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10 January 2016

Dear Graeme,

Thank you for your letter of 9 December, setting out the Environment, Climate Change and Land Reform (ECCLR) Committee’s conclusions on their consideration of the Committee on Climate Change Adaptation Sub-Committee (ASC) independent assessment of the Scottish Climate Adaptation Programme (SCCAP).

In your letter you ask some questions – for example on compulsory soil testing, peatland restoration and forestry planting - that will be addressed by the forthcoming draft Climate Change Plan, which will be laid in Parliament this month. I look forward to sharing the contents of the plan with you then.

As you say in your letter, the Scottish Government’s intention is to respond to the ASC’s assessment in our next annual adaptation report in May, meanwhile I have set out updates on specific issues raised by the Committee in Annex A.

I look forward to continuing to work with the Committee on developing Scotland’s adaptation response.

Yours,

Roseanna Cunningham
CLIMATE CHANGE ADAPTATION: SECTOR UPDATES JANUARY 2017

Biodiversity: Ecosystem Health Indicators

The ecosystem health indicators (EHI) are a suite of 13 metrics that characterise the condition, natural function and resilience of ecosystems. They are a ground-breaking part of the wider suite of biodiversity indicators, with strong links to Scotland’s Natural Capital Asset Index. They are being developed through partnership, overseen by the EHI subgroup of the Scotland’s Biodiversity Strategy Science Support Group.

SNH has already published some of its EHI components, such as condition results for protected areas. These, along with the other EHI components, will be processed through the SEWeb Spotfire application for viewing at a landscape scale, defined by the 10 river sub-basin management areas. All of the original 13 indicators are on schedule to be published on SEWeb by September 2017, with a further five by March 2018.

Species

Evidence on observed and possible future effects of climate change on species in the terrestrial environment is summarised in the Biodiversity Climate Change Impacts Report Card (LWEC 2015) to which SNH contributed. The future effects of climate change on species are considered likely to be significant, with winners as well as losers. For various reasons there are only a few examples so far of evidence of losses to biodiversity in Scotland that can be attributed to climate change. The Evidence Report for the UK Climate Change Risk Assessment (Summary for Scotland, July 2016) highlighted research gaps around improving understanding of how species will respond to climate change, the uncertainties involved and what the best options are for conservation taking into account such uncertainty. Some research is being undertaken on the possible effects on particular iconic species (for example on capercaillie by RSPB). SNH, with help from the Climate Change Centre for Expertise (ClimateXChange), is bringing together sources of general information on impacts of climate change for its advisers on species conservation and management. Given uncertainties will continue, the focus needs to be on preparing for change and prioritising action, perhaps based around the ecosystem functions and services considered of most value. Scottish Natural Heritage’s adaptation principles form a basis for this. As well as continuing efforts to bring ecosystems into good condition, their practical application might involve different actions in different places as a hedging strategy, modifying objectives towards maintaining or restoring ecosystem functions and natural processes, and beginning slow-acting transformations in sensitive sites like upland streams.

The Scottish Government is funding research into how to improve ecosystem resilience in the face of environmental change through the Strategic Research Programme. SNH and others support gathering long-term data to provide evidence on the effects of climate change in ecosystems including species populations.

Marine environment

Scottish Natural Heritage (SNH) has recognised for some time the implications of climate change on the marine environment. SNH commissioned the first analysis of this issue resulting in the publication of a report in 2001 ‘The impact of climate change on subtidal and intertidal benthic species in Scotland’. Since then SNH has commissioned two MarClim surveys that have documented the changes in the distribution of a range of intertidal...
(indicator) species as a result of temperature changes. This has led to the development of a Community Temperature Index as a potential means of measuring changes in intertidal community composition as a result of climate change which is now being developed further as a Marine Strategy Framework Directive indicator. SNH has also been involved with the Marine Climate Change Impacts partnership (MCCIP) since its inception and Prof. John Baxter has chaired its expert review process as part of the production of the various report cards that have been produced over the years. The have gathered the most up to date information available on the impacts of climate change on the marine environment and its biodiversity. SNH has also been heavily involved in developing the research effort around the implications of ocean acidification through Prof. Baxter’s involvement as vice-chair of the Ocean Acidification international Reference User Group.

Coastal environment

The National Coastal Change Assessment (concludes March 2017) has analysed Scotland’s 21,000 km of shoreline, identified the potentially erodible or soft 4,000km and assessed historic and recent change. Of the soft coast 89% has been stable or accretional and 11% has been eroding recently. Past erosion has been projected forward to identify assets at risk between now, 2050 and 2100. The findings support The Climate Change Adaptation Programme, Flood Risk Management Act, Terrestrial and Marine Planning, Land Use Strategy & Scottish Biodiversity Strategy and have implications across the public sector.

The National Coastal Change Assessment undertakes the first part of Shoreline Management Plans, namely the identification of change and vulnerable assets. The second part: the policy response remains the responsibility of the Coastal Protection Authority / Local Authority. Phase 2 of the NCCA intends to explore novel policy opportunities via National Flood Risk Assessment which provide a supplementary or alternative approach to SMPs, which also exemplify the importance of Natural Flood Risk Management techniques, given the very significant role ‘natural’ coastal defences have been shown to play.

Coastal Realignment

The Marine (Scotland) Act 2010 provides for a framework of marine planning at both national and regional levels. At a national level the National Marine Plan is a statutory marine plan which sets out how Scottish Ministers envisage marine resources will be used in coming years. Public authorities who make authorisation or enforcement decisions, or any other decision that affects the marine environment, must do so in accordance or with regard to the Plan. The plan contains a policy on coastal processes and flooding which states that wherever possible, flood risk management and coastal solutions should work with natural processes and features, encouraging managed realignment of coastal habitats such as sand dunes, salt marshes and mudflats. The National Marine Plan also guides forthcoming regional plans by stating that, where relevant, regional marine plans should also reflect areas where managed realignment of the coast may be appropriate, setting out the potential benefits such as habitat creation. Ministers are currently in the process of establishing stakeholder-led Marine Planning Partnerships within 11 Scottish Marine Regions to take forward the process of regional planning. It may be considerable time before all Partnerships are established and regional plans are adopted, however in the absence of regional marine plans, the National Marine Plan directs all decision making in the marine environment.

Peatlands

The Scottish Government recognises the many multiple benefits including carbon sequestration that peatland restoration provides. Through the Peatland Action initiative, over
10,000 hectares has been restored since 2013. The forthcoming Climate Change Plan will set out the Scottish Government’s ambitions for peatland restoration. This will build up the National Peatland Plan, which recognises that successful delivery is a partnership effort involving land managers and others. For its part the Scottish Government identified £8m for 2017/18 to enhance the contribution already made by Peatland Action.

Forestry

To aid the restoration of native woodland, funding is available as part of the SRDP Forestry Grant Scheme. This mechanism can support the Scottish Government’s commitment to deliver improvements in native woodland condition through restoration type projects. The Forestry Grant Scheme is competitive and only the highest scoring projects are approved. The threshold for approval is dependent on the level of demand and available budget at the time of application. Applications for improving the condition of designated native woodlands are a priority in terms of woodland restoration and are considered as part of this process. The grant scheme can accommodate applications to plant smaller diverse woodlands where they are appropriate.

Land Use Strategy

In policy terms the Committee highlights the role of the Land Use Strategy (LUS). The LUS has a clear role in providing a high-level national policy agenda for the use of Scotland’s land. This is expressed through the three Objectives and the Principles for Sustainable Land Use. As such the LUS encourages a strategic, integrated and informed approach to land use with the aim of delivering multiple benefits from our land resources. The new LUS Reporting Framework will be published shortly and will chart progress with the delivery of the LUS throughout its five year life.

Scottish Water

Since 2002 Scottish Water has delivered more than £1 billion of investment in environmental quality measures. In the 2015-21 investment period there will be £500 million of investment to further protect and enhance the environment. Scottish Water continues to bear down on the number of pollution incidents from its assets and has seen a dramatic improvement in this area over recent years.

River basin management plans

In 2009 SEPA published the first River Basin Management Plans (RBMPs) for the Scotland and the Solway Tweed river basin districts. The purpose of the RBMP process is to improve water bodies to a classification of ‘good’ ecological status by 2027. The Plans must be updated every 6 years, and the second RBMPs were published by 22 December 2015.

Between 2009 and 2015 63% of water bodies in Scotland were at good ecological status. Over that time real improvements were made to 92 water bodies, representing around 1,000 km of watercourse. Certain aspects of many other water bodies were also improved although overall upgrades have not yet been achieved, illustrating the complex nature of achieving our RBMP targets. Headline progress was also affected by the valid authorisation of many new hydropower schemes to support the achievement of Scotland’s renewable energy targets.

The Scottish Government recognised the need to make significantly greater progress in the 2015-21 period, and instructed SEPA (who prepares the draft Plans for Ministerial approval) to ensure the second Plans reflected this goal. The work programme set out in the second
RBMPs aims to ensure that 87% of our water bodies achieve a good status classification by 2027. Whilst many actions are scheduled for the 2015-21 period, the ecological recovery will take longer. This is illustrated in Figure 1.

**Figure 1 – Expected improvements to Scotland’s water bodies as a result of the actions planned for the period 2015-2027**

Water bodies not at good status are affected by impacts on their water quality, physical condition, accessibility to migratory fish, or water flows and levels. Many of the necessary improvements can be addressed through traditional regulatory approaches, by SEPA working with regulated businesses to reduce pollution and increase river flows.

The most significant progress in reducing water pollution is made through Scottish Water’s programme of investment; and since 2002 Scottish Water has delivered more than £1 billion of investment in environmental quality measures. In the 2015-21 investment period there will be £500m of investment to further protect and enhance the environment.

However the second RBMPs also signalled a step change in approach for addressing our most significant challenges - diffuse pollution from agriculture, barriers to fish passage, and impacts on the physical condition of our water environment. SEPA plays a key management role in securing the delivery of such improvements, and has committed additional staffing to the delivery of these aspects of the Plans.

Many of the necessary improvements to fish passage and the physical condition of rivers and lochs are voluntary. To facilitate this programme of work, Ministers established a Water Environment Fund, administered by SEPA. This has now been fully operational for 3 years, and SEPA is driving the development of restoration projects with a range of partners including fisheries trusts, land managers and local authorities. Around 40 restoration projects are currently at various stages of development - scoping, development of options, design of physical works, or on-the-ground implementation.

As well as achieving our environmental goals, this programme of work will make a real difference for our communities:

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removing barriers and/or installing fish passes improves salmon and trout access to valuable habitat in the upper reaches of catchments, which in turn can bring important local economic benefits and increased tourism; and

restoring watercourses to a more natural condition improves biodiversity and reduces flood risk, thus supporting our programme of climate change adaptation; and in urban communities the associated creation of green space also brings health and recreation benefits.

For the period 2015-21 these elements of the programme are projected to cost in the region of £10m pa. Recognising the importance of the environmental and other outcomes provided by this work an additional £1m was identified in the recent spending review to support this work, bringing annual funding to £5.5m.

**Flooding- assessment of risk and funding**

SEPA published the first Flood Risk Management Strategies for Scotland in December 2015. These lay out the current understanding of flood risk in Scotland and the actions that will be taken forward through till 2021 to reduce flooding impacts. The Strategies ensure national coordination and prioritisation and embed a consideration of the potential future conditions arising from climate change.

The Strategies are evidence-based utilising the best, currently available information on flood hazard and risk. This includes considering a range of climate change scenarios to determine those areas most susceptible to an increase in flooding through climate change and what that may mean in terms of increased flood exposure. Guidance is also available to local authorities on the application of future climate change allowances to ensure actions designed and delivered now take account of potential future changes.

The Strategies establish actions that will result in the reduction of flood risk for communities across Scotland. While specific figures are not currently available for the number of properties at risk in 2080 considering global efforts to mitigate climate change, it is clear that without the planned delivery of flood risk management actions, there is likely to be a greater number of properties at risk. Currently, at the 200-year flood return period, around 108,000 properties are at risk of flooding however, considering a High emissions scenario to 2080, a further 60,000 properties could be at risk due to climate change.

SEPA has been working closely with the Adaptation Sub Committee and is seeking to respond to the recommendations arising from the SCCAP review by further developing its information including considering a wider range of climate change scenarios that particularly reflect global actions to address climate change. This will enable the opportunity to specifically consider future investment. Development of new information is being taken forward and planned with cross-agency input and engagement with Scottish Government. The uncertainty around increases in exposure to flood risk through climate change makes it challenging to pin-down accurate future at-risk property counts. However, by considering different scenarios and embedding climate change into the flood risk management planning process and the design of delivered actions, we are confident that responsible authorities are focusing on the priority at-risk areas.
Using the best available evidence and techniques SEPA will continue to reassess risk through each flood risk management planning cycle. Any significant changes to risk identified will be reflected in the prioritised actions included in future Flood Risk Management Strategies.

The Flood Risk Management (Scotland) Act 2009 creates a joined up and coordinated process to manage flood risk at a national and local level. It sets a framework for coordination and cooperation between all organisations involved in flood risk management, particularly responsible authorities such as local authorities and SEPA. Key organisations are now collaborating much more closely.

The publication of the Flood Risk Management Strategies which were published in December 2015 and the development of Local Flood Risk Management Plans by the lead local authorities have been achieved through partnership working by SEPA and the designated responsible authorities.

The Scottish Government has undertaken a number of actions to help promote this collaborative approach. For example, with SEPA we produced guidance in 2012 (Flood Risk Management Planning in Scotland: Arrangements for 2012 – 2016) which provided an explanation of how and when the Strategies and Plans would be produced. The Guidance described the involvement of local partnerships and advisory groups, as well as the planned co-ordination with River Basin Management Planning and land-use planning.

The Scottish Government also established the Scottish Advisory Implementation Forum for Flooding (SAIFF) to support organisations and stakeholders with an interest in flood risk management. SAIFF comprises a series of working groups which are known as Task and Finish Groups, each with a specific remit. These groups are convened to help develop specific guidance or to undertake further analysis of important technical issues. The membership of these groups is made up of representatives from the areas of policy and implementation as well as technical experts. The work of these groups is managed by the SAIFF Policy Management Group (SAIFF PMG).

We recognise that property level protection (PLP) measures such as barriers for doorways, airbrick covers can help reduce the damage caused by floods and make the clean-up easier. These products are particularly important in areas that are unlikely to benefit from a traditional civil engineered flood protection scheme in the foreseeable future.

We are aware that there are already a number of local authorities, including The Scottish Borders, Dumfries and Galloway, and Perth and Kinross, which provide grants, or discounted PLP equipment, to households at high risk of flooding. There may be a case for some support to be provided to help households install PLP measures and these have been included as a potential flood mitigation action in the Local Flood Risk Management Plans.

To help encourage more local authorities to consider PLP in 2014 we commissioned JBA Consulting Ltd. to carry out research to assess the flood risk management benefits of PLP and how many properties in Scotland might benefit from these products. We also provided guidance for local authorities to help them set up schemes to encourage residents and business owners to install products. The Scottish Flood Forum, which receives £140,000 a year from the Scottish Government, offers people free information flood product surveys.

No specific assessment has been undertaken of the how the flooding support grants provided by local authorities were used. The remainder of the funding, after the grants were paid out, was made available to the local authorities in order to meet general repair and clear...
up costs, and we also said it could also be used to increase the flat rate grant at the local authority’s discretion if it was merited in individual cases. How the surplus money was spent was therefore at the discretion of the individual local authorities. Our understanding is that local authorities generally used the funds for remedial and repair works which were required following the storms and associated flooding.

We have commissioned research to better understand the long term impacts of flooding on individuals and communities, such as Ballater. Through individual surveys and interviews researchers at James Hutton Institute and the University of Aberdeen will collect information about what types of support and advice people and communities need at different stages of a long-term recovery process. They will ask residents whether they received a household or business grant in 2016 and ask them what they used the grant for.

There are a wide range of resilient repairs, many of which are low cost that can help reduce flood damage and make future repairs quicker and easier. It is however a longstanding principle that property owners and their insurers are responsible for covering the costs of flood damage. Through the National Centre for Resilience we will be working with stakeholders, including the Association of British Insurers, the Building Standards Agency, ClimateXChange, BRE (Building Research Establishment) and the Scottish Flood Forum, to encourage resilient home repairs after a flood event and provide households with the most up to date information about techniques and materials.

The Scottish Government’s view is that the Flood Risk Management Strategies and Local Plans are coherent and integrated. SEPA undertook a consultative, partnership-based approach with responsible authorities and the Scottish Government in the work to develop the Flood Risk Management Strategies and Local Plans. The Local Plans take each Strategy and turn it into a local delivery plan. They provide more detail on how and when the actions from the Strategy will be delivered locally, providing additional details on the costs, benefits and delivery timetable for actions to be taken between 2016 and 2021.

Lead local authorities will provide an interim report on the progress of delivering all actions and measures in the Local Plans before June 2019 and a final report will be prepared by June 2022.

The Strategies and Plans are evidence based. They build on the National Flood Risk Assessment (NFRA), which was published in 2012 and identified the potential sources of flooding (river, surface water and coastal) and likely receptors, and subsequent flood risk and hazard maps. SEPA is now starting the process for reviewing the NFRA and the designation of Potentially Vulnerable Areas as part of the next cycle of flood risk management planning and will be considering new evidence and information that has emerged since the last cycle of planning was completed.

**Flooding – sharing best practice**

Sharing good practice examples and research outputs is an important part of any project. We fund the Tweed Forum to share the research findings and experiences of implementing natural flood management from the Eddleston Water project. With funding from the Scottish Government the Tweed Forum offers field trips and site visits to local authorities flood managers, agency staff, academics, school pupils and students. This ensures that implementation expertise is shared and research findings are discussed. The Eddleston Water project is now part of a wider EU Interreg research project to share evidence for building with nature to manage flood risk and coastal erosion across the North Sea region.
Flooding – prediction

The Weather Radar Network Renewal (WRNR) Project Board met in December 2016 and has confirmed that the Lewis upgrade will go ahead. There will be a meeting next week to develop a detailed plan and schedule.

Flooding – planning development on flood plains

Where a risk of flooding exists for new buildings, specific guidance supporting Scottish building regulations currently advises that there is a need for resilient construction that can reduce the flood impact on structure and materials.

Planning

The Scottish Government’s Chief Planner, John McNairney, made his report on building on flood plains to the Parliament’s Conveners Group on 21st December, which I hope members find informative. The Scottish Planning Policy is the appropriate place for the Scottish Government to set out national planning policy on climate change mitigation and adaptation. It provides direction for planning authorities in drawing up development plans and assessing individual planning applications. I would like to reassure the Committee that the Scottish Planning Policy gives clear and prominent support to climate change mitigation and adaptation. These matters are an integral part of the presumption in favour of development that contributes to sustainable development, introduced in Scottish Planning Policy in 2014.

The Committee will note the forthcoming publication of the climate change plan and the ongoing review of the Scottish Planning system with the publication of ‘Places, people and planning – a consultation on the future of the Scottish planning system’ which was published on 10 January 2017. As Mr McNairney indicated in his report, we can look to the next review of Scottish Planning Policy as an opportunity to explore whether there is a further need to revise policy, including any changes that are needed to reflect the policies and proposals set out in the forthcoming Climate Change Plan. We will also reflect on the comments made during the consultation on ‘Places, People and Planning’ before setting out how and when the Scottish Planning Policy and National Planning Framework will be revised.

Education - evaluating impact of measures to support education about adaptation

Education Scotland’s Community Resilience Development Officer post has been funded by Scottish Government since 2013 and is supported by the Scottish Government Managing Flooding Risk Team and the Resilient Essential Services and Communities Unit as well as the Scottish Environment Protection Agency (SEPA). The current post-holder has been in the role for 23 months.

The focus of this role has been to raise awareness amongst teachers as to how resilience can be used as a meaningful context for teaching and learning. Flooding and extreme weather are key contexts for learning about adaptation and resilience, but the Development Officer has also supported work on adaptation and resilience in relation to utilities and energy supplies.

The Development Officer has supported numerous professional learning events to raise awareness of how resilience can be integrated into the curriculum and how resilience professionals can support schools to make the learning real and relevant. In many cases, pilot schools have been identified for resilience professionals to work with to develop new approaches and models which can be shared. Working with schools in this way helps local
authorities to meet their duties under the Flood Risk Management (Scotland) Act 2009 to raise public awareness of flood risk and promote adaptation measures.

The networking events organised over the last 23 months have been attended by at least 161 teachers and resilience professionals, and 262 head teachers and teachers have attended professional learning events across Scotland. The Development Officer has engaged with at least 100 resilience professionals from 32 local authorities.

The Resilient Essential Services and Communities Unit has commissioned an external evaluation of the impact of the Community Resilience Development Officer post to gather evidence of positive impact and to inform the future direction and resourcing of this activity. This evaluation includes a review of the impact of the Ready for Emergencies website. The evaluation report is due to be completed by the end of December 2016.

Health

Using funding from the National Centre for Resilience, the Scottish Government has commissioned Health Protection Scotland (HPS) to conduct a study into the link (or absence thereof) between hot and cold ambient temperature and mortality and morbidity. This will enable the Scottish Government to design evidence based interventions in response to extreme weather events related to climate change. We are also working with HPS to scope proportionate research into the climate change related risks to public health from vector borne disease.

Business

Scottish Enterprise works closely with Adaptation Scotland and their Sustainability Specialists work directly with companies (both account and non-account managed) to identify opportunities to ‘future proof’ business practices, including opportunities to address adaptation. Scottish Enterprise support covers a wide range of topics including Energy Systems, Environmental Technology, Environmental Management, Lifecycle Analysis, Carbon Footprinting, Sustainable Business Practices, the Circular Economy and Adaptation. Scottish Enterprise make sure that companies are considering this area within the wider context of innovation, technology and workplace innovation where that is appropriate. In support of the Scottish Green Growth strategy, Scottish Enterprise continue to work with companies to address the significant opportunities in the Low Carbon Economy, including opening up important areas such as business opportunities from adaptation in sectors like enabling technologies, tourism and construction. Scottish Enterprise welcomes the opportunity through working with Adaptation Scotland to continue to consider areas of good practice in raising awareness of adaptation with businesses.