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Wales Coastal Flooding Review – Project 1 Report – Recommendation 7

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Context

Following the coastal flooding of late December 2013 and early January 2014, the Minister for Natural Resources, asked Natural Resources Wales (NRW) to undertake a two stage Review into the coastal flooding events. The Minister requested that the Review be undertaken in collaboration with all Risk Management Authorities in Wales. Phase 2 of this Review identified 47 Recommendations for future progression and in January 2015 NRW published a Delivery Plan outlining a proposed way forward to address each Recommendation. The Minister directed NRW to collaboratively implement the Delivery Plan in 2015/16 with supporting funding made available.

Thirty of the Recommendations have been packaged into ten Projects to reflect common themes. The remaining seventeen Recommendations stand independently outside of these projects with individual leads for progression.

The 10 Projects and their broad technical themes are listed below:

Project 1 – Flood Forecasting and Coastal Design

Project 2 – Flood Warning and Forecasting

Project 3 – Community Resilience

Project 4 – Operational Response

Project 5 – Coastal Defences

Project 6 – National Coastal Defence Dataset and Inspection

Project 7 – Skills and Capacity Audit and Roles and Responsibilities

Project 8 – Review of Coastal Groups

Project 9 – Coastal Adaptation

Project 10 – Infrastructure Resilience

Recommendations 3, 4, 5, 6, 7 & 8 form Project 1 - Flood Forecasting and Coastal Design. This Report addresses completion of Recommendation 7 alone. Recommendation 3 is completed through content in the progress report and Recommendation 4 has been completed through an external report by the National Oceanography Centre. Recommendations 5, 6 and 8 remaining ongoing in 2016/17 with progress updates available within the progress report.

Background to Recommendation 7

Within the Wales Coastal Flooding Review, Recommendation 7 was defined as follows:

Review with partners what additional forecast information could be provided to support local incident management decisions. Identify options and recommendations.

The experiences from the 2013/14 storms highlighted the importance of incident management decisions being taken locally, whilst informed by advice and guidance by national service providers, such as the flood forecasting service.

Issues have been raised from our partners on forecast information provided, therefore this Recommendation is to review and identify if any additional information can be provided to aid in the decision making process both prior to and during events.

The key element to this Recommendation is adding *valued* information to our partners.

This will enable more effective local decisions to be made when having access to all available forecasting information.

Methodology

To progress these Recommendations an internal NRW working group was created comprising a technical specialist from each of the three local Flood Incident Management teams (South West, South East and North Wales), representatives from the National Flood Forecasting team and NRW's Wales Coastal Flooding Review project team.

The working group agreed the following approach:

- Consult with Professional Partners on current issues and what additional information would aid them in the decision-making process.
- Evaluate the feedback from the Professional Partners against available additional forecast information.
- Identify options and summarise recommendations in a report that outlines next steps and the preferred way forward for Recommendation 7 (i.e. this report)

Consultation

All Coastal Risk Management Authorities (RMAs) and Wales Local Resilience Forums were consulted.. The following 3 questions, relevant to the Recommendation, were asked;

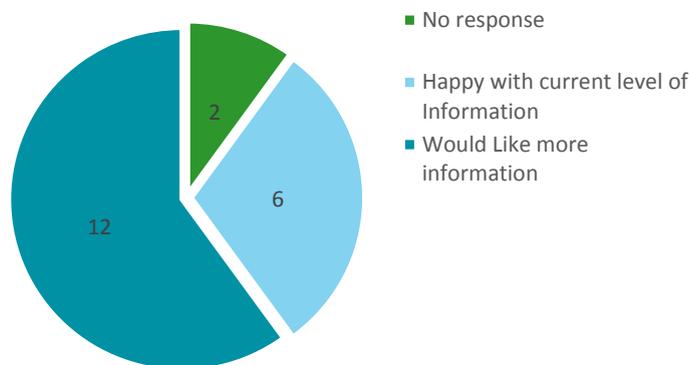
- Question 1: What forecasting information do you currently receive and in what format?
- Question 2: What additional forecast information would be beneficial to your operations and why?
- Question 3: Can you identify any situations when forecast information is diluted through onward sharing within organisations and may therefore not fully reach all the intended recipients?

Response Summary

The responses to question 1 showed that some partners had better contact with NRW; some partners contacted the incident rooms directly while others received emails with additional information.

The second question clearly identified that most partners who provided responses would like to see more information from NRW. The results for question 2 are summarised in the Pie Chart below:

Question 2 Response Categories



Six out of the twenty partners who responded suggested they were happy with the current level of information provided. It was noted, however, from the responses to question 1, that the level of contact with NRW for additional information was variable amongst the partners. For example, in direct response to question 1, one response stated:

“None - A good working relationship with both local NRW and Met Office contacts allows for any additional information to be sought via telephone and telecom”

Therefore of the six who were happy with the current level of information, a number of these were receiving more information already, due to their good working relationship and ongoing communications with NRW or the Met Office.

Of those who requested more information, there was a varied response; five of the twelve requiring more information wanted very detailed forecast information, while others wanted more generalised information on a local scale to aid decision making. Two examples showing the variation in the level of forecast information requested are given below:

“As far as flood forecasting is concerned great strides have been made under the Flood Guidance Statements but again more localised information would be beneficial, it would also be good if NRW FIM’s (Flood Incident Management teams) were more proactive and issued information according to forecast, similar to Met Office advisor.”

“Accurate and up to date (real time) forecasting regarding overtopping locations and predicted rates of overtopping.”

Question 3 was asked in response to concerns raised at a Wales Coastal Flooding Review workshop regarding internal barriers to communication of flood forecast information. Some partner responses did indeed note problems with how the information is being passed within their organisations. NRW could assist by ensuring that partners are happy with the number of people within their respective organisations that are signed up to the flood warning service.

Recommendation 7 Conclusions

The consultation concluded that the majority of partners would like more forecast information from NRW, specifically information on a more local level to help the understanding of likely local impacts.

Information held by NRW

Before deciding upon what extra information NRW can provide there is a need to understand what information is held by NRW, and whether the information would be appropriate to share.

Generic Information

NRW hold generic data on the forecast conditions around the coast. This information is the raw data that is used as an input into forecasting models. This data comes directly from the Met Office and includes:

1. Astronomic tide and time information at Class A gauges around the coast.
2. Surge forecasts at Class A gauges around the coast.
3. Offshore wind and wave data.

All of this information may be of benefit to partners and provision by NRW would enable partners to gather the data from the same source. This is important as it ensures the data they are viewing is both verified and consistent with the data that NRW is viewing and using; this ensures a consistent understanding of the current forecast.

There may be issues with providing this information. NRW would need to ensure all licencing agreements allowed for onward dissemination of commercially sensitive data. Some interpretation of the information may need to be provided to ensure the data is not misinterpreted. Providing too much raw data may detract from the real issue of the expected local impacts.

Site Specific Information

The NRW Flood Forecasting team use the generic raw information from the Met Office and run it through a series of models to provide detailed forecasts on a site by site basis. Forecasts are now run up to five days in the future at all sites.

It may be beneficial for partners to have access to the model outputs. However, NRW have identified a number of issues in providing this data. The issues range from the current inability to provide confidence indicators in the model outputs to ensure no misinterpretation of data, to investigating a viewing platform where this data could be shared. Providing this information would involve a significant amount of work and a change in the current ways of working.

Local Impact Information

NRW area teams interpret site specific forecast information and decide whether flooding messages should be issued. Area teams use their local knowledge of the areas and the decision is supported by the use of local validation information. Knowledge of likely impacts may extend to local areas not covered by the existing flood warning service.

This additional detail is likely to be particularly useful to professional partners. Currently, such information is shared, to some extent, inconsistently with partners: via telephone conversations, emails and in larger events through partner Local Resilience Forum (LRF) teleconferences. Likely impacts are in some cases quantifiable by looking up past event data or using documents such as the 'Tidal Impact Scenarios' document (see NRW Coastal Review Delivery Plan Recommendation 19).

Proposed Solution

The consultation responses were varied. Some partners quoted that they would like to see information presented in a format similar to that provided by the Met Office Advisors. Others wanted full forecasting details including overtopping rates and NRW triggers. Providing emails is achievable almost immediately; this is already being done in some events. By contrast, providing full forecasting information is something that would take longer due to achieve due to technical complexities in the data dissemination process and the risk of providing data for which the uncertainty and limitations are not clear to all users. However, it would be beneficial to share full forecasting information and how this could be done should be considered now for the future.

Following discussions within NRW's working group for this Recommendation, it was decided that it would be feasible to address the issues in a 2 staged approach:

- Stage 1 - Short Term Response: Provide generic information on a more local level via email.
- Stage 2 - Long Term Response: Provide more detailed forecast information to partners and the public.

Stage 1 - Short Term Response: Provide generic information on a more local level via email

The short term suggestion was to provide Professional Partners with more local, longer-range information via email correspondence as and when required. Emails will be provided on a LRF basis, covering the geographical area associated with the each LRF in a similar style to those of the Met Office advisors. This suggestion would meet the requirements of the majority of the consultees. The contents of these emails would vary in detail depending on the conditions. However, the emails should generally:

- Give an introduction to the forthcoming tides identifying those most likely to cause impact.
- Give an overview of general forecast conditions for the tides of concern.
- Give an indication of impacts for the tides of concern.

Emails should also provide a local contact in case more information is required, formalising the contact routes for professional partners, an issue potentially identified as part of the question 1 consultation analysis. Emails would ensure a more consistent approach across Wales from NRW.

Stage 2 - Long Term Response: Provide more detailed forecast information to partners

A longer term option should be the provision of more detailed forecast information, such as site specific forecasts, for partners. Publishing this information on the NRW website could be a successful solution which would attract visitors to the NRW website, raising the profile of NRW's flood forecasting and warning service.

A feasibility study should be undertaken by NRW to progress this task. Decisions on the level of data provided and the manner in which it is presented is key for this to work successfully. Ultimately, if there is data which would be beneficial to professional partners, that would improve the accuracy and effectiveness of the flood warning service and present a clearer message of the risk, then this data should be shared.

Stage 1 has been implemented from the November 2015 and is now part of the process when NRW issues forecast information.



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