ENVIRONMENTAL
Standards Scotland
Ìrean Àrainneachdail na h-Alba

Environmental Standards Scotland

Baseline Evidence Review – Land and Soil

(Strategy and Analysis)

September 2022

Contents

Version Control

Version	Author	Purpose	Date
1.0	ESS	Baseline evidence review of public sources accessed up to August 2022.	30/09/2002

Executive summary

This baseline evidence review provides a high-level summary of key published information about the current position, recent trends and performance and progress towards relevant targets and standards in the area of land and soil in Scotland.

Introduction

A series of rapid reviews of key evidence sources were undertaken to support the identification of environmental issues of most concern. The reviews inform where Environmental Standards Scotland's (ESS) proposes to focus its initial analytical work.

Eight reviews were produced, covering the environmental categories of air; biodiversity and ecosystem resilience; climate change; cross-cutting environmental governance; land and soil; population, human health and cultural heritage; resource use and waste; and water. These categories are primarily intended to help Environmental Standards Scotland organise, manage and prioritise its work and are based on those used in the Strategic Environmental Assessment and the Environmental Impact Assessment processes. Considering the evidence within each category provides a structure for assessment.

There will be overlaps amongst these categories and to minimise duplication, topics have been covered under what was considered to be the most relevant category. For example, there is some overlap between this review and the 'Biodiversity and Ecosystem Resilience' review in relation to land coverage and habitats.

Rapid reviews were undertaken in each topic area, with a narrow scope of identifying key data sources and summarising what they tell us about how the environment is changing in Scotland. The focus was on National or Official Statistics and Annual Reports and their related data, mainly from Government and other national organisations, to obtain a high-level summary of current environmental conditions and to ensure confidence in the quality of the information.

The approach started with the data, considering whether Scotland is on track to achieve its current environmental targets and objectives. They are not intended to be detailed explorations of individual issues e.g. reasons for contamination of any particular land sites. Similarly, they are not intended to provide exhaustive lists of relevant legislation. If a topic is not included, it is because it is covered in another

review or relevant published data was not found within the scope of the review at this point. However, the topic will still form part of ongoing horizon scanning activity and could be explored in the future with relevant organisations.

Future stages of analysis will consider whether performance trends relate to any issues of compliance with or effectiveness of environmental legislation and scrutinise the detail underpinning trends identified.

ESS' monitoring and analysis work will progress through a series of stages. This will range from horizon scanning to identify high-level areas of concern, through to a deepening analysis and understanding of how things are changing, the causes of this, and how policy and regulatory decisions affect this. All of the monitoring and analysis work will be focused on identifying areas where further investigation or use of ESS' powers may be necessary, then supporting active investigations, and assessing whether the changes that have been made in response to ESS' recommendations or use of powers are having the desired impact.

As the analytical priorities are taken forward, it is likely that some will quickly be identified as not having any compliance or effectiveness issues that merit further analysis or investigation at this stage. These can then be returned to horizon scanning in case an issue arises in the future, and a new issue can be added to the list of those subject to more detailed analysis. The list of analysis priorities is expected to be dynamic and regularly updated. The evidence reviews, however, are a snapshot in time as of August 2022 and there is no plan for these to be updated on a regular basis.

Summary of key baseline evidence review findings

Scotland has met its target to protect 10% of its seas and to protect 17% of its land by 2020. However, it did not meet its national target for 80% of features in protected areas to be in favourable condition. It remains to be seen whether Scotland will meet the target to protect 30% of land by 2030 (30 by 30).

The effectiveness of the protected area system for biodiversity and nature conservation, and the focus on designating sites to meet the 30 by 30 target, has been critiqued by academics and environmental organisations. They have argued that the focus on designating sites is not sufficient to achieve environmental

improvements and that more focus on the features being protected will be needed to ensure benefits are realised from protected areas.

Scotland's land is used for a variety of purposes, with the predominant land use being agriculture. Forestry is also a significant land use. Peatland is an internationally important landscape type in Scotland. However, 80% of Scotland's peatland is thought to be degraded with significant implications for greenhouse gas emissions. It should be noted that the number of protected peatland sites in favourable condition is increasing with restoration programmes.

There is not enough data available to draw a conclusion about the overall state of Scotland's soils. Whilst reports summarising the state of Scotland's soils exist, all conclusions have been limited due to the lack of data to assess the state of and trends in soil health. Nonetheless, a variety of pressures threatening soil health have been identified, such as climate and land use changes leading to threats such as loss of organic matter, changes in soil biodiversity, and erosion and landslides.

There is a lack of up to date information on the number and state of contaminated land sites in Scotland meaning it is difficult to fully understand the extent of contaminated land. The information that is available suggests that the number of contaminated land sites, and the number of vacant and derelict land sites, is decreasing in Scotland. However, the current approach and legislation for contaminated land may be masking problems. Further analysis is therefore needed.

Conclusions for initial ESS analytical priorities

This baseline review identified a wide range of possible issues for further analysis, including the target to protect 30% of Scotland's land by 2030, the effectiveness of the contaminated land system and agricultural policy development.

However, for the purposes of setting out initial analytical priorities, ESS will focus on:

- Developing a better understanding of the current status of soil health, controls and monitoring.

ESS' proposed Strategic Plan describes how issues will be prioritised for further analysis according to a range of criteria, including:

- Importance – the size and risk of the potential effect on the environment and/or public health; the urgency with which improvement is required;

- Nature and Scope – recent trends in environmental performance; whether the issue of concern appears to be systematic and/or longstanding;
- Neglect – whether there has been action taken on the issue of concern, or further action is planned in the near future; and
- Added-value – the contribution we could make, considering whether other monitoring, oversight or scrutiny bodies are planning to take, or could take, action to address the issue of concern.

This priority in the area of land and soil takes account of that scheme. It recognises the importance of soil health due to its cross-cutting influence in many environmental and social areas such as for agriculture, climate change, biodiversity and water quality. It also considers the lack of data currently available to assess the status of Scotland's soil health. In keeping with the prioritisation process, the contributions of other actors and the added value that ESS can bring to an area will also be considered, in deciding where to focus future work.

Although ESS intends to focus on one issue in the first instance, other issues will be retained on a list for potential future analysis and horizon scanning in line with the stages of monitoring and analysis work set out in the strategic plan.

Land and Soil Baseline Evidence Review

1. Introduction

Scotland has 77,900 sq km of land area[1], including an estimated over 900 offshore islands[2] (of which 93 were inhabited as at the 2011 Census)[3]. This land is used for a variety of purposes and provides a large number of goods and services including food production, recreation and urban areas.

Scotland is also home to a range of internationally important landscapes and habitats including peatlands and those found in national parks.

2. Methodology

A rapid review of key evidence sources has informed this report. This has focussed on scanning across the topic area, identifying key data sources and summarising what they tell us about how the environment is changing in Scotland and whether environmental targets and objectives are on track to be achieved.

The scope of the work was deliberately narrow and was intended to provide a snapshot of the evidence rather than a fully comprehensive picture. Where ESS' initial assessment of the evidence has identified potential concerns or issues that warrant further scrutiny, more detailed monitoring and analysis will be considered.

The work focussed on published analytical reports and datasets, searching for relevant evidence by:

- using the terms 'land' and 'soil' sometimes in combination with 'health', 'condition', 'management', 'protected', 'contaminated', 'use', 'change' and / or 'planning'.
- having searched for the broad terms above, sometimes specific searches were undertaken for particular types e.g. 'agriculture' or 'forestry'.
- where necessary these terms were combined with 'Scotland', 'UK', 'EU' or 'International' to search for comparisons with other countries.

These terms were derived from ESS' environmental categories and sub-categories. Specific searches of key organisations' websites were also undertaken, based on knowledge and understanding of those active in the area. For land and soil data this focussed on NatureScot, Joint Nature Conservation Committee (JNCC), Scottish Government, The James Hutton Institute and SEPA. There is some subjectivity in

the choice of terms and organisations which may have an impact and were somewhat mitigated by consulting with key stakeholders on sources.

The focus of the reviews was on National or Official Statistics and Annual Reports and their related data, mainly from Government and other national organisations. This enabled ESS to obtain a high-level summary of current environmental conditions with a tight scope which allowed the reviews to be completed in time to inform strategic plan development. Only publicly available information was considered, Individual research reports or grey literature on specific, detailed areas of the topic were not within scope. Evidence of issues relating to compliance with or effectiveness of environmental legislation was not the focus at this stage. It is envisaged that this will form part of future analysis activity on priority analytical areas.

The approach started with the data, considering whether Scotland is on track to achieve its current environmental targets and objectives in this area. They are not intended to be detailed explorations of individual issues e.g. of any one particular pressure on soil health. Similarly, they are not intended to provide exhaustive lists of relevant legislation.

Baseline evidence reviews have been undertaken in each of the ESS Environmental Categories and there are naturally some topics which could fall across a number of reviews. For example, many of the issues relating to protected habitats have been considered in the ‘Biodiversity and Ecosystem Resilience’ review and this is covered to a lesser extent here.

If a topic is not included, it is because it is covered in another review or no relevant published data was found within scope. However, the topic is likely to still form part of future horizon scanning activity and could be explored further with relevant organisations.

Initial drafts of the evidence reviews were shared with the ESS Board and with key identified analytical stakeholders to provide proportionate check that no key sources had been missed and no information had been misinterpreted. Going forward into more detailed analytical projects and undertaking further horizon scanning, ESS expects to engage a wide range of experts, including academics and specialist organisations.

3. Baseline evidence for environmental areas

Protected sites/special areas

There are many different types of protected areas/special sites, which may be designated for different reasons, such as for biodiversity, landscape features and recreation. Types of designations include country parks, national parks, special sites of scientific interest (SSSI), special areas of conservation (SAC), special protection areas (SPA) and Ramsar sites. More detail on the number of designated sites of each type can be found on the Nature Scot website[4] and more discussion can be found in the 'Biodiversity and Ecosystem Resilience' evidence review.

Extent of protected areas

The Global Aichi Targets (Target 11) set by the Convention on Biological Diversity committed Scotland to have:

> 'at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes'[5].

In addition, in 2020 the Scottish Government committed to protect at least 30% of Scotland's land for nature by 2030[6], known as the 30 by 30 commitment. The Bute House Agreement also includes various commitments to improve the systems of protected land and sea[7].

As of March 2021, 17.6% (1.4 million hectares) of Scotland's terrestrial land received protection from SSSI, SPA, SAC and Ramsar sites (the indicator represents the net non-overlapping extent of these sites). When including landscape scale sites (National Nature Reserves, National Scenic Areas, and National Parks), this figure rises to 29.6% (2.3 million hectares) [8]. 36.9% of Scotland's marine environment receives protection[8]. This is illustrated in Table 1, alongside international comparisons. The different figures quoted above including different types of sites are referenced in different reports, and there is not necessarily a clear explanation of when one should be used over the other[9]. Scottish Environment Link, a voluntary organization, have suggested that the sites included in the restricted indicator

(excluding landscape scale sites) capture the most important areas for wildlife and that the landscape scale sites are not necessarily designated to conserve wildlife[10].

Either way, Scotland has achieved the area percentages set out in Aichi commitment in this area. However, its own reporting assesses this target as having 'insufficient progress' since it has not met its own national targets on protected area condition (discussed below)[11]. This highlights that analysing the extent of protected areas alone is not sufficient and is unlikely to provide adequate insight into the effectiveness of the protected area system and the protection afforded to land, soil, biodiversity and other features they are designed to protect.

Condition of protected areas

Scotland has a national target for 80% of designated features to be in favourable condition[12].

As part of their Site Condition Monitoring (SCM) programme[13], NatureScot publishes an official statistic measuring how many features within SSSI, SAC, SPA and Ramsar sites are in favourable or improving condition.[14] This statistic contributes to Scotland's national performance framework indicators[15]. The latest statistics show that the proportion of natural features in favourable or improving condition on protected sites at 31st March 2022 was 77.9%. The change from 2021 was assessed as stable and the long term trend (2005-2022) was assessed as increasing[14]. However, examining the statistics over time, they show that the proportion of features in favourable condition peaked in 2016 at 80.4% and has decreased since then. It is also important to note that the 77.9% favourable figure includes 65.0% assessed as favourable, 6.5% assessed as unfavourable recovering and 6.4% assessed as unfavourable recovering due to management change.

Only 60 SCM feature assessments were completed in 2021/22. Site visits to assess features were limited due to Covid-19 restrictions and staff absences meaning most of these relied on assessment reports from previous years.[14] Furthermore, there has been some criticism, for example from Scottish Environment Link, that the SCM has faced budget cuts and that the number of sites being monitored has declined.[16]

More detail on the evidence underpinning this statistic including breakdowns by feature type (such as habitats and species) can be found in the biodiversity baseline evidence review.

Progress towards targets

Scotland has achieved the Aichi targets of protecting 17% of terrestrial and inland water areas and 10% of coastal and marine areas with 17.6% of terrestrial and inland water areas protected and 36.9% of marine and coastal areas protected. However, Scotland also has a national target for 80% of designated features to be in favourable condition[12]. As 78.3% of features were assessed to be in favourable condition in 2021, Scotland has missed this target.

Therefore, in its progress report against the Aichi targets, Nature Scot concludes that Scottish progress has been insufficient against Aichi target 11 to increase and improve protected areas[11]. It remains to be seen whether Scotland will meet the 30 by 30 target for land.

Overall effectiveness of the protected area system

There have been a few reviews of the protected area system in Scotland and the UK. However, there is a lack of a comprehensive, up to date assessment.

In 2014, NatureScot invited a panel to review the role and purpose of Scotland's network of protected areas for nature[17]. The panel's report[18] concluded that while protected areas have 'contributed significantly to the safeguarding of nature', they are not sufficient to be the only tool to tackle the increasing pressures on biodiversity. They argue that the ongoing decline in biodiversity shows that more work is needed to improve the role that protected areas play. They suggest that the lack of effectiveness of the current system is due to a number of factors including protected areas becoming increasingly isolated from each other, wider land use, and society; protected areas focusing on rarity and maintaining the status quo rather than responding to the changing environment; and other policies not taking a sufficient share of their responsibility to protect the natural world. To tackle these issues they propose a number of initiatives such as developing a new vision for protected areas including a focus on outcomes, their role in the bigger picture of tackling biodiversity loss and adapting to a changing environment; changing the policy framework so that it is more supportive and coherent and eliminates silos; and exploring opportunities to involve people in decisions about the establishment and management of protected areas. Following on from this work, during 2020 Nature Scot's Protected Areas Committee instigated a review of protected areas, aiming to gather experience and good practice examples. The review included stakeholder webinars and the

production of ‘think pieces’ to draw together thinking and knowledge gaps[17]. There does not yet appear to be a report or final outcome from this work.

Nature Scot and JNCC have also published reviews of specific types of protected areas[19,20], which ESS could explore further if deciding to focus a piece of work on these particular protected areas.

There have also been some recent critiques of the effectiveness of the protected area system in Scotland, including the 30 by 30 target. For example, a recent report published in the scientific journal Nature concluded that protection alone does not guarantee good biodiversity outcomes[21]. Furthermore, a report by the British Ecological Society suggests that the coverage of protected areas which are effective could be as low as 5% in the UK. Issues identified included insufficient funding, pressures inside and outside of boundaries and some protected areas not being designed to specifically prioritise biodiversity. They also argue that while more protection is required to aid nature recovery, this is not sufficient for biodiversity recovery due to insufficient funding, pressures on the environment and a lack of prioritisation of biodiversity, among other factors. They propose a new set of criteria for a protected area to meet to be counted towards the 30 by 30 target which they argue will improve the effectiveness of the protected area system for protecting biodiversity.[22] This issue was also highlighted by Scottish Environment Link who suggest that simply designating sites to meet the 30 by 30 target will not be enough to see biodiversity improvements[16].

UK comparisons

Table 1: Percentage of land and sea protected in Scotland and the UK[8]

Country	Total % land protected	% land protected by specific designations	Total % seas protected
Scotland	29.6	17.6	36.9
England	26.4	6.5	40.3
Wales	29.4	10.6	50.3
Northern Ireland	28.4	9.8	35.6
United Kingdom	27.8	10.6	38.2

Source: Joint Nature Conservation Committee, UK Biodiversity Indicators 2021, C1. Protected Areas

The specific designations mentioned in the table are: Area/Site of Special Scientific Interest, Marine Conservation Zones, Nature Conservation Marine Protected Areas, National Nature Reserve, Ramsar, SAC and SPA site designations . Excluded in the table are Areas of Outstanding National Beauty, National Scenic Areas and National Parks (these are included in the total figure).

Scotland has a higher percentage and area of land protected by specific designations compared to the rest of the UK. England and Wales have a higher percentage of protected seas than Scotland. However, these percentages mask the fact that Scotland has a much larger sea area to consider and actually it has protected by far the greatest area at 22.8 million hectares, compared to 9.3 million hectares for England, 1.5 million hectares for Wales and 0.2 million hectares for Northern Ireland[8].

Across the UK, the total extent of protected areas (including the wider landscape designations) on land has increased in the long-term (1950 to 2021) with no change in the short-term (2016 to 2021). The total extent of marine protected areas in the UK has increased in both the short and long-term[8].

Summary

Scotland has met the global Aichi target to protect 10% of its seas and to protect 17% of its land by 2020. However, it did not meet its national target for 80% of features in protected areas to be in favourable condition. As a result, the final report on Achi progress recorded this Protected Areas target as having ‘insufficient progress’ despite achieving the area targets.It remains to be seen whether Scotland will meet the target to protect 30% of land by 2030 (30 by 30).

Scotland has a higher percentage of protected land compared to the rest of the UK. Scotland has a lower percentage of protected seas than England. However, Scotland has a larger number of hectares of protected seas compared to other countries within the UK given its much greater sea area.

The effectiveness of the protected area system for biodiversity and nature conservation, and the focus on designating sites to meet the 30 by 30 target, has been critiqued by academics and environmental organisations. They have argued that the focus on designating sites is not sufficient to achieve environmental

improvements and that more focus on management and the features being protected will be needed to ensure benefits are realised from protected areas.

More information can be found in the Biodiversity Baseline Evidence Review.

Land use and land management / Land use change and planning

More information about the extent of habitats in Scotland can be found in the biodiversity baseline review.

Agriculture

Agriculture is the predominant land use in Scotland. The 2020 Scottish Agricultural Census[23] found that 5.64 million hectares (excluding common grazings, representing over 70% of total land area) were used for agriculture. This has remained relatively stable since 2010. There are a variety of different land uses within agriculture including crops and livestock. The 2020 Census found that rough grazing made up the majority (55%) of agricultural land, followed by grass (23%), crops and fallow (10%), woodland (10%) and other land (2%).

However, Scotland's land quality is generally quite poor for agricultural uses. ‘Less-Favoured Areas’’ (LFA)[23] account for 85% of Scottish agricultural. LFA land has a natural disadvantage which makes agricultural production difficult and this is why the majority of Scotland’s agricultural area is used for livestock grazing.[24]

Agricultural policy is currently being reformed in Scotland after the EU exit including the development of replacement for the Common Agricultural Policy and the development of an Agriculture Bill in 2023. This will likely affect land use by agriculture[25].

Forestry

In 2021 woodland covered 19% (1.5 million hectares) of the total land area in Scotland.[26] This represents an increase from 4.5% in the early 1900s, 11.8% in 1980 and 16.4% in 1995-99. 74% of this area is made up of conifers and 26% of broadleaves. These increases are due to new planting, Scottish Rural Development Contracts, or by natural colonisation of trees on land near existing woodland. Decreases in woodland area can result from the conversion of woodland to other land uses.[27] 10.66 thousand hectares were planted in Scotland in 2020-21 up from 4.76 in 2016-17 and mostly by the private sector. 9.17 thousand hectares of publicly funded restocking were reported (where trees are replaced when they have been felled) in Scotland in 2020-21[26].

Peatland

While not strictly a land use, peatland habitats are an important landscape type and their condition is strongly affected by land use. Some of the information included in this section is related to soil health and quality.

The Ramsar convention's definition of peatland is 'Peatlands are ecosystems with a peat deposit that may currently support vegetation that is peat-forming, may not, or may lack vegetation entirely'[28]. Peatlands in natural condition sequester (take up and hold) carbon. However, although damaged peatlands still hold carbon, they are more likely to be a net source of greenhouse gas emissions which contribute to climate change[29]. There are different types of peatland habitat including blanket bog (rare habitat worldwide, found in the uplands), raised bog (found in the lowlands), fens (including many types of fens) and bog woodland (very rare)[28].

Peat soils cover over 20% of Scotland's land area[28,30] and are thought to store around 1,600 million tonnes of carbon[31]. However, it is thought that over 80% of the UK's peatland, with most of this being in Scotland, is damaged. It is estimated that 70% of Scotland's blanket bog and 90% of raised bog area has been damaged to some degree[28,32]. However, peatland features in protected sites (SSSIs, SACs and RAMSAR sites) in Scotland in favourable condition show an increase from 2007 (333 features) to 2018 (428 features), an increase from 58.1% of total peatland features to 69.8%.[33] The most recent data suggests that, as at March 2022, 68.5% of peatland features in protected sites were in favourable condition[34]. There is no data source that has condition of peatlands in the UK for a consistent reference year and so further data would be required to fully understand the state of peatlands in the UK[33].

The first National Peatlands Plan was published in 2015[28] and the Scottish Government have funded a Peatland ACTION project to restore peatlands[35]. The UK Peatland Strategy was published in 2018 and aims to coordinate action within the UK[36].

The most recent (2022) estimates suggest that the median restoration cost per hectare of peatland in Scotland is £1026, based on data showing costs that were actually incurred during restoration projects[37]. However, the cost of restoration varies based on the activity required. Preliminary findings suggest that the restoration cost per hectare was found to be approximately twice as high in the presence of forest-to-bog restoration relative to unforested peatland. Costs are also higher on sites that

are actively eroding and require removal of scrub and forestry. However, it is important to also consider the benefits of peatland restoration and whether they vary with restoration costs.

Other land uses

There are a variety of other land uses in Scotland, however there is not as much detailed evidence on these as for agriculture and forestry. For example, other important land uses in Scotland include sporting, recreation and urban[38]. The Scottish Government Urban Rural Classification 2020[39] quantified the extent of urban and rural land uses, categorised by population density and accessibility. They report that 2.25% of Scotland's total land area is urban, with the rest being rural. 68.7% of Scotland's land area is considered to be remote rural i.e. areas with a population of less than 3,000 people, and with a drive time of over 30 minutes to a settlement of 10,000 or more. Table 2 shows the proportion of Scotland's land within eight more detailed urban/rural categories. The Scottish Government Urban Rural Classification 2020[39] also provides a visualisation of the extent of urban and rural land uses.

Table 2: Land Use Types in Scotland[39]

Classification	Area (sq-km)	% of total land area
Large Urban Areas	623.98	0.80
Other Urban Areas	801.17	1.03
Accessible Small Towns	234.48	0.30
Remote Small Towns	42.44	0.05
Very Remote Small Towns	53.16	0.07
Accessible Rural	22,635.29	29.04
Remote Rural	21,189.37	27.19
Very Remote Rural	32,357.22	41.52

Source: Scottish Government Urban Rural Classification 2020

The Habitat Extent and Condition, Natural Capital, UK 2022 report[40] provides an alternative sources of information on urban areas and green space. It stated that there was 176,000 hectares of urban area in Scotland (broadly the same as the large

urban, other urban, accessible and remote small town land area in the urban rural classification above). Of this, 12,700 hectares was functional greenspace (7% of urban area) and 7,710 hectares of publicly accessible green space (4% of urban area).

It is also important to note that many areas of land in Scotland have multiple land uses.[38]

Land use change and planning

An updated land use strategy for Scotland was published in March 2021, with the previous land use strategies being published in 2011 and 2016. The publication of these strategies is required under the Climate Change (Scotland) Act 2009.[41] The strategy sets out the government's long term vision for sustainable land use in Scotland. The Act also requires Scottish Ministers to produce an annual progress report. While there has not yet been a progress update on the 2021-2026 land use strategy, two progress reports on the 2016 to 2021 strategy were published in 2020[42] and 2021[43]. However, these focus on activities, policies and plans that have been put in place to deliver the outcomes and do not describe progress on the environment level outcomes themselves.

The latest strategy includes 10 monitoring indicators. Some of these are also reported elsewhere such as under the climate change plan, the environment strategy and the Scottish Government's National Performance Framework[15]. Most have been covered in other ESS baseline evidence reviews. For example, greenhouse gas emissions are covered in 'Climate Change'; high nature value farming and forestry, natural capital asset index and terrestrial breeding birds are covered in 'Biodiversity and Ecosystem Resilience' and water ecological status is covered in 'Water'.

A new National Planning Framework (NPF4) is currently under development, with the consultation period having closed on 31st March 2022. The draft framework sets out a vision for how Scotland's places will change in the future, with a vision for 2045.[44] The amended Town and Country Planning (Scotland) Act 1997 directs that the National Planning Framework must contribute to six outcomes:

- improving the health and wellbeing of our people;
- increasing the population of rural areas;
- meeting housing needs;

- improving equality and eliminating discrimination;
- meeting targets for emissions of greenhouse gases; and
- securing positive effects for biodiversity.

NPF4 will also guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities.[45] Progress reports against previous National Planning Frameworks have been published. The most recent report against NPF3 published in 2019 found that progress had varied since its implementation with some actions completed, some still to be developed and some shifting in priorities and challenges[46]. Further analysis would be required to determine whether progress has been sufficient.

Scottish Environment Link have provided some criticism of land use policy in Scotland[47]. Specifically, they argue that while the vision and objectives of the land use strategy are commendable, they are broad and often difficult to measure and achieve, with a lack of implementation plans.

International comparisons

The area of woodland in the UK at 31 March 2021 was estimated to be 3.2 million hectares. Of this total, 1.5 million hectares (46%) was in Scotland, 1.3 million hectares (41%) in England, 0.3 million hectares (10%) in Wales and 0.1 million hectares (4%) in Northern Ireland.

Conifers account for around one half (51%) of the UK woodland area, however this proportion varies from around one quarter (26%) in England to around three quarters (74%) in Scotland. Woodland area in the UK has risen by around 300,000 hectares (11%) since 1998. It appears that this increase has been driven by an increase in woodland cover in Scotland, however further analysis would be needed to confirm this conclusion[26].

A total of 0.86 million hectares of woodland in the UK (27%) is owned or managed by Forestry England, Forestry and Land Scotland, Natural Resources Wales or the Forest Service (in Northern Ireland). 1.41 million hectares of woodland in the UK were certified in March 2021, meaning that they have been independently audited against the UK Woodland Assurance Standard. This is a 1% increase from 2020. The area of certified woodland represents 44% of the total UK woodland area, 24% in England, 47% in Wales, 60% in Scotland and 55% in Northern Ireland[26].

The UK is amongst the top ten nations of the world in terms of its total peatland area. It has between 9-15% of Europe's peatland area (46,000-77,000 km2) and about 13% of the world's blanket bog – one of the world's rarest habitats[48]. Peatlands are estimated to account for around 12% of UK land area, storing over 3 billion tonnes of carbon[33]. Scotland contains a high proportion of the UK's peatland, approximately 66%[33,49].

In England, between 2011 and 2018 the number of protected sites (SSSI, SAC and RAMSAR sites) areas classified as favourable for blanket bog, lowland fens and lowland raised bog has increased, however, upland flushes, fens and swamps has seen a decline in areas in favourable condition.[33] As mentioned above, Scotland has seen an increase in the number of protected features classified as favourable for all types of peatland areas to 2018 though this has decreased slightly to 2022.

There is a lack of an official report on the state of the EU's peatlands. However, recent research concluded that 25% of Europe's peatlands are degraded. This figure rises to 50% in the EU alone[50]. The report also concluded that in over half of Europe's mire (peatlands where peat is being formed) regions the target of at least 17% of the area being protected for peatlands is not met. There are some European initiatives to restore and protect peatlands including the LIFE peat restore project involving six countries[51].

The Habitat extent and condition, natural capital, UK report published by the Office for National Statistics gives further insight into the cover of natural habitats in the UK. The extent of UK land cover by each habitat type from the 2022 report[40] is presented in Table 3.

Table 3: Land cover of habitat types in the UK[40]

Habitat type	Cover (hectares)	% of UK land cover
Enclosed farmland	12,694,693	52
Woodland	3,268,707	13
Mountain, moorland and heath	2,584,348	11
Semi-natural grasslands	2,493,388	10
Urban	1,843,901	7
Freshwater, wetlands and floodplain	1,330,499	5
Coastal margins	390,796	2

Source: Office for National Statistics, Habitat extent and condition, natural capital, UK: 2022

In terms of trends, the 2022 Habitat extent and condition, natural capital, UK report also found that in the UK the extent of urban environments increased 30%, freshwater, wetlands and floodplains by 25% and woodlands by 29% while mountain, moorland and heath decreased by 22% and enclosed farmland by 5% between 1990 and 2019. The extent of UK farmland that is woodland has increased from 2% in 1984 to 6% in 2020 and land used for organic farming in the UK decreased 32% between 2010 and 2020.

The indicators for the condition of these habitats is broken down by country, but the indicators for size of the habitat is not. The condition of habitats is covered in the Biodiversity baseline evidence review.

Summary

Scotland's land is used for a variety of purposes, with the predominant land use being agriculture. Forestry is also a significant land use.

Peatland is an internationally important landscape type in Scotland. However, 80% of Scotland's peatland is thought to be degraded, with significant implications for greenhouse gas emissions. However, the number of protected peatland sites in favourable condition increased to 2018 though has decreased slightly to 2022.

There have been recent developments in land use policy which may merit further analysis to understand their effectiveness and implications for environmental and human health outcomes.

While this section has taken a general view of land use further work would be needed to fully understand all of the land uses in Scotland. In addition, while the data reported are thought to reflect genuine trends, changes in reporting practices from year to year mean they should be interpreted with caution.

Soil health

Soil has a number of functions, such as growing food, controlling the quality and quantity of water flow, and storing carbon. Soil quality is defined as the ability of soils to carry out these functions.[52] Soil health is slightly different and was defined by the Intergovernmental Technical Panel on Soils (ITPS) in 2020 as 'the ability of the soil to sustain the productivity, diversity, and environmental services of terrestrial ecosystems'.[53]

This report will largely focus on soil health with some references to quality. It is important to note that soils with a certain characteristic may be considered healthy or of high quality in one area but not in another due to the functions it is expected to carry out.

The Scottish Soil Framework[54] outlines the Scottish Government's vision for the protection of soils and highlights that there is currently no overarching policy framework or piece of legislation for the protections soils. ClimateXChange have also commissioned a review of soil governance in Scotland[55,56].

There are a range of policies and legislation that provide some protection for some aspects of soils. However, the policy and legislation landscape is complex, with over 60 different policies and laws that protect some aspects of soils and influence how they are managed[57]. In addition, much of the policy and legislation does not focus on soil health overall[54]. For example it may only focus on one function of soil and is often primarily focussed on other aspects of the environment, such as biodiversity and water quality, with soil protection as a secondary outcome. This complex policy and legislative landscape presents challenges for identifying legal breaches[58].

Current state of soil health

ESS commissioned a review in 2021 in relation to environmental priorities[58] which found that to date, no single or composite indicators of soil health have been identified in Scotland. Therefore, it is not possible to analyse the overall current state of soil health in Scotland. Indeed, soil health is listed as an indicator within the Environment Strategy for Scotland's initial monitoring framework. However, it is noted that 'options for undertaking additional work to identify strategic indicators of soil health are being explored'[59] and no current data or measure is provided. The ITPS states that there is no single measure that captures all aspects of soil health[53].

This is likely due to the wide variety of functions that soil health encapsulates. Therefore in order to understand the state of soil health in Scotland, it is likely that a variety of indicators should be analysed. ClimateXChange recently commissioned a report which analysed the indicators available for soil health and found 13 potential indicators[60]. However, the report noted that 'no single indicator measures the full range of relevant properties encompassing all soils or climactic conditions'. The study highlights that further work is needed to understand the factors affecting these indicators before they can be used effectively. Another ClimateXChange commissioned report identified a subset of the indicators which 'may be directly relevant to monitoring soil health within different land use categories across Scotland' but noted that further work was required to explore interactions and applications in policy contexts.[61] Therefore, while there has been some progress in identifying indicators for soil health in Scotland, there is not currently a suite of indicators available for analysis and so further work is required.

The most recent State of Scotland's soils report was published in 2011[62], as a result of a commitment in the Scottish Soil Framework[54] and expanded on a 2006 report summarising the current state and trends of Scotland's soil resource[63]. The report concluded that there is a lack of data to assess the state of Scotland's soils or any changes over time. However, it does provide some information on Scotland's soils. Key findings included:

- Scotland's soils were found to be highly variable due to the diverse geology and climate, and therefore different to soils found in the rest of the UK and Europe.
- Scottish soils store over 50% of the UK's soil carbon and are expected to play a significant role in mitigating greenhouse gas emissions.
- Some Scottish soils support internationally important habitats, for example blanket bog, heather moorland and machair, which may also have a strong regional identity.
- Scotland's soils are relatively young compared to others worldwide and have been developing since the last Ice Age.
- The majority of Scottish soils have highly organic surface horizons meaning they are acidic and have low inherent fertility.

- Human activities have radically altered Scotland's soils through, for example, accumulation of contaminants from waste application to land and deforestation.
- Many soils are also poorly drained[62].

The 2011 State of Scotland's soil report builds on a 2006 report which also summarises the state of Scotland's soils and the threats to their quality. The 2006 report concluded that based on the limited information at the time, Scottish soils were generally of good quality. Only a few soils had high levels of contamination and levels in the remainder are generally low. There is a limited amount of evidence to analyse the effects of serious soil erosion, compaction or other problems related to land management on soil. Some soils are particularly sensitive to acid inputs, but there is some evidence that the extent of this problem has decreased.[63] Further detail on specific aspects of soil quality is provided in the report however further analysis beyond the scope of the current review would be required to understand this.

Maps of soils found in Scotland have been produced[64,65,66] to visualise the types of soil in Scotland, the distribution of specific properties (e.g. topsoil organic carbon, soil texture and available water capacity), the capability of soils for agriculture and forestry and areas of soil vulnerable to specific risks to water quality (e.g. compaction and erosion)[66]. However, they were not complied for the purpose of providing information about soil health and whether it is changing. Furthermore, the data was collected between 1947 and 1981 so data on some aspects, such as soil properties, may be out of date. In addition, the map scales mean they are not sufficiently accurate to assess site specific issues. Therefore, while the soil maps provide some information about soils in Scotland, they do not provide detail on soil health.

As part of the Scottish Soil Framework, the Scottish Government committed to developing a soil monitoring framework[54]. The Soil Monitoring Action Plan was published in 2012 as a result and was informed by the 2011 State of Scotland's Soil Report[67]. An implementation plan for the Soil Monitoring Action Plan was published in 2013, highlighting the need for better monitoring of Scotland's soils. Some actions have been implemented such as better monitoring of soil erosion and soil sealing.

It is important to note that there are other sources of soils data in Scotland that could not be reviewed in the current report as they are not publicly available.

Overall, while there is some data on the types of soil found in Scotland, there is a lack of data on soil health and changes in soil composition over time.

Soil sealing

The extent of soil sealing is one measure of soil health. Soil sealing occurs when soil is covered by a waterproof material or structure such as tarmac or buildings. This can lead to irreversible loss of soil functions[68]. In Scotland overall, the percentage of land affected by soil sealing has slightly increased between 2009 and 2019 from around 1.5% to 1.9% based on a visual inspection of the chart. There is some regional variation with the Clyde and Forth regions having the percentage of land affected by soil sealing, at over 5% and the West Highland and Argyll regions having below 1%[68]. The measure of soil sealing is a proxy based on the extent of Scotland's build environment. It is estimated that 1,400 hectares of Scottish land is sealed every year[69].

Threats to and pressures on soil health

The 2011 State of Scotland's Soils report[62] identified some key pressures on soil health in Scotland. They suggest the most important pressures are climate change (due to changes in soil wetness, soil temperature and also rainfall patterns) and changes in land use and land management (including development). These pressures can result in a range of soil degradation processes (i.e. threats) which damage soil health. The report suggests that the principal threats are loss of organic matter, changes in soil biodiversity, and erosion and landslides although soil sealing was also ranked as important. They highlight the need for policy integration and data to better tackle these issues. However, there is still a lack of quantified information on the threats to soil health[70].

One threat to soil health is soil erosion. A 2020 report published by the Scottish Government estimated the financial costs of soil erosion in Scotland[71]. The calculation of the identified and quantifiable annual costs of soil erosion include: a) on-site costs (e.g. decline in agricultural and forestry yields caused by the reduction in soil depth, and the cost of replacing losses in soil-based Carbon, Nitrogen, Phosphorous and Potassium); and b) offsite costs (e.g. declines in water quality and greenhouse gas emissions). The calculation was made based on data from representative regions and extrapolated to the whole of Scotland. Limited data may therefore restrict the robustness of conclusions. Their estimate of the total annual

costs of soil erosion in Scotland were £49,498,461 (including drinking water treatment costs) or £30,972,155 (not including water treatment costs). Off-site costs of soil erosion exceeded those associated with on-site costs. The research report suggests that this cost justifies the need for investment in soil protection interventions that control soil erosion. The report also found that soil erosion by water is the dominant erosion process in Scotland and that this affects recently felled and newly planted forests and recently ploughed/seeded arable fields in winter cereals. However, they conclude that evidence of erosion rates and their impacts remains sparse and tends to be anecdotal. Therefore, caution may be required in drawing conclusions about the extent and impact of soil erosion at this stage.

Maps have been developed which show the vulnerability of soils to erosion, runoff, leaching and both topsoil and subsoil compaction affecting water quality. These could be used to identify areas at particular risk from these threats[72].

International comparisons

Scotland's soils are highly variable because of the diverse geology, climate and land management practices in Scotland. As a result, their nature and use differs markedly from soils in the rest of the UK and, indeed, most of Europe. For example, 25% of Scotland's soils are cultivated for agriculture (with an additional 45% for rough grazing). This is much lower than in most European countries.[62]

The most recent UK-wide Countryside Survey was conducted in 2007.[73] Detailed findings can be found in the soils report[74] from this work. With respect to the research questions that the 2007 survey was designed to address, the survey found for Great Britain that: there had been no change in soil carbon (in the top 0-15cm of soil) between 1978 and 2007, there has been a loss of soil biodiversity for mesofauna (but the results are uncertain), there had been recovery from acidification since 1998 for mineral soils but not organic soils, in many habitats there has been a reduction in phosphorous levels and that there are highly variable trends in the concentrations of heavy metals in soils.[75] Separate Scotland information is available in the detailed report. A new 5-yearly survey is now being developed with the first findings on soil carbon expected to be reported in 2022 and the full report in 2025[75].

The Intergovernmental Technical Panel on Soils published the first assessment of the state of the world's soils in 2015[76]. The report concluded that:

> ‘while there is cause for optimism in some regions, the majority of the world’s soil resources are in only fair, poor or very poor condition. Today, 33 percent of land is moderately to highly degraded due to the erosion, salinization, compaction, acidification and chemical pollution of soils. Further loss of productive soils would severely damage food production and food security, amplify food-price volatility, and potentially plunge millions of people into hunger and poverty. But the report also offers evidence that this loss of soil resources and functions can be avoided. Sustainable soil management, using scientific and local knowledge and evidence-based, proven approaches and technologies, can increase nutritious food supply, provide a valuable lever for climate regulation and safeguarding ecosystem services.’

Similar threats to those identified for Scotland’s soils have been identified for soils across Europe. Some threats identified in a 2016 European Commission report[70] include erosion by water and wind, decline in soil organic matter, soil compaction, soil sealing, soil contamination, soil salinization, desertification, flooding and landslides, decline in soil biodiversity. The EU have recently published a soil strategy to protect and restore European soils and ensure their sustainable use by 2030[77]. Members of the European Parliament have recommended that the European Commission develop a legal framework for the protection of soils due to the current lack of legal framework[78].

Summary

There is not enough data available to draw a conclusion about the overall state of Scotland’s soils. Whilst reports summarising the state of Scotland’s soils exist, all conclusions have been limited due to the lack of data to assess the state of and trends in soil health.

Nonetheless, a variety of pressures threatening soil health have been identified, such as climate and land use changes leading to threats such as loss of organic matter, changes in soil biodiversity, and erosion and landslides. Similar pressures have also been identified across Europe.

Contaminated, vacant and derelict land

Extent of contaminated land

Part IIA of the Environmental Protection Act (1990)[79,80,81,82,83] defines contaminated land as 'any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that— (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused'[79].

It is important to note that this is a specific definition. Land can be contaminated but not captured under this definition. Land that is contaminated (rather than contaminated land) is considered elsewhere in the review, for example exploring vacant and derelict land statistics as a proxy.

Part IIA is intended to deal with the legacy of historical contamination of land and is underpinned by the 'polluter pays' and 'suitable for use approach' principles. For example, under Part IIA and the associated Planning Advice Notice 33[84], the planning system has responsibility to deal with contaminated land and to ensure land is suitable for new uses. Separate but related legislation covers radioactive contaminated land[85,86,87]. Other legislation applies to preventing contaminated land including the PPC Regulations, the Controlled Activities Regulations and the Environmental Liability Regulations[88].

The Scottish Government states that the amount of contaminated and polluted land in Scotland has been steadily decreasing due to the clean-up of many high-value sites as part of redevelopment projects.[89]

SEPA's 2009 report, Dealing with land contamination in Scotland[90], was the first attempt to show the extent of contaminated and potentially contaminated land in Scotland. The report details the progress made in implementing Part IIA from 2000-2008. SEPA concluded that, overall, the introduction of Part IIA and the contaminated land regime has benefitted Scotland's environment and people. For example, by providing an incentive for voluntary remediation and rehabilitation of sites through the planning system. Key figures regarding the extent of contaminated land in 2009 included:

- Approximately 67,000 sites (82,034 hectares) could be affected by land contamination. However, it is difficult to be certain on the total number of sites affected by contamination within Scotland since different assessment methods are employed across local authorities.
- An estimated 27,000 inspections of land with the potential to be contaminated have already been or are in the process of being undertaken. This represents around 40% of all such sites.
- 807 sites (1,864 hectares) of land affected by contamination were remediated via the planning system or through voluntary remediation.
- Part IIA has enabled the determination of 13 sites (equivalent to 53 hectares). Remediation notices have been served for five sites.

There does not appear to be a more recent report of a similar scope.

Once land is identified as contaminated under Part IIA, it may then be designated as a special site. A special site is contaminated land which meets one of the descriptions in the regulations: for example, land on which a process subject to Integrated Pollution Control[91,82] is / has operated. There are currently three sites in Scotland designated as special sites under Part IIA[91]. Special sites do not necessarily represent the most heavily contaminated land.[91] This may not be the most effective measure of the extent of contaminated land in Scotland because it relies on local authorities inspecting sites. The level of resourcing in local authorities is likely to directly influence the designation of special sites and so the number of such sites may not provide an accurate picture of the level of contaminated land.

Vacant and derelict land

Not all vacant or derelict land is necessarily contaminated, but it can give insight into the state of Scotland's land.[88] The Scottish Vacant and Derelict Land Survey is a regular publication establishing the extent and state of vacant and derelict land.

The most recent publication is for the survey conducted in 2021[92] and was published in May 2022[93]. Key findings include:

- **Extent:** There was 9,459 hectares of derelict and urban vacant land in Scotland in 2021. Of this, 1,898 hectares (20%) were classified as urban vacant and 7,561 hectares (80%) were classified as derelict. This represents a 16% (1,809 hectares) decrease from 2020 when there was 11,268 hectares,

and continues the trend of decreasing derelict and urban vacant land identified since 2015 (12,909 hectares). The decrease between 2020 and 2021 reflects two derelict airfields sites being brought back into use for agriculture and 11 derelict former opencast coal sites becoming naturalised.

- **Location:** More than half (53%) of derelict and urban vacant land was located in five authorities in 2021 - North Lanarkshire (1,354 hectares, 14% of the Scotland total), North Ayrshire (1,189 hectares, 13%), Glasgow City (880 hectares, 9%), East Ayrshire (869 hectares, 9%) and Dumfries and Galloway (756 hectares, 8%).
- **Population proximity:** 27% of the population were estimated to live within 500 metres of a derelict site, though this varies by local authority with North Lanarkshire having the highest percentage at 74% and Na h-Eileanan Siar having none of the population living in proximity.
- **Reclaimed or brought back into use:** 966 hectares of land was reclaimed or brought back into use and 1,019 hectares were recorded as naturalised in 2021. The largest area of land was brought back into use for agriculture (3 sites, 600 hectares) while most sites were brought back into use for residential purposes (116 sites, 137 hectares). In the majority of cases (719 hectares), the source of funding was unknown, while solely private sector funding was the source for 113 hectares brought back into use in 2021 (113 hectares). 104 hectares brought back into use in 2021 involved either a full or partial contribution of public funding.
- **Development potential:** 77% (7,316 hectares) of the total area of derelict and vacant land was reported to be developable while 13% (1,226 hectares) was considered uneconomic to develop and/or viewed as suitable to reclaim for a soft (non-built) use. For 10%, the development potential was unknown. Of the land reported to be developable, 2,012 hectares (28%) was considered suitable for development within five years.
- **Previous use:** Excluding 461 hectares where the previous use was not known, 24% had been previously used for mineral activity (2,120 hectares), 22% for manufacturing (1,987 hectares) and 13% for defence (1,149 hectares).

International comparisons

The most recent report summarising the state of contaminated land in England was published in 2016[94] and covered progress in implementing Part 2A from 2000 to 2013 based on a survey of local authorities undertaken in 2014.

The report found that local councils have spent at least £32 million on inspecting more than 11,000 sites and determined that more than 511 contaminated land sites needed remediation. Of these the majority were posing unacceptable risks to human health with arsenic, lead and benzo(a)pyrene being the most common substances causing contamination.

Remediation has been initiated on 493 of these sites, with work reported as complete at 433 sites. However, there are at least 10,000 sites that need further investigation to establish the risks that they pose following preliminary inspection. Furthermore, the report concluded that proactive identification and remediation of contaminated land is ongoing and will take many years to complete. However, only 60% of the councils in England responded to the survey underpinning the report and for some parts of the survey the response rate was as low as 14%. It is therefore important to interpret the results with caution.

Estimates from the European Environment Agency published in 2014[95,96] suggest that there may be as many as 2.5 million potentially contaminated sites across Europe, which need to be investigated. Of these, approximately 14% (340 000 sites) are expected to be contaminated and likely to require remediation. Approximately one third of these contaminated sites have already been identified and around 15% have been remediated. Of the countries included where data was provided on potentially contaminated sites (12 of 39), the United Kingdom was estimated to have the second highest number at 4.78 per 1,000 capita, behind Belgium (Flanders) at 13.80 and close to France at 4.62. The level of variation is thought to reflect the lack of a common definition of potentially contaminated sites.

The UK did not provide information on estimated numbers of contaminated sites (where there is evidence that they are actually contaminated) to the survey underpinning this report. Based on the 11 countries which did provide information, on average an estimated 5.7 contaminated sites per 10,000 inhabitants were reported.

Summary

There is a lack of up to date information on the number of and state of contaminated land sites in Scotland meaning it is difficult to fully understand the extent of contaminated land, or to compare it to elsewhere. The information that is available suggests that the number of contaminated land sites, and the number of vacant and derelict land sites, is decreasing in Scotland. A similar picture is presented for England. However, according to 2014 statistics, the UK overall has a high number of potentially contaminated sites per 1000 capita compared to other European countries. Definitional issues and lack of data on the number assessed as contaminated mean that this should be interpreted with caution.

However, the current approach and legislation for contaminated land may be masking problems. For example, there are issues with using the number of contaminated land sites as a metric because it depends on the planning system, local authority resources and level of inspection.

4. Summary of next steps

This baseline review identified a wide range of possible issues for further analysis, including the target to protect 30% of Scotland's land by 2030, the effectiveness of the contaminated land system and agricultural policy development.

However, for the purposes of setting out initial analytical priorities, ESS will focus on:

- Developing a better understanding of the current status of soil health, controls and monitoring.

ESS' proposed Strategic Plan describes how issues will be prioritised for further analysis according to a range of criteria, including:

- Importance – the size and risk of the potential effect on the environment and/or public health; the urgency with which improvement is required;
- Nature and Scope – recent trends in environmental performance; whether the issue of concern appears to be systematic and/or longstanding;
- Neglect – whether there has been action taken on the issue of concern, or further action is planned in the near future; and
- Added-value – the contribution we could make, considering whether other monitoring, oversight or scrutiny bodies are planning to take, or could take, action to address the issue of concern.

This priority in the area of land and soil takes account of that scheme. It recognises the importance of soil health due to its cross-cutting influence in many environmental and social areas such as for agriculture, climate change, biodiversity and water quality. It also considers the lack of data currently available to assess the status of Scotland's soil health. In keeping with the prioritisation process, the contributions of other actors and the added value that ESS can bring to an area will also be considered, in deciding where to focus future work.

Although ESS intends to focus on one issue in the first instance, other issues will be retained on a list for potential future analysis and horizon scanning in line with the stages of monitoring and analysis work set out in the strategic plan.

5. Summary of key sources

The end notes to this review provide details of the references and sources used throughout the document. This section is intended to provide a shorter note of those reports (in future iterations) and data sources which have been identified as likely to be important for an ongoing understanding of land and soil in Scotland.

Protected sites/special areas

JNCC, UK Biodiversity Indicators, C1. Protected Areas, https://jncc.gov.uk/our-work/ukbi-c1-protected-areas/#indicator-description-table-c1i-extent-and-percentage-cover-of-protected-areas-by-country-as-at-31-march-2021-for-all-site-types-included-in-the-indicator

NatureScot, Official Statistics for Protected Sites, https://www.nature.scot/doc/official-statistics-protected-sites

NatureScot, Protected Areas for Nature Review, https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/protected-areas-nature-review

Land use and land management/Land use change and planning

Scottish Government, Key Scottish Environment Statistics 2016 https://www.gov.scot/publications/key-scottish-environment-statistics-2016-9781786525505/pages/10/

Scottish Government, Scottish Agricultural Census, https://www.gov.scot/collections/june-scottish-agricultural-census/

Office for National Statistics, Habitat Extent and Condition, Natural Capital, UK https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/habitatextentandconditionnaturalcapitaluk/2022

Soil health

James Hutton Institute, *Scotland's Soil Data,* *https://www.hutton.ac.uk/learning/natural-resource-datasets/soilshutton/soils-maps-scotland/download*

Dobbie, K.E., Bruneau, P.M.C and Towers, W. (eds) 2011. The State of Scotland's Soil. Natural Scotland, https://www.sepa.org.uk/media/138741/state-of-soil-report-final.pdf

Emmett, B.A.; Reynolds, B.; Chamberlain, P.M.; Rowe, E.; Spurgeon, D.; Brittain, S.A.; Frogbrook, Z.; Hughes, S.; Lawlor, A.J.; Poskitt, J.; Potter, E.; Robinson, D.A.; Scott, A.; Wood, C.; Woods, C., NERC/Centre for Ecology and Hydrology, 192pp. (CS Technical Report No. 9/07, CEH Project Number: C03259), Countryside Survey: Soils Report from 2007, 2010, https://countrysidesurvey.org.uk/sites/default/files/CS_UK_2007_TR9-revised%20-%20Soils%20Report.pdf Soils | Countryside Survey

Office for National Statistics, *UK Natural Capital: Peatlands*, July 2019, https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalforpeatlands/naturalcapitalaccounts#peatland-condition

NatureScot, *Scotland's National Peatland Plan: Working for our future*, 2015, https://www.nature.scot/doc/scotlands-national-peatland-plan-working-our-future

Contaminated land

SEPA, Dealing with Land Contamination in Scotland, A Review of Progress 2000 to 2008, https://www.sepa.org.uk/media/28314/dealing-with-land-contamination-in-scotland.pdf

Scottish Government, Scottish Vacant and Derelict Land Survey https://www.gov.scot/publications/scottish-vacant-derelict-land-survey-2021/

Environment Agency, Contaminated Land Reports https://www.gov.uk/government/publications/contaminated-land-reports

Marc van Liedekerke (European Commission, JRC), Gundula Prokop, Sabine Rabl-Berger (Environment Agency Austria), Mark Kibblewhite (Cranfield University), Geertrui Louwagie (European Environment Agency), European Commission EUR 26376 – Joint Research Centre – Institute for Environment and Sustainability, Progress in the Management of Contaminated Sites in Europe https://esdac.jrc.ec.europa.eu/ESDB_Archive/eusoils_docs/other/EUR26376EN.pdf

6. Endnotes

References accessed August 2022 unless otherwise stated

---

[1] National Records of Scotland, *Mid-2021 Population Estimates Scotland,* July 2022, https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021.

[2] Marine Scotland, *Facts and figures about Scotland's sea area,* https://marine.gov.scot/data/facts-and-figures-about-scotlands-sea-area-coastline-length-sea-area-sq-kms.

[3] National Records of Scotland, *Islands,* https://www.nrscotland.gov.uk/statistics-and-data/geography/our-products/other-national-records-of-scotland-nrs-geographies-datasets/islands.

[4] NatureScot, *Protected Areas,* https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas and links within this site

[5] Convention on Biological Diversity, *Aichi Biodiversity Targets website, Goal C*, https://www.cbd.int/sp/targets/#GoalC.

[6] Scottish Government, *Scottish biodiversity strategy post-2020: statement of intent*, December 2020, https://www.gov.scot/publications/scottish-biodiversity-strategy-post-2020-statement-intent/pages/2/.

[7] Scottish Government, *Scottish Government and Scottish Green Party – Shared Policy Programme,* September 2021, https://www.gov.scot/publications/scottish-government-scottish-green-party-shared-policy-programme/.

[8] JNCC, UK Biodiversity Indicators 2021, *C1. Protected Areas,* https://jncc.gov.uk/our-work/ukbi-c1-protected-areas/.

[9] The figure encompassing all designation types is used in the UK's official reporting to the Convention on Biological Diversity https://data.jncc.gov.uk/data/527ff89f-5f6b-4e06-bde6-b823e0ddcb9a/UK-CBD-Overview-UKAssessmentsofProgress-AichiTargets-web.pdf/ https://www.cbd.int/doc/nr/nr-06/gb-nr-06-p1-en.pdf. However, the figure excluding landscape scale site types is used in the Scottish reporting, including the progress report on the Environment Strategy https://www.gov.scot/publications/environment-strategy-scotland-progress-report-parliament/pages/4/#:~:text=This%20will%20build%20on%20our%20existing%20strong%20networks,our%20approach%20to%20protecting%20and%20restoring%20Scotland%27s%20biodiversity.?msclkid=6544c29cc61611ecbfab03c0d6f010c8 and Scotland's final report on Aichi https://www.nature.scot/doc/scotlands-biodiversity-progress-2020-aichi-targets-final-report.

[10] Scottish Environment Link, *30 by 30: Protecting Scotland's Land, Restoring Scotland's Nature,* July 2021 https://www.scotlink.org/wp-content/uploads/2021/07/LINK-30x30-position-1.pdf.

[11] NatureScot, *Scotland's Biodiversity Progress to 2020 Aichi Targets - Final Report*, 2021, https://www.nature.scot/doc/scotlands-biodiversity-progress-2020-aichi-targets-final-report.

[12] Scottish Government, *Scotland's biodiversity: a route map to 2020*, June 2015, Big Steps for Nature and Priority Projects - Scotland's biodiversity: a route map to 2020 - gov.scot (www.gov.scot).

[13] NatureScot, *Site Condition Monitoring*, https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/site-condition-monitoring.

[14] NatureScot, The Proportion of Scotland's Protected Sites in Favourable Condition 2022, https://www.nature.scot/doc/proportion-scotlands-protected-sites-favourable-condition-2022.

[15] Scottish Government, *National Indicator Performance*, https://nationalperformance.gov.scot/measuring-progress/national-indicator-performance.

[16] Scottish Environment Link, *Scotland's environmental ambitions: From rhetoric to reality: revisited*, April 2022, https://www.scotlink.org/wp-content/uploads/2022/03/From-Rhetoric-to-Reality-Revisited-Medium-Res-FINAL.pdf.

[17] NatureScot, *Protected Areas for Nature Review*, https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/protected-areas-nature-review.

[18] NatureScot, *Protected areas for nature – review, Report from the Panel 27-28 May 2014*, https://www.nature.scot/sites/default/files/2018-10/Protected%20Areas%20for%20Nature%20Review%20-%20Panel%20Report%202014.pdf.

[19] JNCC, *Special Protection Areas – Overview*, latest review published in 2016 based on data from the 2000s, https://jncc.gov.uk/our-work/special-protection-areas-overview/#spa-reviews.

[20] NatureScot, *NatureScot Commissioned Report 174: Evaluation of Local Nature Reserves*, 2006, https://www.nature.scot/doc/naturescot-commissioned-report-174-evaluation-local-nature-reserves Published in 2006.

[21] Wauchope, H.S., Jones, J.P.G., Geldmann, J. et al. *Protected areas have a mixed impact on waterbirds, but management helps.* Nature 605, 103–107 (2022). https://doi.org/10.1038/s41586-022-04617-0.

[22] Bailey J. J., Cunningham, C. A., Griffin, D. C., Hoppit, G., Metcalfe, C. A., Schéré, C. M., Travers, T. J. P., Turner, R. K., Hill J. K., Sinnadurai, P., Stafford R., Allen D., Isaac N., Ross B., Russi D., Chamberlain B., Harvey Sky N., McKain S. (2022). *Protected Areas and Nature Recovery. Achieving the goal to protect 30% of UK land and seas for nature by 2030*. London, UK. https://www.britishecologicalsociety.org/policy/protected-areas/read-the-report/.

[23] Scottish Government, Scottish Agricultural Census: final results – June 2020, December 2020, Supporting documents - Scottish Agricultural Census: final results - June 2020 - gov.scot (www.gov.scot).

[24] Scottish Government, Scottish Agricultural Census: June 2018, October 2018, https://www.gov.scot/publications/results-june-2018-scottish-agricultural-census/pages/2/.

[25] Scottish Government, *Sustainable and regenerative farming - next steps: statement*, March 2022, https://www.gov.scot/publications/next-step-delivering-vision-scotland-leader-sustainable-regenerative-farming/pages/1/.

[26] Forest Research, *Forestry Statistics 2021,* September 2021. https://cdn.forestresearch.gov.uk/2022/02/complete_fs2021_jvyjbwa.pdf.

[27] Scottish Government, *Key Scottish Environment Statistics 2016,* October 2016, https://www.gov.scot/publications/key-scottish-environment-statistics-2016-9781786525505/pages/10/.

[28] NatureScot, *Scotland's National Peatland Plan: Working for our future*, 2015, https://www.nature.scot/doc/scotlands-national-peatland-plan-working-our-future.

[29] IUCN Peatland Programme, *About Peatlands*, https://www.iucn-uk-peatlandprogramme.org/about-peatlands.

[30] Scotland's Environment, Scotland's Soils, *Carbon and peatland 2016 map*, https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/.

[31] Scotland's Environment, Scotland's Soils, *Peatland Restoration,* https://soils.environment.gov.scot/resources/peatland-restoration/.

[32] IUCN Peatland Programme, *Peatland Damage,* https://www.iucn-uk-peatlandprogramme.org/about-peatlands/peatland-damage.

[33] Office for National Statistics, *UK Natural Capital: Peatlands*, July 2019, https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalforpeatlands/naturalcapitalaccounts#peatland-condition.

[34] Scotland's Environment, Protected Nature Sites data, Protected Nature Sites (sepa.org.uk).

[35] NatureScot, *Peatland Action Project*, https://www.nature.scot/climate-change/nature-based-solutions/peatland-action-project.

[36] IUCN, *UK Peatland Strategy*, https://www.iucn-uk-peatlandprogramme.org/uk-strategy.

[37] SEFARI, *The cost of peatland restoration in Scotland*, 2022, https://sefari.scot/research/the-cost-of-peatland-restoration-in-scotland.

[38] Scotland's Environment, *Land Use and Management*, November 2011, https://www.environment.gov.scot/media/1211/land-land-use-and-management.pdf#:~:text=Land%20use%20and%20management%20Scotland%27s%20land%20is%20primarily,relationship%20with%20the%20intrinsic%20properties%20of%20the%20land..

[39] *Scottish Government Urban Rural Classification 2020, May 2022,* https://www.gov.scot/publications/scottish-government-urban-rural-classification-2020/.

[40] Office for National Statistics, *Habitat extent and condition, natural capital, UK,* May 2022, https://www.ons.gov.uk/economy/environmentalaccounts/datasets/habitatconditionnaturalcapitaluksupplementaryinformation.

[41] Scottish Government, *Land use - getting the best from our land: strategy 2021 to 2026*, March 2021, https://www.gov.scot/publications/scotlands-third-land-use-strategy-2021-2026-getting-best-land/pages/1/ (accessed August 2021).

[42] Annex A: Table 1. Progress on policies and proposals for Second Land Use Strategy 2016-2021 reporting duties - Getting the best from our land – a land use strategy 2016 to 2021: first annual progress report - gov.scot (www.gov.scot)

[43] Scottish Government, *Land use strategy 2016-2021: second annual progress report, September 2021,* https://www.gov.scot/publications/second-annual-progress-report-land-use-strategy-2016-2021/.

[44] Scotland 2045 - fourth National Planning Framework - draft: consultation - gov.scot (www.gov.scot)

[45] Draft National Planning Framework (NPF4) - Published | Transforming Planning

[46] National Planning Framework 3: monitoring report - gov.scot (www.gov.scot)

[47] Scotland's environmental ambitions From rhetoric to reality: revisited Layout 1 (scotlink.org)

[48] IUCN, *Commission of Inquiry on Peatlands,* October 2011, https://www.iucn-uk-peatlandprogramme.org/resources/commission-inquiry.

[49] Evans, C, Artz, R, Moxley, J, Smyth, M.A, Taylor, E, Archer, N, Burden, A, Williamson, J, Donnelly, D, Thomson, A, Buys, G, Malcolm, H, Wilson, D, Renou-Wilson, F. (2017) Implementation of an Emissions Inventory for UK Peatlands. A report to the Department for Business, Energy and Industrial Strategy, Report: Implementation of an Emissions Inventory for UK Peatlands - NAEI, UK (beis.gov.uk).

[50] Tanneberger, Franziska, Asbjørn Moen, Alexandra Barthelmes, Edward Lewis, Lera Miles, Andrey Sirin, Cosima Tegetmeyer, and Hans Joosten. 2021. "Mires in Europe—Regional Diversity, Condition and Protection" Diversity 13, no. 8: 381. https://doi.org/10.3390/d13080381.

[51] LIFE Peat Restore - Restoring Peatlands, Sequestering Carbon (life-peat-restore.eu)

[52] Dobbie, K.E., Bruneau, P.M.C and Towers, W. (eds) 2011. The State of Scotland's Soil. Natural Scotland, https://www.sepa.org.uk/media/138741/state-of-soil-report-final.pdf.

[53] Food and Agriculture Organisation of the United Nations, Intergovernmental Technical Panel on Soils, *Towards a definition of soil health*, September 2020, https://www.fao.org/3/cb1110en/cb1110en.pdf.

[54] Scottish Government, *The Scottish Soil Framework,* May 2009, https://www.gov.scot/publications/scottish-soil-framework/pages/1/.

[55] Annie McKee, The James Hutton Institute, ClimateXChange, *Soil Governance in Scotland – Mapping the Institutional Architecture,* May 2018, Soil Governance in Scotland – Mapping the Institutional Architecture (climatexchange.org.uk).

[56] Michaela Roberts and Natalie Rees, James Hutton Institute, ClimateXChange, *Soil Governance in Scotland – Mapping the Institutional Architecture – update*, January 2022, https://www.climatexchange.org.uk/media/5166/cxc-soil-governance-in-scotland-january-2022.pdf.

[57] Scotland's Environment, Scotland's Soils, *Soil Protection,* https://soils.environment.gov.scot/soils-in-scotland/soil-protection/.

[58] Hough, R.L., SEFARI Fellowship Report, SEFARI Gateway, Edinburgh, *Identifying Environmental Priorities and Analytical Requisites for Environmental Standards Scotland (ESS),* 2021, https://sefari.scot/document/identifying-environmental-priorities-and-analytical-requisites-for-environmental-standards.

[59] Scottish Government, *Environment Strategy: Initial Monitoring Framework*, December 2021, https://data.gov.scot/environment/.

[60] R.Neilson, A. Lilly, M. Aitkenhead, R. Artz, N. Baggaley, M.E. Giles, J. Holland, K. Loades, P. Ovando Pol, M. Rivington, M. Roberts, J. Yeluripati, James Hutton Institute, ClimateXChange, *Measuring the vulnerability of Scottish soils to a changing climate,* August 2020, https://www.climatexchange.org.uk/research/projects/measuring-the-vulnerability-of-scottish-soils-to-a-changing-climate/.

[61] Roy Neilson, Matt Aitkenhead, Allan Lilly & Kenneth Loades, James Hutton Institute, ClimateXChange, *Monitoring soil health in Scotland by land use category – a scoping study*, September 2021, https://www.climatexchange.org.uk/research/projects/monitoring-soil-health-in-scotland-by-land-use-category-a-scoping-study/.

[62] Dobbie, K.E., Bruneau, P.M.C and Towers, W. (eds), Natural Scotland, *The State of Scotland's Soil*, 2011, https://soils.environment.gov.scot/soils-in-scotland/state-of-scotlands-soils/.

[63] W. Towers, I.C. Grieve, G. Hudson, C.D. Campbell, A.Lilly, D.A. Davidson, J.R. Bacon, S.J. Langan and D.W. Hopkins, Environmental Research Report 2006/01**,** Scotland's Soil Resource – Current State and Threats, https://www.webarchive.org.uk/wayback/archive/20150219013459/http:/www.gov.scot/Publications/2006/09/21115639/0.

[64] James Hutton Institute, *Scotland's Soil Data, https://www.hutton.ac.uk/learning/natural-resource-datasets/soilshutton/soils-maps-scotland/download*.

[65] Scottish Government Spatial Data, *National Soil Inventory of Scotland,* https://www.data.gov.uk/dataset/d373bd77-4240-45e8-b16a-ca3dafe44b39/national-soil-inventory-of-scotland#licence-info.

[66] Scotland's Environment, Scotland's Soils, *National soil map of Scotland*, https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/.

[67] Scotland's Environment, Scotland's Soils, *Soil Monitoring Action Plan*, action plan (November 2012) and implementation plan (March 2013) https://soils.environment.gov.scot/soils-in-scotland/soil-monitoring/.

[68] Scotland's environment, Ecosystem Health Indicators, *Indicator 13: Soil Sealing*, https://www.environment.gov.scot/our-environment/state-of-the-environment/ecosystem-health-indicators/resilience-indicators/indicator-13-soil-sealing/.

[69] Scotland's environment, *Land infographic*, https://www.environment.gov.scot/media/1429/land-infographic.pdf.

[70] European Commission, *Soil Threats in Europe*, 2016, https://esdac.jrc.ec.europa.eu/public_path/shared_folder/doc_pub/EUR27607.pdf (accessed August 2016).

[71] Rickson, R.J., Baggaley, N., Deeks, L.K., Graves, A., Hannam, J., Keay, C and Lilly, A., Report to the Scottish Government, *Developing a method to estimate the costs of soil erosion in high-risk Scottish catchments*, 2019, https://www.gov.scot/publications/developing-method-estimate-costs-soil-erosion-high-risk-scottish-catchments/.

[72] Scotland's Environment, Scotland's Soils, *Risk Maps*, https://soils.environment.gov.scot/maps/risk-maps/.

[73] UK Centre for Ecology and Hydrology, *Countryside Survey Reports*, https://countrysidesurvey.org.uk/publications/reports.

[74] Emmett, B.A.; Reynolds, B.; Chamberlain, P.M.; Rowe, E.; Spurgeon, D.; Brittain, S.A.; Frogbrook, Z.; Hughes, S.; Lawlor, A.J.; Poskitt, J.; Potter, E.; Robinson, D.A.; Scott, A.; Wood, C.; Woods, C., NERC/Centre for Ecology and Hydrology, 192pp. (CS Technical Report No. 9/07, CEH Project Number: C03259), *Countryside Survey: Soils Report from 2007*, *2010*, https://countrysidesurvey.org.uk/sites/default/files/CS_UK_2007_TR9-revised%20-%20Soils%20Report.pdf.

[75] UK Centre for Ecology and Hydrology, *Soils in UKCEH Countryside Survey*, https://countrysidesurvey.org.uk/science/soils.

[76] Food and Agriculture Organisation of the United Nations and Intergovernmental Technical Panel on Soils, Rome, Italy, *Status of the World's Soil Resources (SWSR) – Main Report*, 2015, https://www.fao.org/3/i5199e/i5199e.pdf.

[77] European Commission, *EU Soil Policy*, https://ec.europa.eu/environment/soil/soil_policy_en.htm

[78] European Parliament, https://www.europarl.europa.eu/news/en/press-room/20210412IPR01806/meps-call-for-better-protection-of-soil-to-reach-green-targets.

[79] *Environmental Protection Act 1990, Part IIA*, https://www.legislation.gov.uk/ukpga/1990/43/part/IIA.

[80] *The Contaminated Land (Scotland) Regulations 2000*, The Contaminated Land (Scotland) Regulations 2000 (legislation.gov.uk).

[81] *The Contaminated Land (Scotland) Regulations 2005*, The Contaminated Land (Scotland) Regulations 2005 (legislation.gov.uk).

[82] *Scottish Government, Environmental Protection Act 1990 - Part IIA Contaminated Land: statutory guidance edition 2*, June 2006, https://www.gov.scot/publications/environmental-protection-act-1990-part-iia-contaminated-land-statutory-guidance/pages/1/ (accessed August 2002).

[83] SEPA, *Contaminated Land, Legislative Framework*, Legislative framework | Scottish Environment Protection Agency (SEPA).

[84] Scottish Government, *Planning Advice Note 33: Development of contaminated land,* December 2017, https://www.gov.scot/publications/pan-33-development-of-contaminated-land/.

[85] *The Radioactive Contaminated Land (Scotland) Regulations 2007*, http://www.legislation.gov.uk/ssi/2007/179/pdfs/ssi_20070179_en.pdf.

[86] *The Radioactive Contaminated Land (Scotland) Amendment Regulations 2007,* http://www.legislation.gov.uk/uksi/2007/3240/pdfs/uksi_20073240_en.pdf.

[87] Scottish Government, *The Radioactive Contaminated Land (Scotland) Regulations 2007 Statutory Guidance,* March 2008, https://www.webarchive.org.uk/wayback/archive/20150221042855/http://www.gov.scot/Publications/2008/03/31102033/8.

[88] SEPA, Regulations, Land, *Contaminated Land*, https://www.sepa.org.uk/regulations/land/contaminated-land/.

[89] Scottish Government, *Pollution Policy,* Contaminated land - Pollution - gov.scot (www.gov.scot).

[90] SEPA, *Dealing with Land Contamination in Scotland: A review of progress 2000 – 2008,* 2009, https://www.sepa.org.uk/media/28314/dealing-with-land-contamination-in-scotland.pdf.

[91] SEPA, Land, Contaminated Land, *Special Sites in Scotland*, https://www.sepa.org.uk/regulations/land/contaminated-land/special-sites-in-scotland/.

[92] Scottish Government, *Planning Statistics,* https://www.gov.scot/collections/planning-statistics/#scottishvacantandderelictlandstatistics.

[93] Scottish Government, *Scottish Vacant And Derelict Land Survey 2021, May 2022,* https://www.gov.scot/publications/scottish-vacant-derelict-land-survey-2021/.

[94] Environment Agency, *Contaminated Land Reports* https://www.gov.uk/government/publications/contaminated-land-reports.

[95] Marc van Liedekerke (European Commission, JRC), Gundula Prokop, Sabine Rabl-Berger (Environment Agency Austria), Mark Kibblewhite (Cranfield University), Geertrui Louwagie (European

Environment Agency), European Commission EUR 26376 – Joint Research Centre – Institute for Environment and Sustainability, *Progress in the Management of Contaminated Sites in Europe* https://esdac.jrc.ec.europa.eu/ESDB_Archive/eusoils_docs/other/EUR26376EN.pdf.

[96] European Environment Agency, Data Visualisation, *Estimates for potentially contaminated sites and contaminated sites*, https://www.eea.europa.eu/data-and-maps/daviz/estimated-number-of-potentially-contaminated-1#tab-chart_5_filters=%7B%22rowFilters%22%3A%7B%7D%3B%22columnFilters%22%3A%7B%22columnfilter_Category_of_sites%22%3A%5B%22Estimated%20number%20of%20CSs%2F1000%20capita%22%3B%22Estimated%20number%20of%20PCSs%2F1000%20capita%22%5D%7D%3B%22sortFilter%22%3A%5B%22country%22%5D%7D.

ENVIRONMENTAL
Standards Scotland
Ìrean Àrainneachdail na h-Alba

CONTACT

Environmental Standards Scotland
Thistle House
91 Haymarket Terrace
Edinburgh
Scotland
EH12 5HD

E-mail: **enquiries@environmentalstandards.scot**

Telephone: 0808 1964000