



# Protecting and Enhancing Soils

## *Policy Position Statement*

**This Policy Position Statement (PPS) explains the importance of soils and the threats which they face. It recommends actions to address these threats.**

Concerted action is needed to protect soils. Their needs should be reflected in the policies and actions of all relevant stakeholders, both private and public.

CIWEM supports the implementation of the 25 Year Environment Plan and the development of the Agriculture and Environment Bills and encourages bold implementation of them to deliver the stated recommendations.

***CIWEM is the leading independent Chartered professional body for water and environmental professionals, promoting excellence within the sector.***

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## Updated June 2019

*Note: CIWEM Policy Position Statements (PPS) represent the Institution’s views on issues at a point in time. It is accepted that situations change as research provides new evidence. It should be understood, therefore, that CIWEM PPSs are under constant review and that previously held views may alter and lead to revised PPSs. PPSs are produced as a consensus report and do not represent the view of individual members of CIWEM.*

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# Recommendations

CIWEM calls for:

## **1. Soils to be covered by the new Environmental Land Management scheme.**

The new Environmental Land Management scheme must promote management which improves soil health and function, reduces erosion, protects buried archaeology, and buffers adjacent habitats. The scheme should consider existing barriers to change, such as initial capital outlay, and support land managers in overcoming these.

## **2. Soil protection and enhancement to be legislated for.**

Such is the threat to soil fertility and health, commitments on soil protection and enhancement should be firmly established now. Statements of policy do not afford enough certainty to ensure long-term protection and recovery of soils. Statutory protections and management requirements for soil should be delivered through changes to the Agriculture Bill or the Environment Bill.

## **3. Organisations to proactively promote good practice in soil management.**

All relevant organisations, public and private, should proactively encourage land managers to adopt 'good practice', whether through audits, assurance schemes and codes, or by facilitating knowledge exchange.

Existing knowledge exchange initiatives that could be expanded or replicated elsewhere include, the College of Agriculture Food and Rural Enterprise's (CAFRE) Business Development Group<sup>1</sup>, and Linking Environment and Farming's (LEAF) Demonstration Farms<sup>2</sup>.

Information on sustainable farming techniques that enhance soils can be found in Campaign to Protect Rural England's report, *Back to the land: rethinking our approach to soil*<sup>3</sup>.

## **4. Successful and measurable implementation of the 25 Year Environment Plan.**

The government must bring forward new policies to meet their 25 Year Environment Plan target for all soils to be sustainably managed by 2030. To measure changes to soil health, suitable metrics must be developed that consider soil health holistically, taking into account multiple indicators.

## **5. Action to improve the evidence base for making policy decisions about soils.**

Government should ensure long term national monitoring of soils to provide up to date, comprehensive inventories of soil types, health and distribution, which are required for planning effective management measures. Government should also support more research into the threats to soils, the services soils provide, the implications of soil degradation on these services and new methods of improving soil health.

**6. A natural capital approach to inform greater understanding, recognition and protection of soil functions and their role in the provision of ecosystem services.**

Soils are central to the provision of all ecosystem services. The maintenance of natural soil processes is therefore critical and should be more widely considered and reflected in decision making. A natural capital approach to decision making should be encouraged to support recognition of the value of soils.

**7. All public bodies to pay greater attention to soils in their work.**

Public bodies should assess the implications for soils of any activities which they regulate, and the implications for soils of their own operational activities. They should then ensure that they, and those they regulate, employ approaches which mitigate damage to, and preferably enhance, soils.

**8. The promotion of, and support for, soil education at all levels, and support for initiatives which improve standards in professional soil science.**

This will ensure the availability of an active, sustainable professional community with adequate levels of recruitment of high-quality scientists and greater societal recognition of the value of soil.

**9. The continued protection of 'Best and Most Versatile land' within an integrated approach to planning.**

Soil protection for food production must continue and be set within the context of the wider benefits derived from soils as natural capital assets which provide ecosystem services. Within this local planning authorities must exercise pragmatism in considering applications for on farm reservoirs which can provide water to support production on the remaining land.

**10. The protection of soil types of special value and scientific interest.**

Rare and threatened soils and their biodiversity merit protection for their own sake, not simply because they support important habitats, or reflect distinct underlying geology.

**11. A risk-based approach to be applied in identifying and tackling threats to soils.**

Soils are multi-functional and very diverse in their nature and distribution. Adopting a risk-based approach to their management will help identify the most serious threats to any specific soils.

**12. Continued action to improve soil organic matter while protecting soils against contamination.**

Spreading organic wastes (bioresources) on soils improves soil condition and sequesters organic carbon, but long-term contamination by, for example, heavy metals and microplastics must be avoided.

### **13. Action to rehabilitate soils which have been contaminated or degraded.**

Rehabilitation of contaminated or degraded soil is vital to the wider recovery of soil health as part of a commitment to leave the environment in a better state than it was inherited. Actions could include 'unsealing' soils lost to past development, restoring agricultural soils to semi-natural habitats, or rehabilitating mineral workings as semi-natural habitats.

Under Part 2A of the Environment Act 1990, local authorities are obliged to finance remediation of contaminated sites where the polluter cannot be found. Defra capital support for this was withdrawn in 2017<sup>4</sup>.

In light of the Government's 25 Year Environment Plan<sup>5</sup> which has a focus on connecting people with the environment to improve health and wellbeing, we call on the Government to reinstate grant funding for these works.

### **14. Problems to be tackled at source, working through natural processes.**

For example, land use practice which results in soil loss to erosion, which is then deposited in other locations where it is removed during maintenance, should as far as possible be modified to reduce such losses.

## Context

Soil is a fundamental and essentially non-renewable natural resource; "it can take 500 years to replace 25 mm (1 inch) of topsoil"<sup>6</sup>. Soil degradation is an urgent issue.

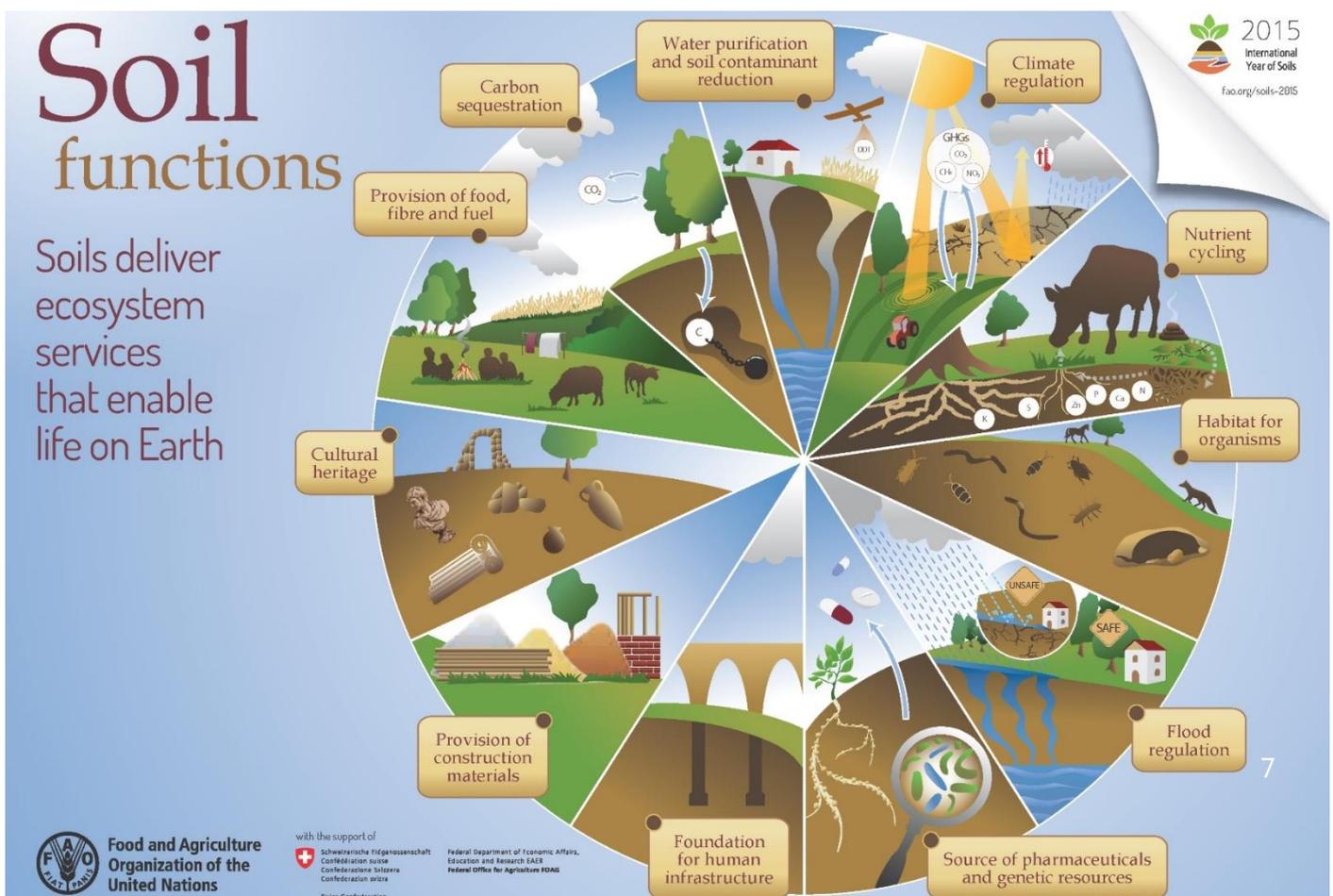
The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services state that land needs to be restored to support "biodiversity and ecosystem services vital to all life on Earth and to ensure human well-being"<sup>7</sup>.

### Soils are important

Soils provide an extensive and impressive range of 'services'. They:

- ◆ **Support the production of crops:** for food, timber and energy for human use.
- ◆ **Store and filter water:** absorbing and holding rain, reducing peak flows and flooding.
- ◆ **Store carbon:** peatlands are particularly effective in this respect.
- ◆ **Protect the environment:** absorbing, buffering and filtering potential pollutants.
- ◆ **Process organic wastes:** converting organic wastes to their basic components.
- ◆ **Conserve biodiversity:** supporting rich species assemblages (both above and below ground, the value of which we don't yet fully understand), and varied surface habitats.
- ◆ **Preserve cultural features:** protecting valuable evidence of past cultures.
- ◆ **Support construction:** providing the physical basis for buildings and infrastructure.
- ◆ **Provide playing surfaces:** healthy soils are critical for outdoor sport and recreation.
- ◆ **Influence landscapes:** combining with the history of land management to create variety.

Image source: Food and Agriculture Organisation of the United Nations<sup>8</sup>



## Soils are threatened

The European Commission's *Thematic Strategy for Soil Protection* (2006)<sup>9</sup> identified several threats to soils:

- ◆ **Erosion:** Water erosion has been exacerbated by some agricultural practices (e.g. intensification leading to overstocking land). Wind erosion is also a problem on some sandy and peaty soils, and in some moorland areas.
- ◆ **Decline in organic matter:** Soil organic matter is a major carbon pool. It is closely linked to soil biodiversity and is an indicator of desertification processes. The rate of soil organic matter loss can vary a lot, "depending on cultivation practices, the type of plant/crop cover, drainage status of the soil and weather conditions"<sup>10</sup>. In 2013 the emissions of CO<sub>2</sub> from soil carbon losses were: "12.4 MtCO<sub>2</sub> from croplands, 3.5 MtCO<sub>2</sub> from grasslands and 6.1 MtCO<sub>2</sub> from development" according to the Committee on Climate Change<sup>11</sup>.
- ◆ **Local and diffuse contamination:** Acute contamination remains a problem in many industrial areas. Diffuse contamination is widespread, mostly from atmospheric deposition, but also related to land management, including the use of pesticides, manure and inorganic fertilisers.
- ◆ **Covering and sealing:** Soil is lost through the construction of buildings, roads and other infrastructure.
- ◆ **Compaction:** Some soils are particularly vulnerable to subsoil compaction by machinery, which reduces infiltration rates. Increased run-off can lead to erosion and flooding.
- ◆ **Decline in biodiversity:** Contamination by air-borne pollutants, and modern agricultural practices, are strong influences on the diversity and richness of soil organisms. Changes to soil management practices will also impact on above ground biodiversity.
- ◆ **Salinisation:** Fertility is seriously reduced where soluble salts accumulate in soils (e.g. through irrigation, intrusion of sea water in coastal aquifers, or sea-level rise).
- ◆ **Flooding and landslides:** The threats of flooding and landslides are often linked to soil degradation through erosion, compaction and sealing.

These threats remain relevant today and must be addressed for the UK to meet the Sustainable Development Goals (SDGs), particularly SDGs 2 (zero hunger) and 15 (life on land). Globally, failure to manage soils in a sustainable way affects the ability of millions of people to feed themselves. Many examples of extensive, long-term environmental damage can be found, whether due to erosion by water or wind, contamination by pollutants, or salinisation through inadequate water management.

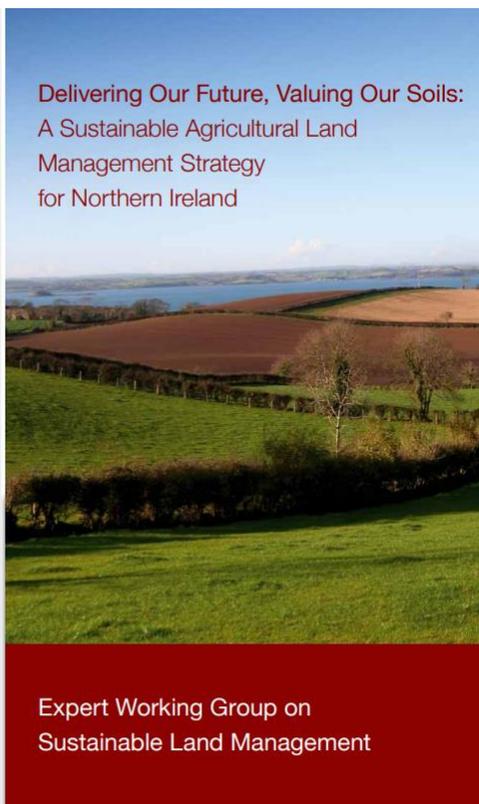
Soils in the UK continue to be degraded by human activities, such as intensive agriculture, industrial pollution, erosion and urban development. Future climate change has the potential to exacerbate these impacts, resulting in further degradation.

## Past UK Policy Initiatives

Over the last fifteen years, UK policy-makers have given increasing (and overdue) attention to soils. For example through:

- ◆ Codes of good agricultural practice covering soils in England<sup>12</sup>, Wales<sup>13</sup>, Scotland<sup>14</sup> and Northern Ireland<sup>15</sup>.
- ◆ Environment Strategy Wales (2006)
- ◆ Think Soils<sup>16</sup> (2007) (England)
- ◆ Safeguarding our soils: A strategy for England<sup>17</sup> (2009)
- ◆ Construction Code of Practice for the Sustainable Use of Soils on Construction Sites<sup>18</sup> (2009)
- ◆ Scottish Soil Framework (2009)
- ◆ The State of Scotland's Soil<sup>19</sup> (2011)
- ◆ The Natural Choice: securing the value of nature<sup>20</sup> (2011) (England)
- ◆ Scotland's Soil Monitoring Action Plan<sup>21</sup> (2012)
- ◆ Scotland's Land Use Strategy (2016)<sup>22</sup>
- ◆ Delivering Our Future, Valuing Our Soils: A Sustainable Agricultural Land Management Strategy for Northern Ireland<sup>23</sup> (2016)
- ◆ Scotland's soils website<sup>24</sup>
- ◆ A Green Future: Our 25 Year Plan to Improve the Environment<sup>25</sup> (25 YEP) (2018) (England)
- ◆ Northern Ireland's four-year DAERA funded project on measuring soil health<sup>26</sup> (2018)
- ◆ The state of the environment: soil<sup>27</sup> (2019) (England).

CIWEM welcomes current soils initiatives and offers this PPS as a contribution to this important work.



## Policy in England

The 2009 Defra paper *Safeguarding our Soils: A strategy for England*<sup>28</sup> was followed in 2011 by the Defra Natural Environment White Paper (*The Natural Choice: securing the value of nature*) which saw the protection and sustainable management of soils as integral to environmental improvement. It included a commitment to,

*“undertake a significant research programme over the next four years to explore how soil degradation can affect the soil’s ability to support vital ecosystem services such as flood mitigation, carbon storage and nutrient cycling; and how best to manage our lowland peatlands in a way that supports efforts to tackle climate change. We will use the results of this research to set the direction of future action”.*<sup>29</sup>

The 2016 Environmental Audit Committee inquiry on soil health<sup>30</sup> highlighted inadequacies in cross compliance under the Basic Payment Scheme, soil monitoring and reporting and funding for cleaning up soil contamination. The committee stated that existing measures were not sufficient to meet the aims of the soil strategy and recommended that soils were identified as a priority in the 25 Year Environment Plan.

The 25 Year Environment Plan, published in 2018, states:

*“We will ensure that resources from nature, such as food, fish and timber, are used more sustainably and efficiently. We will do this by [...] Improving our approach to soil management: by 2030 we want all of England’s soils to be managed sustainably, and we will use natural capital thinking to develop appropriate soil metrics and management approaches”.*<sup>31</sup>

The plan also includes an intention to develop a framework for peat restoration in England and a commitment to connecting people with the environment to improve health and wellbeing which will also be important in raising awareness of the role soils play.

It is good to see that past reports have informed current policies. However, it is vital that we now see these strategic policies translated effectively into sustainable management practices.

As understanding of soil science continues to grow reports should be reviewed and updated to ensure that policies are based on the most up to date information.

Policy-makers need to recognise that soils are:

- ◆ **Multi-functional:** relevant to many diverse policy areas.
- ◆ **Essentially non-renewable:** soils can take decades to recover from mismanagement.
- ◆ **Incredibly diverse:** there are more than 300 major soil types recognised in Europe alone.
- ◆ **Locally variable:** soils often vary at a field scale, as well as at farm and landscape scales.
- ◆ **Publicly and privately owned:** policies need to be in tune with the rights and responsibilities of owners.

## Farming

Over 70% of England's land is managed for agriculture<sup>32</sup> and in 2018 tens of thousands of land managers submitted Basic Payment Scheme applications against their land<sup>33</sup>. As such the Basic Payment Scheme, and its predecessors under the Common Agricultural Policy, have provided a useful mechanism for influencing management. To be eligible for payment farmers are required to meet the Cross Compliance rules. Good Agricultural and Environmental Conditions 4, 5 and 6 cover minimum soil cover, minimising soil erosion and maintaining organic matter.

Despite this, the Environmental Audit Committee raised concerns in 2016 that cross compliance rules were not sufficient to meet the governments ambitions laid out in their soil strategy and that the limited inspection regime was not supporting compliance<sup>34</sup>.

When the UK leaves the EU, land management policies and regulations will be nationally designed rather than adopted from the EU. Some progress has already been made in this transition; in 2017 the *Farming Rules for Water*<sup>35</sup> were introduced and in 2018 the Agriculture Bill was laid before Parliament. The Agriculture Bill does not directly refer to the protection of soil. However, the accompanying Policy Statement does clearly show the government's intention to support soil management stating that money will be spent on soil and peat, and research into soil health<sup>36</sup>. This commitment to soil protection and enhancement must be explicit in law as the Policy Statement cannot be enforced in the same way. This could be accommodated through changes to the Agriculture Bill or the Environment Bill.

As the new Environmental Land Management scheme is developed to replace the Basic Payment Scheme (BPS) and Countryside Stewardship (CS) it will be important that soil management for environmental benefits and sustainable food production is adequately addressed.

With the development of natural capital accounting we expect to see the value of soils reflected in management decisions outside of schemes too. In order to ensure this value is adequately considered, natural capital approaches should be promoted. The Valuing Nature Programme has produced a report titled, *Soil Natural Capital Valuation in Agri-food Businesses*<sup>37</sup> and the World Business Council for Sustainable Development have published *The Business Case for Investing in Soil Health*<sup>38</sup>. The Natural Capital Committee have published *Advice on Soil Management*<sup>39</sup>.



## The Role of Regulatory Bodies

The **Department for Environment Food and Rural Affairs (Defra)** is responsible for driving the policy agenda and legislation for soils in England. Defra was responsible for the Soils Strategy, The Natural Choice White Paper and led the 25 Year Environment Plan.

At the start of 2019 Defra consulted on metrics for the 25 Year Environment Plan, including on soil health. It is important that we have a long-term national monitoring system so that we can understand soil condition, make informed decisions on what policy interventions are needed and monitor their impact.

As part of implementing the 25 Year Environment Plan, Defra laid the Environment Bill to transpose the targets into legislation. Soil protection and enhancement should be included in either the Agriculture Bill or Environment Bill.

**Natural England** is the government's advisor on environmental matters. Natural England provides information on Agricultural Land Classification which local planning authorities are advised to consider in determining where to allow development, the aim being that the most productive agricultural land should remain in food production.

Natural England also works in partnership with the Environment Agency and Defra to deliver the Catchment Sensitive Farming (CSF) initiative. CSF provides advice to farmers on how to manage their land to prevent diffuse pollution, including from soil erosion.

Until October 2018 Natural England managed agri-environment schemes under the Common Agricultural Policy. This responsibility now lies with the Rural Payments Agency.

Natural England have had significant difficulties in securing sufficient resources to fulfil their duties and meet their potential. Funding of Natural England urgently needs reviewing.

The **Rural Payments Agency** administers the Basic Payment Scheme (BPS) and Countryside Stewardship (CS) in England under the Common Agricultural Policy. These schemes both look to support productive land and soils.

To be eligible for the Basic Payment farmers must have met the cross-compliance rules which cover soils. Though the Environmental Audit Committee have previously highlighted inadequacies in cross compliance. Approaches to restoring and improving soil should be strengthened going forward.

The Rural Payments Agency is expected to administer the new Environmental Land Management scheme being developed to replace BPS and CS post Brexit. It is essential that the new Environmental Land Management scheme addresses soil health.

The **Environment Agency** is England's environmental regulator. One of its priorities is to protect land by tackling pollution. It is responsible for the treatment of contaminated land. For information on land contamination please see our PPS on this issue<sup>40</sup>. Microplastics and microfibres are an emerging threat to soil health (please see our PPS on microplastic pollution)<sup>41</sup>. The Environment Agency published *The state of the environment: soil* in 2019<sup>42</sup>.

**Natural Resources Wales** is Wales' environmental regulator. The Environment (Wales) Act 2016<sup>43</sup> imposes a duty on Natural Resources Wales to pursue sustainable management of natural resources, which includes soil in its definition.

Scotland's environmental regulator is called the **Scottish Environment Protection Agency** (SEPA). SEPA published *The State of Scotland's Soil* in 2011 which outlined issues and solutions for improving soil condition and understanding. SEPA has commissioned soil research in more recent years.

In Northern Ireland responsibility for environmental regulation lies with the **Northern Ireland Environment Agency**. One of their objectives is "good habitat and landscape quality with species abundance and diversity"<sup>44</sup> which can be supported by good soil health.

Public forest management in the UK is undertaken by the **Forestry England, Scottish Forestry, Natural Resources Wales** and the **Department of Agriculture, Environment and Rural Affairs** in Northern Ireland. Soils are recognised as an important forest ecosystem component. The UK Forestry Standard<sup>45</sup> covers soil under section 6.6 where there are details on requirements for waste management, control of pesticides and soil protection.

**Local authorities** have a responsibility to protect soil by preventing development on valuable soils and addressing land contamination. The National Planning Policy Framework<sup>46</sup> requires under para 170 a that planning decisions should contribute to and enhance the natural and local environment by protecting and enhancing soils. The Environmental Protection Act 1990<sup>47</sup> sets out local authority duties to remediate contaminated land.

Local authorities have suffered significant funding cuts, including withdrawal of capital grants for cleaning up contaminated land, limiting their capacity to meet these responsibilities as funding is focused on core services that immediately affected resident's health and wellbeing such as care and school services. Local authority funding cuts must be reversed to allow them to fulfil all their duties.

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- <sup>46</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/779764/NPPF\\_Feb\\_2019\\_web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf)
- <sup>47</sup> <https://www.legislation.gov.uk/ukpga/1990/43/contents>