

1 Summary of the Deal SWMP

1.1 Background

A Surface Water Management Plan (SWMP) is a study to understand the risks that arise from local flooding, which is defined by the Flood and Water Management Act 2010 as flooding that arises from surface runoff, groundwater, and ordinary watercourses.

SWMPs are undertaken by a partnership of flood risk management authorities who have responsibilities for aspects of local flooding, including the Local Authorities, Environment Agency (EA), Sewerage Undertaker and other relevant authorities.

Please refer to Figure 101 for a location plan and the extent of the SWMP area.

This SWMP is being undertaken by Kent County Council (KCC) to investigate the local flood risks in Deal as part of their remit for strategic oversight of local flood risk management in Kent, conferred on them as Lead Local Flood Authority (LLFA) by the Flood and Water Management Act 2010. This area has been identified as being at risk due to the history of local flooding in the area. This SWMP maps the local flood risk and identifies potential mitigation options.

1.2 Background

Flood risk in Deal arises from a complex combination of sources: coastal, ordinary watercourses, surface water and groundwater. This SWMP focuses on ordinary watercourses, surface water and groundwater as the primary local flood risks.

Deal was highlighted in the Kent Preliminary Flood Risk Assessment as being at significant risk of flooding from localised flooding.

The risk of surface water flooding is high within the town centre and a number of areas within Mill Hill, Walmer and Middle Deal, with a high intensity storm draining off the urban area and overloading the surface water drainage system. This flood risk is exacerbated by a large area of the town served by combined sewer systems, particularly in the northern and central areas of Deal.

In June 2007 and August 2010 Deal experienced significant surface water flooding, with flood water entering numerous residential and commercial properties.

1.3 Objectives

The purpose of a SWMP is to

- Identify what the local flood risk issues are
- Identify potential sustainable flood mitigation options
- Develop an Outline Action Plan to provide to guidance on the next steps for flood risk management within Deal.

The purpose of the SWMP study is to identify sustainable responses to manage surface water flooding. The Outline Action Plan provides an evidence base for future decisions and funding applications for putting the recommendations into practice. Preparation of the Action Plan for Deal has followed the latest Defra guidance¹. The Action Plan is presented in Section 4.

¹ SWMP Technical Guidance, Defra 2010

1.4 Previous Studies

The Initial Flood Risk Assessment for Deal was finalised in July 2012. This report set out the basic principles of the Deal SWMP summarising data sources and provided an initial assessment of flood risk within Deal Town. The IFRA also included interviews with local residents which as been used to confirm the models assessment of flood risk.

The Dover SWMP and Preliminary Flood Risk Assessment have been undertaken in parallel to this study. Findings and lessons learnt have been fed into the current study. Of particular relevance are the representation of buildings and roads in the hydraulic modelling, the treatment of runoff from chalk catchments and option identification.

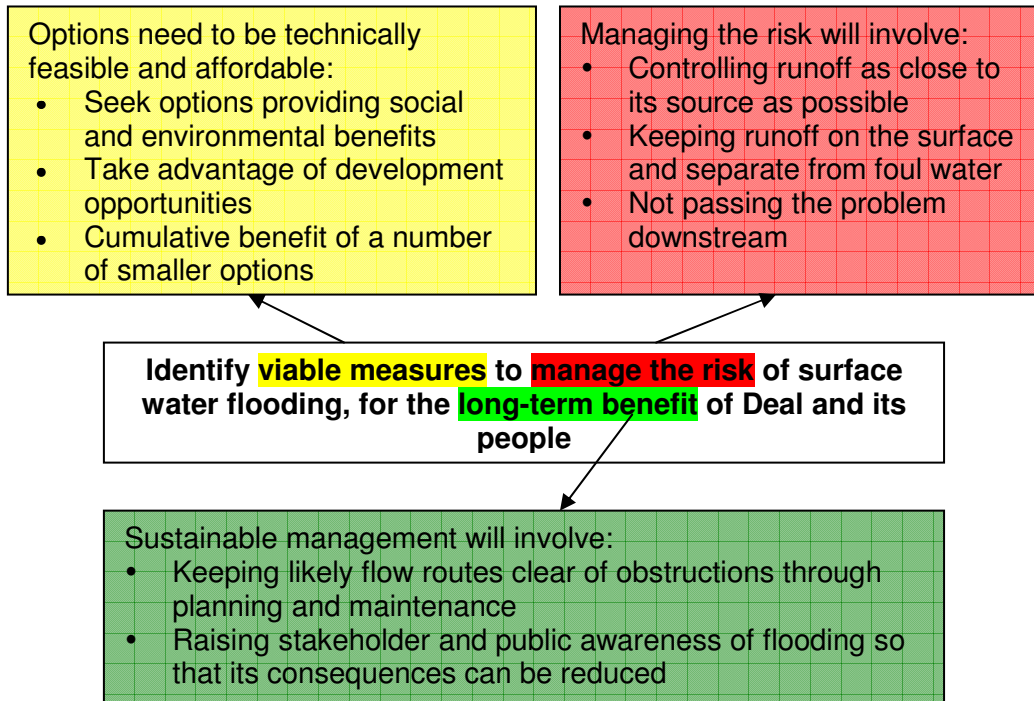
The EA are currently progressing a scheme to reduce the risk of flooding from the sea in Deal. Some areas of Deal have a 5% AEP risk of tidal flooding. The scheme will reduce this risk to 0.33% AEP, for 1,418 homes and 148 commercial properties in Deal. Flooding from the sea continues to be managed by the EA and is not considered further in this SWMP.

1.5 Partnership Approach to Flood Risk Management

The partnership approach to integrated flood risk management, as encouraged by the Flood & Water Management Act 2010², has been strengthened in this SWMP through integrated working between KCC (lead partner), Deal Town Council (DTC), the EA and Southern Water (SW). The vision for the project was agreed by the SWMP Partnership as shown in Figure 1.

² <http://www.legislation.gov.uk/ukpga/2010/29/contents>

Figure 1: The SWMP vision statement highlighting key concepts



Consultation with partner organisations, stakeholders and representatives of the public has been a key element throughout the development of the SWMP. A ‘stakeholder workshop’ was held on 13 June 2012 and on 6 March 2013 with a number of councillors, technical experts from the councils, SW and the EA to discuss key flooding issues and gather local information to help direct the study.

Key flooding issues identified at the outset of this SWMP are summarised in Box 1. More detailed observations for each key risk area are provided in Appendices A to G. Predicted flood risk is mapped for a range of return periods in Figures 201 to 207.

Box 1 Key flooding issues

Key flooding issues identified for Deal Town

- There is demonstrable history of surface water and groundwater flooding across the urban area of Deal, for example in June 2007 and August 2010. The flooding has affected both residential and non-residential properties.
- There are natural valleys, apparently dry (as on chalk geology) which could during heavy rainfall when the hills are saturated or frozen give rise to significant overland flow paths.
- There are numerous basement premises throughout Deal with entrances at or near road level where surface water could readily flow into the basement if it overtops the kerbs. There is evidence of deep flooding in some of these basements which poses a significant hazard.

1.6 Risk Assessment through Modelling

A two dimensional hydraulic model has been constructed to support the SWMP Action Plan. The model has been used to better understand the locations and

mechanisms of flooding and inform identification and development of management options. General observations arising from analysis of the model results are presented in Box 2. More details on the model build process is included in Section 2.3 and in Appendix H.

The hydraulic modelling has indicated that exceedance of the capacity of the surface water drainage system poses the greatest risk of flooding to Deal. Risk of flooding from ordinary watercourses and groundwater are far lower in comparison.

Box 2 *General observations from the modelling*

General observations from the modelling

- Predictions of deep and/or extensive flooding are largely consistent with recorded evidence of surface water flooding.
- The key areas of flood risk identified are Deal town centre and Lower Walmer. Each of these areas has over 20 properties at ‘Very Significant’ risk of flooding. (as defined under FDGiA funding as at risk of flooding from $\geq 5\%$ AEP event)
- The model confirms observed flooding at Church Street in Upper Walmer, Albert Road and the junction of Church Lane and Southwall Road.
- The model predicts observed highway flooding in Sholden.

Maximum depths at individual properties in National Receptor Dataset (NRD) have been used to estimate economic damages due to surface water flooding in the existing (‘do minimum’) situation. It is estimated that approximately £17.4M of damage (including indirect, intangible and emergency service costs where applicable) due to surface water flooding will be experienced across the modelled urban area of Deal in the next 50 years. Of the 13,575 ground floor residential properties in the study area, 497 are predicted to incur flooding damages over the next 50 years.

1.7 Options for Sustainable Management of Surface Water Flooding

In order to manage the local flood risks that have been identified in Deal, a range of options has been developed for surface water management in the town.

Box 3 *Philosophy for the identified options*

Philosophy for the Identified Options

- Seek management options providing social and environmental benefits – schemes with multiple benefits are more likely to attract funding
- Manage runoff close to its source and keep runoff on the surface wherever possible – this will be sustainable and have reduced maintenance costs
- Keep likely flow routes clear of obstructions through planning and maintenance – to reduce both the likelihood and consequences of flooding
- Raise stakeholder and public awareness of flooding – this will reduce the consequences of flooding and improve reporting and evidence of issues
- Implement identified options incrementally and take advantage of opportunities as they arise – ‘piggy-back’ flood risk management activities with other schemes

Options have been developed by combining individual measures (which are introduced in Appendix H) under the following headings:

Source control and Sustainable Drainage Systems (SuDS): Source control measures aim to reduce the rate and volume of surface water runoff through infiltration or storage. They can also provide some natural removal of pollutants and sediments, as well as aquifer recharge, which all provide environmental benefits. In constrained and urban areas like Deal, controlling inflows entering the urban area will be a particularly desirable option, as will reducing sediments and pollutants from entering the drainage system.

Design for exceedance: Roads, buildings and other features can be designed to control overland flow and direct it safely through the urban environment, such that floodwater is less likely to enter buildings or other structures. Designing for exceedance recognises that flows that exceed the below ground drainage capacity are always possible but can be managed to some degree by creating designated flow routes or other measures such as threshold raising at access points.

Increasing capacity: Adding storage and/or increasing the capacity of the sewer network could improve the conveyance of floodwater and limit overland flow and flooding.

Separation of foul and surface water: Alongside effective surface water management, this can reduce flooding and pollution. Misconnections between the surface water and foul systems should be rectified as opportunities arise throughout Deal.

Non-structural measures: Non-structural measures can reduce the consequences for the receptors of flooding, e.g. people, property and the environment. These measures include the application of planning policy to reduce flood risk. This could involve the direction of development away from the highest risk areas; for instance the excluding areas for development in areas at risk of flooding from events more severe than required by the NPPF. Another option could be to place more onerous requirements on developers to reduce runoff, for example by 50% of existing³. In most cases, these are likely to be implemented across Deal through the introduction of council policy.

The principal concepts for improved surface water management are listed for each key risk area in Appendices A to G. Location-specific options included in the Outline

³ London Plan, GLA ,2011

Action Plan are marked on Figure 401. Options have been appraised through an analysis of the following criteria:

Technical – Is the option technically possible and will it actually improve management of surface water flooding? The effectiveness of the options has not been tested in the hydraulic model. However the model has been used to assess the flooding mechanism and as a source of data to identify a solution, such as identifying sections of the drainage capacity with spare capacity.

Economic – A high-level assessment has been made to determine the maximum cost of a financially viable scheme, based upon the predicted flood damages.

Social – Will the community benefit or suffer from implementation of the option?

Environmental – Will the environment benefit or suffer from implementation of the option?

SWMP – The majority of proposed options were discussed at an Options Workshop held on 6 March 2013, to which all SWMP Partners and other stakeholders were invited. The degree of support for each option has informed selection those options included in the Action Plan in Section 4.