



FLASH FLOODS AND PLUVIAL FLOODING



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e la Ricerca Ambientale



**REGIONE AUTONOMA
DELLA SARDEGNA**



**MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE**

Working Group F Thematic Workshop

Development of the pluvial flood map for Northern Ireland



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Director of Development, Rivers Agency

26th-28th May 2010, Cagliari, Italy



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Rivers Agency

- Statutory flood defence and drainage authority
 - For Northern Ireland



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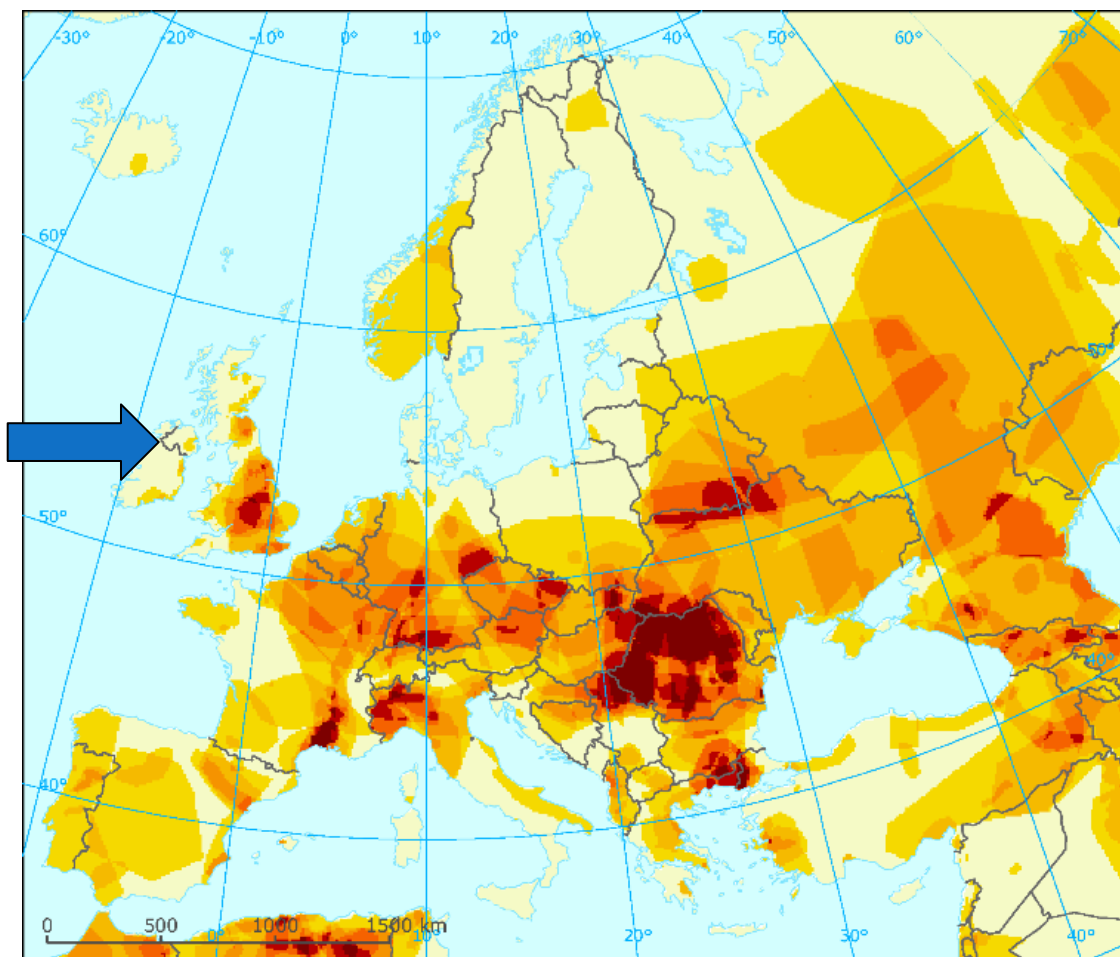
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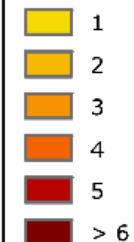


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Flood events, 1998–2008

Number of events





Rivers Agency

- Statutory flood defence and drainage authority
 - For Northern Ireland
 - Land mass: 13,843 km²
 - Population: 1,775,000
 - 6866km of designated watercourses
 - 830,000 properties
 - 5.5% at flood risk from rivers and sea
 - 2.5% at risk from pluvial flooding



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Rivers Agency

- Statutory flood defence and drainage authority
- Department of Agriculture and Rural Development
- Competent Authority for Floods Directive



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Rivers Agency - functions

- Maintain designated watercourses and sea defences.
- Construct drainage and flood defence structures.
- Advisory and enforcement to protect drainage.



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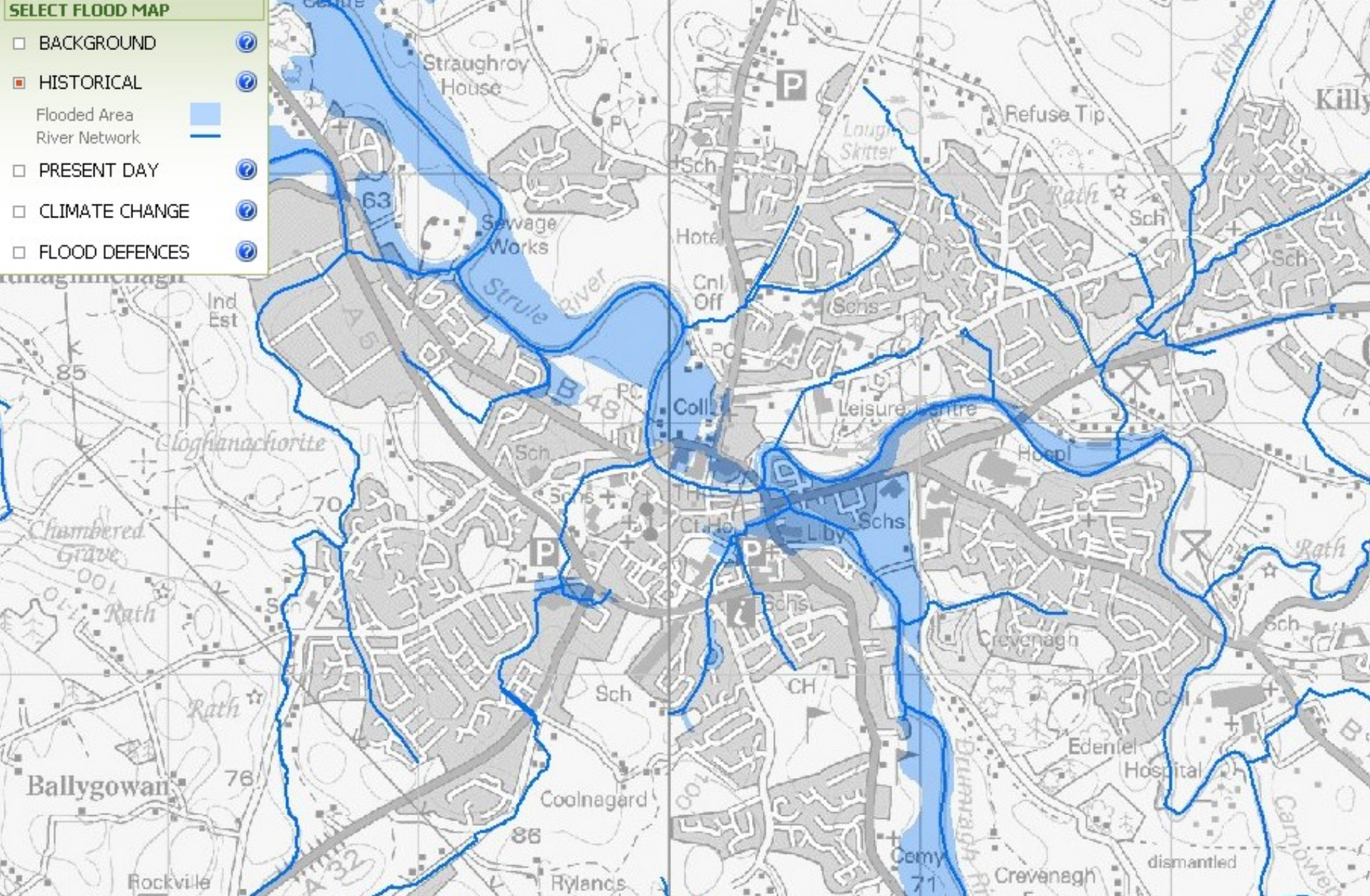


Preliminary Flood Risk Assessment - PFRA

- 'available or readily derivable'
- Identify gaps

SELECT FLOOD MAP

- BACKGROUND
- HISTORICAL
 - Flooded Area
 - River Network
- PRESENT DAY
- CLIMATE CHANGE
- FLOOD DEFENCES



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Preliminary Flood Risk Assessment - PFRA

- 'available or readily derivable'
- Identify gaps
- Surface water
- Work commissioned using framework
- WDR & RT Taggart
- JBA Consulting



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1st Generation Surface water map

- 0.5% AEP or 200 year Rainfall
- 6.25 hour rainfall duration
- 100% ground run off
- Storm systems overwhelmed
- Bare earth DTM

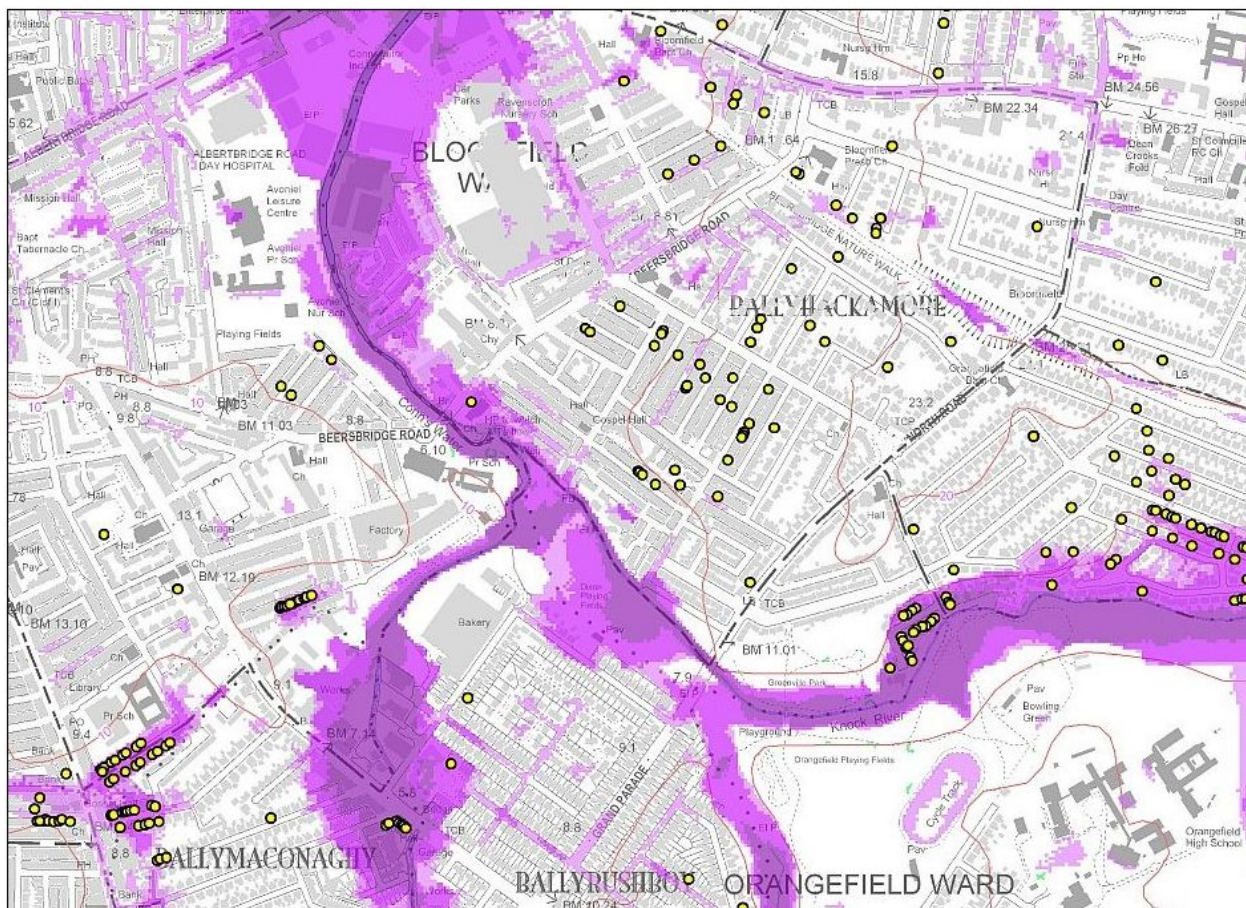


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Version 1



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Real rain event

- 12 June 2007
- 48mm of rain in a one hour period
- 0.3 to 0.2% AEP (300- 500 year event)
- Impacted upon Belfast
- Over 900 properties
- Hardship payment

History of Flooding



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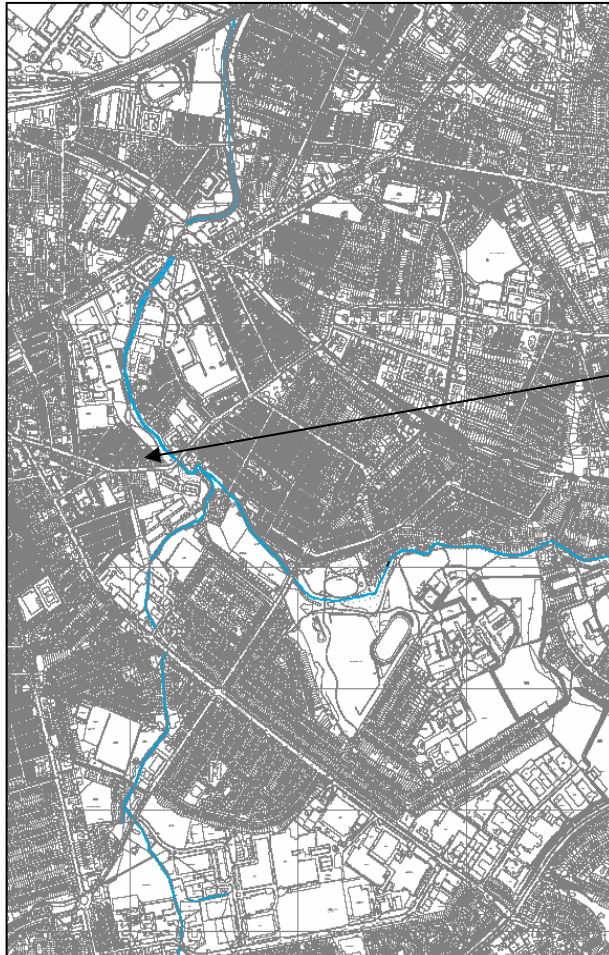
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History of Flooding



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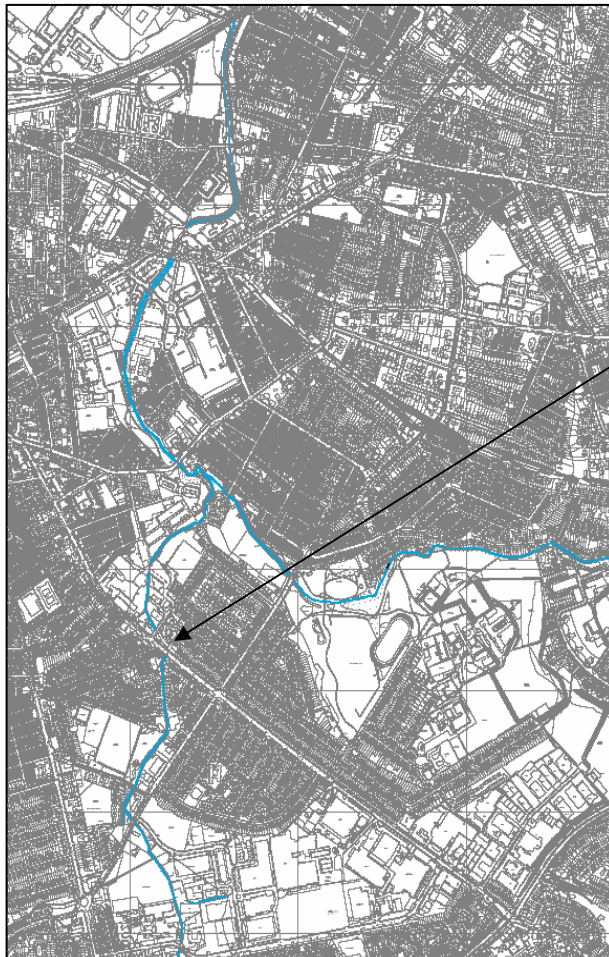
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History of Flooding



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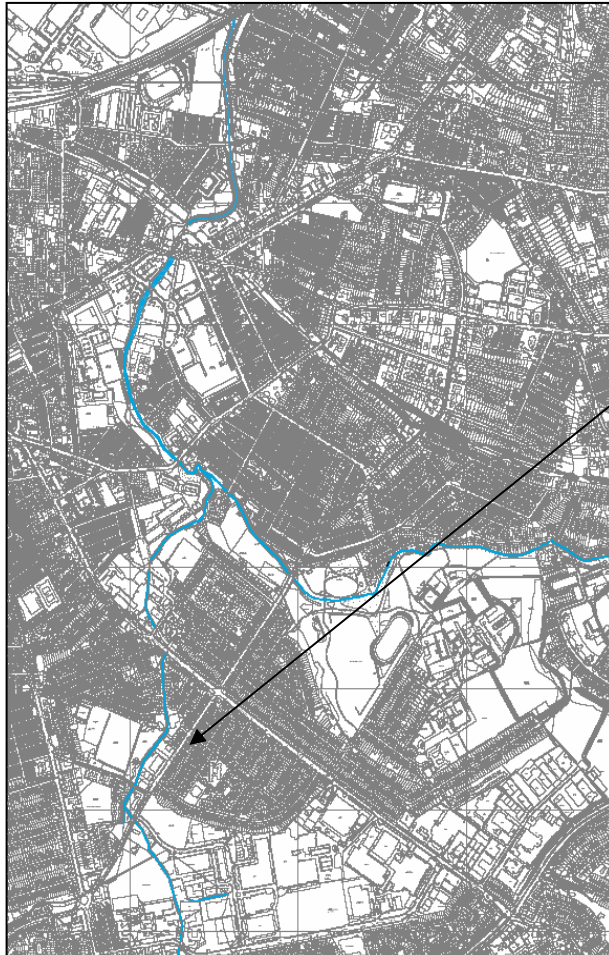
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History of Flooding



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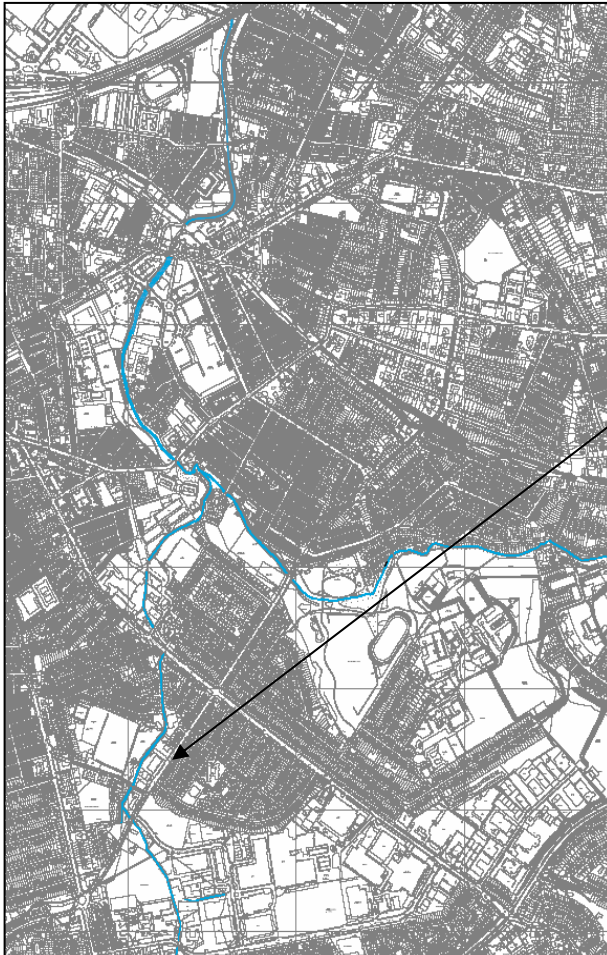
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History of Flooding



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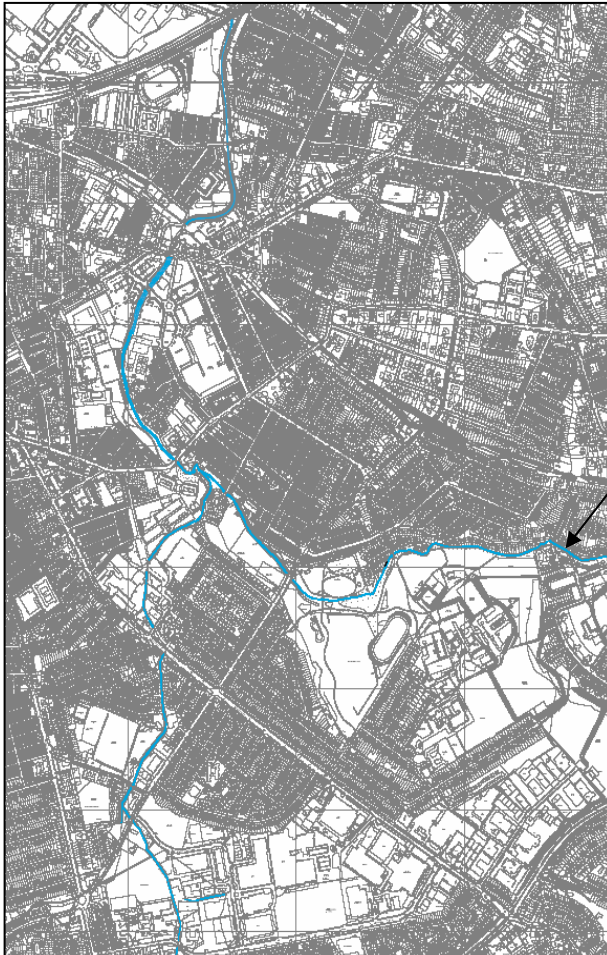
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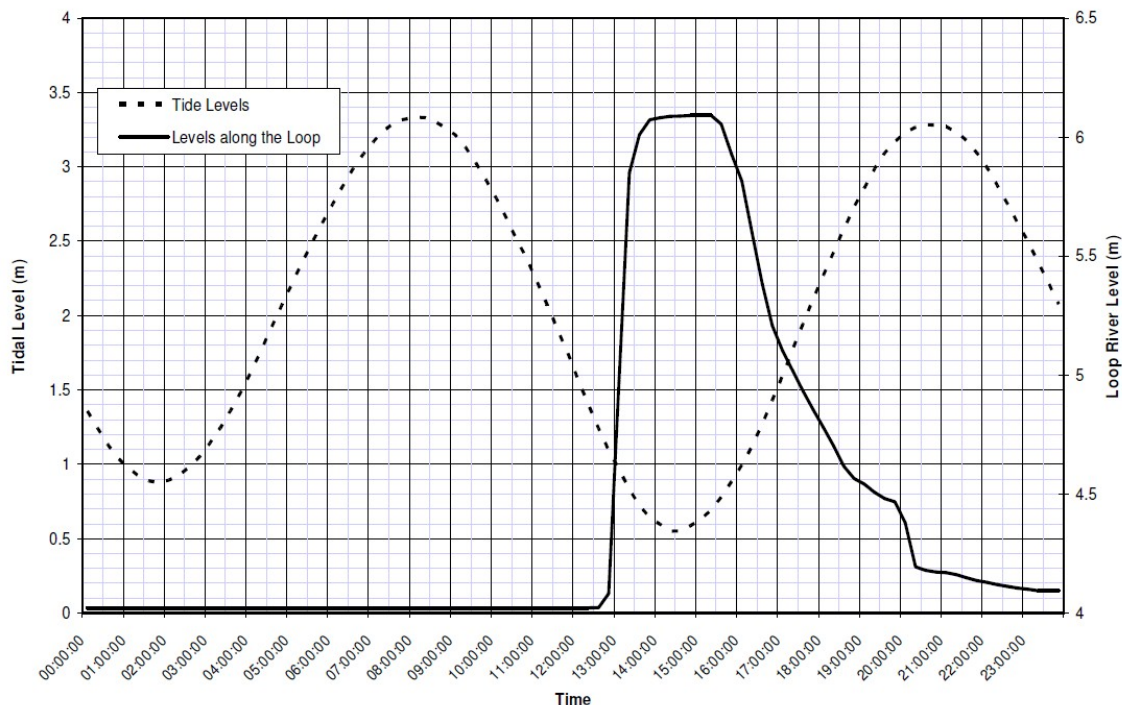
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Knock and Loop Rivers

- 427 properties
 - 229 or 54% fluvial
 - 198 or 46% pluvial
 - Not a coastal even





2nd Generation Surface water map

- Rainfall
 - 0.1% AEP (1000 year)
 - 0.5% AEP (200 year)
 - 3.33% AEP (30 year)
- 1 hour rainfall duration
- Ground run off
 - 80% Urban
 - 38-39% Rural
 - Variable Manning coefficient
- Storm systems allowance of 12mm/hr
- DTM
 - Buildings raised by 5m
 - Roads lowered by 0.15m



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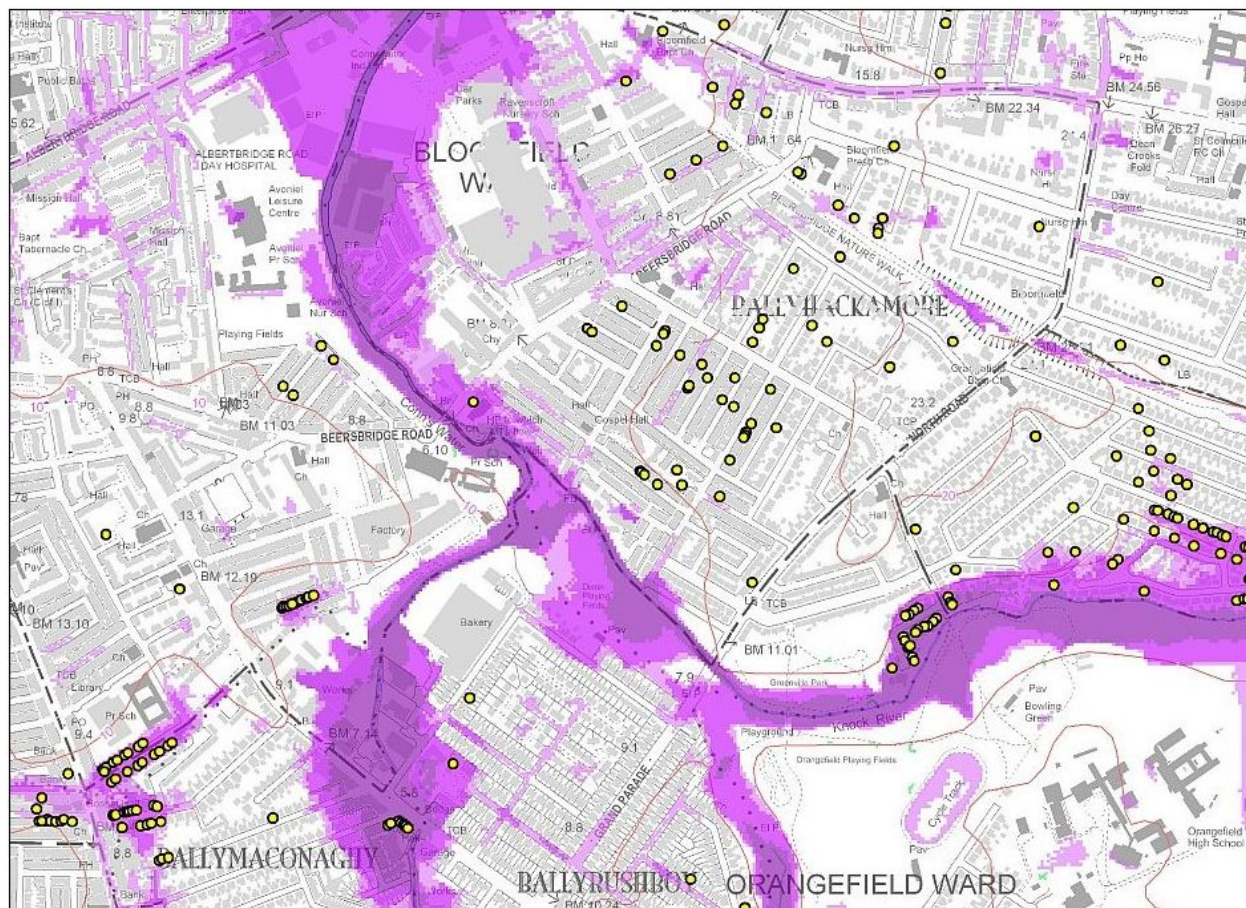


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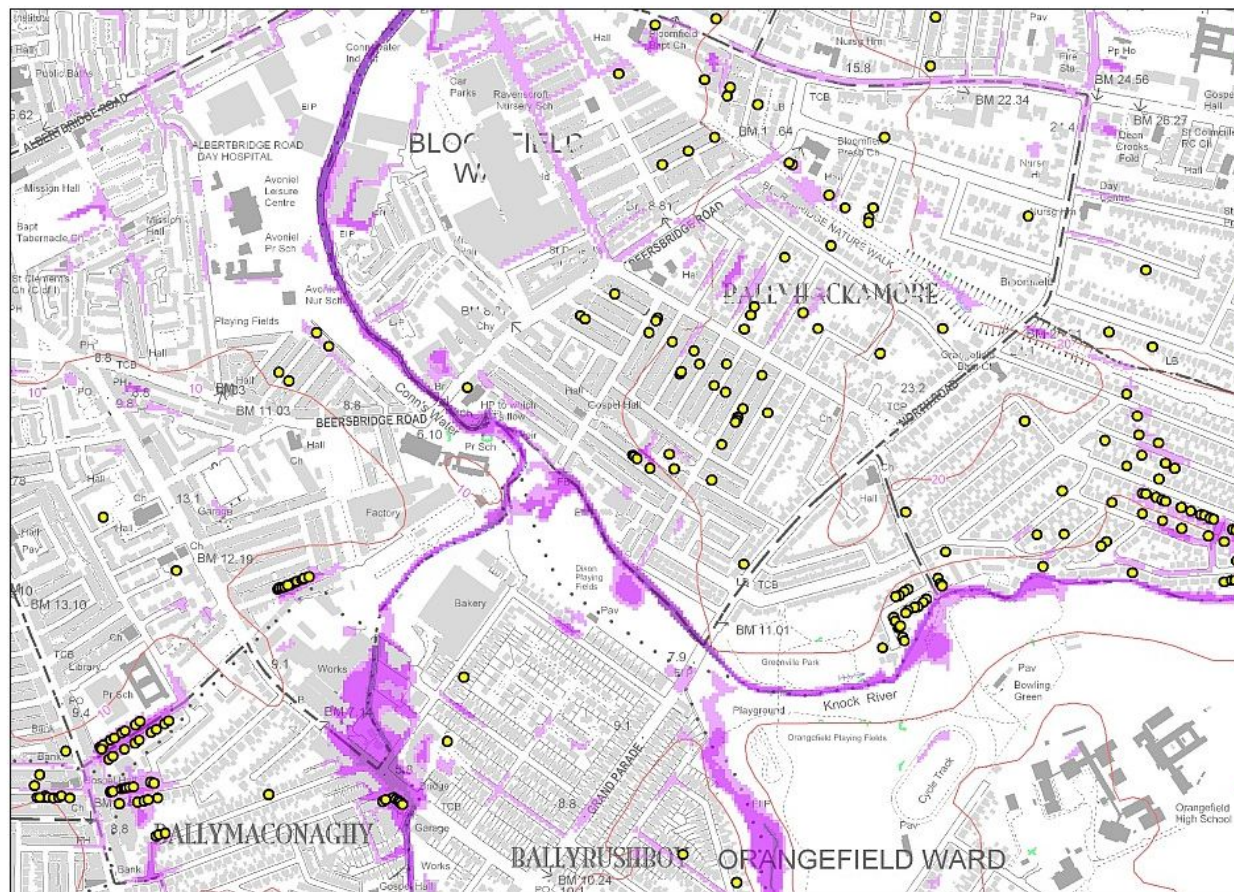


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Version 2





Conclusion

- Understand the purpose of the map
 - Strategic
 - PFRA
 - Conservative
 - Less detail model
 - Detailed
 - Land Use Planning
 - Determine level of risk
 - Complex and costly model



Conclusion

- Level of Risk
 - Too high
 - Property or land Blight
 - Un-necessary panic or alarm
 - Too low
 - False comfort
 - Discredit map in the event of a flood
- Need an industry standard





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Thank You



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