

<b>Subject</b>	Loxwood Flood Risk Management Scheme – Preliminary Advice Note	<b>Checked by</b>	A. Haydon 09/06/2017
<b>To</b>	W. Culley	<b>Approved by</b>	O. Evans 15/06/2017
<b>From</b>	C. Jenkins		
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<b>Attachments</b>	Inception Meeting Minutes & Incoming Data Register		

**Technical Note**

**EA file naming and file metadata table**

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**Introduction**

This preliminary Advice Note (PAN) provides Mott MacDonald’s advice to the Environment Agency on the viability of the Loxwood Flood Alleviation Scheme (FAS) project, and whether the project should progress. This note sets out the current economics, completed tasks, and next steps of the project.

**Background Information**

Loxwood is a rural village which generally floods most winters due to a silted, under capacity and manipulated watercourse. Surface water from surrounding hillsides entering the highway drainage systems can exacerbate the problem. Problems are also understood to occur with Southern Water’s system.

According to the Strategic Outline Business Case (SOC), the number of properties at risk from flooding is estimated to be between 10 no. and 30 no. There has been no previous significant study of the fluvial system through the village, however, Loxwood Parish Council have commissioned an independent flood risk consultancy to investigate potential reduction measures.

Based on available fluvial and surface water flood mapping, the SOC predicts the following number of properties at flood risk in Loxwood:

**Table 1: Summary of Properties at Risk**

Flooding Mechanism	Estimated Number of Properties at Risk		
	<3.33% AEP	<1% AEP	>1% AEP
	High Risk	Moderate Risk	Low Risk
Fluvial	6	10	16
Surface Water	18	30	43
Combined	21	33	46

Loxwood Flood Risk Management Scheme, Strategic Outline Business Case (SOC), Feb 2016

The SOC indicates that available benefits are approximately £881k. Whole-life costs may not exceed this value to ensure a Benefit Cost Ratio (BCR) of greater than 1. An update to economics has not yet been carried out since the SOC was produced. The following sections set out the completed tasks and next steps in order to update the economics assessment, to give a better indication of whether a scheme is viable, and if the project should progress.

#### Completed tasks

- **Site visit:**  
The Environment Agency (EA), Mott MacDonald (MM) and ESE Contractor project team attended a site visit in Loxwood.
- **Meeting:**  
The EA, MM and ESE Contractor attended an Inception Meeting to discuss the project, the meeting minutes are appended to this PAN with the key points summarised below:
  - Appoint Water Environment for additional predicted flood risk outputs
  - Reassess the economics in light of additional predicted risk data
  - Focus options for low cost solutions to manage the flashy flooding experienced
- **Data:**  
An indicative review of all data received to date has been completed, the current data log is appended to this PAN.
- **Water Environment (WE) Meeting and Modelling Scope:**  
A meeting was held with WE to understand the existing modelling that had been carried out in Loxwood on behalf of the parish council. ICM modelling was undertaken for a 1 in 100 year flood event, for fluvial flows only. WE's modelling indicates that approximately 20 properties are at fluvial flood risk in 1 in 100 year event. In comparison, EA mapping indicates approximately 10 properties at risk in the same event.

The study did not include surface water flows, however, WE confirmed with residents that the EA's surface water flood mapping closely matched the flow routes seen during heavy rainfall.

The study modelled six flood mitigation options, including:

1. Flood defences;
2. Upstream offline flood storage area;
3. Upstream online flood storage area;
4. Options 2 and 3 combined;

5. Channel widening and limited culvert improvements; and,
6. Channel widening and maximised culvert improvements

Options 5 and 6 caused some properties to be removed from flood risk. The other mitigation options had minimal impact to flood risk.

It was agreed with the EA to instruct WE to run the existing model for additional return periods, to update the economics and review the viability of a scheme at Loxwood.

A quote for additional model runs and GIS outputs has been received from WE for £5,634. The work includes for:

- The existing 1 in 100 year outputs for all options (existing condition and 5 mitigation options)
- Animation of the existing condition 1 in 100 year model run
- Re-run of the model for the existing condition only, for the 1 in 2, 10, 30 and 1000 year storm events.

MM are currently setting up WE as a sub-consultant.

- Stakeholder Engagement Plan (SEP):  
A draft SEP has been developed for Loxwood. Mott MacDonald and Environment Agency project staff attended a Stakeholder Engagement workshop at the EA offices. Loxwood was used as an example project during the workshop, where the business objectives and stakeholder engagement objectives were identified, and who and how we are going to communicate with stakeholders.

It was agreed to utilise the Loxwood Flood Forum as the main point of contact, to filter information to the community, making use of existing communication channels. The project is fairly high profile with the local MP involved, but there are relatively few properties at flood risk and so a scheme may not be viable. Managing the expectations of the flood forum and local residents will be important during engagement activities and these groups have been highlighted as key stakeholders.

The SEP was updated with Project, Business and Engagement Objectives with both the Area Team and NCPMS during a meeting held in EA Offices on 6<sup>th</sup> June.

### **Next steps**

- Modelling  
WE will carry out the modelling tasks as set out above. This will give an improved indication of properties at flood risk, and which properties are at highest risk of flooding that flood during the lower order events.
- Cost of Mitigation Option:  
Using the EA's project costing tool, Options 5 and/or 6 identified by WE for channel improvement works, will be costed. The costing can be undertaken during the modelling works.
- Update benefits assessment:  
The 30, 100, and 1000 year outputs from WE will be used to re-calculate the benefits available from fluvial flood risk, together with the properties at risk from surface water flooding as shown by the EA's surface water flood mapping. A high-level benefits assessment method will be used at this early stage of the project to calculate the benefits available. Together with the estimated cost of the culvert improvement

works, an estimated benefit cost ratio (BCR) will be calculated. An assessment can then be made as to whether the project should progress. If the BCR is greater than 1, this will indicate that a scheme is viable for Loxwood.

NOTE: Programme for the above tasks is included under separate cover.