ITEM 5

Somerset Rivers Authority Board Paper

Title: Workstream Update W6 – Funding and Delivery of linked, long-term flood risk management and resilient infrastructure.

RECOMMENDATION

The SRA Board is asked to:

1. Close down workstream W6 in its current form as most of the actions are either completed or substantially underway.
2. Consider the need for further work to quantify and understand the residual risk of flooding on road, rail and communication networks following the implementation of infrastructure improvements and ongoing flood and water management activity.
3. Consider the need for further work with agencies and communities to consider the long term sustainable future of the levels and moors in the light of the available evidence base, activity progressing under W5,2 & 3, and possible agricultural policy change linked to Brexit.

Purpose of the item:

To review progress in delivering workstream W6, identify outstanding issues and actions, and consider the need for the workstream to continue in its current form.

Background and context

The flood action plan highlighted the need to assess the flood risk, and long term choices and options for a sustainable future for the Somerset Levels and Moors. Much of the technical work needed to underpin this challenging ambition was set out in workstream W6. The desired approach to delivering the workstream was to develop more collaborative multi-agency working to ensure that investment plans for the area were considered in a more integrated way. The purpose of workstream W6 is to:

- Gather evidence of financial losses as a result of the impacts of flooding on local communities and the wider economy; and
- Evaluate the strategic connectivity of the impacts of flooding and provide information to support the development and comparison of standalone and linked flood risk management and infrastructure options that will be delivered by stakeholders to mitigate long-term flood risk.

Latest status

A review of progress in delivering the workstream confirms that excellent progress has been made, with the majority of the actions complete or well underway. A number of significant infrastructure schemes have been completed which reduce flood risk and improve resilience and accessibility for communities. An ongoing programme of future

infrastructure improvement schemes is now funded via the SRA and through the local growth fund.

It should be noted that despite some positive initial high-level discussions with Government Departments, the aspiration to transform the national approach to investment for flood and water management solutions (through integrating infrastructure planning and business case decisions across infrastructure providers) has not yet resulted in significant change nationally.

Major infrastructure investment decisions by Network Rail and Highways England are still made based on traditional sector specific business cases; but there is an increased level of dialogue across agencies in the planning and delivery of infrastructure programmes and schemes as a result of the flood action plan.

River models have been expanded and updated to provide a much greater understanding of the impact of the interventions that have taken place so far and to inform the most appropriate design standards for future interventions (with forecast water levels and volumes to plan for etc). It is still challenging to accurately and definitively determine the residual flood risk that remains in the area using the available tools, to inform strategic decisions about the need for future road, rail and other infrastructure investment. The need for further work on Environment Agency models should therefore be considered.

It is unclear without further engagement how resilience for utilities has progressed and it is suggested that a short piece of work is undertaken with water, power and telecomms organisations to understand what resilience improvements they have achieved following the flooding events and what further resilience improvements may be necessary.

Recommendation:
The SRA Board is asked to:

1. Close down workstream W6 in its current form as most of the actions are either completed or substantially underway.
2. Consider the need for further work to quantify and understand the residual risk of flooding on road, rail and communication networks following the implementation of infrastructure improvements and ongoing flood and water management activity.
3. Consider the need for further work with agencies and communities to consider the long term sustainable future of the levels and moors in the light of the available evidence base, activity progressing under W5 & 3, and possible agricultural policy change linked to Brexit.

Date: 10 November 2016
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APPENDIX1: Detailed Review of Workstream W6

1. Background

The flood action plan highlighted the need to assess the flood risk, and long term choices and options for a sustainable future for the Somerset Levels and Moors.

The plan notes that "*Determining the long term sustainable future for the Somerset Levels and Moors will require careful assessment of the options and evidence, and difficult decisions about investments and how the community can adapt. It will need work to understand and agree what is an acceptable level of risk and what is a reasonable standard of protection for people, property, agriculture and environment.*"

The plan notes "*Currently it is not known if flood risk to rail and road routes is more cost effectively delivered by raising transport routes or managing the river system differently*". "*The immediate action flowing from the plan is to ensure the assessment of these options is carried out and to work with the wider community to reach a shared view on the best approaches to a long terms sustainable future*". "*This will be a key task in the delivery of the plan, and a central role for the future delivery body*".

Much of the technical work needed to underpin this challenging ambition was set out in workstream W6.

The purpose of workstream W6 is to:

- Gather evidence of financial losses as a result of the impacts of flooding on local communities and the wider economy; and
- Evaluate the strategic connectivity of the impacts of flooding and provide information to support the development and comparison of standalone and linked flood risk management and infrastructure options that will be delivered by stakeholders to mitigate long-term flood risk.

The workstream has three main elements:

- W (6.1) – Making a business case for further investment
- W (6.2) – Developing potential flood risk management options
- W (6.3) – Developing potential infrastructure options

The desired approach to delivering the workstream was to develop more collaborative multi-agency working to ensure that investment plans for the area were considered in a more integrated way.

The idea was to develop shared evidence about the impact and effectiveness of potential flood risk management solutions in order to build a business case that appropriate investment in flood risk management would reduce the need for costly infrastructure resilience improvements to road, rail and utility networks. Ideally the funding potentially available to infrastructure providers could then be used more flexibly (e.g. to reduce the risk of flooding rather than to raise the height of at-risk rail and road networks) to provide the most cost effective response to the problems.

It was recognised that this would require changes in treasury rules for infrastructure investment, and the Environment Agency lead economist was therefore initially asked to lead the workstream.

It should be noted that in terms of action to work with communities regarding the long term sustainable future for the area, there are strong linkages action taking place within workstreams W3 Urban Water Management, and W5 Building Local Resilience.

2. Update on key deliverables.

The key deliverables from the workstream are set out below along with current status:

2.1 Business case for investment and multi-agency working

The deliverables associated with the strategic business case for multi-agency investment in flood management are now largely complete. A robust economic assessment of the impacts of the 2014 floods was published and a positive infrastructure provider's workshop gained high-level interest from Treasury and Infrastructure UK, but failed to deliver a significant change in approach nationally. A programme of water management and local road improvements was developed and considered through the SRA and through the LEP Growth Deal process leading to a funded programme.

Deliverables associated with the business case for investment and multi-agency working:

Deliverable	Status	Comment/ Outcome
Produce initial high-level economic assessment of flood impacts	Complete	
Prepare information for Autumn Statement 2014	Complete	Information on potential investment needs submitted at the Minister's request.
Complete detailed economic assessment of flood impacts	Complete	Report published. http://www.somersetriversauthority.org.uk/useful-info/. Quantifying the economic cost to Somerset was up to £147.5m.
Identify flooding and economic scenarios	Complete	The levels associated with the 2014 flooding event were quantified and used as an input to feasibility studies for infrastructure improvements.
Identify funding streams for investment and maintenance	Complete	Current investment streams were identified and discussed at the providers workshop
Undertake initial infrastructure providers workshop	Complete	Workshop held October 2014 including representatives from EA, Treasury, Infrastructure UK, DfT, Natural England, Network Rail, Highways England, Wessex Water and Somerset County Council (apologies from Energy and Communications providers). General agreement that a more joined up approach to investment would have benefits starting with greater sharing of risk scenarios and greater integration of programmes. National Infrastructure Plan Dec 2014 included a case study on the 20 year action plan multi-agency working.
Identify current and proposed infrastructure interventions	Complete	Current and potential interventions were identified for water management, local roads, rail and strategic roads.
Develop long list of	Complete	Water management and local roads schemes have been

standalone and joint options		sifted and prioritised for SRA and Growth Deal funding.
Solutions short list	Complete	Water management and local roads schemes have been sifted and prioritised for SRA and Growth Deal funding.
Develop business cases	Complete	Individual business cases have been completed for SRA and Growth Deal funded schemes.
Develop a cross-sectoral investment plan	Incomplete	National engagement in developing a new approach to cross-sectoral investment ceased with departure of EA lead economist from the project

2.2. Flood Risk Management and Infrastructure Options

The deliverables associated with developing options for flood risk management and infrastructure improvement, and constructing the priority improvement schemes are now largely complete. Feasibility studies for major road improvement schemes on the A372, A361 and at Muchelney are complete and improvement schemes have been constructed at Beer Wall and Muchelney to improve water conveyance and accessibility of communities. A programme of smaller local road improvements has been developed and priority schemes now form part of a funded programme. Long-term strategic improvements to the A303 have been secured and localised flooding on the A303 is being addressed. Network Rail have completed flood resilience improvements and have worked with partners to include further resilience improvements in the emerging 20 year rail strategy. It is unclear without further engagement how resilience for utilities has progressed. Although the evidence base is much improved, it is still challenging to provide a definitive view on residual flood risk using the available models so further work in this area could be considered.

Hydraulic models for the Somerset levels and Moors have been upgraded and used to model the impact of various interventions on reducing flood risk depth, duration and frequency, as described below. Capacity or operational improvements have been made to a number of pumping stations and a dredging strategy to identify other potential capital dredging locations has been completed. Circa £15 million has been spent by the Environment Agency upgrading and repairing flood banks and spillways to reduce the risk of overtopping and/or breach during future flood events.

Deliverables associated with developing flood risk management and infrastructure options: (Note many of these are options to be assessed and considered in terms of relative effectiveness and cost so not all will be delivered).

Deliverable	**Status**	**Comment/ Outcome**
Expand existing river models to assess effectiveness of actions and identify most cost effective options	Complete	There has been a significant investment in upgrading the Parrett and Tone and Brue hydraulic models. Although the evidence base is much improved, it is still challenging to provide a definitive view on residual flood risk using the available one dimensional models.
Examine feasibility and cost of raising level of the A361 (East Lyng to Burrowbridge)	Complete	Feasibility study completed confirming cost of options to raise the A361 above flood levels would be prohibitive.
Raise level of the A372 – Othery to Aller (7 bends)	Complete	Beer wall scheme completed. Phase 1 complete December 2014. Phase 2 complete July 2015.

and to allow larger culvert for Sowy channel		
Design and implement road raising schemes to ensure access for Muchelney and other communities	Complete	Muchelney road raising scheme completed February 2015. Proposals for other local road improvements developed as part of the SRA programme.
Feasibility and assessment studies to identify key priorities for road schemes to ensure local access and delivery of schemes	Complete	Locations susceptible to local road flooding identified and prioritised improvement programme developed as part of the SRA programme.
Improve pumping capacity and operation, including upgrading Northmoor pumping station as appropriate.	Complete	The Environment Agency have funded and completed pumping capacity and/or operational improvements at North Moor, Salt Moor, Curry Moor, Westonzoyland, North Drain and Dunball.
Further local protection e.g. ring banks, around communities	Complete	The Environment Agency's initial consultations found a general lack of consensus on the desire to construct community ring banks. The SRA, via the Internal Drainage Board as a delivery partner have a line in the 4 year programme to explore these reasons and concerns further.
Additional dredging, identified as effective of key locations (other than the 8km near Burrowbridge), across the catchment, and implement as appropriate	Ongoing	On behalf of the SRA the IDB have commissioned a dredging strategy to look at potential further dredging locations and alternative methods of dredging. Further modelling of these locations is currently underway and agitation trials are planned this winter.
Improve the condition and raise floodbanks and spillways	Ongoing	In the 2 years post the 13/14 floods the Environment Agency invested circa £15m to improve floodbanks and spillways across Somerset.
Setting back defences to increase river channels and create floodplain within widened river channel	Potential Option	Environment Agency modelling has not shown any significant flood risk benefit to property of setting back flood banks at a number of key locations. The SRA are currently funding an investigation into the setting back of the Brue Banks to ensure a more effective maintenance regime.
Spreading floodwater across the moors more evenly eg. Improved Lyng cutting	Potential Option	The Environment Agency has modelled various scenarios of spreading floodwaters more evenly, and found there is no overall benefit in terms of flood risk reduction to property. In fact some scenarios showed a negative knock on effect to some communities.
Create temporary flood storage areas particularly in the mid catchments –	Potential Option	Modelling scenarios did not identify any significant benefit in terms of flood risk to property of creating temporary flood storage areas. The only one being progressed at

500 ha within 20 years		present is in Bradford on Tone, and is being jointly promoted by Taunton Deane District Council and the Environment Agency, with a small financial contribution from the SRA in the first couple of years.
A303 improvements to increase resilience, following Highways Agency feasibility study	In Progress	A303 expressway dual carriageway improvements committed as part of Road Investment Strategy (RIS). Funding also provided for solution to localised flooding on A303 at Ilchester with proposals under discussion.
Network Rail to identify best value options for ensuring the resilience of 4.5 miles stretch of railway between Taunton and Bridgwater and to implement the findings	Complete	Network Rail implemented resilience improvements including repairing track and raising signal equipment above flood levels, as well as rail resilience improvements between Castle Cary and Taunton in Oct 2014. EA and NR engaged in preparing Peninsula Rail Task Force 20 Year rail strategy supporting need for flood and water management solutions at this location rather than track raising which has prohibitive cost. PRTF plan seeking DfT/NR funding for improving diversion route between Exeter and Castle Cary to accommodate diverted trains during flooding on the Levels and DfT Large Major Schemes funding bid has been submitted.
Assess risk and as necessary implement flood alleviation measures at National Grid's Bridgwater electricity substation and Western Power's substations.		National Grid responsibility. No recent engagement on this issue.