northern Ireland Environment Agency (NIEA), Natural Resources Wales (NRW) and operators of nuclear sites.</p> <p>Environment agencies monitor radioactivity to:</p> <ul style="list-style-type: none"> <li>• check whether radiation exposure conforms to legal limits</li> <li>• check that radioactivity in food and the environment from authorised releases and discharges does not affect people’s health or the environment</li> <li>• gather long-term information on concentrations and trends so that we can identify any changes and take action if required</li> <li>• assess the public’s total exposure to radiation around nuclear and other radiation facility sites such as Culham Centre for Fusion Energy</li> </ul> <p>Monitoring includes several high volume air samplers, which are capable of detecting tiny amounts of radioactive particles in the air. Analysis can be carried out for short lived radionuclides. Results are published in Radioactivity in Food and the Environment (RIFE) reports. The latest RIFE report was published in 2022 and contains data for 2021<sup>318</sup>.</p>			
	The RIFE report identifies that the radiation doses to people living around non-nuclear radioactive substances sites from authorised releases of radioactivity were well below the UK national and European limit of 1	The RIFE report identifies that the radiation doses to people living around non-nuclear radioactive substances sites from authorised releases of radioactivity were well below the UK national and European limit of 1		

<sup>318</sup> UK Government (2022) Radioactivity in Food and the Environment (RIFE) Reports. Available: <https://www.gov.uk/government/publications/radioactivity-in-food-and-the-environment-rife-reports>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	millisievert (mSv) per year in 2021.	millisievert (mSv) per year in 2021.		
	<p>Supporting Trend Data:</p> <p>During 2021, as a result of an ongoing programme of monitoring by the operator, radioactive items (particles, including contaminated pebbles / stones) from Sellafield were detected on Cumbrian coastline beaches and removed. Over several decades, concentrations of radioactivity in the environment around Sellafield have declined as a result of reduced discharges. Public Health England (PHE) has provided advice that the overall health risks for beach users from radioactive objects on beaches near Sellafield are very low and significantly lower than other risks that people accept when using the beaches. Fishing restrictions under the Food and Environment Protection Act (FEPA) 1985 are still in force<sup>319</sup>.</p>			
Health and Well-Being:	The Measuring National Well-being (MNW) programme set out to establish measures to understand and monitor national well-being <sup>320</sup> .			
The Measuring National Well-being programme	<p>Mental well-being in adults aged 16 and over on average ranked 24.3 out of 35 in 2018/2019. This represents a deterioration over the short and long term<sup>321</sup>. This varies across the UK as follows:</p> <p>England – 24.3 out of 35</p> <p>Wales – 23.7 out of 35</p> <p>Scotland – 24.4 out of 35</p> <p>Northern Ireland – 25.0 out of 35</p>			

<sup>319</sup> UK Government (2022) Radioactivity in Food and the Environment (RIFE) Reports. Available: <https://www.gov.uk/government/publications/radioactivity-in-food-and-the-environment-rife-reports>

<sup>320</sup>

<sup>321</sup>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>In October to December 2022, 32.1% of adults aged 16 and over rated how worthwhile they feel the things they do in life are as very high. This represents no change from the previous year but a deterioration since the same period in 2017<sup>322</sup>. This varies across the UK as follows<sup>323</sup>:</p> <p>England – 31.8%</p> <p>Wales – 36.1%</p> <p>Scotland – 31.0%</p> <p>Northern Ireland – 38.9%</p> <p>In October to December 2022, 29.4% of adults aged 16 and over rated their happiness yesterday as very high. This represents no change from the previous year but a deterioration since the same period in 2017<sup>324</sup>. This varies across the UK as follows<sup>325</sup>:</p> <ul style="list-style-type: none"> <li>• England – 29.2%</li> <li>• Wales – 32.3%</li> <li>• Scotland – 27.9%</li> <li>• Northern Ireland – 33.3%</li> </ul>			

<sup>322</sup> Office for National Statistics (2023) Measures of National Well-Being Dashboard: Quality of Life in the UK. Available:

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuresofnationalwellbeingdashboardqualityoflifeintheuk/2022-08-12>

<sup>323</sup> Office for National Statistics (2023) Quarterly Personal Well-Being Estimates – Non-Seasonally Adjusted. Available:

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/quarterlypersonalwellbeingestimatesnonseasonallyadjusted>

<sup>324</sup> Office for National Statistics (2023) Measures of National Well-Being Dashboard: Quality of Life in the UK. Available:

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuresofnationalwellbeingdashboardqualityoflifeintheuk/2022-08-12>

<sup>325</sup> Office for National Statistics (2023) Quarterly Personal Well-Being Estimates – Non-Seasonally Adjusted. Available:

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/quarterlypersonalwellbeingestimatesnonseasonallyadjusted>



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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>In October to December 2022, 23.3% of adults in the UK rated their life satisfaction as very high. This represents a deterioration from the previous year and a deterioration since the same period in 2017<sup>326</sup>.</p> <p>In October 2021 to September 2022, it was reported that 6.24% people in England felt lonely often or always. Data was not available for the other regions within the UK<sup>327</sup>.</p> <p>The labour market shocks associated with the coronavirus pandemic have been felt more by young people and the lowest paid; people aged under 30 years and those with household incomes under £10,000 were around 35% and 60%, respectively, more likely to be furloughed than the general population. Measurements of health and well-being as a result of the coronavirus pandemic are still to be confirmed and indications of mental health issues such as anxiety are being preliminarily explored. The reliability of such data is unknown at this stage.</p>			
Health and Well-Being:	<p>The IMD is the official measure of relative deprivation for small areas (Lower-Super Output Areas) in England. The Index ranks every small area in England from 1 (most deprived) to 32,844 (least deprived)<sup>328</sup>.</p>			
The English Index of Multiple Deprivation (IMD) 2019	<p>The SIMD shows where the most deprived areas in Scotland and is a relative measure of deprivation. Scotland is split into 6,976 zones with indicators measured including income, employment, education, health, access to services, crime and housing<sup>329</sup>.</p> <p>The WIMD is the official measure of relative deprivation for small areas in Wales. WIMD ranks all small areas in Wales from 1 (most deprived) to 1,909 (least deprived)<sup>330</sup>.</p>			

<sup>326</sup> Office for National Statistics (2023) Measures of National Well-Being Dashboard: Quality of Life in the UK. Available:

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuresofnationalwellbeingdashboardqualityoflifeintheuk/2022-08-12>

<sup>327</sup> Office for National Statistics (2023) Measures of National Well-Being Dashboard: Quality of Life in the UK. Available:

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuresofnationalwellbeingdashboardqualityoflifeintheuk/2022-08-12>

<sup>328</sup> Ministry of Housing, Communities and Local Government (2019) English indices of deprivation 2019. Available: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

<sup>329</sup> Scottish Government (2020) Scottish Index of Multiple Deprivation 2020. Available: <https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/>

<sup>330</sup> Welsh Government (2019) Welsh Index of Multiple Deprivation. Available: <https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
The Scottish Index of Multiple Deprivation (SIMD) 2020	The NIMDM comprises seven domains of deprivation, each developed to measure a distinct form or type of deprivation. This provides a mechanism for ranking the 890 Super Output areas (SOAs) from the most deprived (rank 1) to the least deprived (rank 890) <sup>331</sup> .			
The Welsh Index of Multiple Deprivation (WIMD) 2019	The south east, south west and east of England are the least deprived areas in the UK. Deprivation increases in urban areas, with towns and cities generally being more deprived than rural areas. The north west and north east are the most deprived areas of England.	The south east and north east coast are the most deprived areas in Wales. Deprivation is most concentrated in the south east, around the urban areas of Cardiff, Newport, Swansea and Bridgend. The smaller towns within the valleys of the south east, such as Caerphilly and Merthyr Tydfil are similarly deprived. Comparatively the rural areas of Wales are considerably less deprived.	The most deprived areas in Scotland are concentrated around the populated central areas of Glasgow, Edinburgh, Stirling, Perth, Kilmarnock and Dundee. Pockets of deprivation are also located in other urban centres throughout the country, such as Stranraer in the south west, Oban in the west and Aberdeen in the East. The islands of Stornoway and the Orkneys are comparatively deprived to the majority of Scotland.	The most deprived areas of Northern Ireland are the urban centres of Belfast in the east and Derry in the north west. Deprivation is also recorded in rural areas, including around Cookstown in central Northern Ireland, Crossmaglen in the south and Strabane in the west. The lowest deprived areas are North Down, Fermanagh and South Tyrone, Strangford and South Antrim.
Northern Ireland Multiple Deprivation Measure (NIMDM) 2017	Middlesbrough, Knowsley, Kingston upon Hull, Liverpool and Manchester are the five local authority districts with the largest proportions of highly deprived neighbourhoods in England.			
Supporting Trend Data:				
It is not advised to compare the deprivation measures across the UK as data definitions, collection methods and base populations are not the same across the devolved administrations.				
Overall, 88% of neighbourhoods that are in the most deprived decile according to the Index of Multiple Deprivation 2019 (IMD2019) were also the most deprived according to the IMD2015. As was the case in previous versions of the Indices, IMD2019 reveals concentrations of deprivation in large urban conurbations, areas that have historically had				

<sup>331</sup> Northern Ireland Statistics and Research Agency (2017) Northern Ireland Multiple Deprivation Measure 2017 (NIMDM2017). Available: <https://www.nisra.gov.uk/statistics/deprivation/northern-ireland-multiple-deprivation-measure-2017-nimdm2017>

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>large heavy industry manufacturing and/or mining sectors (such as Birmingham, Nottingham, Hartlepool), coastal towns (such as Blackpool or Hastings), and parts of east London. There are also pockets of deprivation surrounded by less deprived places in every region of England.</p> <p>Six council areas have a larger share of the 20% most deprived data zones in Scotland compared with SIMD 2016. Three council areas have a smaller share. The rest have changed by less than 2 percentage points. The councils with the largest decrease are Glasgow City, Renfrewshire, and City of Edinburgh. The councils with the largest increase are Aberdeen City, North Lanarkshire, Moray, East Lothian, Highland, and North Ayrshire.</p> <p>In WIMD 2019, there were pockets of high relative deprivation in the South Wales cities and valleys, and in some North Wales coastal and border towns. The overall picture is similar to that of WIMD 2014. Seven of the ten most deprived areas from WIMD 2014 remained in the ten most deprived areas in WIMD 2019.</p> <p>Since 2005 there has been little change in the areas of worst deprivation within Northern Ireland.</p>			
Health and Well-Being:	<p>National Trails are long distance walking, cycling and horse riding routes through the best landscapes in England and Wales. In Scotland the equivalent trails are called Scotland's Great Trails. In total, England and Wales have around 2,500 miles (4,000 Km) of National Trail.<sup>332</sup></p>			
National Trails	<p>There are 13 National Trails in England including:</p> <p>Cleveland Way</p> <p>Cotswold Way</p> <p>Hadrian's Wall Path</p> <p>North Downs Way</p>	<p>There are 3 National Trails in Wales including:</p> <p>Glyndŵr's Way</p> <p>Offa's Dyke Path</p> <p>Pembrokeshire Coast Path<sup>340</sup></p>	<p>Scotland's Great Trails include 29 routes, totalling over 1,900 miles, including:</p> <p>Annadale Way</p> <p>Arran Coastal Way</p> <p>Ayrshire Coastal Path</p> <p>Berwickshire Coastal Path</p>	N/A

<sup>332</sup> National Trails The Trails. (Accessed 17/07/2023) Available: [The Trails - National Trails](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Peddar’s Way and Norfolk Coast Path</p> <p>Pennine Bridleway</p> <p>Pennine Way</p> <p>South Downs Way</p> <p>South West Coast Path</p> <p>Thames Path</p> <p>The Ridgeway</p> <p>Yorkshire Wolds Way</p> <p>A new 2,795 mile National Trail, the King Charles III England Coast Path, is currently being established. 340</p>		<p>Border Abbeys Way</p> <p>Cateran Trail</p> <p>Clyde Walkway</p> <p>Cross Borders Drove Road</p> <p>Dava Way</p> <p>Fife Coastal Path</p> <p>Formartine and Buchan Way</p> <p>Forth &amp; Clyde/Union Canal Towpath</p> <p>Great Glen Canoe Trail</p> <p>Great Glen Way</p> <p>Great Trossachs Path</p> <p>John Muir Way</p> <p>Kintyre Way</p> <p>Loch Lomond &amp; Cowal Way</p> <p>Moray Coast Trail</p> <p>Mull of Galloway Trail</p> <p>River Ayr Way</p>	

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
			Rob Roy Way Romans and Reivers Route Southern Upland Way Speyside Way St Cuthbert's Way Three Lochs Way West Highland Way West Island Way <sup>333</sup>	
	The trails – like many local greenspaces and access areas further afield – recorded high levels of use during the pandemic. Whilst these levels have certainly not been sustained, the people counters provided evidence of high levels of use, which suggests that some people may have continued to explore these high quality networks. Natural England has secured an uplift for the National Trails for three years from April 2022. <sup>334</sup>			
Health and Well-Being:	Country Parks are public green spaces often at the edge of urban areas which provide places to enjoy the outdoors and experience nature in an informal semi-rural park setting. <sup>335</sup>			
Country Parks	Many Country Parks were designated in the 1970s by the then Countryside Commission, under the	Most Country Parks were designated in the 1970s, under the Countryside Act 1968 with the support of the	Countryside (Scotland) Act 1967 Section 48 gives local authorities power to assess and review the need for	There are 7 Country Parks in Northern Ireland. <sup>338</sup>

<sup>333</sup> Scotland's Great Trails Scotland's Great Trails (Accessed 17/07/2023) Available: [Discover Scotland's finest long-distance trails, compare routes, find support services, maps and guidebooks - Scotland's Great Trails \(scotlandsgreattrails.com\)](https://www.scotlandsgreattrails.com/)

<sup>334</sup> Natural England and National Trails (2023) National Trails Annual Report 2021/22. Available: [NT-Annual-Report-21-22-small.pdf \(nationaltrails.s3.eu-west-2.amazonaws.com\)](https://www.naturalengland.org.uk/Images/NT-Annual-Report-21-22-small.pdf)

<sup>335</sup> Natural England (2023) Country Parks (England). Available: [Country Parks \(England\) - data.gov.uk](https://data.gov.uk/dataset/country-parks-england)

<sup>338</sup> NI Direct Country parks (Accessed 17/04/202) Available: [Country parks | nidirect](https://www.nidirect.gov.uk/country-parks)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>Countryside Act 1968. More recently Country Parks have been created under a less formal arrangement and Natural England is working with partners to encourage a renaissance and accreditation of parks which meet certain criteria.<sup>342</sup> There are over 250 Country Parks in England and Wales.<sup>336</sup></p>	<p>former Countryside Commission. In more recent times there has been no specific financial support for Country Parks directly, and fewer have been designated.<sup>344</sup></p>	<p>Country Parks in consultation with SNH. There are 40 Country Parks in Scotland.<sup>337</sup></p>	
	<p>Public parks and greenspaces have been under increasing budget pressures in recent years, with limited resources available to adapt to changing circumstances. Between 2014 and 2020, Nesta, in partnership with The National Lottery Heritage Fund and The National Lottery Community Fund backed 24 innovations, with £3 million in funding and support, to test and replicate ideas to improve parks. The Future Parks Accelerator, a collaboration between the National Trust, National Lottery Heritage Fund, and the Ministry for Housing, Communities and Local Government is supporting nine places to help local authorities transform their green spaces to enable these valuable places to be more financially sustainable and ensure that communities can continue to benefit from them for generations to come.<sup>339</sup></p>			
Health and Well-Being:	<p>The National Cycle Network is a UK-wide network of signed walking and cycling paths connecting our cities, towns, and countryside. The National Cycle Network brings huge benefits to the UK's economy and improves people's health and wellbeing.<sup>340</sup></p>			

<sup>336</sup> Natural Resources Wales (2023) Country parks. Available: [Country Parks - data.gov.uk](https://data.gov.uk/dataset/country-parks)

<sup>337</sup> NatureScot (2023) Country parks. Available: [Country parks | NatureScot](https://www.naturescot.gov.uk/country-parks)

<sup>339</sup> Nesta (2020) Rethinking the future of parks. Available: [Rethinking the Future of Parks | Nesta](https://www.nesta.org.uk/our-work/our-projects/2020-rethinking-the-future-of-parks)

<sup>340</sup> Sustrans About the national cycle network (Accessed 17/07/2023) Available: [About the National Cycle Network - Sustrans.org.uk](https://www.sustrans.org.uk/about-the-national-cycle-network)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
National Cycle Networks	<p>There are over 250 cycle paths in England of varying distances.<sup>348</sup></p> <p>The next Cycling and Walking Investment Strategy (CWIS2) is due out in spring 2022 and will cover a three-year period from 2022 to 2025, seeking to create traffic-free stretches by using Environmental Land Management pilots.<sup>351352</sup></p>	<p>There are over 1,200 miles of National Cycle Network in Wales.<sup>341</sup></p> <p>The Welsh Government is investing in active travel and has provided £350,000 funding for maintenance of the National Cycle Network.<sup>352</sup></p>	<p>There are approximately 1,643 miles (2,644 km) of National Cycle Network routes in Scotland, including 702 miles of traffic-free routes which use a mix of railway path, canal towpath, forest road, shared-use path, segregated cycle lanes and redetermined rural footways.<sup>342</sup></p> <p>In September 2021 the Programme for Government pledged that the Scottish Government would increase funding for active travel from £100 million a year to £320 million a year by 2025/26. It also includes a commitment to deliver investment in the Sustrans 30-year National Cycle Network Plan.<sup>352</sup></p>	<p>There are currently more than 1,300km of cycle paths in Northern Ireland - this includes 170km of traffic-free paths offering long, medium and short rides for cyclists of all ages.<sup>343</sup></p> <p>The Department for Infrastructure's strategy, 'Exercise - Explore - Enjoy: A Strategic Plan for Greenways', provides a solid basis and rationale for greenway development across Northern Ireland.<sup>352</sup></p>
<p>Sustrans is working in partnership with government, local authorities and other key stakeholders to create a safe and accessible traffic-free Network. The project involves assessment and plans for every mile of the National Cycle Network, as well as detailed and specific plans for priority sections.<sup>344</sup></p>				

<sup>341</sup> Sustrans The national cycle network in Wales (Accessed 17/07/2023) Available: [The National Cycle Network in Wales - Sustrans.org.uk](https://www.sustrans.org.uk/national-cycle-network-wales)

<sup>342</sup> Sustrans The national cycle network in Scotland (Accessed 17/07/2023) Available: [The National Cycle Network in Scotland - Sustrans.org.uk](https://www.sustrans.org.uk/national-cycle-network-scotland)

<sup>343</sup> NI Direct Cycling – getting started (Accessed 17/07/2023) Available: [Cycling – getting started | nidirect](https://www.nidirect.gov.uk/cycling-getting-started)

<sup>344</sup> Sustrans (2022) Paths for everyone. Available: [Paths for Everyone Three Years On \(sustrans.org.uk\)](https://www.sustrans.org.uk/paths-for-everyone)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Health and Well-Being:	A coastal path is a trail that runs alongside a lake or seashore for pedestrians, and sometimes cyclists or equestrians.			
Coastal Paths	The King Charles III England Coast Path will circle the entire country's coastline and, when completed, will total around 2,700 miles in length. The path is aims to be fully walkable by the end of 2024. <sup>345</sup>	The Wales Coast Path is a continuous coastal footpath stretching the entire coastline of Wales, totalling 870 miles. <sup>346</sup>	Popular paths along Scotland's 6000 miles of coastline include Fife Coastal Path, Clyde Coastal Path, the Berwickshire Trail and the John Muir Way. <sup>347</sup>	Popular coastal paths in Northern Ireland include the Giant's Causeway Trail, Kearney Coastal Walk, Murlough Nature Reserve North Point trail, Castle Ward boundary trail and Mussenden Temple and Downhil Demesne. <sup>348</sup>
The National Trust protects over 780 miles of coastline in England, Wales and Northern Ireland. They work with other organisations such as tourist bodies and the South West Coast Path Association to protect and promote access to the coast, an essential part of their commitment to coastal access. Their ranger teams are continually working to improve our coastal paths, making them more accessible for everyone, and planning for future coastal change. <sup>349</sup>				

<sup>345</sup> Natural England (2023) King Charles III England Coast Path: improving public access to the coast. Available: [King Charles III England Coast Path: improving public access to the coast - GOV.UK \(www.gov.uk\)](#)

<sup>346</sup> Wales Coast Path About the path (Accessed 17/07/2023) Available: [Wales Coast Path / About the path](#)

<sup>347</sup> National Coast Path (2021) The Scottish Coastal Way. Available: [The Scottish Coastal Way - Nationalcoastalpath.co.uk](#)

<sup>348</sup> National Trust Coastal walks in Northern Ireland (Accessed 17/07/2023) Available: [Best Northern Ireland coast and sea walks | National Trust](#)

<sup>349</sup> National Trust Caring for coastal footpaths. (Accessed 17/07/2023) Available: [Caring for coastal footpaths | National Trust](#)



# Resources and Waste

## Introduction to the baseline information and overview of interaction with the NPS

Material resources allow us to meet our basic human needs as well as generate economic growth and create social value. A material is waste if the holder has discarded it. Improper waste disposal can cause serious issues to the environment. As such, waste management and the safe disposal of waste have massive and far-reaching consequences for the environment and are of vital importance. The UK generated 222.2 million tonnes of total waste in 2018, with England responsible for 84% (187.3 million tonnes) of the UK total. The UK recycling rate for Waste from Households was 44.6% in 2021, increasing from 44.4% in 2020. UK biodegradable municipal waste sent to landfill increased to 6.8 million tonnes in 2021 from 6.1 million tonnes in 2020. The Resources and Waste Strategy for England aims to maximise the value of resource use and minimise waste and its impact on the environment. Similar strategies exist in Wales, Scotland, and Northern Ireland. Central to these strategies are the waste hierarchy: waste prevention and reduction first, followed by reuse and, then recycling and composting. The government is committed to using Geological Disposal Facilities (GDF) to dispose of qualifying radioactive waste. There is some uncertainty about the quantity of radioactive waste from fusion power plants that would qualify for GDF disposal. Radioactive waste produced by the fusion power plants must be safely managed to minimise the environmental impact.

Mineral resources are defined as natural concentrations of minerals or, in the case of aggregates, bodies of rock that are, or may become, of potential economic interest due to their inherent properties. They make an essential contribution to the country's prosperity and quality of life. Minerals can only be worked where they naturally occur, so location options for the economically viable and environmentally acceptable extraction of minerals may be limited. This means that it is necessary to consider protecting minerals from non-minerals development and has implications for the preparation of minerals plans and approving non-mineral development in defined mineral safeguarding areas. Since minerals are a non-renewable resource, minerals safeguarding is the process of ensuring that non-minerals development does not needlessly prevent the future extraction of mineral resources, of local and national importance.<sup>350</sup>

To meet the UK's legally-binding target to be "net zero" across the economy by 2050, the government has said that all electricity should be generated from "clean" sources by 2035. Remaining non-electric energy use will have to be net zero by 2050. Around 20%, of UK energy use was from "low-carbon" sources in 2022 which is up from 12% in 2012. "Low-carbon" includes renewables such as wind, solar, hydropower and bioenergy and nuclear. The licensing of exploration and development of the UK's offshore and onshore oil and gas resources, gas storage and unloading activities is regulated in accordance with the Strategy and the UK Government's target of net zero greenhouse gas emissions by 2050.<sup>351</sup>

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<sup>350</sup> Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2014) Minerals. Available: [Minerals - GOV.UK \(www.gov.uk\)](https://www.gov.uk/minerals)

<sup>351</sup> North Sea Transition Authority (2023) Exploration and production. Available: [North Sea Transition Authority \(NSTA\): Overview - Exploration & production \(nstauthority.co.uk\)](https://www.nstauthority.co.uk/nsta/overview-exploration-production)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Resources & Waste: Active Landfill Sites	<p>A landfill is a waste disposal site for the deposit of waste onto or into land<sup>352</sup>. The Landfill Tax Regulations 1996 were introduced in the UK with the primary purpose of reducing the disposal of waste to landfill and encouraging more sustainable waste management outcomes. This is a tax on the disposal of waste to landfill, paid by site operators. Landfill Tax applies to England and Northern Ireland. The tax was devolved to Wales by way of the Landfill Disposals Tax (Wales) Act 2017<sup>353</sup> and to Scotland by way of the Landfill Tax (Scotland) Act 2014<sup>354</sup>. The tax is chargeable by weight. As of April 2023, the standard rate was £102.10 per tonne.</p>			
	<p>Landfill sites are regulated in England by the Environment Agency. As of 2020, England contained <sup>350</sup></p>	<p>Landfill sites are regulated in Wales by Natural Resources Wales. The Welsh Revenue Authority provides a list of the 20 landfill sites in Wales which was updated in 2023<sup>355</sup>.</p>	<p>The Scottish Environment Protection Agency regulates landfill sites in Scotland. As of 2021, Scotland contained 43 landfill sites<sup>356</sup>.</p>	<p>The Northern Ireland Environment Agency regulates landfill sites through an environmental permit which aims to ensure that the landfill is operated by best practice with minimal impact on the environment<sup>357</sup>. As of 2021, NI contained 22 inert landfills, 10 non-hazardous landfills and 2 hazardous landfills, one of which had no waste deposited since 2015<sup>358</sup>.</p>
	<p>The UK recycling rate for Waste from Households (WfH); including Incinerator Bottom Ash metal (IBAm) was 44.6% in 2021, increasing from 44.4% in 2020. However, UK biodegradable municipal waste (BMW) sent to landfill increased to</p>			

<sup>352</sup> DEFRA (2010) Environmental Permitting Guidance- The Landfill Directive. Available: [DRAFT GUIDANCE ON: \(publishing.service.gov.uk\)](#)

<sup>353</sup> Welsh Government (2023) An Independent Review of the Landfill Disposals Tax (Wales) Act 2017. Available: [An Independent Review of the Landfill Disposals Tax \(Wales\) Act 2017 \(gov.wales\)](#)

<sup>354</sup> Scottish Government Scottish landfill tax (Accessed 17/07/2023) Available: [Scottish Landfill Tax - Taxes - gov.scot \(www.gov.scot\)](#)

<sup>355</sup> Welsh Revenue Authority (2023) Check the list of registered landfill site operators in Wales. Available: [Check the list of registered landfill site operators in Wales | GOV.WALES](#)

<sup>356</sup> SEPA (2022) 2021 waste data quality report – waste landfilled in Scotland. Available: [2021-landfill-qual-report-003.pdf \(sepa.org.uk\)](#)

<sup>357</sup> DAERA Regulation of landfills in Northern Ireland (Accessed 18/07/2023) Available: [Regulation of landfills in Northern Ireland | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](#)

<sup>358</sup> DAERA (2023) Number of active landfill sites in Northern Ireland, their remaining capacity and their waste inputs and outputs. Available: [Number of active landfill sites in Northern Ireland, their remaining capacity and their waste inputs and outputs | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](#)

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	6.8 million tonnes in 2021 from 6.1 million tonnes in 2020. It is estimated that the UK generated 40.4 million tonnes of commercial and industrial (C&I) waste in 2020, of which 33.8 million tonnes (84%) was generated in England. <sup>359</sup>			
Resources & Waste:  Mineral safeguarding and exploration zones	<p>The National Planning Policy Framework states that “it is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs”<sup>360</sup>. The role of the planning authority in relation to mineral extraction is to balance the fundamental requirement to ensure the adequate supply of minerals with the protection of amenity and the environment. Each mineral planning authority should ensure that it makes an appropriate contribution to meeting local, regional and UK needs for primary minerals which reflects the nature and extent of resources in the area and their best and most appropriate use, subject to relevant environmental and other planning considerations.<sup>361</sup></p> <p>Mineral exploration is the systematic process of investigation designed to eliminate mineral resource targets that are considered uneconomic and highlight targets for further investigation. The ultimate aim is to identify a concentration of minerals that can be economically extracted.<sup>362</sup></p>			
	<p>Relevant Plans should designate Minerals Safeguarding Areas (MSAs) that include areas of known resources, existing permitted reserves and quarries.</p> <p>Minerals Consultation Areas (MCAs) identify the area in which the local planning authority should consult with</p>	<p>Using the National Minerals Resource Maps and the National Aggregates Safeguarding Maps for Wales, areas to be safeguarded should be identified on proposals maps and policies should protect potential mineral resources from other types of permanent development</p>	<p>Local Development Plans should support a landbank of construction aggregates of at least 10-years at all times in the relevant market areas, whilst promoting sustainable resource management, safeguarding important workable mineral resources,</p>	<p>Mineral exploration in Northern Ireland is administered by the Department for the Economy (DfE) who are advised and supported by the Geological Survey of Northern Ireland<sup>365</sup>.</p>

<sup>359</sup> Department for Environment, Food & Rural Affairs (2023) UK statistics on waste. Available: [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-statistics-on-waste)

<sup>360</sup> Department for Levelling-UP, Housing & Communities (2023) National Planning Policy Framework. Available: [National Planning Policy Framework \(publishing.service.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/115114/nppf-2023.pdf)

<sup>361</sup> Welsh Government (2021) Planning Policy Wales. Available: [Planning Policy Wales - Edition 11 \(gov.wales\)](https://www.gov.wales/planning-policy-wales-edition-11)

<sup>362</sup> Department for the Economy (2021) Mineral prospecting - common exploration methods. Available: [Mineral prospecting - common exploration methods | Department for the Economy \(economy-ni.gov.uk\)](https://www.economy-ni.gov.uk/mineral-prospecting-common-exploration-methods)

<sup>365</sup> British Geological Survey (2019) Exploration and Mining in Northern Ireland. Available: [Exploration and Mining in Northern Ireland \(bgs.ac.uk\)](https://www.bgs.ac.uk/exploration-and-mining-in-northern-ireland)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
	<p>the Mineral Planning Authority on local plan site allocations and planning applications. MCAs should be defined based on MSAs but often extending beyond these, in the form of a ‘buffer’ (often between 100 and 500m) around mineral resource, depending on the type of resource and extraction activity and may include access roads, and existing and potential minerals infrastructure sites.<sup>363</sup></p>	<p>which would either sterilise them or hinder extraction.</p> <p>Development plans should set out the broad strategy for mineral working and related development and as far as practicable, areas for future working should be identified, where this can be undertaken in a sustainable way.<sup>368369</sup></p>	<p>which are of economic or conservation value, and take steps to ensure these are not sterilised by other types of development.<sup>364</sup></p>	
	<p>The UK’s Critical Minerals Strategy, published in 2022, set out an approach to improve the resilience of critical mineral supply chains to safeguard British industries now and in the future, deliver clean energy transition and protect national security and defence capability. The strategy sets out how we will accelerate our domestic capabilities, collaborate with international partners and enhance international markets.<sup>366</sup></p>			
	<p>A UK Petroleum Exploration and Development Licence (PEDL) allows a company to pursue a range of oil and gas exploration activities, subject to necessary drilling/development consents and planning permission. There are currently</p>			

<sup>363</sup> The Mineral Products Association and The Planning Officers’ Society (2019) Mineral safeguarding practical guidance. Available: [MPA\\_POS\\_Minerals\\_Safeguarding\\_Guidance\\_Document.pdf \(mineralproducts.org\)](#)

<sup>364</sup> Scottish Government (2023) National Planning Framework 4. Available: [National Planning Framework 4 \(www.gov.scot\)](#)

<sup>366</sup> Department for Business & Trade and Department for Business, Energy & Industrial Strategy (2023) Critical Minerals Refresh: Delivering Resilience in a Changing Global Environment. Available: [Critical Minerals Refresh: Delivering Resilience in a Changing Global Environment \(published 13 March 2023\) - GOV.UK \(www.gov.uk\)](#)

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Sustainability Topic / Baseline	England	Wales	Scotland	Northern Ireland
Resources & Waste:	230 onshore licences, covering 529 blocks. The 14th Licensing Round was announced on the 17th of December 2015 with the award of 159 new blocks under 93 new licences. <sup>367</sup>			
Exploration Licenses	In England, the licensing functions are carried out by the Oil and Gas Authority <sup>354</sup> .	From 2018, Welsh Ministers are responsible for licensing the exploration and development of Wales' onshore petroleum resources <sup>368</sup> .	From 2018, onshore oil and gas licensing powers were devolved to Scotland <sup>369</sup> .	Any person who wants to explore for, drill for or extract oil or gas in Northern Ireland must hold a petroleum licence granted by the Department for the Economy (DfE) under the Petroleum (Production) Act (Northern Ireland) 1964 <sup>370</sup> .
<p>For the UK, the scenarios for meeting the Sixth Carbon Budget and Net Zero in 2050 require large and rapid reductions in consumption of oil and gas<sup>371</sup>. The UK is a mature basin and in their 2021 reserves and resources report, the Oil and Gas Authority warned that without further exploration the UK faces a cliff edge in production decline and increased reliance on imports. The North Sea Transition Deal, signed in March 2021, has ambitious milestones for the offshore sector to support the government's objective of reaching Net Zero, for example challenging production emission reduction targets (10% by 2025, 25% in 2027 and 50% by 2030) and enabling Carbon Capture, Utilisation and Storage at scale.<sup>372</sup></p>				

<sup>367</sup> UKOOG Licensed areas. Available: [Licensed Areas | UKOOG](#)

<sup>368</sup> Welsh Government (2021) Petroleum Licensing Functions in Wales: Frequently Asked Questions. Available: [Petroleum Licensing Functions in Wales: Frequently Asked Questions \(gov.wales\)](#)

<sup>369</sup> Scottish Government Oil and gas (Accessed 19/07/2023) Available: [Oil and gas - gov.scot \(www.gov.scot\)](#)

<sup>370</sup> Department for the Economy Petroleum licensing (Accessed 19/07/2023) Available: [Petroleum licensing | Department for the Economy \(economy-ni.gov.uk\)](#)

<sup>371</sup> Climate Change Committee (2022) Letter: Climate Compatibility of New Oil and Gas Fields. Available: [Letter: Climate Compatibility of New Oil and Gas Fields - Climate Change Committee \(theccc.org.uk\)](#)

<sup>372</sup> OEUK (2022) Designing a climate compatibility Checkpoint for future oil and gas licensing in the UK Continental Shelf – OEUK Response. Available: [OEUK- Consultation-Response-28.02.2022-Designing-a-climate-compatibility-checkpoint-for-future-oil-and-gas-licensing-in-the-UK-.pdf](#)

This consultation is available from: [www.gov.uk/government/consultations/fusion-energy-facilities-new-national-policy-statement-and-proposals-on-siting](https://www.gov.uk/government/consultations/fusion-energy-facilities-new-national-policy-statement-and-proposals-on-siting)

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