SUSTAINABLE SOILS ALLIANCE

Environment Agency

SSA response to EA Consultation: Draft flood and coastal erosion risk management strategy *July 2019*

Q1: To what extent do you agree with the vision: a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100?

Overall, there is a great deal of emphasis on resilience in the Strategy, and while this is important, it should not eclipse those measures capable of reducing the frequency and severity of flood events, even if by only 5%, 10% etc. In particular, the document could set out more explicitly how land use planning and soil management can reduce runoff generation at source, as well as building more resilient infrastructure.

To this end we would draw attention to the Amended Strategic Environmental Assessment Environmental Report 2019 which notes *potential for flood risk resilience through land use management at localized (e.g. catchment level, woodland / forestry, funding through ELMs) – cf national solutions - e.g. working with natural processes, urban biodiversity enhancement through Sustainable Urban Drainage Systems*.

In general, we need a national overview of soils and how they affect flooding. We suspect that poor soil condition (and its ability to absorb rainfall) is widespread and a key cause of increased levels of flooding. There is concern that natural flood management (NFM) methods emphasise instream dams, and bunds at the expense of the natural function of the soil – which should be considered in the first instance.

Q2: To what extent do you agree with the Environment Agency's proposed strategic overview role as set out in the chapter 'setting the context for the draft strategy'?

The context lacks detail about the Agency's specific role. In particular we would like to see further emphasis on preventative measures as opposed to just resilience. For example, does the Agency's role include efforts in the catchment to reduce the severity of flood events?

Q3a: To what extent do you agree with strategic objective 1.1: Between now and 2050 the nation will be resilient to future flood and coastal risks. Over the next year the Environment Agency will work with partners to explore and develop the concept of standards for flood and coastal resilience?

As important as resilience is, we would like to see this expanded to cover implementing measures that will reduce flood frequency and severity.

We also feel that it is ambitious to set up standards within the space of a year. These need to be defined and agreed – as well as the mechanisms required to monitor them. It also needs to be better explained what the consequence of not meeting the proposed Standards would be.

Where possible, Standards developed should link with the environment metrics used to implement the 25 Year Environment Plan e.g. in the case of Healthy Soils, a metric to ensure optimum water storage and control of runoff /flood risk.

Q3b: Please provide comments on the measures described under strategic objective 1.1, and tell us about any additional measures you think there should be, and who could implement them.
We are pleased to see land management included as a measures / tool for resilience.

An additional recommended measure would be to ensure soil quality including (metrics on organic matter, soil structure, compaction, erosion, land drainage, soil chemistry and biology).

Q4a: To what extent do you agree with strategic objective 1.2: between now and 2050 risk management authorities will help places plan and adapt to flooding and coastal change across a range of climate futures?
We agree, but these 'places' should also be managed to reduce flood frequency and severity (even by a marginal amount) e.g. where the 1 in 2-year flood event (for example) no longer causes damage because of improved soil and land management in the catchment.

This would require an enhanced leadership role for the EA - which in turn will require adequate funding.

Q4b: Please provide comments on the measures described under strategic objective 1.2, and tell us about any additional measures you think there should be, and who could implement them.
There is no mention here about the importance of soil management and how this can be used to reduce flood event frequency and severity. This would be though improved soil quality leading to an increased storage of flood water, but also through control of soil degradation that can lead to an increase in flood risk frequency and severity.

An additional measure as a potential funding stream could be the proposed new Environmental Land Management Scheme.

Implementation of soil improvement measures should be carried out through the mechanism of the Environmental Land Management Scheme – reflecting the fact that healthy soils are a public good and so deserving of public funds. This in turn will require investment in capacity building including independent advisers with genuine soil knowledge, including land-use advice for improved soil condition.

Q5a: To what extent do you agree with strategic objective 1.3: Between now and 2030 all those involved in managing water will embrace and embed adaptive approaches to enhance the resilience of our environment to future flooding and drought?
The list of 'those involved in managing water' should be extended to land users, land managers and farmers. These parties can implement soil and land management measures such as appropriate land use, subsurface drainage, cover cropping and use of grass leys etc. to reduce the frequency and severity of flood events, even under predicted climate change scenarios.

To this list we might add water and insurance company who are well placed – and have an important responsibility to deliver and fund soil health and function (including via building advisory and monitoring capacity).

Question 5b: Please provide comments on the measures described under strategic objective 1.3, and tell us about any additional measures you think there should be, and who could implement them.
Again, there is not enough about the importance of soil management and how this can be used to reduce flood event frequency and severity. This would be though improved soil quality leading to an increased storage of flood water, but also through control of soil degradation that can lead to an increase in flood risk frequency and severity.

Farmers and landowners, as well as the stakeholders listed in 5a are important stakeholders in this regard.

Q6a: To what extent do you agree with strategic objective 1.4: Between now and 2030 risk management authorities will enhance the natural, built and historic environments so we leave them in a better state for the next generation?

Soil and soil management are already referenced in National Flood and Coastal Erosion Risk Management Strategy for England 2019) – and indeed, these do have the potential to contribute greatly to flood mitigation with the right capacity and leadership. For context, the following table shows the relative contribution of soil pores and surface depressions in storing water (thus alleviating flood risk), compared with drainage ditches and detention ponds.

From Godwin & Dresser, 2003 - Soil and water management in the Parret catchment:

Water storage mechanism	Equivalent depth of water (mm)	Storage volume (10^6 m^3)
Soil pores to a depth of 0.5m	50	78
Surface depressions in a ploughed field	10	16
Drainage ditches	2.75	4
100 detention ponds of 25,000m^3	1.5	2
Total	64	100

NB. 1 in 2-year, 5 day event = 62mm or approximately 100 x 10^6 m^3

Q6b: Please provide comments on the measures described under strategic objective 1.4, and tell us about any additional measures you think there should be, and who could implement them.

Soils are essential to enhancement of natural environment. The Strategy needs more explicit mention of soil measurement, monitoring and management in the enhancement of the environment and thus reduction of flood risk (frequency and severity). This would be implemented by landowners, farmers, land managers, urban planners, civil engineers (built environments).

Delivery of soil conservation and recovery will depend on necessary capacity for supporting farmers, land users / managers through independent high-quality soil knowledge/ advice. This needs government support and reconstruction (post ADAS) to be sufficiently fit for purpose to meet the future F&CE RM objectives.

Q7a: To what extent do you agree with strategic objective 1.5: between now and 2030 risk management authorities will use funding and financing from new sources to invest in making the nation resilient to flooding and coastal change?

Funding and financing should be directed at control at source i.e. effective soil and land management that will reduce runoff generation and flood risk and the provision of soil quality advice and monitoring systems.

Q7b: Please provide comments on the measures described under strategic objective 1.5, and tell us about any additional measures you think there should be, and who could implement them.

We are keen that proposed 'Green Finance Schemes' should consider a fund for soil recovery and restoration schemes. This could be applied to a wide range of soil landscapes.

Where available, these should be related to supporting good soil management (e.g. compensatory schemes to cover costs of lost agricultural production).

Q8a: To what extent do you agree with strategic objective 2.1: between now and 2030 all new development will contribute to achieving place based resilience to flooding and coastal change?

The role of new development in increasing, and in some cases creating, flood risk (frequency and severity) as well as its resilience should be explicit. The use of impermeable surfaces can lead to increased runoff and increased flood risk. Use of Sustainable Urban Drainage (SUDs) plans / technologies will mitigate this.

Q8b: Please provide comments on the measures described under strategic objective 2.1, and tell us about any additional measures you think there should be, and who could implement them.
Understanding soil capabilities should be a mandatory element of the planning process. To support this, high resolution soils maps should be made universally available to develop more accurate and updated flood risk maps and underpin land use decision-making.

Q9a: To what extent do you agree with strategic objective 2.2: Between now and 2030 all new development will seek to support environmental net gain in local places?
See response to Q8a. Environmental net gain will need to include soil condition, so this must be included in any analysis. We would also draw the Agency's attention to the fact that environmental net gain is weak on recognizing ecosystem services of soils and soil ecology.

Q9b: Please provide comments on the measures described under strategic objective 2.2, and tell us about any additional measures you think there should be, and who could implement them. This is not just about biodiversity net gain – there should be net gain of all ecosystem goods and services and many of these are underpinned by healthy soils, so this should be considered explicitly.

Q10a: To what extent do you agree with strategic objective 2.3: Between now and 2030 all risk management authorities will contribute positively to local economic regeneration and sustainable growth through their investments in flooding and coastal change projects?
Investments in flooding management (e.g. improving soil condition to receive, retain and release water) will bring other economic (and social) benefits to local areas. Partnership building will require leadership from the EA and NGOs but also water and insurance companies who have unique and important roes to play.

Q10b: Please provide comments on the measures described under strategic objective 2.3, and tell us about any additional measures you think there should be, and who could implement them
Projects contribute to local economic regeneration and sustainable growth.

Q11a: To what extent do you agree with strategic objective 2.4: Between now and 2050 places affected by flooding and coastal change will be 'built back better' and in better places?
Needs to consider the role of surface sealing when built back – and how this can increase runoff generation and flood risk (frequency and severity) even under predicted climate change scenarios.

Q11b: Please provide comments on the measures described under strategic objective 2.4, and tell us about any additional measures you think there should be, and who could implement them.
Measures: insurers, build back better places, shoreline management plans. See Response above.

Q12a: To what extent do you agree with strategic objective 2.5: between now and 2030 all flooding and coastal infrastructure owners will understand the responsibilities they have to support flood and coastal resilience in places?
This needs a clear strategy and mechanism to achieve this and measures to identify / address shortfalls and failures.

Q12b: Please provide comments on the measures described under strategic objective 2.5, and tell us about any additional measures you think there should be, and who could implement them.
Measures: Best practices; reporting; collaboration, sharing, monitoring.

Q13a: To what extent do you agree with strategic objective 2.6: now and 2050 the Environment Agency and risk management authorities will work with infrastructure providers to ensure all infrastructure investment is resilient to future flooding and coastal change?
Not only resilient, but also infrastructure does not increase flood risk (through surface sealing of urban areas and building on existing flood plains).

Q13b: Please provide comments on the measures described under strategic objective 2.6, and tell us about any additional measures you think there should be, and who could implement them.
Measures should consider long term infrastructure flood impacts and therefore long-term investment from infrastructure companies into resilience and monitoring strategies.

Q14a: To what extent do you agree with strategic objective 3.1: Between now and 2030 young people at 16 should understand the impact of flooding and coastal change, but also recognise the potential solutions for their place, and opportunities for career development?
We would add to this the importance of young people being taught and understanding the importance of soils for the numerous ecosystem services they provide, including carbon storage, food production and biodiversity alongside food and flood security.

Q14b: Please provide comments on the measures described under strategic objective 3.1, and tell us about any additional measures you think there should be, and who could implement them.
See 14a.

Q15a: To what extent do you agree with strategic objective 3.2: between now and 2030 people will understand the potential impact of flooding and coastal change on them and take action?
Agreed – approaches need to be simple, effective and easy to implement. It should include understanding the role of soil structure, conservation and protection in flood risk management.

Q15b: Please provide comments on the measures described under strategic objective 3.2, and tell us about any additional measures you think there should be, and who could implement them.
Measures: Understanding businesses; digital tools

Question 16a: To **what extent do you agree with strategic objective 3.3: Between now and 2030 people will receive a consistent and coordinated level of support from all those involved in response and recovery from flooding and coastal change?**
This requires strong EA leadership, accountability, organisational and communication systems / structures.

Question 16b: Please provide comments on the measures described under strategic objective 3.3, and tell us about any additional measures you think there should be, and who could implement them.
Measures: roles; warnings; incident responses

Q17a: To what extent do you agree with strategic objective 3.4: Between now and 2030 the nation will be recognised as world leader in managing flooding and coastal change, as well as developing and attracting talent to create resilient places?
To achieve this, we must emphasise the importance of training, and specifically a multidisciplinary and transdisciplinary approach, combining e.g. environmental science, civil engineering, geomorphology, planning, soil science, economics, social sciences. It is rare for all these disciplines to come together, but the manner with which they overlap is vital, as is the need for the different specialisms to understand and learn from each other.

Q17b: Please provide comments on the measures described under strategic objective 3.4, and tell us about any additional measures you think there should be, and who could implement them.
Measures involve training for standard setting to include soil university departments and Continuing Professional Development. Courses and curricula must consider the role of soils in flood management with a focus on UK scale.

Q18: Please provide any other comments
The strategy is overall a good document. It is clear that soils are in the EA's thinking nationally. However, consideration of soils does appear disjointed and is not as embedded in process as it should be. Evidence of this is that soils are only mentioned 3 times in the consultation document although they are mentioned 59 times in the Amended Strategic Environmental Assessment (SEA) Environmental Report!

A standard, consistent approach is definitely needed and the SSA welcomes the drive to develop this. Good soil management can enhance physical condition which in turn can receive, retain and release water in ways that reduce surface runoff generation and associated flood risk. However, climate change will have an impact on soils' ability to control flood risk, i.e. to receive, retain and release water (the influence of warm, wet winters and hotter, drier summers on soil properties, condition and functional capacity).

The SSA believe that soil is poorly understood.

The SSA wishes to meet and work with senior EA staff to explore ways we can help to make this nationally important strategy realizable in practice.