



Our response to comments made during the 2013 consultation on the Severn Estuary Flood Risk Management Strategy

January 2014

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Introduction

The Consultation for the Severn Estuary Flood Risk Management Strategy ran from 20 May to 31 July 2013.

The draft Consultation documents were available to view on the Severn Estuary Partnership (SEP) website. There were 1008 website hits in total. We sent out over 140 hard copies of the consultation documents. People were invited to submit their comments either electronically or by post.

During the Consultation we organised a number of drop-in sessions at parishes on both sides of the Estuary. Approximately 150 people attended these sessions in total, including communities, local councillors, an MP and others expressing an interest in the Strategy. We also held a joint meeting with NFU and CLA members, specific meetings for parishioners at a number of locations, and attended a number of other meetings in Gloucestershire, North Somerset and Somerset to discuss the Strategy. Prior to the consultation we undertook extensive engagement along the Estuary, appointing dedicated community engagement officers to explain the Strategy and explore future flood risk management options with communities, interested organisations and their representatives.

A total of 62 responses were received during the Consultation, of which 33 related to the Estuary in Midlands Region, 20 for South West Region, 2 for Wales and 7 concerned the Estuary as a whole.

The SEP has produced a report summarising comments raised by those who responded to the Consultation and they have identified five key themes.

Separate to the SEP summary report we have produced this document to respond to common concerns and comments raised by respondents. To do this most effectively we have expanded the headings from the SEP summary as follows:

1. Strategic overview, modelling and data (links with section 5 in the SEP report)
2. Future options when tipping point is reached (links with section 1 and 3 of the SEP report)
3. Compensatory inter-tidal habitat creation (links with sections 3 and 4 of the SEP report)
4. Managed realignment (links with section 3 of the SEP report)
5. Economic appraisal and funding of proposals (links with section 1 of the SEP report)
6. Strategy documentation wording / presentation (links with section 5 of SEP summary)
7. Food Security (links to section 3 of the SEP report)
8. Topics outside the scope of the Strategy including
 - Funding for maintaining defences
 - Flood maps and insurance letters
 - Shoreline Management Plan 2
 - Severn barrage
 - Local issues(covered under *Topics raised outside the scope of this consultation* in the SEP report)

Many positive comments were received commending our commitment to engagement, and the work done with communities, interest groups, farmers and businesses over the last two years. It was noted that this had gone a long way to build trust and positivity. The increased openness with regard to flood defence maintenance issues was highlighted, as was the commitment to collaborative working. Respondeees were supportive of the adaptive approach and noted that working with communities will be integral to the discussion of future options.

A number of respondeees appreciated that the proposals were better explained and evidenced than had previously been the case. Some respondeees also welcomed our willingness to explore alternatives to hard-standing defences. Respondeees generally reacted positively to proposals to regularly re-evaluate the Strategy every ten years, or when major changes take place.

The remainder of this report concentrates on responding to specific concerns and comments raised during the Consultation. The points raised are shown in the following format:

- ***Question or key concerns raised***

These comments may be the actual wording used by consultees or they may be summarised if the point was made by more than one consultee.

Then we have provided an **EA response**

Where appropriate we have outlined how we will modify the Strategy in response to comments received during the Consultation in *blue italic text*.

List of Contents

<i>Use Ctrl and Click to use hyperlinks to the headings in the document.</i>	<i>Page</i>
1. Strategic overview, data and modelling Includes tidelocking, models, cumulative impacts, sediment issues, climate change data, monitoring	5
2. Future options when tipping point is reached Includes clarity on future proposals, reviews, changes to maintenance arrangements, liabilities	11
3. Compensatory inter-tidal habitat creation Includes addressing habitat loss	15
4. Managed realignment Includes financial arrangements, defending properties	20
5. Economic appraisal and funding of proposals Includes Government policy and guidance, stopping maintenance, valuation of farmland	22
6. Strategy documentation wording / presentation	27
7. Food Security	29
8. Topics outside the scope of the Strategy	
8.1 Funding for maintaining defences	30
8.2 Flood Maps and Insurance Letters	34
8.3 Shoreline Management Plan 2	35
8.4 A Severn Barrage?	35
8.5 Local issues	36
9. Conclusion	37

1. Strategic overview, data and modelling

The following comments were received about the holistic understanding of risk and impact of Strategy proposals, and the modelling and data used.

Strategic overview

- ***An overview of flood risk for the entire Severn Estuary would have been useful in the Strategy. Flood cells cannot be considered in isolation – an action, or lack of one, in a particular area is likely to impact on an area upstream or downstream.***

EA response: The Strategy documentation was arranged into specific geographical areas so that consultees could easily see what the Strategy means for their locality. Work has also been carried out at the Estuary wide scale.

The Strategy covers the coastline from Lavernock Point near Cardiff to Gloucester, and back down the coastline to Hinkley Point in Somerset. Our work has given us an understanding of current tidal flood risk for the Estuary as a whole and how this may increase with climate change. The Strategy documentation included details of numbers of properties, land and infrastructure at current flood risk but didn't include our assessment of how this may change in the future. We will add this information to the documentation.

We have also looked at how much habitat may need to be created in the Estuary as a whole to compensate for the internationally important habitat which may be lost through sea level rise, due to the presence of defences preventing intertidal salt marsh retreating inland (coastal squeeze).

We have considered the maximum potential changes to the position of defences that could result from the Strategy. These changes would only be taken forward with the agreement of landowners and with input from the community. We found that flood levels could be marginally lowered in some locations, but moving defences would not be a cost-effective reduction to flood risk in its own right.

We haven't looked in detail at the impact of proposals to raise banks on neighbouring locations within the Strategy. The detailed assessment will be done when we develop each improvement project for specific locations. However, proposals to raise defences to keep pace with climate change do not alter the relative order of banks overtopping. Overall we believe any changes in river level due to the changes in bank heights proposed in the Strategy, and any subsequent change to volumes of water overtopping banks, will be negligible.

- ***The issue of tide locking has not been factored into the Strategy.***

EA response: The Strategy's focus is on the strategic management of tidal flood risk from the Severn Estuary. However, we recognise that increased tide locking* from sea level rise may lead to an increased flood risk over time from watercourses, rhynes and drains. Any increased flood risk as a result of tide locking could be considered at a local project level. A contribution of public funding may be possible to help manage this if the economic benefits that would result outweigh the cost of the improvements. This would depend on the availability of both public and private funding. In those locations where we have set out the intention to raise defences in the future, we have included the cost for improvements to outfalls.

*Tide-locking is the time during which a tide flap/gate is closed by the tide and prevents outfalls from discharging water into the Estuary.

- ***Many of the tidal tributaries appear not to have been considered in the Strategy.***

EA response: The Strategy's focus is on the strategic management of tidal flood risk from the Severn Estuary and is deliberately aimed at those flood cells that front onto the Severn. There are a number of approved Catchment Flood Management Plans and Strategies which cover the tributaries. These include the Severn Tidal Tributaries CFMP, an approved Strategy for the Parrett and an agreed working Strategy for the Usk through Newport.

How will the Strategy evolve in response to these concerns?

We will add information to the Strategy documentation to make the Estuary wide scale of the Strategy clearer. This will be an overview map of the whole area, and numbers of properties that may be at risk if the climate change projections are realised. The existing Strategic Environmental Assessment outlines the amount of compensatory habitat that may be needed within the Natura 2000 site as a whole.

We won't be adding any maps showing future flood risk. Concerns were raised during the first Consultation that the future flood risk maps we presented may blight properties. The maps were based on modelling using projections of climate change and the actual amount of climate change which will be experienced is uncertain.

We are not proposing to carry out any further assessment of tide-locking or flood risk from the tributaries within the Strategy. These do not have any strategic impact on tidal flood risk and how this can be managed.

Models

- ***Explain and justify the computer modelling used.***

EA response: We have reviewed historical records of flood tide levels to estimate the probability of a range of extreme tide levels and waves. We combined the tides with fluvial flows coming down the River Severn within a computational hydraulic model to predict extreme flood levels around the Estuary. Fluvial flows impact on extreme flood levels as far as the Noose, just downstream of Arlingham.

The model compares flood levels to the levels of defences in the locality and the land behind. The model calculates how much water will spill over defences and fill up the land behind, as well as volumes of water and the velocity at which it will flow over defences. High velocities and overtopping volumes could result in a breach, which would result in more extensive and deeper flooding. To assess the resilience of banks to overtopping and finding the point at which a breach is likely to occur we refer to the EurOtop Assessment Manual: Wave Overtopping of Sea Defences and Related Structures which summarises European research on the subject.

- ***Do the models look at factors such as sea level rise, increased river flow, increased rainfall intensity and variability individually or in combination?***

EA response: We have considered scenarios that take account of the potential future changes to sea level and river flow in combination. This includes the impact of increased rainfall intensity on rivers and the sea. We have modelled the impact of climate change on fluvial flows by applying the guidance 'Adapting to Climate Change: Advice for FCERM Authorities'. This predicts that flows in the Severn River Basin District are most likely to increase by 10% in the 2020s, 20% in the 2050s and 25% in the 2080s-2100s. This has been used in conjunction with the projected sea level rise estimates that affect tide levels.

As the Strategy is considering tidal flood risk, the impact of increased rainfall intensity on local drainage has not been considered. The inflows are likely to be too small to influence levels on the Severn.

- ***The cumulative effect of any flood defence works needs to be modelled.***

EA response: The timing of improvement works depends on the impact of sea level rise; the condition of the defences; the relative priority of the projects in the benefits they deliver and the cost and availability of public and private funding. We do not have sufficient information now to accurately know how high banks will need to be raised and when banks will need to be raised relative to each other. There are numerous scenarios that could occur and modelling these now would not be particularly useful. We consider it would be more effective to carry out modelling when we have more local details and better knowledge of timings. Impacts elsewhere would be assessed during the planning stages of individual location-specific projects.

- ***We want assurance that features such as sediment and effect of outfalls will be taken into account in modelling and any local plans.***

EA response: We acknowledge that sediment is mobile and that this is a key feature of the Estuary's geomorphology. The movement and volume of sediment in the Estuary is negligible in comparison to the volumes of water during the extreme flood levels which the Strategy is assessing. Sediment distribution does not impact on the strategic flood risk within the Estuary.

The movement of sediment is not a consideration in assessing the performance of earth flood banks, in an Estuary context. However, we will consider the impacts of erosion and accretion (build up of sediment) locally, for example if erosion threatens the stability of a flood defence or if sedimentation causes a restriction of outflows from drainage outfalls.

For these reasons we do not believe that a sedimentation study or modelling is needed to support strategic decisions relating to flood risk and its management.

How will the Strategy evolve in response to the concerns?

We have sufficient information to set out the intention to continue to maintain defences in the vast majority of places, at least into the medium term, without modelling sediment movement around the estuary or local tide-locking impacts. We also have sufficient information to adequately assess how much internationally important habitat may be lost by maintaining or improving defences. It is not proposed to carry out any additional modelling at this stage for these reasons.

Climate change data

- ***Will you confirm the proven validity of the climate change figures the projections are based on.***
- ***Confirm the climate change figures used are unbiased?***
- ***The Strategy relies heavily on what appear to be “picked for purpose” points from the available range of climate change predictions.***

EA response: Strategies assist us in developing a sustainable long term plan to manage flood risk. We need to be able to include climate change within our modelling and planning. The Strategy is therefore based on “projections” that by definition cannot be proven until they have occurred. Even though there is uncertainty about exactly what the future holds, basing the Strategy on projections helps us to be prepared for what may need to change in the future.

No climate change model can give a single definitive answer to what the future will look like. Government advises us to plan for the change projected by the United Kingdom Climate Projections 2009 (UKCP09) medium emissions scenario. UKCP09 is the fifth and latest generation of climate change information for the UK, and its projections are based on a new methodology designed by the Met Office Hadley Centre. Climate science and computer modeling have advanced significantly - UKCP09 reflects scientists' best understanding of how the climate system operates, how it might change in the future, and allows a measure of the uncertainty in future climate projections to be included

Responding to feedback in the 2011 Consultation, flood risk management actions taken forward will reflect actual climate change experienced. Whereas we have used the UKCP09 medium emissions scenario in our planning, we have sufficient understanding of current risk and how that might change in the near future to be able to propose actions for the short term based on the current climate change trend. An example of this is our proposals for how we will deliver the compensatory habitat required in the short term.

How will the Strategy evolve in response to these concerns?

We do not propose to change climate change and sea level rise projections used for the Strategy as these reflect the Government approved guidance we must use. We intend to review the Strategy periodically throughout its 100 year period. Future reviews will take into account revised climate change projections as well as the amount of actual sea level rise that has occurred. The sea level rise monitoring being carried out will help inform this.

Monitoring

- ***There has been little actual monitoring of dynamics of river system upstream of Sharpness. This should be included in the baseline.***
- ***Assurance is required that the upper Estuary will be included in Coastal Monitoring Programme. There needs to be an agreed framework for communities in the Estuary to collect monitoring data, to ensure an integrated, robust and repeatable approach.***

EA response: We are at the start of the 100 year period to be covered by the Strategy. At this stage, we have used the long length of records from the gauges at Hinkley, Avonmouth, Sharpness, Newport and Cardiff to help inform the Strategy. We have calculated levels upstream of Sharpness by modelling techniques that combine fluvial river flows in the Severn with the tidal data from Sharpness.

The proposals set out in the Strategy are dependent on actual sea level rise experienced, therefore understanding amounts and rates of sea level rise will be key, going forward.

Monitoring carried out by the Permanent Service for Mean Sea Level and tidal data from our own gauges will help with this understanding.

Monitoring of the coastline helps inform us of changes in heights of flood banks and changes in habitat and vegetation. This monitoring is improving, though not yet comprehensive. The Coastal Monitoring Programme commenced in April 2006 and is on a rolling five year programme. This provides topographic survey, LiDAR and aerial photography and is delivered through local authorities and ourselves. It currently extends as far up the Estuary as Sharpness. We are aiming to extend this into the upper Estuary and are also working with Advance the Line, a local community group, to incorporate their own local monitoring into the records.

The monitoring of sea level rise and the coastline will help inform future reviews of the Strategy. The data will be used along with other sources, such as Natural England condition assessments of the Severn Natura 2000 site, to verify rates of sea level rise and assess their impacts on defences and on internationally important intertidal habitats.

Whilst we consider an understanding of sediment movement is not essential to support strategic decisions relating to the management of tidal flood risk, we are in contact with Cardiff University to look at how their research may help improve geomorphological understanding of the estuary.

How will the Strategy evolve in response to these concerns?

We believe we have the information we need to undertake the planning required at this stage. We are looking to improve the monitoring to help inform future reviews of the Strategy. These reviews will update the Strategy with new information and reflect any changing circumstances.

2. Future options when tipping point is reached

Lack of clarity on future proposals

The following comments were received about the lack of clarity in the Strategy on proposals for the medium and long term and the need for proper consultation on these.

- ***The Strategy provides options for the future maintenance of flood defences, but no proposals have been put forward, or explored as a way ahead. We would have liked to see the options put in some sort of priority order.***
- ***If there are proposals that fundamentally change the management, treatment or effectiveness of the flood defences, these themselves must be subject to full and proper public consultation and a proper period of prior notice.***
- ***A long term commitment by the EA to engagement and consultation is needed and would help to maintain trust and positivity to the process.***
- ***The Strategy is very short on hard facts or concrete proposals and long on disingenuous equivocations. References to "working together", "exploring options" in the future are without any practical concrete basis for taking this forward into the future.***

EA response: It is possible to make decisions on how flood risk can be managed in the short term as we have sufficient understanding of current risk and how that might change in the near future.

How flood risk is managed in the medium and longer term will depend on the impacts of climate change. With input from communities, we've set out a number of options that could be considered together should there come a time when a different approach to managing flood risk is needed. This may be when the frequency or degree of flooding means that the existing land use is unsustainable for landowners/tenants and/or the community.

Alternatively, the point may be reached when we are permanently unable to continue to maintain flood defences using public money. In the latter case, we will consult with those affected and give a period of notice so alternative arrangements can be considered. Our current approach is set out in the Asset Maintenance Protocol

<http://www.environment-agency.gov.uk/research/policy/135650.aspx>

Since future flood risk management actions will depend on the impacts of climate change, there is no need to prioritise options or make decisions until these impacts become more apparent. Starting to think about the options now though does give us all time to consider and plan for the possibility of increased flood risk and the possibility that the way flood risk is managed might have to change. The Strategy will be reviewed periodically and will consider actual and up to date projections of sea level rise as well as any other factors that affect the Strategy, such as changes to funding policy. In-between reviews we will continue our local engagement through existing stakeholder groups and community contacts.

How will the Strategy evolve in response to these concerns?

We are not proposing to change the Strategy at this stage to prioritise medium and long term options. Decisions on how flood risk is managed in the future will only be needed when the impacts of climate change have become more apparent. The Strategy is the starting point for ongoing collaboration between the Environment Agency, landowners, communities and organisations to consider and plan for change for the next 100 years. We expect to collectively review the Strategy every 10 years.

Reviewing the Strategy

- ***Will the EA set trigger points for reviews of the Strategy?***

EA response: We expect to collectively review the Strategy every 10 years so that it can be updated with new information and reflect any changing circumstances. We have not set any specific trigger points but any major changes which may impact on the Strategy, for example a decision to construct a Severn Barrage, could prompt an earlier review. We can also review and make changes locally with interested parties if there are no strategic issues to consider involving the wider Estuary.

Potential discontinuation of maintenance by EA

- ***Any EA decisions to cease maintenance should be subject to open consultation and discussion with the affected landowners and communities well in advance.***
- ***Appropriate notice should be given in the event of any plans by the EA to no longer maintain or abandon defences.***
- ***To improve the way maintenance and management of assets is carried out into the future there is a need for clarity of what the EA will do and when, timescales for future withdrawal.***
- ***Many communities would not be able to afford the maintenance of defences themselves. The EA have not explored the feasibility of this with local landowners.***
- ***EA should hand over defences in a reasonable state of repair.***
- ***All defences should be made fit for purpose by the EA before handing them over.***

EA response: The Strategy has identified that in the future there will be locations where we will not have the economic justification to continue to use public funding to maintain some

existing flood defences. Where this occurs, it is anticipated that we will follow a similar approach to that set out in the current Asset Maintenance Protocol

<http://www.environment-agency.gov.uk/research/policy/135650.aspx>

We will consult and give a period of notice before we permanently discontinue maintenance work that we have previously undertaken. The length of this notice period will vary according to local needs and circumstances. We will work with those directly affected to discuss the different options available to them to manage their own flood risk and to maintain the assets themselves in the future should they choose to do so.

- **We are concerned at the proposal to stop maintaining the defences at Awre.**

EA response: The Strategy assessed the long term viability of spending public money on maintaining and improving flood defences.

At Awre the existing defences provide a standard of protection against tidal flooding of around a 1 in 5 to 1 in 10 chance in any year to the farmland behind. The defences do not provide any protection to houses, buildings and infrastructure. These are on high ground above the height of the defence.

The Strategy highlighted that the defences have a remaining life of around 20-30 years. The defences could be damaged by a tide or overtopping and cease to function before this time. To ensure that the flood defences are able to cope with future tides, they would need to be strengthened with a significant amount of remedial works. Rebuilding and maintaining the defences at Awre was not shown to be viable with public money.

Local landowners have raised concerns about the future of these defences at Awre. We have worked with them to assess the economic case for a 'make-do' option. This option would be to maintain the defences until such time that they need non-routine repairs or refurbishment.

Our assessment indicates there is an economic case for public funding to be used on this 'make-do' option to prolong the life of the defences. Environment Agency involvement in proceeding with this option is on the understanding by landowners that a tide, storm or overtopping may result in the flood defences not functioning effectively and land flooding. The 'make-do' option would not include any 'mending' – if any non-routine repair or refurbishment is needed in the future, this will have to be assessed at the time to ensure there is a robust business case to do this with public money. This 'make-do' option will now be included in the Strategy. We have also included the Brimms Pill defence in this option.

An economic case for the "make-do" option does not guarantee that public funding will be available to carry out all the maintenance that will be required to prolong the life of the defences. We have agreed with the landowners at Awre our joint approach to maintenance activities to ensure that the necessary level and frequency of maintenance continues.

How will the Strategy evolve in response to these concerns?

We will include the economic case for the 'make-do' option to prolong the life of the existing defences at Awre, within the Strategy documentation.

- ***Concerns over liabilities falling on landowners when they take over maintenance of defences. EA need to provide support and guidance on this issue.***

EA response: We recognise that there are concerns about possible landowner liabilities and legal clarification is being sought. This is outside of the scope of the Strategy.

- ***EA has facilitated new development by building and maintaining river defences, so have a moral (if not legal) responsibility for their security against flooding.***

EA response: We have not facilitated new development by building and maintaining defences. Defences were constructed for the benefit of houses, businesses, land, heritage assets and infrastructure which existed at the time.

Although defences reduce the risk of flooding they cannot completely remove it and may be overtopped or breached. Flooding may also result from a different source, for example, surface water or ground water. Where further development has occurred behind any defences, this would have been approved by Local Planning Authorities. Flood risk should have been considered as part of their decision making process.

3. Compensatory inter-tidal habitat creation

Adequately addressing how loss will be compensated

- *The main text appears to imply that there is some uncertainty that the lower limit for habitat creation may be met i.e. 'We are currently working with communities and landowners on managed realignment projects in the Estuary which 'should' provide 'most' of the 300 hectares required to meet the amount of habitat predicted to be lost in the next 20 years with the current sea level rise trend'*
- *We are concerned that the recommendations are based on current levels of sea level rise (or about 2.5mm a year) rather than the projections from the medium emissions scenario of UKCP09 as advised by the UK Government. We feel that further clarity on why the Strategy has not adopted the Government recommended emissions scenario is needed.*
- *The Strategy only appears to cover managed realignment of approximately 300ha of habitat from coastal squeeze rather than the 500ha predicted to be needed by the UKCP09 data (medium emissions scenario).*
- *A Strategy which 'might' result in a small net loss of internationally important habitat under current predictions, and a significant net loss if sea level rise trends accelerate is not acceptable. The Strategy should at least be confident of securing the 300 ha required at the lower end of the prediction scale (and this may not be the case if the on-going discussions with communities and landowners fail to secure the area required) and should have a contingency plan for securing the additional 200 ha if the higher end of the prediction scale becomes a reality. While we acknowledge that the Strategy can be reviewed if the sea level predictions change the current Strategy appears to be limiting future options for securing compensatory land.*
- *In many sections of the document it is suggested that management will be adapted if it is found that the EA is unable to maintain the flood defence or the defences begin to be topped more regularly, and that in some of these situations the EA will walk away. However, we believe that should this occur it would be too late for alternative management to be carefully discussed and implemented, especially with respect to potential sites for coastal realignment where it generally takes many years to gain community acceptance and develop sites to their maximum potential.*
- *We would encourage the EA to adopt the precautionary principle and put in place management for the most likely predicted scenarios now, so that damage can be avoided.*
- *We feel that if habitat is not compensated for within an appropriate timescale, by the time it is realised that compensatory habitat is required the biodiversity*

relying on that habitat will itself have been lost. This will also be in contravention of the EU Habitat and Birds Directives.

- ***The Estuary is an internationally protected site and if some of this habitat is lost then compensatory habitat has to be provided elsewhere. We can see nothing in this document that provides that compensation. Will the EA or landowners initiate projects for habitat creation? When will EA initiate this?***
- ***The monitoring Strategy should be revised to ensure adverse effects on the integrity of European Sites are identified as early as possible to allow time to modify planned mitigation or compensation measures.***

EA response: Providing compensatory habitat is an essential element of the Strategy to enable us to legally maintain or improve flood defences throughout the Severn Estuary. To plan for this we have estimated how much inter-tidal habitat will be lost with continuing to maintain and /or improve the defences. We have also considered how to compensate for this.

We have followed Defra guidance and modelled losses based on the UKCP09 medium emissions scenario. This predicts that 500 hectares of inter-tidal habitat may be lost by 2030 if this scenario is realised.

However, the legal requirement will be met if the compensatory habitat provided equates to that actually lost with the sea level rise experienced. The current trend of sea level rise indicates that the loss will be closer to 300 hectares by 2030 than 500 hectares. This equates to the UKCP09 low 50 percentile projection.

We recognise the importance of creating habitat before habitat is lost and already have two projects under construction at Steart and at Plusterwine and Alvington near Lydney. These will collectively provide 291 hectares of the compensatory habitat in the near future and so will put us well ahead of any observed losses of habitat. We also have other smaller options under negotiation.

Additional habitat will be required by 2030 should sea level rise occur at the higher rate, and beyond 2030 the requirement for compensatory habitat will increase as sea level rise continues. We will review the Strategy at regular intervals to ensure that habitat creation keeps pace with the rate of loss. We have established the baseline extent of habitats within the Estuary. In the reviews, we will use this together with the six yearly assessments of the actual condition of the European site carried out by Natural England and NRW; the amounts of sea level rise actually experienced and the latest projections of climate change to inform compensatory habitat requirements into the future.

We recognise that future options for securing compensatory habitat may have been limited by the proposals in the Strategy to maintain defences as long as there is an economic case to do so. Through our engagement we have recognised that landowners and the community must be involved in how their flood risk should be managed and have taken their views into account. Managed realignment projects are only taken forward with the agreement of land

and property owners. We will continue to work with landowners, property owners and communities where they wish to consider this.

How will the Strategy evolve in response to these concerns?

We are not proposing to change the Strategy to include more sites for habitat creation now. We believe we will have sufficient sites to provide the compensatory habitat required should sea level rise continue on the current trend. We are starting early on the majority of the compensatory habitat that is needed now, well ahead of any observed losses. We will review whether plans to create compensatory habitat need to be accelerated or increased at the regular Strategy reviews.

Other comments received on this subject

- **During our discussions and engagement with the EA over the last 18 months we were assured that the creation of ‘compensating habitats’ would no longer be the dominant reason for any change in flood risk policy yet we note that it still retains a prominent place in this revised Strategy and would also appear to be the only ‘option’ that would release funding to improve our flood risk.**

EA response: Through our engagement we have recognised that landowners and the community should be involved in how their flood risk should be managed. Taking their views into account has resulted in proposals to continue to maintain defences as long as there is an economic case to do so. However, creating compensatory habitat for the legally protected habitat which is lost as a result of the presence of the defences is also an essential element of the Strategy. Without the compensatory habitat we will not be able to maintain or improve flood defences throughout the Severn Estuary. Nevertheless, we have been able to justify a significant reduction in the compensatory habitat requirements in the current strategy as compared to the 2011 version. This is due to updating estimates of losses with the latest sea level rise guidance plus gaining agreement with Defra and other organisations that not all habitat losses in the estuary are caused by flood defences (so are not for the strategy to resolve).

- ***We understand and accept that consideration of the latest climate change predictions (UKCP09) has resulted in proposed flood defence improvements being shifted further into the future to match lower than previously anticipated sea level rise with a corresponding reduction in creation of compensatory habitat to address losses from European nature conservation sites. This has resulted in the extranet of managed realignment sites around the estuary being scaled back from what is set out in the policies for coastal cells agreed in the SMP2’s.***

EA response: Climate change and the amount of sea level rise experienced will affect the lifespan and standard of protection offered by the defences. Using the latest lower climate change projections has indicated that we will be able to justify the use of public money to maintain defences further into the future.

There are proposals within the Strategy that differ from the Shoreline Management Plan 2 (SMP2). Decisions on how to amend or update the SMP will be for the Severn Estuary Coastal Group of Local Authorities that lead on the SMP.

- ***Has the Strategy taken account of the Severn Estuary Coastal Habitat Management Plan (CHaMP)? The Strategy needs to refer to this document and confirm the status of the protected habitats throughout the Estuary and what steps are being taken.***

EA response: The Strategy has taken full account of the CHaMP through the Strategic Environmental Assessment (SEA) that was used to develop strategic options. We have reviewed and updated the assessment of likely compensatory habitat required in light of updated projections and measured sea level rise trends. We have also updated the assessment of the causes of habitat change and developed a clearer understanding of which habitat changes need to be managed within this flood risk management Strategy. Following consultation with Defra and Natural England, the Strategy will take into account habitat loss resulting from coastal squeeze. However, it will not address 'structural' habitat changes that are not influenced by the presence of flood risk management assets. Coastal Squeeze occurs when existing salt marsh on the estuarine side of a flood defence is altered or lost through increased tidal flooding, as a result of sea level rise.

- ***Where is the habitat that will be lost? Is it on the Severn Estuary? Does compensatory habitat have to be located in the area where it is lost?***

EA response: We would expect habitat loss to be distributed around the Severn Estuary shoreline, although the distribution of losses will vary with shoreline topography.

Compensatory habitat does not have to be located in the area where it is lost, but it should be as close as possible to this area to maintain the integrity of the protected site. It is more difficult to create compensatory habitat that is representative of the lost habitat the further away from the site you go. This is especially important in the Severn Estuary where the exceptional tidal range creates unique habitats. Generally, a greater area of compensatory habitat has to be provided when it is recreated farther away from the area of lost habitat.

- ***Most of the coastal realignment projects suggested in Strategy are small scale. We would appreciate knowing the EA's position on this matter.***

EA response: We believe the scale of sites reflects the estuary topography. The sites already under construction, and those that will come into being in the longer term, will be technically effective compensation for habitat losses caused by flood defences. In any

project we take forward we will look to maximise the area of habitat created and the ecological benefits, but realistically it is likely we will only get public funding to contribute to the new habitat creation that is required to meet legal obligations or Government targets. Delivering beyond this will rely on proactive partnerships with non Government Organisations (NGOs) and local communities.

- ***It is too early to use the Steart Project as a success story or as a template for future schemes, especially upstream where the water is not saline or subject to such regular flooding.***

EA response: Steart is an excellent example of a project where, working with the local community, unsustainable defences have been realigned creating multiple benefits for the community and the environment. We have constructed improved local flood defences as part of a compensatory habitat project, plus additional recreation opportunities. We agree that only time will tell exactly how successful that project proves to be as habitat develops over time. We also agree that it cannot be directly transposed to other locations and that each realignment project is unique. Our experience of projects on the Severn and on other estuaries will help shape any future realignment projects.

We recognise that saline levels are significantly lower in more upstream locations and that this will determine the nature of wetland habitat that can be created. We would expect salinity to move upstream as sea level rises. Occasional saline flooding can be extremely damaging to agriculture, so there is significant value in creating areas of farmland and habitat that can adapt as sea level rises.

- ***Does land that farmers already keep as wildlife habitat count towards the compensatory habitat?***

EA response: No, because the wildlife habitat is there already. Compensatory habitat is replacing what will be lost through sea level rise, due to the presence of defences which prevent intertidal salt marsh retreating inland.

4. Managed realignment

Compensation and costs

- ***If landowners agreed to provide land for habitat creation, how much would they be compensated? How much would owners of infrastructure get?***
- ***We would like to see the EA develop guidance regarding potential habitat creation, including likely returns and values. There was concern over land values attained by landowners in Steart Project.***

EA response: If a landowner decides to be involved in a managed realignment scheme then financial compensation for the loss of value of the land which is used in the scheme may be appropriate. Alternatively the land might become eligible for payments under Defra's agri-environmental schemes, if available and the relevant objectives are fulfilled. Selling the land to the EA might be a further option. When purchasing land as part of any realignment scheme we pay a fair market price and negotiate the best value on behalf of the tax payer. The purchase price would be determined by a transparent process based on land values current at the time. Negotiation would be between independent land agents acting on our behalf and the landowner's appointed representatives.

Because the land and location of each site is different, it is difficult to develop national guidance on the likely returns and values relating to managed realignment. This will be discussed with landowners on a case by case basis. We welcome the work on Paid for Ecosystem Services being completed by Defra and going forward would be pleased to receive the National Farmer's Union's (NFU) advice nationally on new market approaches they feel might be beneficial.

Compensation would not be paid to infrastructure owners. The EA's legal powers relating to flood and coastal risk management are permissive which means we have the power to undertake flood risk management works, but we are not legally obliged to provide protection from flooding. This means that ceasing to exercise a permissive power to maintain defences is not grounds for an individual or organisation to claim compensation from us. The infrastructure operators are responsible for ensuring the infrastructure can continue to operate. When taking any managed realignment proposals forward at the location-specific project level, we work with infrastructure providers to find the best solution. For example, managed realignment at Steart Peninsula in Somerset will protect strategic pylons and a road, and several utility services will be moved.

- ***In the event of managed realignment, what would be the costs to defend individual properties and to move infrastructure?***

EA response: This would vary on a case by case basis depending on the scheme involved. We would look at this in detail at the individual location-specific project stage.

- ***Evidence suggests you will only pay compensation of £7000 a dwelling for 'flood resilience'. This is not enough.***

EA response: This is not a compensation payment. In 2011 we were asked how much Flood Defence Grant in Aid (FDGiA) public funding Defra could contribute towards a scheme to improve defences, compared with a managed realignment scheme at the same specific location. In our response to the query, we included a figure of £7000 as an indication of the potential funding that might be available to reduce flood risk to each property at this location. This is the example amount of funding that might be contributed per household protected as set out in Table 6 of Defra's policy statement on an outcome focused partnership approach to funding flood and coastal erosion risk management, 23 May 11 (please see link below for more information).

Should a managed realignment scheme include property level protection measures, the actual amount of FDGiA funding that may be available towards this element may differ from the example amount of £7k per property. However, in most managed realignment schemes set back defences provide enhanced protection to properties which negates the requirement for additional property level protection.

We would assess the costs of property level protection measures at the individual location specific project stage if required. They would then be included in the overall project costs. The overall project costs would be compared against the overall economic benefits the scheme will provide. The FDGiA funding contribution towards the scheme as a whole depends on this and other outcomes delivered. For more information on Defra's partnership funding approach please see

<https://www.gov.uk/government/publications/flood-and-coastal-resilience-partnership-funding>

Other comments received on this subject

- ***Concern about the effect on drainage behind defences if the EA gives up the river bank defences.***

EA response: The impacts on drainage would be considered in detail at the individual location-specific project stage. Managed realignment schemes would not go ahead without considering all the impacts, including drainage behind defences, and discussing these with interested parties.

- ***On issue of managed realignment (setting defences further inland to protect residential buildings), why just listed buildings and not modern homes too?***

EA response: Managed realignment projects can provide protection to houses and businesses. This is not exclusive to listed buildings. However, under Flood and Coastal Risk Management appraisal guidance, any new development granted permission since January 2012 should not be taken into account in the benefits for new schemes or improvements. This ensures that Local Planning Authorities give due consideration to how new development will remain safe for its lifetime in accordance with Government planning policy.

5. Economic appraisal and funding of proposals

Comments relating to government policy and guidance

The following comments were received in connection with current Government policy and guidance for assessing the benefits of protecting agricultural land and farming, including for food security, and funding policy. (see also Section 7 re concerns relating to Food Security).

- ***The EA's method of calculating cost-benefit ratios takes no account of the medium and long term value to GDP that agricultural land and other business makes to output, food security, exports, income tax and inheritance tax.***
- ***An assets contribution to GDP over the lifetime of the asset should be used in the calculation.***
- ***New partnership funding arrangements for maintenance discriminate against rural areas because they do not properly value agricultural land – the value in the cost benefit analysis takes no account of food security and does not value it as a productive asset.***
- ***The issue of food security has not been adequately addressed in the Strategy. The appraisal is inadequate and does not reflect agricultural land values properly. Need an outcome measure for productive agricultural land.***
- ***It is felt that the methodology used to assess the benefits of capital expenditure on flood defences gives insufficient weight to intangibles such as local priorities, community wellbeing, heritage and landscape, food security and wildlife.***

EA response: The case for maintaining or improving the defences of agricultural land is considered in a similar way to other assets. We follow Government policy and guidance when carrying out economic appraisal.

Economic appraisal compares the whole life costs of doing work against the whole life benefits of doing that work. The benefits and costs are calculated over the same time period of one hundred years. If the costs are higher than the benefits then the work is not economically justified. If the benefits are greater the work is viable but funding is not guaranteed.

We assess economic benefits using the methods and values set out in the Defra commissioned 'The Benefits of Flood and Coastal Risk Management: A Manual of Assessment Techniques' (2005) produced by Middlesex University's Flood Hazard Research Centre, and their subsequent handbook produced in 2010 which includes updated values following research after the 2007 floods. These include values for businesses, agricultural land and residential properties which reflect the economic losses to the nation. The manuals also include guidance on the economic assessment of environmental and recreation and amenity costs and benefits. In the Strategy, we have considered recreation,

amenity and other less tangible benefits within the Strategic Environmental Assessment when developing strategic options.

In the Strategy, we have taken the approach of considering recreation, amenity and other less tangible benefits, within the Strategic Environmental Assessment.

Farming and food security is taken into account through the economic appraisal. Values are placed on the potential damages avoided to agricultural land, crops and productivity together with impacts on infrastructure and other assets which play a role in growing food and making it available to consumers.

In order to be considered for any public funding a project has to have a benefit-cost ratio greater than 1. Under Defra's partnership funding arrangements, the Flood Defence Grant in Aid (FDGiA) which a project may attract is calculated based on the outcomes and qualifying benefits it is expected to achieve. The greater the value of benefits that a project can deliver, the more funding could be contributed from the national pot.

The Government will explicitly fund four categories of outcomes that a project will deliver. Whereas there is no specific Outcome Measure for productive agricultural land, this is included in Outcome Measure 1 which has a payment rate associated with it reflecting the benefits a scheme delivers.

Defra's Partnership Funding approach means funding can be contributed towards any viable scheme, including where agricultural land would be the primary or sole beneficiary of taxpayer investment. Under the previous 'all or nothing' funding approach, schemes in more rural areas often struggled to make the threshold for any Government funding. For more information on Defra's partnership funding arrangements please see <https://www.gov.uk/government/publications/flood-and-coastal-resilience-partnership-funding>

How will the Strategy evolve in response to these concerns?

The Strategy is based on the current policy and guidance set out by Government. We will be considering any factors that might affect the Strategy including changes to Government funding policy or appraisal guidance when reviewing the Strategy. We expect to carry out reviews every 10 years or if there is a major change which will affect the Strategy.

We are sharing these policy related concerns with Defra, for their information.

Other concerns not related to policy

- ***There is concern over the EA's criteria for establishing the business case. Asset value is calculated on unrealistically high benefit/cost ratio.***

EA response: In the Strategy, we have considered how long it may be possible to continue to use public funding to contribute towards maintaining, and in some cases improving, defences. We have compared the economic benefits with the costs of carrying out work. Where the costs are higher than the economic benefits, then the work is not economically justified. Treasury rules are that we cannot obtain any public funding for works that are not economically justified. Where the economic benefits are greater than the costs, ie the benefit-cost ratio is more than 1, there is an economic case to carry out the work.

In the majority of locations there is an economic case to continue to maintain defences at least into the medium term (2030+) and many into the long term (2060 and beyond), depending on climate change. Areas that have significant numbers of properties at risk are likely to have an economic case to have their defences improved to keep pace with climate change.

The Strategy sets out the intention to continue to maintain and in some places improve defences where there is an economic case to do so. The Strategy has identified the need for around £500m of funding over the 100 year period to protect properties, infrastructure and agricultural land.

- ***The valuation of farmland using Treasury guidelines is often incorrect and local EA officers have wrongly assumed that some areas will be poorer land, whereas these parcels of land can often be the most valuable part of the farm. Further consultation is required with farmers.***
- ***The process of valuation looks too much at specific value of a parcel of land and not its wider value as part of farm.***

EA response: The methods and values we use are set out in the Defra commissioned 'The Benefits of Flood and Coastal Risk Management: A Manual of Assessment Techniques' (2005) produced by Middlesex University's Flood Hazard Research Centre and their subsequent handbook produced in 2010 which includes updated values following research after the 2007 floods. These include values for businesses, agricultural land and residential properties which reflect the economic losses to the nation. For agricultural land this is based on loss of productivity.

At the strategic level, we look at categories of land use and the extent to which these might be affected by a change in flood frequency. This has been sufficient for us to be able to conclude that in the majority of locations there is an economic case to continue to maintain defences at least into the medium term (2030+), and many into the long term (2060 and beyond), depending on climate change.

We have carried out a more detailed assessment, with landowner input, to confirm the strategic assessment that there is no economic case to maintain the defences at Awre including repair and refurbishment. There is, however, an economic case for a 'make-do' option to prolong the life of the existing defence as long as possible until such time that investment is needed which will make this uneconomic.

- ***How flood cells are defined may influence whether or not an area gets financial support.***

EA response: Flood cells are based on topographic boundaries and potential flood patterns / natural flood mechanisms. Each cell is an area where the risk of flooding can be considered independently from adjacent land. It is the size of the floodable area and the number and type of assets at risk in that area which influences the economic benefits achievable through carrying out work and the amount of public funding that it might attract.

- ***We would like to see complete visibility of the figures used by the EA to value each of the assets in their calculations and hence the ‘cost’ of the benefits to the community verses the cost of maintenance, or improvement of flood defences, which drive their decision to declare a stretch of flood defences as ‘uneconomical’.***
- ***We do not have visibility of calculations used by the EA to justify their decisions so would seek to explore this matter further.***

EA response: In the vast majority of locations the Strategy sets out the intention to continue to maintain defences. We therefore considered that including details of the economic appraisal within the Consultation document would not be of particular interest to readers. We have held separate meetings with the landowners at Awre where the economic assessment has indicated that we cannot justify continuing to maintain the existing flood defences including repair and refurbishment.

If there is a specific interest in understanding the figures we will be happy to discuss on a local basis.

- ***Why can funding be made available for habitat creation, but not be made available for maintenance/improvement of existing defences?***

EA response: Schemes will only attract public funding if the economic benefits outweigh the cost. Under a partnership funding approach introduced by Defra in 2011, every viable capital project has the potential to be supported by Flood Defence Grant in Aid funding over time. This includes raising or refurbishing of defences and managed realignment schemes to give continued flood protection whilst making land available for habitat creation.

The Government will explicitly fund four categories of outcomes that a project will deliver. These include for reducing direct damages to residential properties (Outcome Measure 2) and for environmental outcomes (Outcome Measure 4) including for statutory obligations to create habitat. Other benefits are covered in Outcome Measure 1, including for businesses, agricultural land and infrastructure and Outcome Measure 3, households better protected against coastal erosion. These Outcomes have different payment rates associated with them. The Outcome Measures and associated definitions have been set by Defra. For more information see

<https://www.gov.uk/government/publications/flood-and-coastal-resilience-partnership-funding>

Projects will be either fully-funded or part-funded based on the economic benefits the work provides. The greater the value of benefits that a project can deliver, the more funding could be available from Flood Defence Grant in Aid.

6. Strategy documentation wording / presentation

Strategy presentation

- ***We are disappointed about the number of cross-references to external sources of material, rather than including the information in the Strategy documents.***

EA response: We understand the external sources of material may be of interest to readers. We felt that replicating the information in the Strategy documentation would make this too long and unwieldy. We therefore provided links so that people can choose to read papers in their original form.

- ***The base map for Awre is not consistent with the other locations. Maps are not contiguous, some areas of coastline have not been included.***

EA response: We recognise that the maps are not contiguous. We have excluded areas of coastline where the EA has not had any historic involvement in flood risk management activities. We acknowledge that this could have been made clearer in the Strategy. The base map for Awre is the same Ordnance Survey map as we have used for the other locations. Due to it being such a small area the map has been enlarged to make it clearer.

Strategy wording

A number of comments received related to wording in the Strategy documentation such as “intention” and “as funds allow”.

- ***There is concern over the EA’s ‘intention’ to maintain defences and the lack of certainty. Local communities can’t plan for alternatives.***
- ***Qualification of the commitment to maintain assets by the phrase “as funds allow” is required.***
- ***Under the heading “what can be done” the availability of funding is in question, there is no guarantee of funding to build or maintain current or future defences to counter the probability of flooding even though the level of flood risk is predicted to increase.***
- ***There is concern that the future maintenance of many of the flood defences around the Estuary depends on ‘when funds allow’ and should, in fact be entirely maintained appropriately at all times by the EA***
- ***Would like qualification of the commitment to maintain assets by the phrase “as funds allow”***

EA response: The Strategy assesses tidal flood risk and considers how to manage this over the next 100 years. It enables us to identify future investment needs.

In the majority of locations in the Severn Estuary there is an economic case to continue to maintain defences at least into the medium term (2030+) and many into the long term (2060

and beyond), depending on climate change. Areas that have significant numbers of properties at risk are likely to have an economic case to have their defences improved to keep pace with climate change. However this is subject to funding. Funding is not guaranteed. The availability of funding to carry out the Strategy proposals will depend on how much funding there is and how the activities fit within priorities nationally.

The Strategy cannot, therefore, guarantee carrying out these activities. It sets out the intention to continue to maintain, and in some places improve defences, where there is an economic case to do so. Activities have a greater chance of being funded if they have been identified in a Strategy. This Strategy has identified the need for around £500m of funding over the 100 year period to protect properties, infrastructure and agricultural land.

How will the Strategy evolve in response to these concerns?

We will add an overview map showing the whole of the Estuary covered by the Strategy. We will make it clear in the text that the location specific maps are not contiguous because we have excluded areas where the EA has had no historic involvement in flood risk management activities. We will not be changing the wording in the Strategy relating to our intention to carry out proposals for the reasons given above.

7. Food Security

The following comments have been received that food security has not been considered in the Strategy:

- *EA washing its hands of food security issue.*
- *Issues like food security sidelined in Strategy.*
- *Issue of food security not accounted for.*

EA response: There are no specific Government targets for food security that can be, or have been, incorporated into the Strategy. However, farming and food security is taken into account through the economic appraisal of flood risk management options. Values are placed on the potential damages avoided to agricultural land, crops and productivity, together with impacts on infrastructure and other assets which play a role in growing food and making it available to consumers.

We follow Treasury and Defra guidance to carry out economic appraisal. We are sharing the concerns raised around food security with Defra for their information. Please see section 5 for more information on the economic appraisal.

8. Topics outside the scope of the Strategy

A number of comments have been received on issues outside of the Strategy's remit. We are however responding on these issues within this report as they have been brought up as concerns during the Strategy Consultation.

8.1 *Funding for maintaining defences*

We have received a number of responses in relation to there not being enough Flood Defence Grant in Aid revenue funding available currently to fully fund the maintenance of some existing flood defences along the Severn Estuary, due to other priorities nationally. This is a separate, though parallel, issue to the Strategy.

- ***Further communication with landowners required on the issue of maintenance, including who will do what in the future and what funds will be available for the long term maintenance of defences.***
- ***Strategy should include more detailed proposals on how EA will work in partnership to maximise maintenance when limited funding is available.***
- ***There is a need for clarity on the EA's maintenance plans, in particular regarding changes in responsibilities.***
- ***The EA is already indicating essential maintenance tasks they will not be undertaking leaving communities to find practical solutions to this vital function at short order.***
- ***Poor maintenance should not be used as justification for abandonment of existing defences.***
- ***We therefore regard the EA threat to walk away from maintenance responsibilities as nothing short of blackmail to persuade landowners to agree to the creation of habitats.***
- ***Partnership funding has been cited as a means of funding the maintenance of defences – local authorities have no budget for this.***
- ***There are declining levels of maintenance funding. Neglecting to fund routine maintenance results in progressive decline in the ability of assets to do their job.***
- ***Defences should not be viewed as uneconomic because the EA have not carried out maintenance over recent years which they should have done due to budgetary constraints. EA maintenance programmes from previous years should be available for public scrutiny so that this scenario does not arise.***

- ***The prioritisation of maintenance work using a national model fails to reflect the difference in priorities which exist between predominantly urban and predominantly rural communities.***

EA response: The Strategy assesses tidal flood risk and considers how to manage this over the next 100 years. It enables us to identify future investment needs. It sets out the intention to maintain and in some places raise defences but this is subject to the availability of funding. The Strategy has identified the need for approximately £500m of funding over the 100 year period to continue to protect properties, infrastructure and agricultural land.

Funding to maintain flood defences is allocated to the EA from Government. Currently we are going through a period where the need for flood risk maintenance work across the country outweighs the amount of public money available and we need to prioritise the activities we undertake.

To do this, we take a risk-based approach nationally. We follow Treasury and Defra guidance to compare the economic benefits of carrying out the work with the costs. This ensures that the assessments are undertaken in a consistent way across the country. Benefits include values for businesses, agricultural land and residential properties which reflect the economic losses to the nation.

There is currently not enough Flood Defence Grant in Aid Revenue funding available to fully fund the maintenance of some existing flood defences along the Severn Estuary, due to other priorities nationally. This means stopping or reducing some activities.

We recognise the importance of carrying out the right level and frequency of maintenance which helps to reduce flood risk to land and property. We are working with other members of the Gloucestershire NFU Severn Estuary Stakeholders Group (NFUSES) to explore what could be achieved by working together with landowners, farmers and communities to enable effective maintenance of defences to continue in the Severn Estuary. A maintenance working group has been set up within NFUSES which, along with the EA, includes the National Farmers Union (NFU), the Country Land and Business Association (CLA), the Lower Severn Internal Drainage Board (IDB) and farmer representation. The Group covers the area surrounding both sides of the Severn Estuary from Gloucester to Beachley and from Gloucester to Avonmouth.

Across the country, we are making it easier for others to find out what maintenance is planned; for others to do maintenance work themselves by reducing red tape and providing support and guidance to farmers and landowners, and for others to do work on our behalf eg IDBs.

We recognise that there are concerns about possible landowner liabilities and legal clarification is being sought. This is outside of the scope of the Strategy.

- ***Are there examples of locations where landowners have taken over maintenance of defences in rural areas?***

EA response: We have already worked collectively with landowners and other organisations to carry out maintenance in a number of locations. The experience gained from working with these communities is being shared with the Gloucestershire NFU Severn Estuary Stakeholders' maintenance working group.

- ***Maintenance budgets should be decided in advance to allow for planning for the future.***
- ***EA should be clear and transparent regarding how maintenance budgets are decided and publicise in a timely manner which assets will receive what investment so that all affected can plan accordingly.***
- ***We understand there is an intention to radically reduce annual maintenance due to funding cuts. Appropriate notice should be given.***

EA response: Our maintenance practices are funded through the Flood Defence Grant in Aid Revenue funding stream by Government. We use System Asset Management Plans (SAMPs) which help us budget and plan maintenance, and we publish our maintenance programmes on our website:

<http://www.environment-agency.gov.uk/homeandleisure/floods/109548.aspx>

The funding position for the next couple of years is relatively certain. We will soon be able to communicate locally what maintenance activities can be carried out using Government funding during this period in locations covered by the Strategy.

- ***Concern over impact of funding cuts on inspection and maintenance. How will regular inspection be staffed?***

EA response: We anticipate that we will be able to continue with an appropriate level of inspection depending on flood risk consequences behind the defences. We encourage landowners and communities to report issues to us which they consider will impact on the effectiveness of the defences.

- ***Are capital schemes under maintenance obligations?***

There is no obligation on the taxpayer/Government/EA/Local Authority or any other public body to build flood defences or to maintain flood defences once they have been built. The responsibility for safeguarding land and property lies with the owner.

While there is no legal right to be protected, successive Governments have recognised the wider social need, and embankments have been built and maintained using the public purse.

The EA has legal powers to carry out maintenance activities on Main River defences. These powers are permissive, which means that we have the power to undertake flood and coastal risk management works but are not legally obliged to provide such works. We can intervene in the public interest where we believe works would be economically viable. We prioritise our activities on a risk-based approach nationally depending on the amount of funding available.

- ***Owners of properties that may be affected by lack of maintenance should be fully compensated.***

EA response: The EA's legal powers relating to flood and coastal risk management are permissive, which means we have the power to undertake flood risk management works but are not legally obliged to provide protection from flooding. Ceasing to exercise a permissive power to maintain defences is not grounds for claiming compensation.

- ***The EA must continue to maintain those defences for which it or its predecessors entered into binding contractual agreements to do so in perpetuity.***

EA response: We are not aware of any contractual agreements on the Severn Estuary which would require us to undertake maintenance to a particular standard or frequency in perpetuity. The primary responsibility for safeguarding land and property lies with the landowner. The EA does not own defences unless it owns the land too. This is rarely the case on the Severn Estuary.

- ***There must be an orderly 'process' for landowners taking more responsibility for maintenance for flood defence assets with ongoing support provided by the EA to those affected.***

EA response: We are currently producing a framework of documents to support landowners in undertaking their own maintenance. We are aware that the legislation and consenting surrounding undertaking works on Main River can sometimes be seen as an obstacle to getting work done. This was certainly a concern raised by landowners during and after the 2012 floods. We have been asked by Government to trial a more streamlined approach to consenting in order to make it as easy as possible for landowners to undertake works on Main River. Seven pilots have been set up nationally, including in the Brue Catchment in Wessex, which will run until October 2014.

- ***Consideration should be given to Internal Drainage Board's taking on maintenance of defences.***

EA response: We have been looking at ways to work more closely with IDBs. It may be that the IDB is best placed to take on some of the maintenance activities we can no longer afford. We are working closely with the Association of Drainage Authorities (ADA) to trial a

public sector co-operative agreement which will allow an IDB or Local Authority to undertake work on our behalf.

8.2 Flood Maps and Insurance Letters

- ***We have concerns about the appropriateness of maps used by the Environment Agency to assess the levels of flood risk along the Severn Estuary, and the prejudice this might have on residents obtaining adequate household insurance.***
- ***The EA promised to show flood lines on national flood zone maps not the 1947 line. These maps are vital for residents and businesses for property sales, mortgages, insurance etc and use of the 1947 or other wrong map could adversely affect transactions. Will the EA agree and publish maps based on current conditions as promised now and give notice where and when they change the agreed maps in the future?***
- ***Can the EA supply specific flood risk information to property owners that can be passed on to insurance companies?***

EA response: In the public brochures published in 2011, we displayed maps showing the extreme flood extent in 2110 based on modelling using projections of climate change recommended at that time. Concerns were raised then about basing these maps on climate change projections and how this might blight properties. Following feedback from communities, we have not presented flood risk maps in the revised Strategy Consultation documentation.

We provide maps showing current flood risk on our website

<http://www.environment-agency.gov.uk/homeandleisure/floods/31624.aspx>

We continually review and update these to ensure they are based on the best information we have available.

At the time of the Consultation, we published one Flood Map on our website. This is based on modelling and shows the extent and chance of flooding from rivers and/or the sea without the presence of defences. This is because although defences reduce the risk of flooding they cannot completely remove the risk, and may be overtopped or breached. From December 2013 we also publish a new Risk of Flooding from Rivers and Sea map. This is our national assessment of the likelihood of flooding from rivers and the sea, taking into account flood defences. We also publish maps showing risk of flooding from reservoirs and surface water. The Flood Map won't disappear. It will remain on our website as the Flood Risk Map for Planning (Rivers and Sea). It will still show the area that would flood if there were no flood defences present and is available to provide important information for land-use planning purposes.

The maps are designed to be the first step in assessing risk. The purpose of providing this information is to increase awareness on the likelihood of flooding and to encourage people to find out more and take appropriate action. We encourage contact with our local office to find out more up to date information specific to the location. The map and flood risk

assessment information are not suitable for determining the risk to individual properties, as this will also be dependent on other factors such as the height of door steps, air bricks or the height of surrounding walls.

Any risk of flooding from rhynes behind the defences has not been modelled and, therefore, has not been assessed.

We have let communities know that we can provide letters, if requested, to residents that can be passed on to insurers, mortgage providers etc. We can include information on current flood risk and the up to date position regarding the Strategy.

8.3 Shoreline Management Plan 2

- ***The Severn Estuary Shoreline Management Plan Review (SMP2) was poorly researched and lacked baseline data for the area from Sharpness/Lydney to Gloucester. It is now out of alignment with the SEFRMS although the SMP2 clearly states that the two strategies are to be linked. We seek reassurance that the SMP2 will be either re-written in part, or at the very least, contain a prominent addendum acknowledging its deficiencies until its next revision.***

EA response: Decisions on how to amend or update the SMP will be for the Severn Estuary Coastal Group of Local Authorities that lead on the SMP.

8.4 A Severn Barrage?

- ***As the River Severn has the second highest tide in the world it makes sense to build the Severn Barrage to produce electricity for twice as long as the proposed Hinkley C nuclear development. The barrage will be safer, cheaper, emit no poisonous radioactive gases into the atmosphere, emit no liquid radioactive discharges into the Severn Estuary. It would also enable flooding to be managed to reduce risk to low lying coastal communities.***
- ***We would like to add it is our strong preference for a Severn Barrage project to proceed in the river to gain tidal power and flood protection which would obviate the need for higher flood defence walls. The net benefit of renewable tidal power should quickly pay for the barrage and also make savings on flood defence improvements.***

EA response: The Government's current position regarding the Severn Barrage can be found at the following link

<http://www.publications.parliament.uk/pa/cm201314/cmselect/cmenergy/622/62204.htm>

The EA supports the development of appropriate energy schemes in the Severn Estuary and elsewhere to help secure the reduction in greenhouse gas emissions. Current requirements are to cut UK emissions by at least 80 per cent from the 1990 level by 2050.

Any proposal must be designed and operated to minimise the adverse impacts on people and the environment. Key to this are: considering, the specific needs of, and mitigating the impacts on, species and habitats in the Estuary; and reducing the exposure of communities to flood risk.

Compliance with the Habitats Directive, with respect to migratory fish and inter-tidal habitats, is probably the most difficult challenge for a proposed Severn Barrage.

We have to plan the management of the Severn Estuary flood defences for the future, regardless of whether a barrage is constructed or not. Consideration of the possibility of a Severn Tidal Barrage is outside the scope of this Strategy. Should a barrage be constructed in the future then we will revisit the Strategy, but this should not prevent us planning future investment and prioritising defences now.

8.5 *Local issues*

A number of responses also raised locally specific issues. We will be replying individually to respondees on these.

9. Conclusion

We would like to take the opportunity to thank all those who submitted questions and comments as part of the SEFRMS Consultation process. We hope that we have answered your points satisfactorily in this document or with a letter which you will be receiving directly covering more localised issues you may have raised.

As a consequence of your feedback from the Consultation we will be working on the following:

- Adding an overview map within the documentation to show the whole of the Estuary covered by the Strategy, together with information on future flood risk. We will make it clear in the text that the location specific maps are not contiguous because we have excluded areas where we have had no historic involvement in flood risk management.
- Including within the Strategy the 'make-do' option to prolong the life of the existing defences on the Awre peninsula.
- Sharing the queries and concerns which relate to national Government policy, for example food security and the value of agricultural land, with Defra for their information.
- Seeking to improve monitoring and collaborations with Universities to better understand actual sea level rise in the Severn Estuary, and likely impacts, to inform future revisions of the Strategy.

We are at the beginning of the Strategy's lifespan and ongoing collaboration between communities, landowners, the EA, other risk management authorities and organisations with an interest will be key to managing flood risk over the next 100 years.

The Strategy is not 'set in stone' and is an adaptive document. Periodic reviews will consider if any factors that might affect the Strategy, such as changes to funding policy and climate change projections, have occurred and revisions will be made as required.