

This Report will be made public on 14 September 2012

**Folkestone**

Hythe & Romney Marsh  
Shepway District Council



Report Number **OS/12/07**

**To:** Community Overview Committee  
**Date:** 24 September 2012  
**Status:** Non-Key Decision  
**Head of service:** Chris Lewis, Planning

**SUBJECT:** ROMNEY MARSH – FLOOD RISK UPDATE

**SUMMARY:** Romney Marsh is one of the largest areas in Southern England that is at risk of flooding from the sea, with some frontages having a 1 in 5 chance of flooding in any one year. There are a number of Environment Agency (EA) led schemes currently at the planning stage which when completed will raise the standard of protection across the Marsh in line with climate change/sea level rise predictions.

**Report S/12/07** outlines the current standard of protection on each of the frontages and (subject to Government funding) details the proposals for increasing the standard. The report also offers an update on the timeline and costs for each of the EA schemes. Under the new Partnership Funding mechanism that was introduced by the Government in 2011, schemes have a greater chance of progressing where third party contributions are secured. Further funding updates are provided in this report. Information is also provided on the progress of the planning application for shingle extraction at Dungeness and the modelling work which is connected to the EA flood maps.

**REASONS FOR RECOMMENDATIONS:**

Community Overview Committee is asked to agree the recommendations set out below because:-

The Terms of Reference for the Flood Working Group as agreed at its meeting on 21 May 2012, place a responsibility on the Group to:

- (i) Ensure that all categories of flood risk are monitored throughout the district and where appropriate, to ensure that good communication exists with those responsible for managing flood risk;

- (ii) To receive feedback and monitor progress on the priority schemes contained within the Folkestone to Cliff End Flood & Erosion Management Strategy;
- (iii) To notify the council of any flood related risks or concerns.

**RECOMMENDATION: To receive and note Report OS/12/07**

## **1. ROMNEY MARSH – GENERAL FLOOD RISK**

- 1.1 The coastline and low lying land within the Romney Marsh area is one of the largest areas at risk from flooding in Southern England. Some of the areas are very vulnerable, with a 1 in 5 chance of flooding from the sea in any year. Failure to manage the risk of coastal flooding on Romney Marsh would result in 14,000 homes and 9,603 hectares of agricultural land in danger of flooding. In addition, key infrastructure such as roads, rail links and utilities serving these assets would be lost. The Internal Drainage Board has estimated the value of agricultural land on Romney Marsh to be £290m using land value rates.

## **2. SHORELINE MANAGEMENT PLAN AND STRATEGY**

- 2.1 The EA has a duty under the Environment Act 1995 to review flood risk. This occurs through producing plans and strategies with other operating authorities such as local councils.

*The Folkestone to Cliff End Flood and Erosion Management Strategy* (the Strategy), follows on from the work done for the ‘*South Foreland to Beachy Head Shoreline Management Plan*’ (SMP) published in 2005 and formally adopted by the Council at its Cabinet meeting on 30 November 2005. The SMP identifies the policies to manage risks and the Strategy identifies appropriate schemes to put the policies into practice.

- 2.2 The purpose of the Strategy is to plan and co-ordinate technically sound, environmentally acceptable and economically viable proposals for flood and erosion risk management for the Strategy area for the next 50 – 100 years. It presents the proposed flood and erosion risk management strategy options for each frontage and summarises the socio-economic, technical and environmental appraisals.

- 2.3 The Strategy area covers the coastline between Folkestone to Cliff End in East Sussex, the Royal Military Canal and the River Rother to its tidal limit. It is divided into three coastal cells as follows;

- (i) Cliff End to River Rother West Bank;
- (ii) River Rother East Bank to Sandgate;
- (iii) Sandgate to Folkestone Harbour.

This report comments only on the frontages that offer varying degrees of protection against coastal flooding and which form part of Cell 2. These are: Lydd Ranges, Denge Marsh Sewer to Dungeness Power Stations

West, Dungeness Power Stations, Dungeness Power Stations to Greatstone, Greatstone to Romney Sands, Greatstone Dunes to Littlestone South, Littlestone to St Mary's Bay, St Mary's Bay, High Knocke to Dymchurch and Hythe Ranges.

Broomhill Sands and Rother Tidal Walls lie outside of the Shepway District but the implementation of schemes for these frontages are key to closing the gap in adequate flood defences on Romney Marsh.

- 2.4 The Strategy area has a number of environmental and heritage features including the Dungeness Special Area of Conservation (SAC) which is the most important site in the UK for internationally rare shingle habitat and therefore has a significant influence on coastal management within the area. National designations also include Site of Special Scientific Interest (SSSI) and a National Nature Reserve (NNR).

### **3. EXISTING COASTAL DEFENCES**

#### **3.1 Lydd Ranges**

This frontage is part of the southern shore of the Dungeness peninsula that is eroding due to a lack of sediment input from alongshore. The existing defences at Lydd Ranges comprise the shingle beaches and a secondary defence behind, consisting of an earth embankment known locally as the 'Green Wall'. At the western end, the Green Wall is immediately behind the beach and at the eastern end is several hundred metres behind the beach.

The defences have a 5% (1 in 20) to 10% (1 in 10) chance of failure in any one year where the likely failure mode would be a breach. There have been occasional breaches of the wall in past years, repaired locally with shingle from the surrounding area.

#### **3.2 Denge Marsh Sewer to Dungeness Power Stations West**

A shingle ridge provides the flood defence along this frontage. This is maintained by the EA through beach profiling. A tidal flap prevents sea water flowing along the Denge Marsh Sewer. The existing defences have a 20% (1 in 5) chance of failure in any one year, where the likely failure mode would be overtopping and breaching. This standard of protection will decrease over time if sea level rises as predicted.

#### **3.3 Dungeness Power Stations**

A massive shingle embankment provides protection against a wave with a 0.01% (1 in 10,000) chance of occurring in any one year, (essentially a

tsunami event). The embankment is designed to prevent the tsunami wave breaching the defences and overwhelming the power station. Tidal flooding, e.g. from a storm surge, is not understood to be a priority as the flood warning system would allow sufficient time to shut down the station in advance of an event.

#### 3.4 Dungeness Power Stations to Greatstone

The coastline along this section is naturally accreting. At present, the shingle beach and ridges provide an appropriate standard of defence for the hinterland and there is no management intervention.

#### 3.5 Greatstone to Romney Sands

There are sand dunes along much of this frontage that form the flood defence and provide an appropriate standard of protection. The dunes have a 0.1% (1 in 100) chance of failure in any one year, where the likely failure mode would be erosion leading to breach.

#### 3.6 Greatstone Dunes to Littlestone South

There are no formal defences in this area and the beach provides a low standard of protection with a 2% (1 in 50) chance of failure through breach in any one year. The frontage lies between the Greatstone Dunes in the south and Littlestone beach in the north where there is a seawall and shingle beach.

#### 3.7 Littlestone to St Mary's Bay

A coastal defence scheme for this frontage was completed in 2004 by the EA. The scheme comprised substantial recharge of the shingle beach, strengthening and raising of the seawall, placement of rock, construction of a new promenade and the construction of a terminal rock groyne south of the Jesson Outfall. The scheme allowed for future recycling of shingle that accretes against the terminal rock groyne, back across the frontage. The net drift rate is northerly; however, in practice the movements of shingle have been driven by a series of north easterly sea states (i.e. the shingle is moved towards the south west), resulting in little recent accretion at the terminal rock groyne. The defences here have a 1% (1 in 100) chance of failure in any one year, where the likely failure mode would be overtopping and erosion of the beach.

#### 3.8 St Mary's Bay

The defences along this frontage consist of extensive concrete stepped revetment, a promenade and concrete wave return wall. The defences

are in good condition, having been constructed in the mid 1990s by the EA.

### 3.9 High Knocke to Dymchurch

This frontage is divided into two sub-sections. Frontage A begins at the north end of High Knocke and extends north for approximately 2.3km. Frontage B begins at this point and extends for approximately 2.5km to Dymchurch Redoubt.

Frontage A defences comprise a raised and strengthened seawall and a stepped concrete revetment. The Frontage B defence structures are similar to those along Frontage A, with the addition of a rock revetment along the lower part of the structure to improve wave energy dissipation.

Prior to the completion the Frontage B scheme in 2011, the existing defences had a 10% (1 in 10) chance of breach in any one year. Currently, the risk of failure is reduced to 0.5% (1 in 200) in any one year, up until 2108.

### 3.10 Hythe Ranges

The existing defences comprise a shingle beach with timber groynes. Rock has been placed along sections but it does not form a structural revetment. These defences have a 5% (1 in 20) chance of failure in any one year through overtopping and breach. This standard of protection will decrease over time if sea level rises as predicted. The defences here are managed by the MoD in order to protect the Hythe Ranges training facility.

## 4. **PROPOSALS FOR FUTURE COASTAL DEFENCES**

### 4.1 Lydd Ranges

Owing to a significant change of circumstances for the MoD the option and policy for defending the Lydd Ranges was changed from 'Managed Realignment' to 'Hold the Line'.

The preferred scheme for Lydd includes improvements to the secondary defence (Green Wall), a rock revetment, shingle recharge, groynes (at the western end of the frontage) and a sheet piled wall (at the eastern end of the frontage). At £121m whole life costs, the scheme in its original form was more than £30m more expensive than the environmentally preferred option which was ruled out due to the loss of some MoD land.

It could be argued that the additional £30m should be provided by the MoD defence budget and it is understood that negotiations are ongoing

with them and other parties over scheme contributions. The EA is also considering how phasing of the work and beach maintenance options will impact upon delivery costs.

#### 4.2 Denge Marsh Sewer to Dungeness Power Stations West

This frontage is now included within the Lydd Ranges frontage and the proposal here involves realigning the defence landward between the Denge Marsh Sewer and the Power Stations Switch House by improving the standard of protection and installing timber-clad plastic piling. This will limit the ingress of still water level flooding, whilst the shingle ridges and beach on the seaward side of the realigned defence will dissipate wave action. Realignment would improve the defences so that the risk of failure decreases to a 0.5% (1 in 200) chance in any one year up to 2108.

#### 4.3 Dungeness Power Stations

Ongoing protection here involves sustaining the current standard of defences, taking account of predicted sea level rise. This would meet the safety case for the power stations until 2108 and covers the power stations generating and decommissioning phases. As the stations are decommissioned, the nature and location of the hazard requiring the 1:10,000 year tsunami protection will change. There will be ongoing reviews of the flood defence needs throughout decommissioning with management of the defences adapted accordingly.

#### 4.4 Dungeness Power Stations to Greatstone

'No active intervention' is proposed along this frontage.

#### 4.5 Greatstone to Romney Sands

The council has responsibility for this frontage and since 2009 has successfully bid for funding to maintain the Greatstone dune system (£15k/annum). Maintenance comprises managing pedestrian traffic through the dune system by fencing to prevent erosion. The sand fencing also increases accretion of the dunes at the base rather than the tops.

#### 4.6 Greatstone Dunes to Littlestone South

The preferred option on this frontage is for a beach recharge to raise the beach crest between the Varne Boat Club and the southern end of the sea wall at Littlestone in line with climate change/sea level rise predictions. The EA is currently in discussion with Southern Water with regard to the possibility of constructing a rock groyne around an extension to the sea outfall. It is estimated that this scheme will require an external contribution

of around 75% of scheme costs in order to proceed. There are also issues around the Bathing Water Directive which may be difficult to resolve. An 'insitu' compensatory habitat would also need to be provided should the scheme progress.

#### 4.7 Littlestone to St Mary's Bay

The proposed option for this frontage is to Hold the Line by continuing to maintain the current scheme for the first 50 years and then sustaining the existing defences so that risk of failure remains at 0.5% (1 in 200) chance of failure in any one year, up until 2108. The EA is considering the possibility of combining this frontage with the adjoining frontages which could prove beneficial in beach management terms.

#### 4.8 St Mary's Bay

The proposed option for this frontage is to Hold the Line by continuing with the existing scheme until the end of its design life (about 35 years), then by improving the existing defences. This option maintains the landscape character of the area whilst addressing the increasing flood risk over time due to climate change/sea level rise. The standard of protection would be increased so that the risk of failure is 0.5% (1 in 200) or less in any one year until 2108.

#### 4.9 High Knocke to Dymchurch

The new schemes for Frontages A and B will continue to fix the coastline in position, reducing its ability to respond to natural processes. The policy is to maintain the current standard of defence at 1 in 200 through general maintenance.

#### 4.10 Hythe Ranges

The original Hold the Line option here was to improve the existing defences by constructing a new rock revetment. The structure would incorporate a track along its crest to facilitate access for the MoD. This would remain in place for 50 years, after which the defences would be realigned along the seaward side of the A259 road that borders the range complex (an option that is only viable if the MoD no longer required the ranges for operational purposes for the latter part of the strategy appraisal period).

The scheme will increase and sustain the standard of protection with the risk of failure decreasing to a 0.5% (1 in 200) chance in any one year.

The EA is now considering a phased approach to this scheme – Phase 1 at the western end incorporating the Dymchurch Redoubt frontage and the



first 600m of the Ranges and Phase 2, the remainder of the Ranges from the 600m point to Fisherman's Beach. As with Lydd, the EA is in discussion with the MoD and other stakeholders with regard to funding contributions.

## 5. CURRENT SITUATION

### 5.1 Programme & funding

The EA has recently (28 August 2012) received its indicative allocation of funding for the Folkestone to Cliff End schemes and this, along with the programme for delivery is shown in the table below:

Scheme	Business case	Design	Construction start	Construction finish	Value (k)	Partnership funding score
Hythe Ranges	2013/14	2014/15	2015/16	2016/17	6,261	160%
Lydd Ranges	2013/14	2014/15	2016/17	2017/18	32,831	120%
Romney Sands	2013/14	2016/17	2017/18	2018/19	2,338	73%
Broomhill Sands	2012/13	2013/14	2014/15	2015/16	28,836	143%
Rother Tidal Walls	2013/14	2014/15	2015/16	2016/17	7,189	152%

Prior to the implementation of the new funding arrangements, it was thought that the most cost effective solution for progressing the priority schemes within the Strategy was to 'package' them together as one to achieve economies of scale. This is no longer the case and the EA has spent some time considering the financial benefits from phasing the works.

Under the new funding policy known as 'Partnership Funding' (PF) which was introduced by the Government in May 2011, other parties who have an interest in the work are requested to provide contributions alongside government funding where necessary. The PF score assists the government in prioritising problems and will only consider funding projects that have a PF score of 100% or more. There are a few more reviews for each of the schemes to go through before funding is confirmed but it can

be seen that the PF scores in the table above are reasonably encouraging and reflect the impact that contributions can make.

## 5.2 Borrow pit

The extraction of shingle from the Borrow Pit on the east coast of the Dungeness peninsula has been ongoing since the 1960s. The previous planning consent expired in August 2007 and since this time British Energy has maintained the tsunami bund in front of the Power Stations by sourcing material from the summer emergency store at the top of the bund. In order to minimise the volume of material taken from the emergency store, the bund is monitored on a twice-monthly basis and emergency inspections carried out following significant storm events. British Energy's requirements will remain until the nuclear safety case changes.

At Broomhill Sands the EA renourishes the beach annually in order to maintain the flood defences there and to feed material onto the down drift beaches which protect the MoD's Lydd Ranges. Currently this material is sourced from the Lydd gravel pits and a further 65,000m<sup>3</sup> is required until (and including) 2015/16.

The EA has submitted a joint planning application with British Energy to Kent County Council to extract shingle from the Dungeness Borrow Pit, covering the period 2012 to 2024. There has been a delay in determining the application and it is now due to be discussed in November 2012 by the Planning Committee (the application was originally for the period 2011 to 2023). If the application is successful, the EA will resume extraction from the Borrow Pit from immediate effect. In the meantime, the alternative source from the Lydd gravel pits continues to be used.

## 5.3 Emergency works

During early July, the EA undertook some emergency works on the shingle sea defences in the area between the eastern end on Lydd Ranges and Dungeness Power Station. The work which involved the placement of 4,000 tonnes of material over a 600m frontage was carried out to repair the damage caused by recent storms. Members from the council's Flood Working Group had the opportunity to see this work first hand during a guided visit to Lydd Ranges on 8 August 2012.

## 5.4 Flood maps

The 2009 tidal overtopping model (which informs the EA Flood Maps) is currently being reviewed by an independent consultant and results are expected before the end of 2012. There will be no changes to the Flood

Maps until the review has been completed. In addition to this work, the EA through its National Flood Risk Assessment is considering the impact of fluvial flooding on the Marsh and this work is also due to be completed before the end of the year.

## **6. SHEPWAY DISTRICT COUNCIL'S ROLE**

The council has regular update meetings with colleagues from the EA at which progress on the Strategy schemes are discussed. The council also attended a Strategy workshop in December 2011 at which the proposed schemes were reviewed in order to identify more effective ways of delivering the Strategy outcomes. This work is ongoing and the council has made it clear that it is keen to progress a collaborative agreement with the EA through the East Kent Engineering Partnership. It has been proven that the involvement of local authority staff in scheme delivery can drive down costs, thereby making the schemes more affordable.

## **7. CONCLUSION**

When the council was consulted on the Strategy in 2008, the indicative programme for the priority schemes showed commencement of construction for the Hythe Ranges scheme in 2012/13 followed by Lydd Ranges in 2015/16. The Government approved the Strategy in June 2010 but it was stated that a commitment must be demonstrated by the EA to consider how external contributions may be raised to support the schemes. Negotiations with the MoD and others are continuing in accordance with the new partnership funding guidelines whilst the EA continues to seek cost savings by reviewing scheme delivery options.

The programme in 5.1 indicates that business cases will be completed by the end of 2013/14 for all of the Strategy schemes.

Perceived risk	Seriousness	Likelihood	Preventative action
Government does not approve funding applications to deliver the Strategy schemes	High	Moderate	The council will assist the EA where it is able to do so, to ensure that schemes are deliverable

## **8. LEGAL/FINANCIAL AND OTHER CONTROLS/POLICY MATTERS**

### **8.1 Legal Officer's Comments (Peter Wignall)**

No legal issues arise directly from this report.

## 8.2 Finance Officer's Comments (Tim Madden)

There are no financial implications arising directly from this report. The proposed schemes outlined in this report are to be led by the Environment Agency and, at this stage, the council is not seen as a funding partner for any of these. If this position was to change in the future then Full Council approval would be required to support any funding contribution. It is anticipated that the cost of any technical support provided by the council's Engineering Section towards the schemes in the Strategy will be fully recoverable from the Environment Agency.

## 8.3 Diversities and Equalities Implications (Colin Paine)

There are no diversities and equalities implications arising from this report.

## 9. **CONTACT OFFICERS AND BACKGROUND DOCUMENTS**

Councilors with any questions arising out of this report should contact the following officer prior to the meeting

Chris Lewis, Head of Planning  
Telephone: 01303 853456.  
Email: [chris.lewis@shepway.gov.uk](mailto:chris.lewis@shepway.gov.uk)