

TII National Roads Conference Wexford, 28 September 2018

Effective flood management begins with Foresight





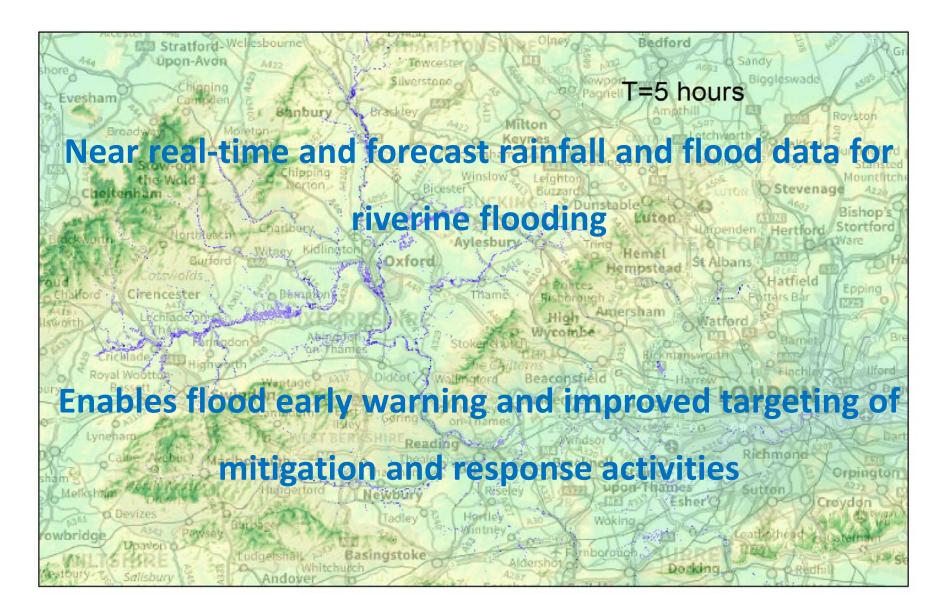
### Summary

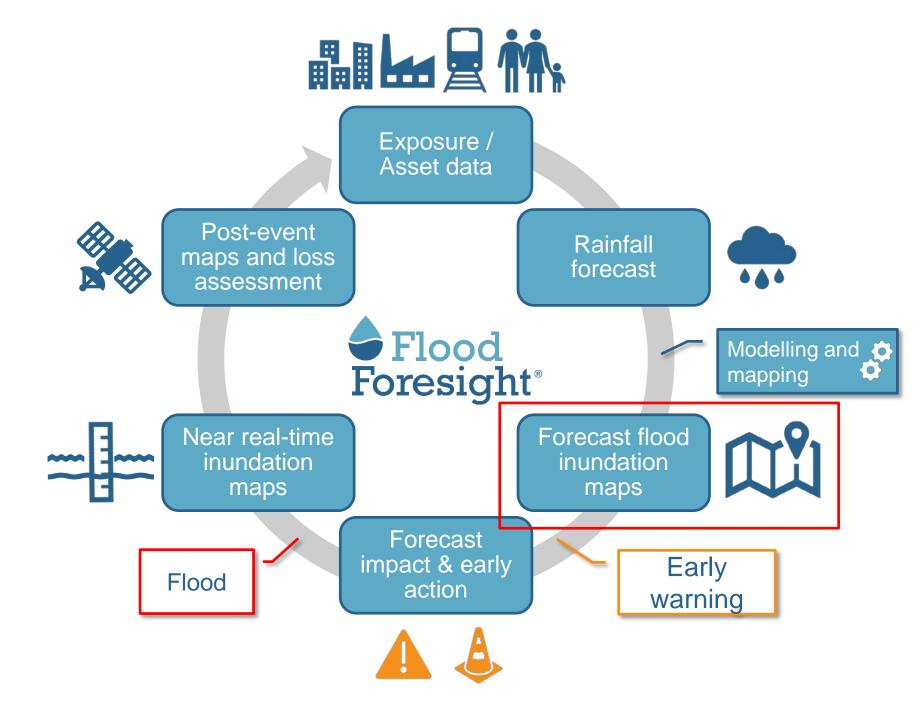


- Summary of Flood Foresight
  - What does it add to current forecasting?
- Case study March 2018 event
  - Rainfall Screening
  - Forecasting Tool
  - Custom road impacts
  - Combine with Flood Risk to Roads Protocol and vulnerability maps
  - Integration
- Next steps

## **Flood Foresight**







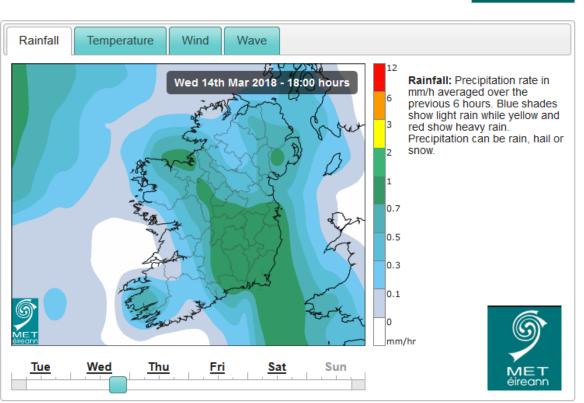
# **Flood Foresight**



Atlantic forecasts

 Goes beyond rainfall forecasting 5 Day Irish Forecasts

- Provides forecast flood inundation maps
- Allows custom impact forecasting
- Enables early action to reduce disruption/loss



**General:** The information presented here is derived from Numerical Weather Prediction (NWP) models used in Met Eireann as forecaster guidance. Information for up to 5 days ahead comes from the ECMWF model, presented at 6-hourly intervals. The official forecast may not always reflect the guidance charts illustrated; the forecasters also consider information from satellite, radar and weather observations, in addition to the application of their own experience.

#### https://www.met.ie/forecasts/5day-ireland.asp



# **Case study: March 2018**

# **Rainfall Screening**



Search for town, city,

#### 13 March Forecast for the 14 March 2018

Flood

- Rainfall amounts:
  - 10-20mm N and W
  - 20-50mm S and E

Foresight			Search	for town, city
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Rainfall Screening				
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S Flood Foresight website 🕑 floodforesight

# **Rainfall Rarity Screening**

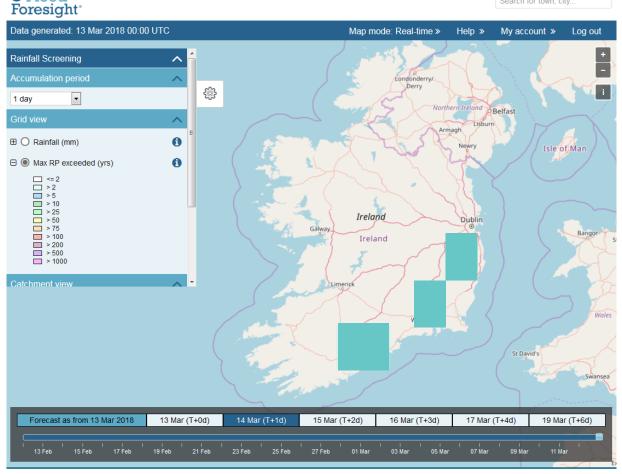


Search for town, city..

#### 13 March Forecast for the 14 March 2018

🗣 Flood

- Where is the added value?....
  - Rarity
     assessment
- 2-yr RP exceeded SE coast
- Dublin, Carlow and Wicklow



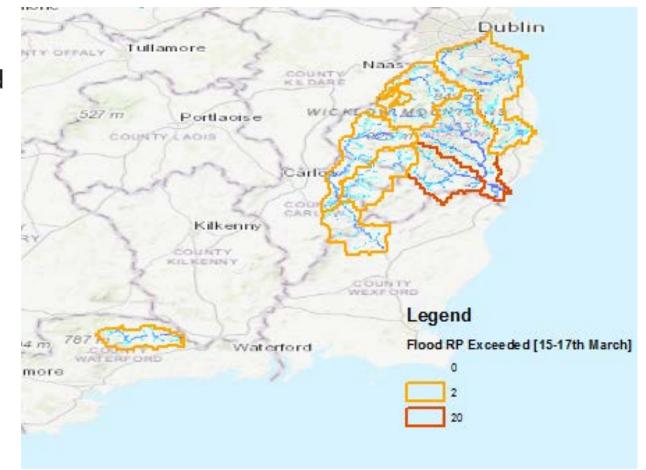
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# 13<sup>th</sup> March forecast for the 15-17<sup>th</sup> March



#### **Flood Severity Information**

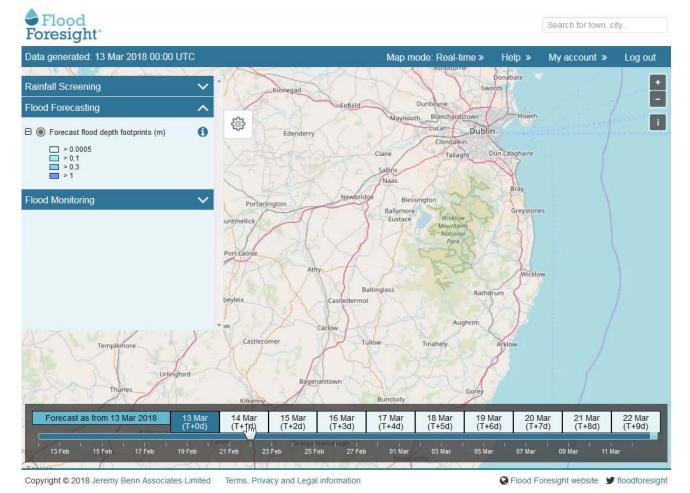
- 2-yr RP exceeded
- 20-yr RP exceeded only for the 15<sup>th</sup> March at those basins





#### Flooding (2-20-yr RP) may occur 15-17 March 2018

- Dublin, Carlow and Wicklow
- 2-yr RP exceeded SE coast





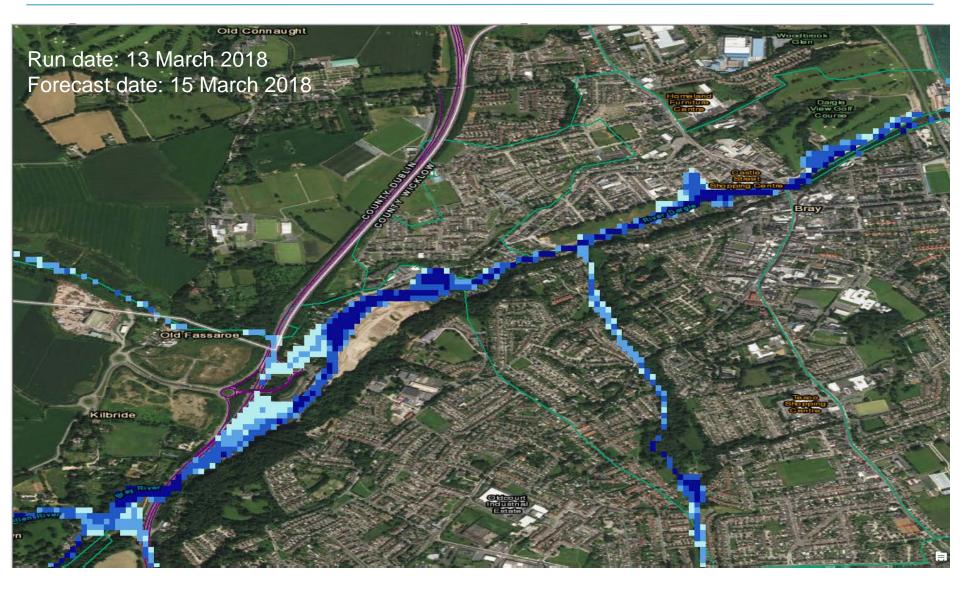
#### Zooming in: Bray, Wicklow





#### **Bray, Wicklow**





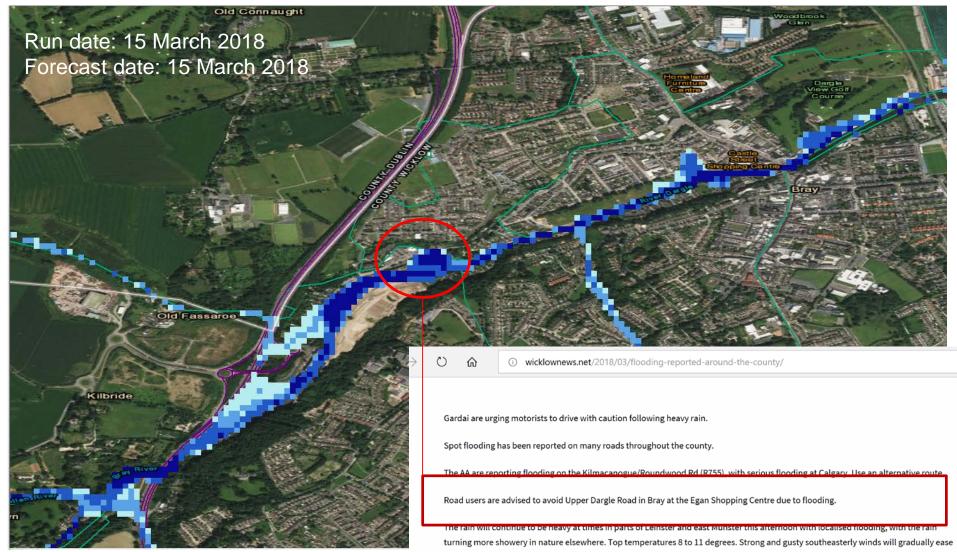
#### **Bray, Wicklow**





#### **Bray, Wicklow**





from the southwest.

# New TII customised road impact alerts (intersection footprint + carriageway)



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### **Combine with vulnerability information**



#### Flood Risk hotspots – worst sections of each major road



#### Flood Risk hotspots for each major road route in Ireland JBA N11 Please Select a Route: Worst ranking areas 1km grid on County (RouteID) Hyper-linked Map Rank multiple measures of flood risk X297000Y139000 Wexford N11D2ML 1 \Route Rank Maps\RiskRank X297000Y139000.pdf 2 X326000Y187000 Wicklow N11D2ML \Route Rank Maps\RiskRank X326000Y187000.pdf X324000Y217000 Wicklow N11D2ML \Route Rank Maps\RiskRank 3 X324000Y217000.pdf 4 X327000Y180000 \Route Rank Maps\RiskRank Wicklow N11D2ML X327000Y180000.pdf 5 X327000Y190000 Maps\RiskRank X327000Y190000.pdf Wicklow N11D2R2042 \Route Ran 6 X298000Y144000 N11D2ML Wexford \Route Rank Maps\RiskRank X298000Y144000.pdf 7 X326000Y210000 Wicklow N11D2ML \Route Rank Maps\RiskRank X326000Y210000.pdf 8 X327000Y195000 Wicklow N11D2ML Route Rank Maps/RiskRank X327000Y195000.pdf X297000Y137000 N11D2ML 9 Wexford Route Rank Maps/RiskRank X297000Y137000.pdf X324000Y175000 10 Wicklow N11D2ML Route Rank Maps/RiskRank X324000Y175000.pdf

This Spreadsheet shows where the flood risk from mutiple sources is worst for each major route

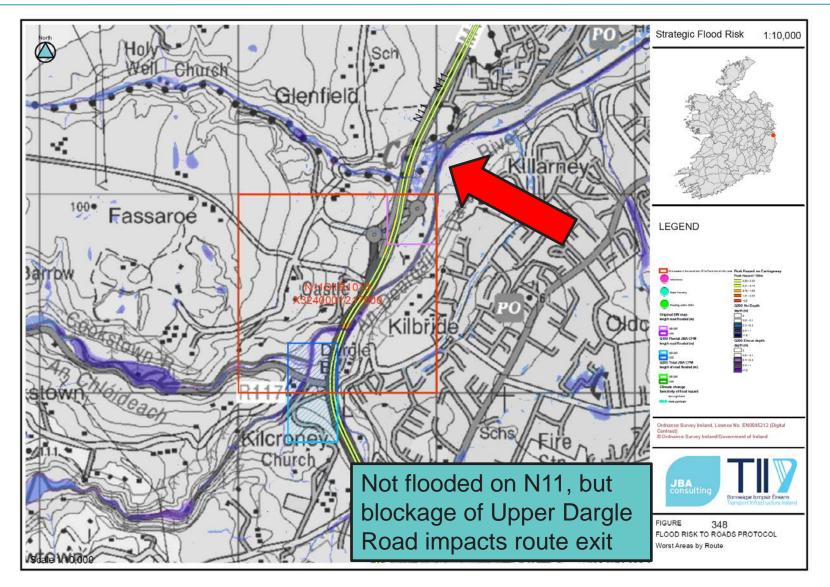
There is a linked sub-folder with 780 PDF maps called "Route\_Rank\_Maps"

If this is present then the Hyper-links in column H above should activate the correct map on clicking

Click on one of the "worst ten road sections for flood risk" to open map

### Vulnerability Map for high risk area / Bray





#### Other areas picked up by Forecasting Tool: River Dodder



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eak Hazard on Carriageway Rank of overall flood risk metric Grid square in the w		O Dublin's river Dodder burst its banks on Wednesday evening leaving a portion
	flooding / road closure	of the Dodder Road Lower impassable.
		Dublin City Council used its Twitter account to alert people to avoid the river
		at Orwell Road, as the fire brigsde attended the scene.

ahead of a high tide at 10pm. Gardaí are attending.

# **Integration options**

#### Where next?

- Assessing current working practices, software and facilities with RDOs
- Flood Foresight layers and vulnerability maps can be brought into existing decision-support systems (e.g. TII app, GIS, Vaisala)
  - also available as CSV/Excel, on FTP or website
- Need to develop thresholding and link to decision making







- Concluding this phase of R&D project
- Assessing integration options
- Works alongside other tools
- Looking for 1-2 RDOs in which to demonstrate integration and develop decision protocols - towards having a full Flood Risk Service Plan
- Volunteers welcome!

# Flood Foresight®

#### jbaconsulting.com/floodforesight

# For more information, contact: barry.hankin@jbaconsulting.com

