

## Written evidence submitted by the Wildlife & Countryside Link (SH0065)

*Wildlife and Countryside Link (Link) is the largest environment and wildlife coalition in England, bringing together 68 organisations to use their strong joint voice for the protection of nature.*

*Our members campaign to conserve, enhance and access our landscapes, animals, plants, habitats, rivers and seas. Together we have the support of over eight million people in the UK and directly protect over 750,000 hectares of land and 800 miles of coastline.*

### **How can the Government measure progress towards its goal of making all soils sustainably managed by 2030? What are the challenges in gathering data to measure soil health how can these barriers be overcome?**

1. The Government's Environmental Improvement Plan commits to bringing 60% of agricultural soils into sustainable management by 2030, with an interim target of 40% of agricultural soils by 2028. This aim is significantly lower than the original commitment of bringing *all* soils into sustainable management by 2030, as it equates to only 42% of England's soils in total.
2. The weakening of this commitment puts a lot of other Government priorities at stake. Restoring all soil back to health is a vital pillar of halting the decline of species by 2030, and meeting Net Zero.
3. Given the important role that soils play in supporting food security, mitigating climate change and underpinning biodiversity, we are disappointed in this weakening of ambition and recommend that the Government comes up with a more comprehensive plan to restore all soils by 2030.

#### ***Defining 'sustainably managed'***

4. The Environment Agency published a 'Summary of the state of the environment: soil' in 2021 for England and Wales, which found that *'there are insufficient data on the health of our soils. Investment is needed in soil monitoring'*.<sup>i</sup> It also found that:
  - a. *'almost 4 million hectares of soil are at risk of compaction.*
  - b. *over 2 million hectares of soil are at risk of erosion.*
  - c. *intensive agriculture has caused arable soils to lose about 40 to 60% of their organic carbon.*
  - d. *soil degradation was calculated in 2010 to cost £1.2 billion every year'*
5. The Natural Capital Committee also notes that *'within the UK the rate of soil erosion is estimated to be 10-100 times higher than it has been prior to intensive farming, with 2.2 million tonnes of soil eroded each year'* and recommends that *'Government should give soils equivalent focus and attention to air and water and this should be reflected in the 25 YEP indicators being developed, such that soil health is one of the headline indicators. To underpin this investment in developing soil indicators should go well beyond the £200,000 specified in the 25 YEP and reflect the cost of ongoing degradation which is estimated at £3.21 billion just for the loss of soil carbon across the UK.'*<sup>ii</sup>
6. The Government needs to define 'sustainably managed' in the context of soils. This is because there are many different and often competing interpretations of what constitutes 'sustainable' soil management'. A 2020 UK survey found that although 92% of farmers said

they practised sustainable soil management, 85% of them could not name a recognised sustainable soil management practice that they used.<sup>iii, iv</sup>

7. In the context of farming, this definition should promote a whole-farm approach to soil management. The Soil Association identifies seven key measures for improving soil health:
  - a. Monitoring soil health.
  - b. Increasing organic matter that goes into the soils (based on soil type).
  - c. Reducing tillage and chemical use.
  - d. Covering bare soils year-round.
  - e. Agroforestry.
  - f. Reducing compaction from machinery and livestock.
  - g. Well-designed crop rotations.
  
8. A whole-farm approach is crucial for increasing soil health because it recognises and incorporates the complexities of maintaining and improving soil health. Conversely, a simple 'quick fix' approach such as relying on herbicide-principally glyphosate- for no-till systems often leads to unintentional consequences. For instance, it can lead to resistance in some weeds, and has knock-on effects for biodiversity such as damaging or eliminating beneficial plants that provide food and shelter for pollinators.<sup>v</sup> The use of herbicides can also negatively impact biodiversity such as earthworms and bees, which play key roles in boosting soil health and maintaining healthy crops.<sup>vi, vii, viii</sup>
  
9. Whereas agroecological soil management can increase profitability. For example, the cost saving for a tonne of no-till wheat is an estimated £23 per hectare compared to the average UK farm.<sup>ix</sup> A case study from East Yorkshire also showed that a low/no-till system led to a 25% reduction in nitrogen applications and a 33% reduction in fuel and labour costs.<sup>x</sup> Avoiding tillage also reduces the amount of carbon loss from the soil from oxidation. A reduction in fertiliser inputs also benefits the growth and diversity of semi-natural grassland plant species. Evidence shows that increasing the diversity of plants in grasslands, particularly deep-rooting species, can support increased storage of carbon in semi-natural grasslands' soils, while reducing costly inputs for farmers. Greater plant species-richness is a key driver to increased abundance and activity of soil microbes and ecosystem engineers (such as earthworms and ants), which facilitate greater sequestration and storage of soil organic carbon.<sup>xixii</sup>

### ***Data and baselining***

10. It is crucial that the Government standardises the metrics used to collect soil data. Without this, the risk is that many different standards and metrics for measuring soil health emerge, with contradictory and wide-ranging outcomes. Standardised metrics should include chemical, physical and biological indicators to produce more rounded and holistic data on soil health. Indeed, across the UK and globally, multiple different metrics and standards are already established.
  
11. In its 2011 Natural Environment White Paper, the Government committed to undertake a significant programme of research into soil degradation and how it can affect soils' role in supporting ecosystem services.<sup>xiii</sup> This is yet to materialise fully.
  
12. Standardised metrics should also be coupled with better advice and support for farmers and land managers, to help them to understand the state of their soils, and to choose

appropriate cover crops and management measures. Advice come in many different forms, such as peer-to-peer learning, certification schemes, professional farming advisers and information hubs. However there is often conflicting advice and this can be a barrier to progress on soil health.

13. Approaches to carbon accounting and measuring soil organic carbon in grassland soils are usually taken at a depth of 15cm. However, modelling demonstrates that up to 60% of the soil organic carbon is stored at depths between 30-60cm.<sup>xiv</sup> This means that measurements can often undervalue the amount of soil organic carbon stored in semi-natural grassland soils. therefore soil measurements should be taken at greater depths.
14. However for each soil type, different depths and measurements will be needed. As standard, soil carbon measurements should be taken at multiple depths and factor in the habitat/land use being sampled.
15. We welcome the Government's expansion of Catchment Sensitive farming, which will now be available to more farmers across the country and which includes good soil management advice. However more must be done by the government to facilitate advice and knowledge-sharing networks. Link supports the Sustainable Soils Alliance recommendations for Government action on soil health advice, which are<sup>xv</sup>:
  - a. Soil advice to be embedded in future farming incentive schemes – this should be independent, flexible, simple, easy to engage with and encourage straight-forward actions. Peer-to-peer learning should be encouraged where possible.
  - b. The development over the long term of a farming advice industry that is fully independent of industry (product sales) influences.
  - c. A review of CPD services for all farm advisers with the expectation that they are explicitly trained in soils management e.g. BASIS Soil and Water.
  - d. The development of official, accredited and region/crop specific guidance on soils management by soils specialists – giving farmers peace of mind that it is authoritative and expert.
  - e. An examination of soil's place within higher and further education to ensure it reflects the most recent scientific and policy developments relating to soil's role and function.
16. More government and private funding should also to be channelled into research and innovation in technologies that can measure soil health (in a standardised way). The government should also provide open access to the relevant data and evidence. The cost of accessing the UK Soils data set from Cranfield university is a severe constraint to innovation.<sup>xvi</sup>

**Do current regulations ensure that all landowners/land managers maintain and/or improve soil health? If not, how should they be improved?**

***The efficacy of current rules and regulations***

17. The Government must a clearly defined set of basic environmental rules across all farmland. Defra need to urgently clarify the regulatory baseline that will underpin the new SFI and ELMs scheme, particularly around protected sites and explain how the scheme will be enforced.<sup>xvii</sup> This would create a level playing field for farmers and create a baseline on which to build future agri-environment schemes. The new farming rules for water are a welcome step but there is no system for identifying those contravening the rules. This needs to be

urgently addressed and the rules strengthened.

18. At present the critical regulatory tool for soils protection is the Reduction and Prevention of Agricultural Diffuse Pollution (England) Regulations 2018 (Farming Rules for Water or FRfW), introduced to create a national baseline for good farm practices. The soil-specific elements are as follows:

- a. **Rule 1: Planning use of manures and fertilisers.** This requires farmers to test their soils at least every five years, then plan and apply their fertiliser or manure to improve soil nutrient levels and meet crop needs.
- b. **Rule 6: Reasonable precautions to prevent soil erosion.** Farmers must take all reasonable precautions to prevent significant soil erosion and runoff from:
  - i. the application of organic manure and manufactured fertiliser;
  - ii. land management and cultivation practices (such as seed-beds, tramlines, rows, beds, stubbles – including harvested land with haulm – polytunnels and irrigation);
  - iii. creating farm tracks or gateways;
  - iv. poaching by livestock;
  - v. cleaning out ditches.
- c. **Rule 7: Protecting against soil erosion by livestock.** Any land within 5m of inland freshwater and coastal waters must be protected from significant soil erosion by preventing poaching by livestock. This may include erecting fences to keep animals away from watercourses in some circumstances; or wintering livestock on well-drained, level fields.

19. However as yet, it is difficult to measure the efficacy of the FRfW for soil health. This is largely due to:

- a. **Low awareness:** There was little investment in promoting the rules when they were launched in 2018.
- b. **Capacity:** the lack of capacity for the Environment Agency to investigate 'low-impact' incidents is well-established. In 2021, the Environment Agency was given £1.2 million to significantly increase the number of inspectors visiting farmers to reduce diffuse water pollution, with 50 additional full-time employees recruited for inspections.
- c. **Advice-led approach:** Until now, the Environment Agency has taken an *advice-led, risk-based and proportionate approach* to the enforcement of the farming rules for water and continues to do so, following up with more direct enforcement action where needed. A more formal approach was scheduled to start in 2021. However there is currently little evidence published on the effectiveness of this approach thus far. In 2021, despite 243 documented breaches of the rules, no penalties were issued. While it is our view that penalties should not be the only form of enforcement- indeed penalties should be avoided where possible and where there is a willingness from the land manager to comply- there should be a clear and robust model for enforcing the FRfW and other agricultural regulation.
- d. Their limited scope, because they don't cover all threats to soil health, such as high levels of pesticide use or practices which lead to carbon being released into the atmosphere.

20. The Government must take immediate regulatory action in areas where current measures are insufficient to achieve statutory conservation standards. Particular attention should be given to protected sites. Bespoke regulatory measures, that could take the form of a Water Protection Zone, are likely to be needed.

21. The Environmental Impact Assessment (EIA) Agriculture regulations also protect land in England that has been uncultivated in the past 15 years by physical means, such as ploughing or activity that breaks the soil surface, or land which hasn't been disturbed by chemical means such as fertiliser additions. The EIA Agriculture regulations also provide important protections for priority semi-natural habitats, such as species-rich grasslands, where large carbon stocks can remain in the ground if their soils are undisturbed, preventing carbon from being released into the atmosphere.
22. Much of the challenge relating to soils regulations is also in part due to definitions and a lack of clarity on issues such as:
  - a. What constitutes 'reasonable precautions' for protecting soils.
  - b. Under what circumstances might certain crops/management types be banned (e.g. slopes, soil type, or catchments).
  - c. What constitutes a 'steep' slope and how should it be measured.
  - d. How to measure soil type, splitting fields in or out of the catchment.
23. As a starting point, the Government should make some of this language uniform with universal definitions, as well as establish a framework of different categories (soil, landscape, farming types) so that a common language around the different issues at stake can be established.
24. Cross-compliance has also acted as a 'quasi-regulatory' tool for improving soil health. Over 95% of land managers have been receiving direct agricultural payments.<sup>xviii</sup> This means that the majority of land managers in England must comply with rules to protect soils, thereby improving soil health. Soil-related Cross Compliance rules (some of which have been phased out since 2018) include:
  - a. **GAEC 4: Minimum soil cover.** Feedback from the RPA and EA was that the effectiveness of this particular rule was low.
  - b. **GAEC 5: Minimum land management reflecting site-specific conditions to limit soil erosion.** This rule works because it is built around a specific outcome and so should be applicable for high-risk crops including maize and root crops grown on unsuitable sites demonstrating poor practice. Whilst this rule is largely covered by the FRfW, they do not cover erosion caused by wind.
  - c. **GAEC 6: Maintenance of soil organic matter level through appropriate practices,** In practice, there was no obligation to measure and no baseline data for existing soil carbon stocks in the majority of farms, there are no mechanisms to establish either compliance or breach. The rule mainly bans practices which are already abandoned - the closest thing to a baseline is 'no crop residue burning in England'.
25. In 2024, the Government will end cross-compliance. In the absence of a replacement for these rules, the risk is that there will be an overall weakening of mandatory soil health measures to which all land managers must adhere.

### ***The need for improved soil regulation***

26. In light of the above, there is a clear need for more robust regulation relating to soils. We recommend that the Government comes forward with new regulations which:
  - a. Protects soil multifunctionality and the diverse public goods and services provided by soils. In particular, regulation should protect carbon storage and sequestration (achieving net zero carbon as well as climate change mitigation) water storage, soil fertility and biodiversity. This might require the creation of a new instrument ('Farming Rules for Soil Health' or 'General Binding Rules for Soil Health').

- b. Explicitly recognises the role and responsibility of the food supply industry by enforcing regulations through their supply chains and basic standards, as well as ensuring they don't accidentally encourage non-compliance through contractual arrangements.
27. A stronger regulatory baseline for soils will also help farmers to access private funding sources including trusted farm assurance, nutrient trading schemes, collaborations with water companies and local development authorities via protocols for carbon off-setting schemes which will need to see legal compliance as a condition before investors will commit.

**Will the standards under Environmental Land Management schemes have sufficient ambition and flexibility to restore soils across different types of agricultural land? What are the threats and opportunities for soil health as ELMs are introduced?**

28. As outlined in paragraphs 3-4, a whole-farm approach is essential for regenerating soil health under ELM schemes. As yet, there is very little in the existing ELM design which incentivises whole-farm agreements and actions. Instead, in the 2023 standards there is a menu of individual actions which farmers can choose from.
29. Under the Sustainable Farming Incentive (2023), there are three standards which relate to soil management. We assess them below:
- a. Arable/horticultural soils introduces some basic good practices, including over-winter cover, measuring soil organic matter and creating/maintaining a soil health action plan. However these actions constitute a fairly low level of ambition, and will not deliver the step-change needed to recover English soils. This is because many farmers already introduce over-winter crops, and actions such as measuring soil organic matter-while important- don't in and of themselves deliver outcomes for the environment.
  - b. Improved grassland soils again introduces basic good practices such as minimising bare ground and the intermediate level incentivises the maintaining of herbal leys. However the requirement for herbals leys is only on 15% of land in the SFI agreement, which could constitute a very small area of land, which would have little impact on soil health.
  - c. Moorland and rough grazing is the lowest in its ambition of the three schemes, as it does not require any actions with measurable outcomes for soil health-or otherwise-whatsoever in its current form. It only requires farmers to measure and monitor soils which-while important- again does not in itself improve soil health.
30. In 2023, Defra has also launched standards on nutrient management, hedgerows and integrated pest management, improved grasslands, and low/no input grasslands. All of these standards have the potential to enhance soil health significantly, but again ambition must be sufficient in future schemes from 2024.
31. For example, the integrated pest management standard includes some good actions, including insecticide-free areas and crop rotation, but makes no requirement on these being done in conjunction with each other as a whole-farm approach – instead it is a 'pick and mix' approach. This matters in the context of soil health because soil biodiversity is dependent on all aspects of land management-as is Integrated Pest Management (IPM)- and thus a few actions won't achieve the necessary outcome.

32. We recommend that the 2024 SFI standards are increased in their ambition, and require sets of actions that work together for soil health, and which cover the seven actions outlined in paragraph 4(a-g). All ELM schemes should increase over time until the end of the Agriculture Transition in 2027, to ensure that they incentivise the necessary action required to meet environmental targets.
33. Furthermore, there is no minimum land area required under an SFI agreement. This means that theoretically, a land manager could enter a small field-or less- into an agreement, which would have minimum impact on the soil health overall in that area. Given that soil-and indeed all- biodiversity is a complex web of interdependent parts, having no minimum land area fails to recognise this fundamental facet of sustainable soil management. However, there is value in the low/no input grassland standard applying to small areas of land (for example, often less than 2 hectares) as often only small fragments of these habitats remain, so farmers should be incentivised to restore and manage these important areas of biodiversity.
34. Finally, we welcome the provision of advice in both the IPM and nutrient management SFI standards. In future, peer-to-peer learning, network building and demonstration farms should be facilitated through all three ELM schemes.

**What does UK Government need to do to tackle other stressors on soil health such as soil contamination?**

35. By 2020, bring all exempt slurry storage facilities into the Water Resources (Control of Pollution) Silage, Slurry and Agricultural Fuel Oil (SSAFO) regulations 1991. Currently around 50% of slurry stores are exempt. This creates capacity issues for the storage of slurry and leads to spreading at inappropriate times, risking the health of farmland soils, watercourses and drinking water supplies. Defra needs to urgently clarify when the current slurry storage SSAFO exemption will be rescinded.<sup>xix</sup>
36. The use of treated sewage sludge as fertiliser is also a major driver of soil contamination. This is because contaminants such as microplastics and chemicals (e.g. per-and polyfluoroalkyl substances (PFAS) ‘forever’ chemicals) are often present in agricultural sludge. These contaminants are initially present in household and industrial wastewater and are partially removed during the wastewater treatment process, ending up in the biosolid phase or sewage sludge used as fertiliser. They then cannot be removed from soils-or other environments such as rivers and oceans and many are highly persistent in the environment.<sup>xx</sup> Furthermore, the long-term use of sewage sludge in agriculture is known to increase the abundance of antibiotic resistance genes in soil.<sup>xxi</sup>
37. This leads to the increased presence not only of chemical pollutants in soils that could potentially impact soil biodiversity and soil food webs but also has knock-on effects for freshwater and marine life. For example, many persistent chemicals impact the reproductive and hormonal functioning of marine mammals such as seals.<sup>xxii</sup>
38. To tackle this, the UK Government should<sup>xxiii</sup>:
  - a. Stop chemical contamination at source, by phasing out the most harmful chemicals from non-essential uses in the UK.

- b. Extend producer responsibility for companies responsible for wastewater contamination, including chemical and pharmaceutical companies, as well as other industries responsible for microplastic pollution.
  - c. Improve monitoring programmes of contaminants from source to sea (such as the Water Framework Directive and Marine Strategy Framework Directive).
  - d. Introduce thresholds for a wider range of contaminants for sewage sludge and wastewater treatment (particularly PFAS, microplastics, emerging chemicals of concern such as pharmaceuticals and anti-microbial resistant genes that aren't regulated in current outdated sludge legislation).
  - e. Encourage UK water companies to develop a road map for reducing contaminants in wastewater and sewage sludge (i.e. avoiding further concentration of contaminants in sludge during water treatment).
39. The Government must recognise the impact of the current use of pesticides on soil health, and up the ambition to reduce reliance on these chemicals. This means increasing the ambition and ensuring good uptake of the IPM standard within the SFI, publishing the National Action Plan for the Sustainable Use of Pesticides as soon as possible (including setting reduction targets), and increasing research, development and training into alternatives.
40. The presence of persistent and harmful chemicals in compostable food packaging and tableware is another source of soil contamination. For instance, high levels of the 'forever chemicals' PFAS have been reported in compostable packaging made of moulded plant fibre in the UK<sup>xxiv</sup>. When this packaging is composted, the chemicals are then released into the compost and soil and can migrate into crops<sup>xxv</sup>.
41. To tackle this, the UK Government should:
- f. Ban the use of persistent and harmful chemicals, such as PFAS, in compostable packaging and tableware.
  - g. Revise the standards for compostable food packaging to set strict threshold for the presence of organic pollutants, beyond heavy metals, including PFAS.

**This submission is supported by the following Link members:**

A Rocha	National Trust
Angling Trust	Plantlife
Amphibian and Reptile Conservation	The Rivers Trust
Bumblebee Conservation Trust	RSPB
Butterfly Conservation	Soil Association
CHEM Trust	The Wildlife Trusts
Friends of the Earth (England & Wales)	

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<sup>i</sup> <https://www.gov.uk/government/publications/state-of-the-environment/summary-state-of-the-environment-soil>

<sup>ii</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/909069/ncc-advice-soil-management.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/909069/ncc-advice-soil-management.pdf)

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