

The Highland Council

Transport , Environmental and Community Services Committee
7 November 2013

Agenda Item	6
Report No	TEC 78/13

Coastal Flood Warning Schemes – Firth of Lorn / Loch Linnhe and Moray Firth

Report by Director of Transport, Environmental and Community Services

Summary

This report updates Members of the partnership working undertaken by the Council and SEPA to develop flood warning systems for the Firth of Lorn / Loch Linnhe, and the Moray Firth.

The report includes information on a new tidal surge model for the Firth of Lorne / Loch Linnhe which went live at the end of October 2013 and an update on the position in relation to the development of a tidal model for the Moray Firth area.

1. Background

- 1.1 The Council have been working closely with SEPA on the development of coastal flood warning systems for sections of the Highland coastline for a number of years.
- 1.2 Part of the flood warning system is dependent on the utilisation of a predictive tool which will assist in early forecasting of tidal surge and wave height in various critical sectors of the coastline. This predictive tool utilises mathematical modelling techniques based on background tides and predicted tidal surges forecast from weather data including pressure and wind strength and direction.
- 1.3 Such models have been in place for the Firth of Clyde for a number of years and SEPA have been keen to develop further tidal surge models for other areas of the Scottish coastline that are sensitive to coastal flooding.
- 1.4 Two such areas in Highland are the Firth of Lorn / Loch Linnhe, and the Moray Firth.

2. Firth of Lorne / Loch Linnhe Flood Model

- 2.1 Lochaber Members will be aware of the tidal surges experienced in the Fort William area at fairly regular intervals over the last 100 years. The last significant event was in 2005 when residential areas in Caol and Fort William were flooded due to an extreme tidal surge of around 2.4m above predicted tide level.

- 2.2 More recently the Council working with JBA Consulting developed a tidal surge predictive model for Loch Linnhe using historic weather information with data on atmospheric pressure and wind strength and direction.
- 2.3 This model was taken up by SEPA and refined and developed further with assistance from JBA Consulting to provide a tool that would predict more accurate tidal surges based on forecasted weather. This will allow the emergency services to be better prepared for tidal surge events that could result in residential properties in Caol and Fort William being inundated by extreme high tides.
- 2.4 This new model was launched by SEPA at a Partner Workshop in Caol on 30 October 2013 and a copy of the letter from SEPA dated 21 October 2013 announcing this event is attached at **Appendix A**.
- 2.5 This new model is at the forefront of numerical modelling and design technology and SEPA are to be commended for developing this model to enhance the flood warning system for the Loch Linnhe area.
- 2.6 Members will be aware that work has been undertaken to develop designs for a major flood alleviation project for Caol and Lochyside, and the results of the tidal surge model will be used to help refine the design.

3. Moray Firth Flood Model

- 3.1 Following the severe coastal damage to the eastern seaboard during the winter of 2012 the Council has been in discussion with SEPA who are engaged in the development of a tidal surge model for the Moray Firth area. This model as well as providing early predictions of tidal surge will also provide predictions of wave height which was a critical factor in the extensive damage to infrastructure and property last winter.
- 3.2 The scoping and extent of this model is currently under development with consideration being given to the data requirements for the model and how this data may be collected to supplement historic weather information. When SEPA have clarified the parameters required for the development of this model they will be discussing this further with both Moray and Highland Councils to ensure that this model will fit in with the requirements of the Emergency Services as part of an early flood warning system for the Moray Firth.
- 3.3 A further report on the development of this model will be taken to a future Committee.

4. Implications

- 4.1 The Highland Council have previously contributed £30k towards the development of the tidal surge model for Loch Linnhe with this model being further refined and developed by SEPA for active use in a flood warning system for the Fort William and Caol areas. The model for the Moray Firth is still at an early stage of development and details of any contributions required

from the Council to this model will be reported to a future Committee.

- 4.2 There are no legal implications arising directly from this report.
- 4.3 There are no equality implications arising directly from this report.
- 4.4 The tidal surge models will provide a measure of resilience to the effects of climate change on tidal surge in coastal areas of Loch Linnhe and the Moray Firth and contribute to the Council's Carbon Clever initiative.
- 4.5 There are no risk implications arising directly from this report.

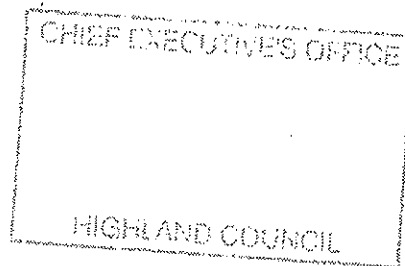
5. Recommendations

- 5.1 Members are invited to note the details of the tidal surge model for the Firth of Lorne / Loch Linnhe which went live at a Partner Workshop on 30 October 2013.
- 5.2 Members are invited to approve that the Council continues to work in partnership with SEPA to develop a tidal surge model for the Moray Firth area to help develop a coastal flood warning scheme for the eastern coastline of the Highland area. Further information on the scope of this model, including any resource implications for the Council, will be reported to a future Committee.

Designation: Director of Transport, Environmental and Community Services

Date: 25 October 2013

Author: S. MacNaughton, Head of Transport and Infrastructure



Our Ref:
Your Ref:

DJP/NS

21 October 2013

Steve Barron
Chief Executive
Highland Council
Glenurquhart Road
Inverness
IV3 5NX

Dear Mr Barron

Firth of Lorn and Loch Linnhe Coastal Flood Warnings Scheme

I would like to inform you that, as part of SEPA's Flood Warning Strategy 2012-2016, the Flood Warning Scheme for the Firth of Lorn and Loch Linnhe will become operational on 30th October 2013. The scheme provides early notification of potential coastal flooding for the town of Oban and for settlements in Upper Loch Linnhe.

SEPA working with local authority technical specialists and JBA Consulting, has identified the 3 areas which would benefit most from improved flood warnings, namely: "Corpach and Caol" "Fort William" and "Oban". For these areas, we have developed enhanced coastal flood forecasting capabilities based on of a number of factors including water level, wave and wind data.

The new model will enable SEPA to provide flood warnings directly to Category 1 and 2 Responders and registered customers in advance of potential flooding. The warning locations and procedures for notification have been developed and agreed in partnership with Highland and Argyll & Bute Council. We are grateful for the support of the council and its staff in developing this tool.

A Partner Workshop is planned to coincide with the launch of the model on the 30th October 2013, local authority, SEPA staff and members of the emergency services have all been invited to attend. The workshop will be an opportunity to introduce partners to the new coastal flood forecasting model and associated new flood warnings.

We hope the new scheme assists in the future mitigation of flood damage in your area. In the meantime, if you have any enquiries then please contact Mairi MacNaughton at our Dingwall Office (Tel. 01349 862021).

Yours sincerely

David Pirie
Executive Director



Chairman
David Sigsworth

Chief Executive
James Curran

Corporate Office
Erskine Court, Castle Business Park,
Stirling, FK9 4TR
tel 01786 457700 fax 01786 446885
www.sepa.org.uk