

Natural catastrophe and geospatial intelligence

Better Management Information for localised events

Geospatial World Forum, Rotterdam, 24 May 2016

Dr Tina Thomson



Clock tower

LOTHNER

WINNER

WINNER

Desmond



Desmond was an extra-tropical cyclone and fourth named storm of the 2015–16 UK and Ireland windstorm season.

Formed

3 - 8 December 2015

Highest gust

112 mph

Loss estimate

£662m Perils insured property loss

Power outages

46,300

Casualties

3

Areas affected

Ireland, Isle of Man, UK, Iceland, Norway, Sweden

Eva



Heavy rainfall from Eva occurred circa three weeks after Storm Desmond had brought severe flooding to parts of Northern England, exacerbating the on-going situation.

Formed

22-24 December 2015

Highest gust

75mph

Loss estimate (incl. Frank)

£578 Perils insured property loss

Power outages

3,000

Casualties

1

Areas affected

Ireland, UK

Frank



Frank was the sixth storm to be officially named by the Met Office on 28 December 2015, and brought severe gales to western parts of the UK.

Formed

28-31 December 2015

Highest gust

85mph

Power outages

27,900

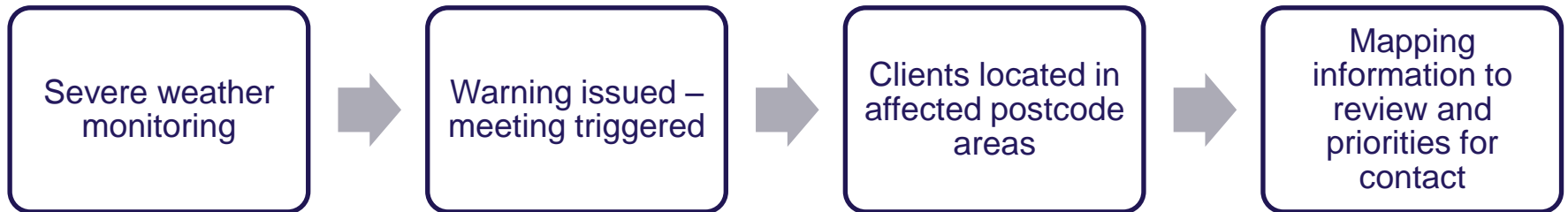
Casualties

3

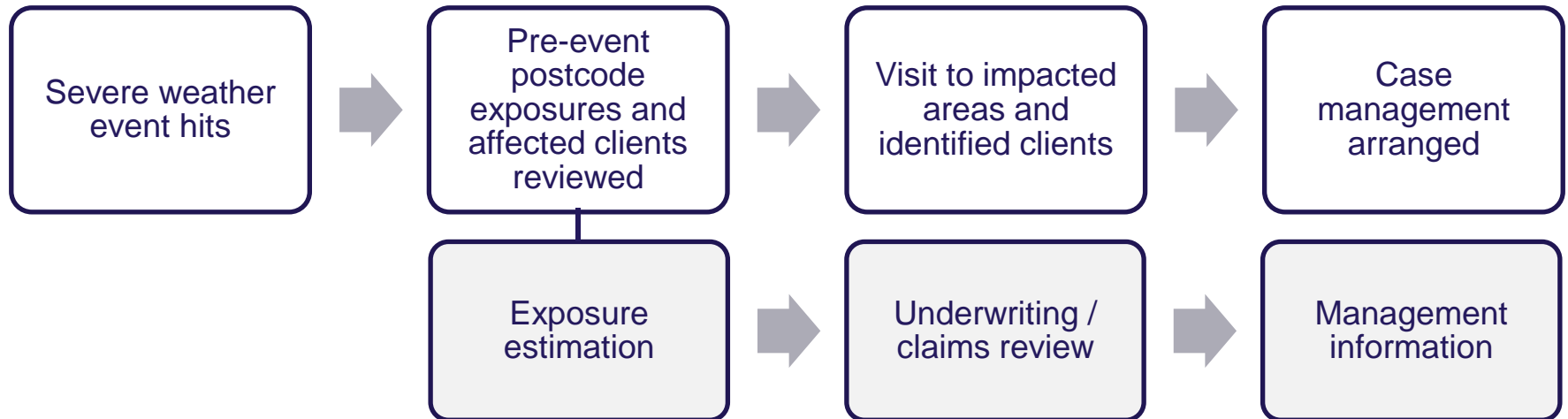
Areas affected

Ireland, UK, Iceland

Pre-event



Post-event



Pre-event monitoring

WeatherNet Weather Forecast Application
The definitive weather resource

Validation App **Next 16 days** Now Today Actual Forecast Archive Contact Us

Total Precipitation Forecast

Monday 16 May 2016

Updated 05:00 16/05
Next Update 11:00 16/05

Postcode Forecast: Towns & Cities Spot Values (mm) Postcode Areas

Forecast Date	Forecast Hours (GMT)					
Mon 16 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Tue 17 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Wed 18 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Thu 19 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Fri 20 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Sat 21 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Sun 22 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Mon 23 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Tue 24 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Wed 25 May 16	00-03	03-06	06-09	09-12	12-15	15-18
Thu 26 May 16			00-12			
Fri 27 May 16			00-12			
Sat 28 May 16			00-12			
Sun 29 May 16			00-12			
Mon 30 May 16			00-12			
Tue 31 May 16			00-12			

Forecast Weighted by UK Homes

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Flood Warnings

Number of Flood Warnings in Force by Region

Region	Number of Flood Warnings
North East England	0
North West England	0
Yorkshire	0
East of England	0
London	0
South East England	0
South West England	0

Floodline
Telephone: 0345 988 1188
24-hour service

Environment Agency

Severe Flood Warning
There is a flooding danger to life.

Flood Warning
Flooding is possible, immediate action is needed.

Flood Alert
Flooding is possible, 24 hours notice.

Warnings no longer in force
Flood warnings are still active but have been removed from the map in this area.

Flood warnings and alerts

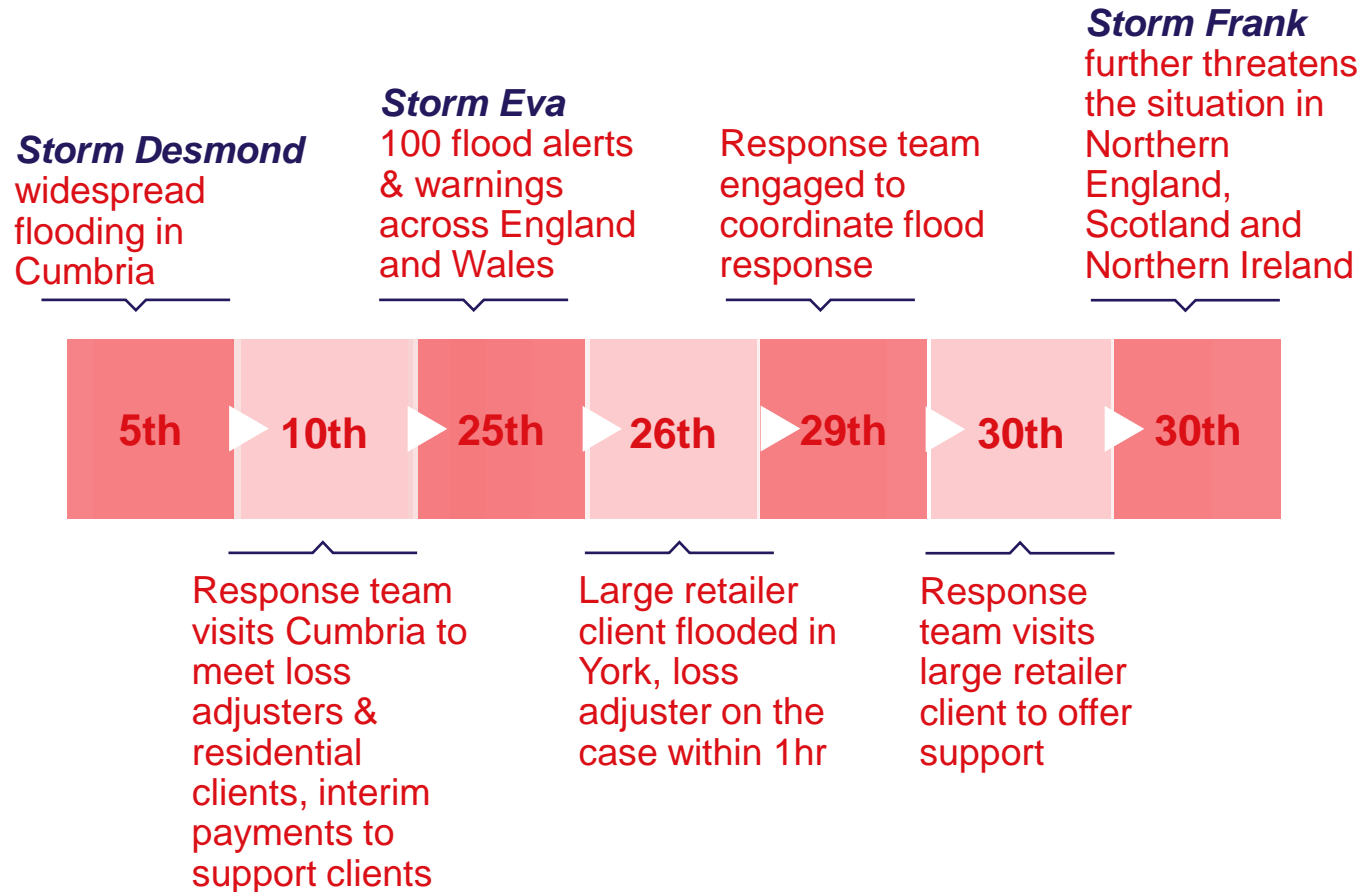
Related pages

- [Flood warnings guide](#)
- [Severe weather warnings](#)
- [How prepared of severe weather](#)

Related links

The Environment Agency (EA), Natural Resources Wales (NRW) and Scottish Environment Protection Agency (SEPA) constantly monitor rainfall, river levels and sea conditions to forecast the possibility of flooding.

If flooding is forecast, three types of warning are issued: [Flood Alerts](#), [Flood Warnings](#), and [Severe Coastal](#)









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NO WINES PICKED FOR YOU TO LOVE

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AIX

AIX

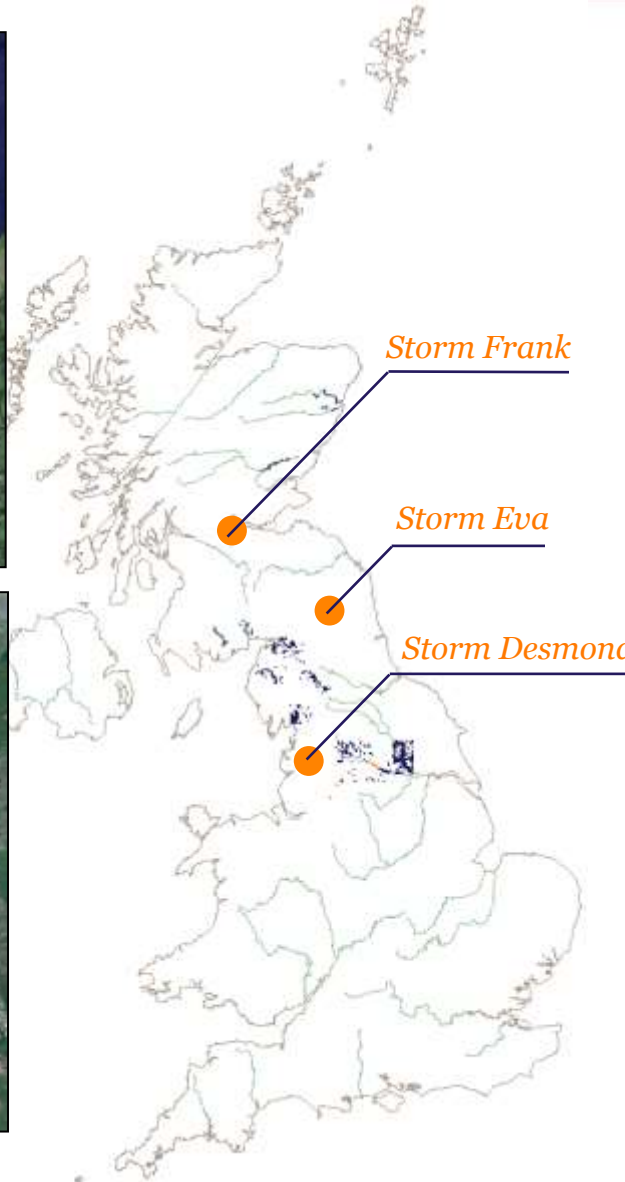
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Data sources

1. Copernicus Emergency Management Service 95 flood extents from Sentinel radar (all-weather) sensors (20m).
2. In house delineated footprints from Sentinel radar data.
3. RMS flood model footprints in the most affected urban areas.


Exposure estimation method


1. Combined data sources by event and assumed 100m buffer
2. Delineated max area around footprints
3. Netted both down exposures
4. 100% PML

Storm Frank

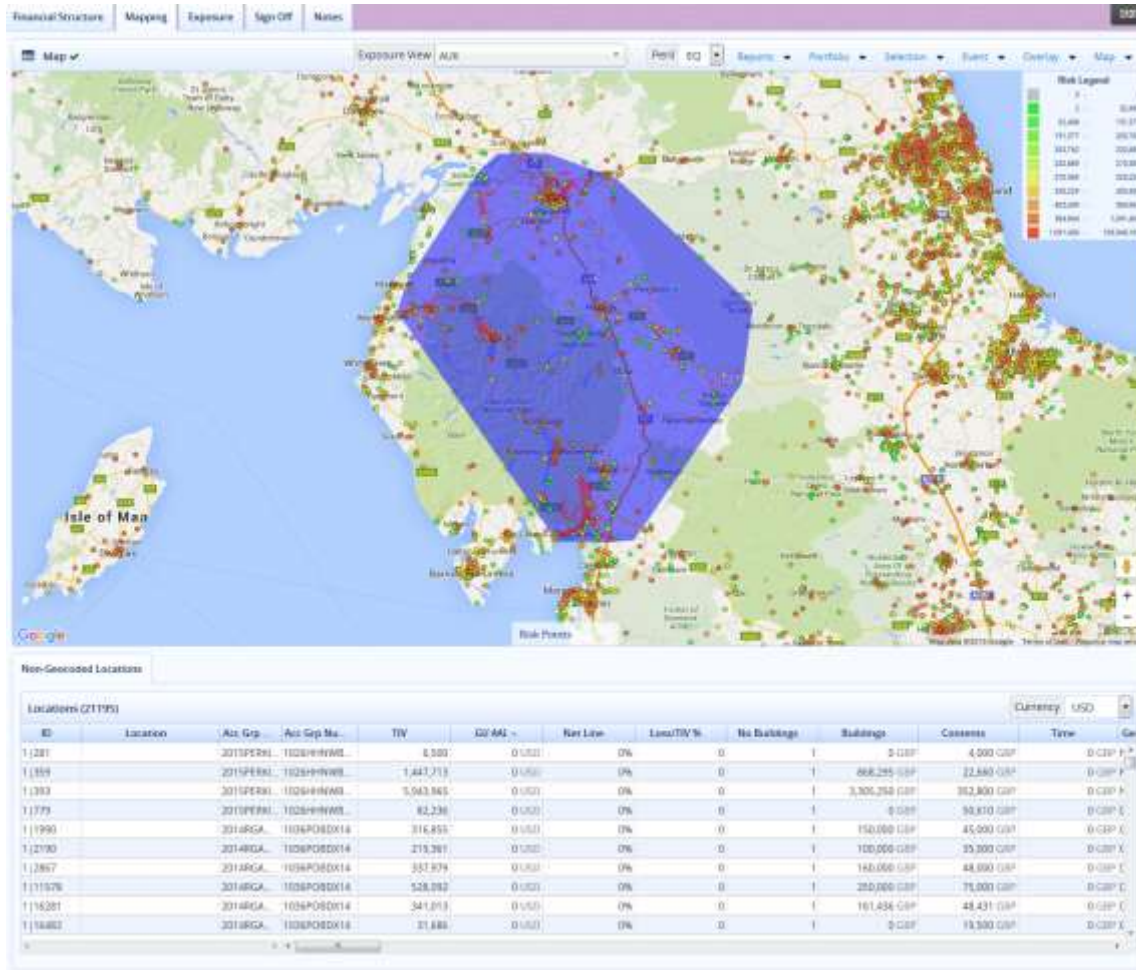
 In house delineated satellite footprint

Storm Desmond & Eva

 Copernicus delineated satellite footprint

 RMS flood model footprint

Storm Desmond exposure estimation



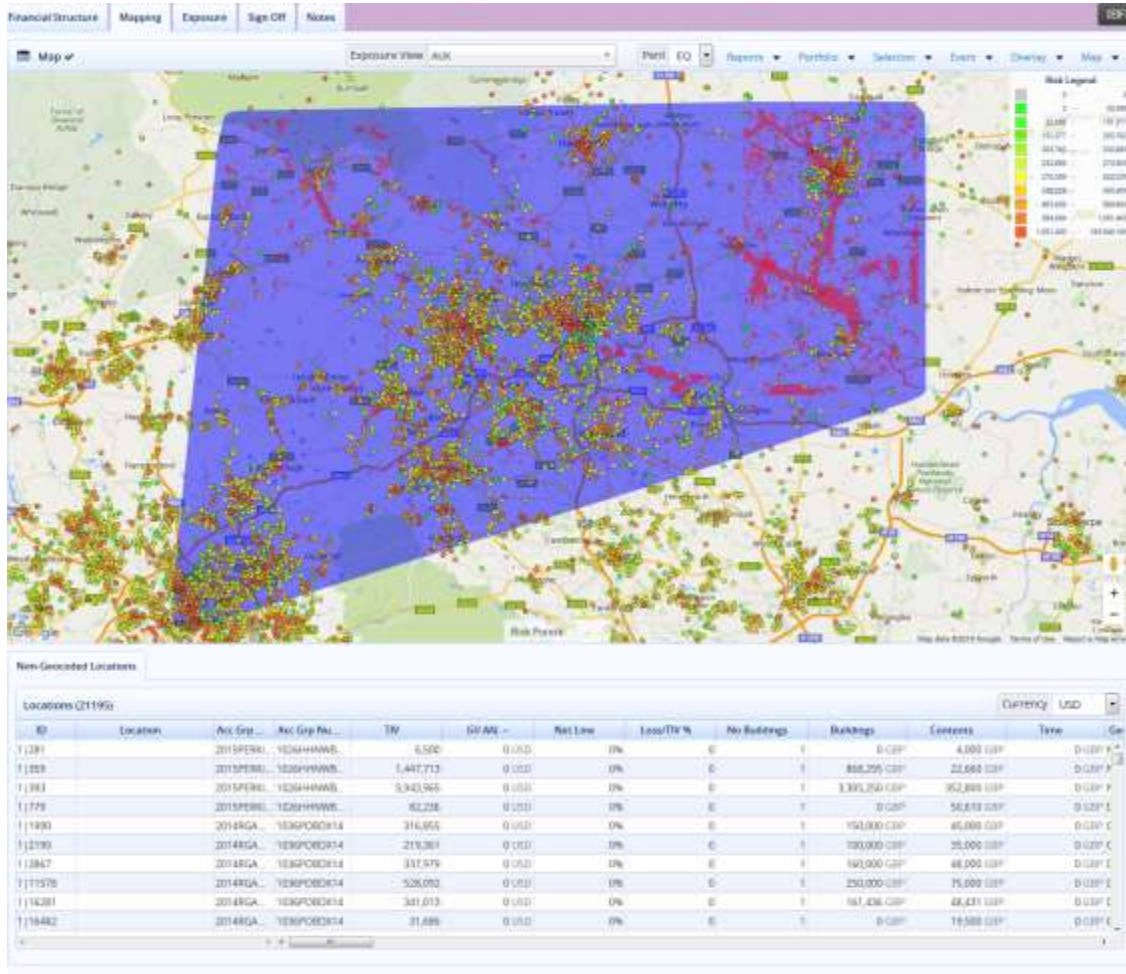
Incurred claims
4% of footprint exposure

PPM printed screen

■ Footprint

■ Max affected area

Storm Eva exposure estimation



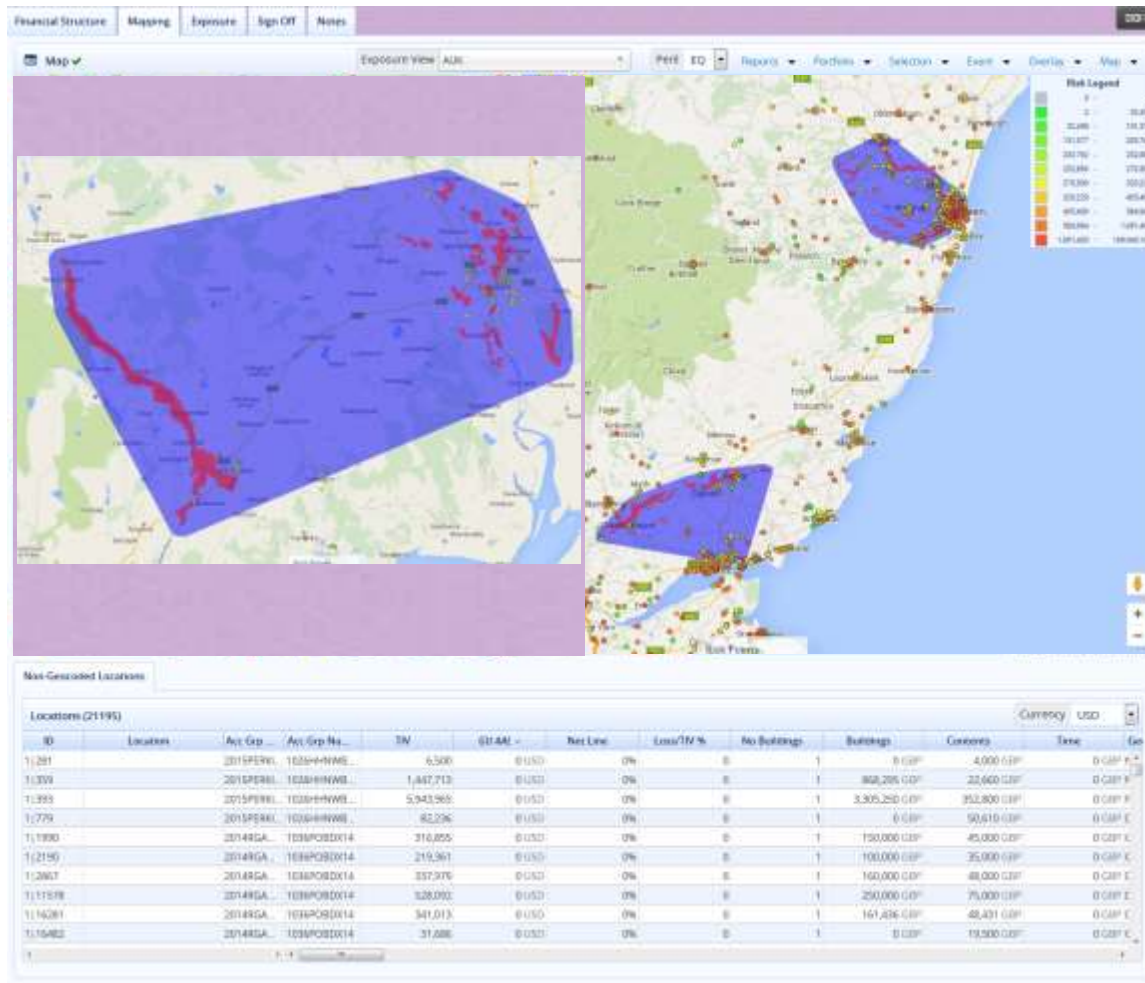
Incurred claim
2% of footprint exposure

PPM printed screen

■ Footprint

■ Max affected area

Storm Frank exposure estimation



Incurred claim
10.5% of footprint exposure

PPM printed screen

■ Footprint

■ Max affected area

Pre-event

- Varying levels of skill prediction
- Coarse assessment of potential regions affected
- For flood event more localised information critical
- To improve client experience, reserving, loss adjusters

Post-event

- Footprint availability for exposure assessment
- Data source limitations such as
 - Coverage
 - Resolution
 - Costs
 - Timing

Thank you

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