Planning for stronger, more resilient floodplains

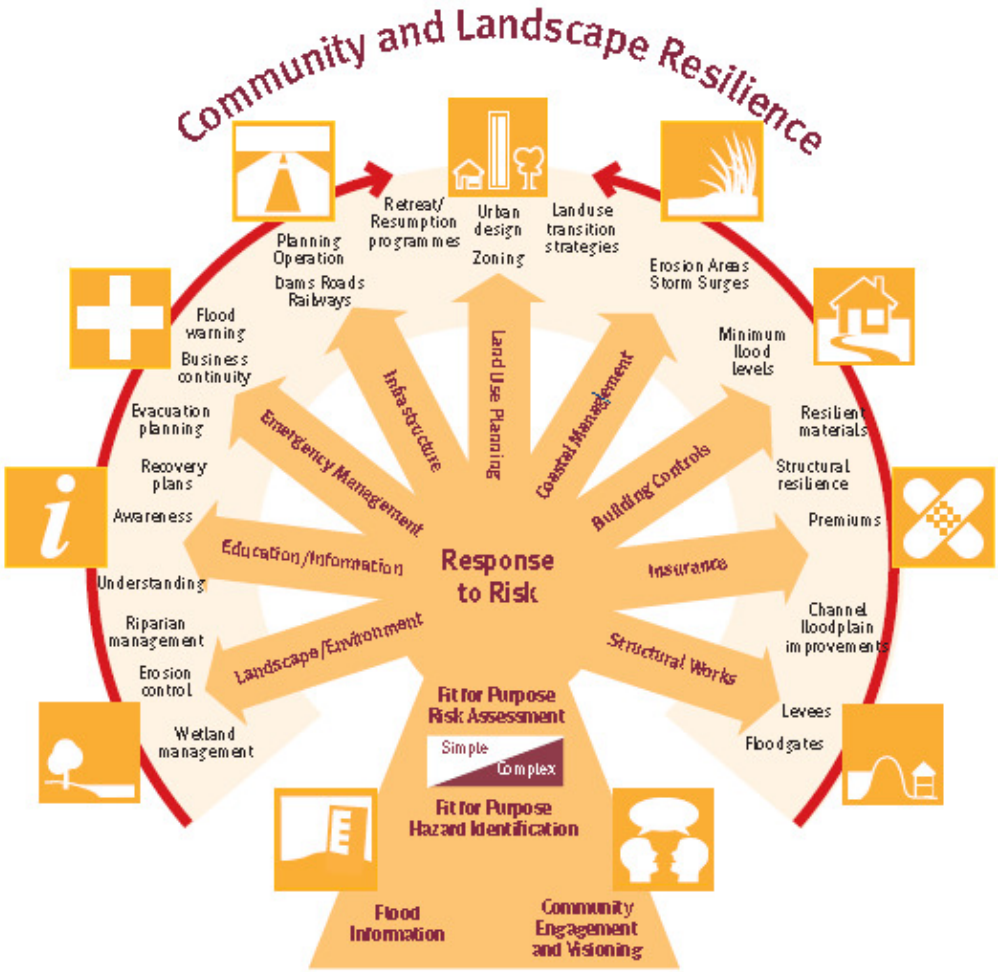
Floodplain Mapping

Graeme Milligan, General Manager – Environmental Liaison

WHY

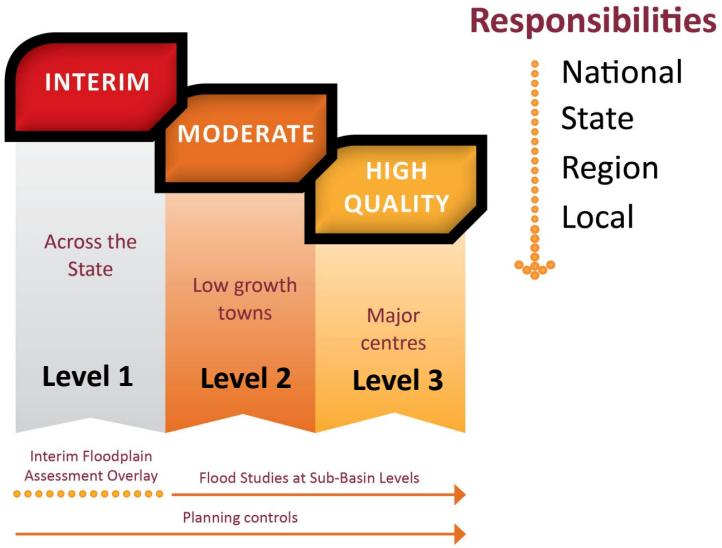
An Integrated Approach across a range of disciplines

- Users' needs
- Response to risk
- Risk Assessment
- Hazard Identification
- Available info / data



Purpose of Flood Mapping

- **To identify the locations of our floodplains to better inform and influence land use planning and environmental management**
- **Fit for purpose approach to level of mapping required**
- **To show extent of flooding and characteristics - hazard, depth and velocity**
- **Consistent with State Government Implementation as per the Queensland Floods Commission of Inquiry**



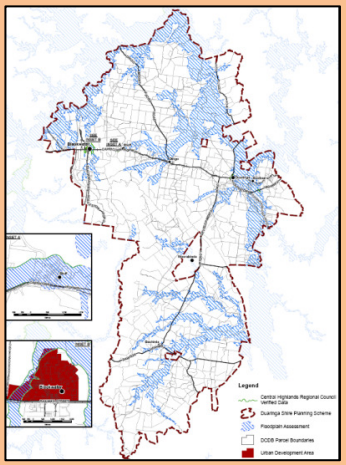
Not all parts of Qld need a comprehensive flood study.

CoI Final Report, March 2012, pg 54

Flood Investigation Guidance

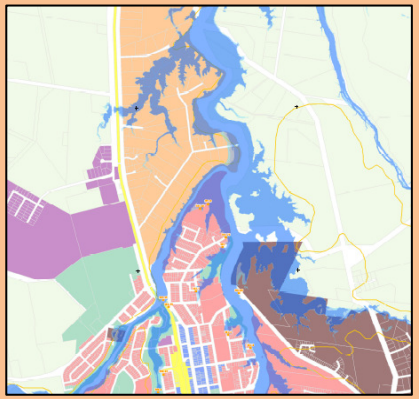
Level 1
INTERIM
As per Part 1 Guideline

Locally Verified QldRA mapping
+
Flood Level investigations
=
Areas of Inundation + Local flood



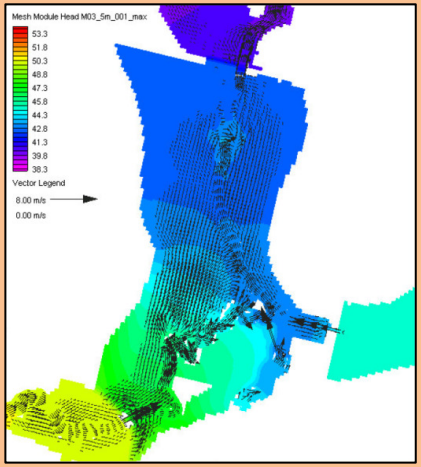
Level 2
MODERATE
Mid-level Investigation

Standard Data Inputs
+
Flood Frequency Analysis
=
Basic Hazard Mapping, incl. height & velocity + AEPs



Level 3
HIGH QUALITY
Comprehensive Flood Study

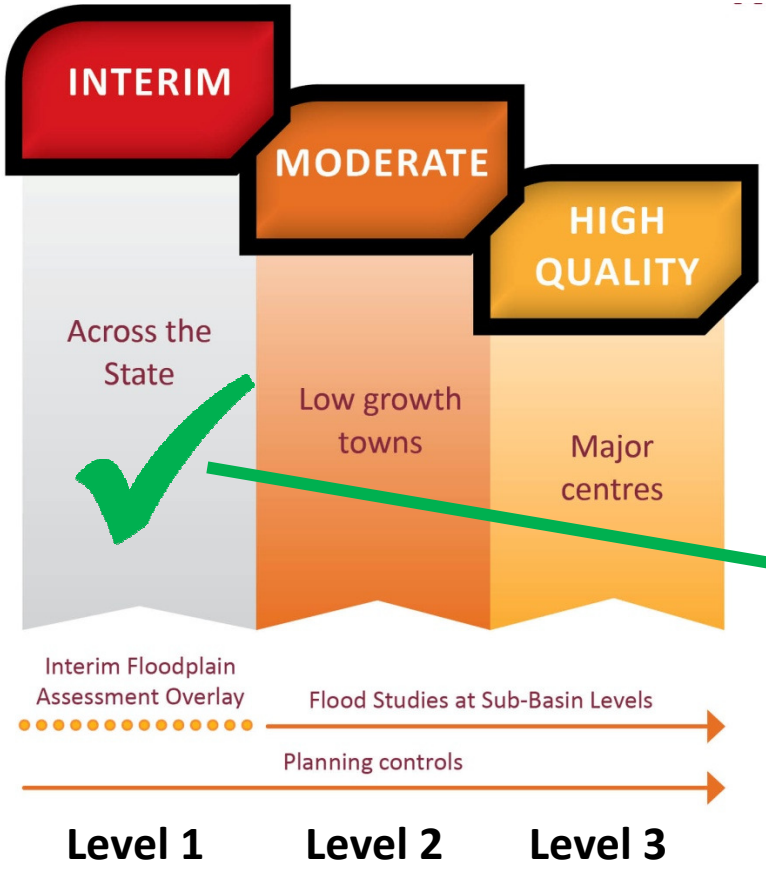
Detailed Data Inputs
+
Computer Modelling
=
Detailed Information, incl. Hazard Mapping + AEPs



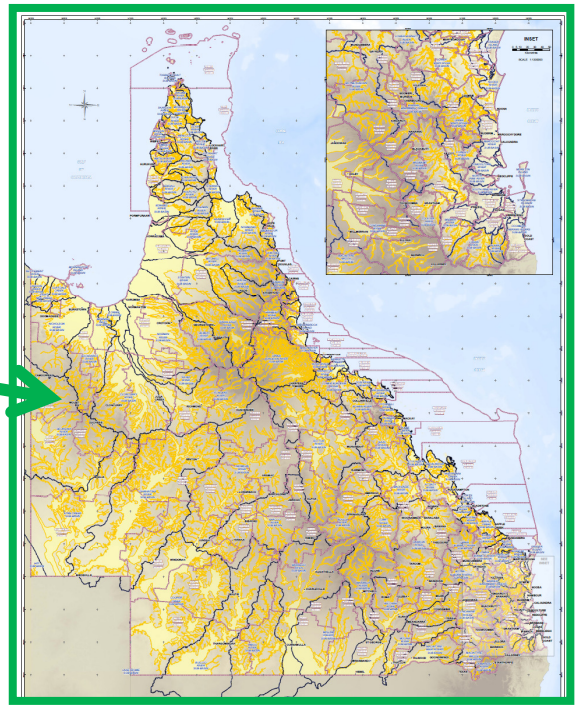
***Local Governments select the combination of flood investigations appropriate for their circumstances**

Level 1 – State-wide floodplain mapping

STATUS - DELIVERED



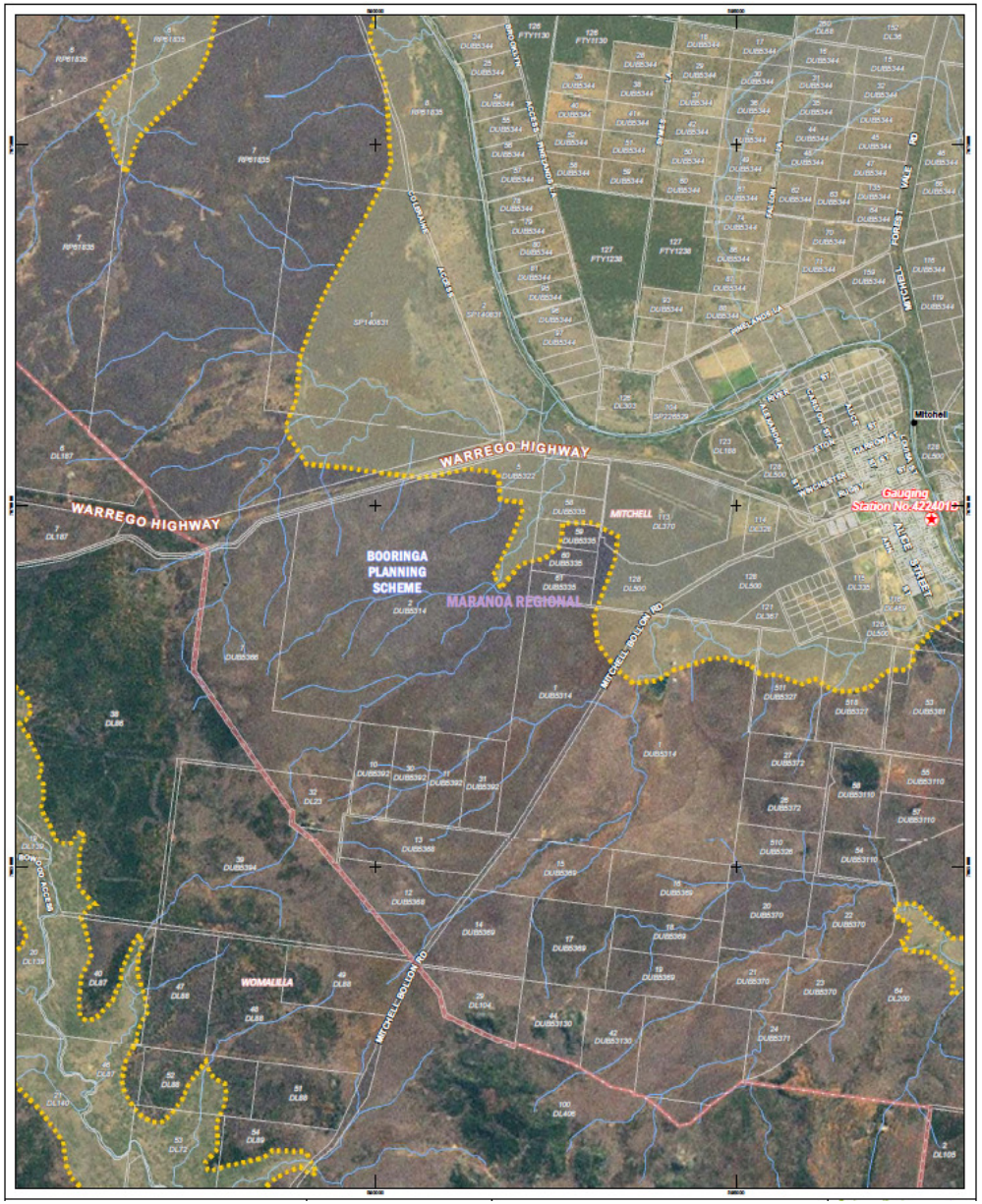
- Good initial identification of hazard
- Uses a broad range of datasets to show potential hazard
- Preliminary product which can be easily adopted



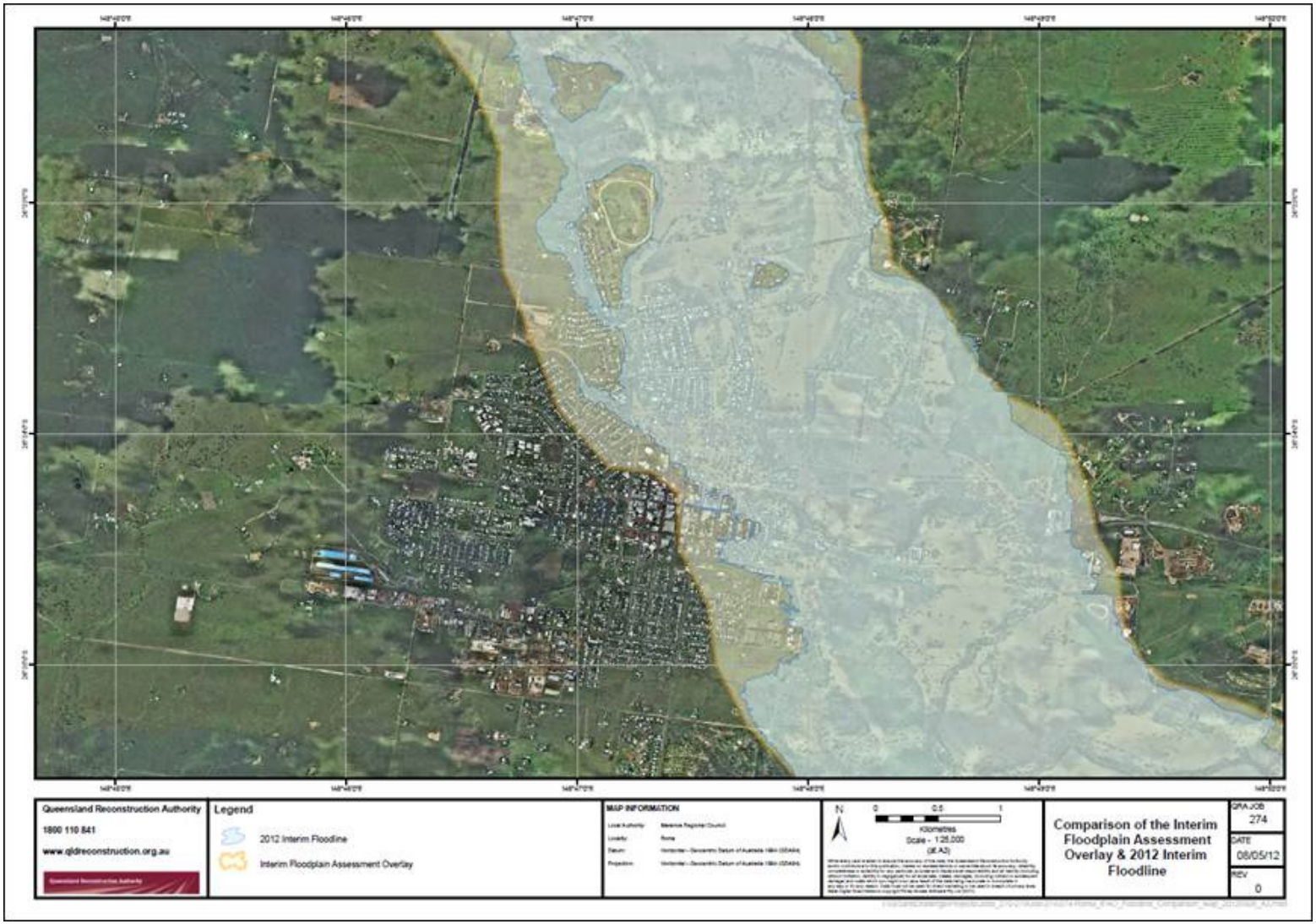
State-wide catchment based maps of Queensland Floodplains being used to understand potential flood hazard and areas for further investigation

Level 1 - State-wide

- 129 Sub-basins across Queensland
- 118 sub-basins have been mapped to date (within 8 months)
- In total 99.3% of the State has been assessed for floodplains
- 26.6% identified within a floodplain
- 8,875 map pages produced to date (A3 @1:50,000 scale)
- Over 450,000km^2 identified as part of Interim Floodplain Assessment Overlay from these 118 river sub-basins

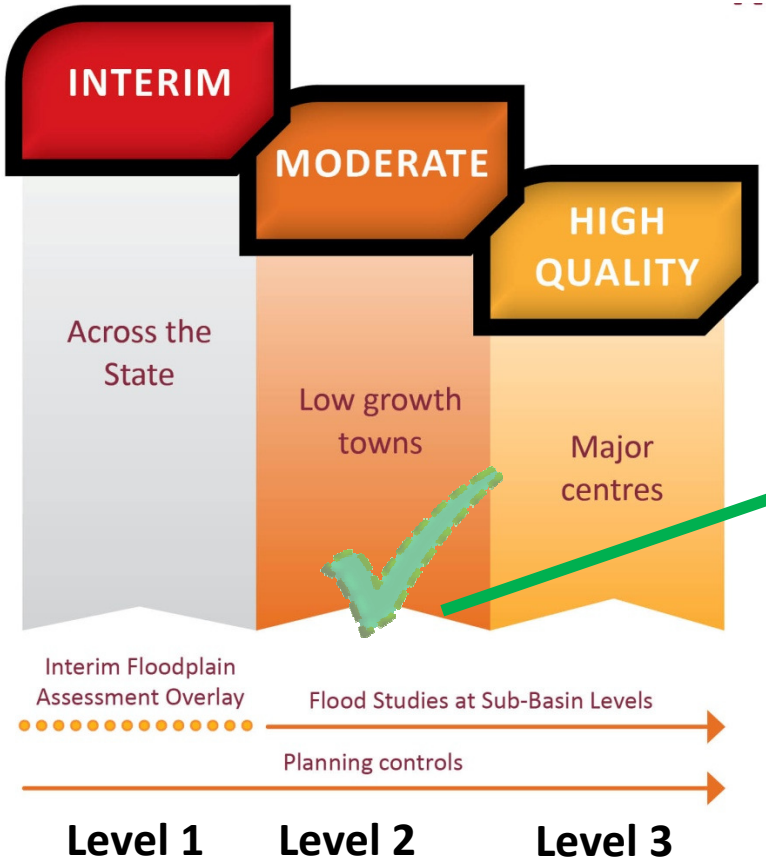


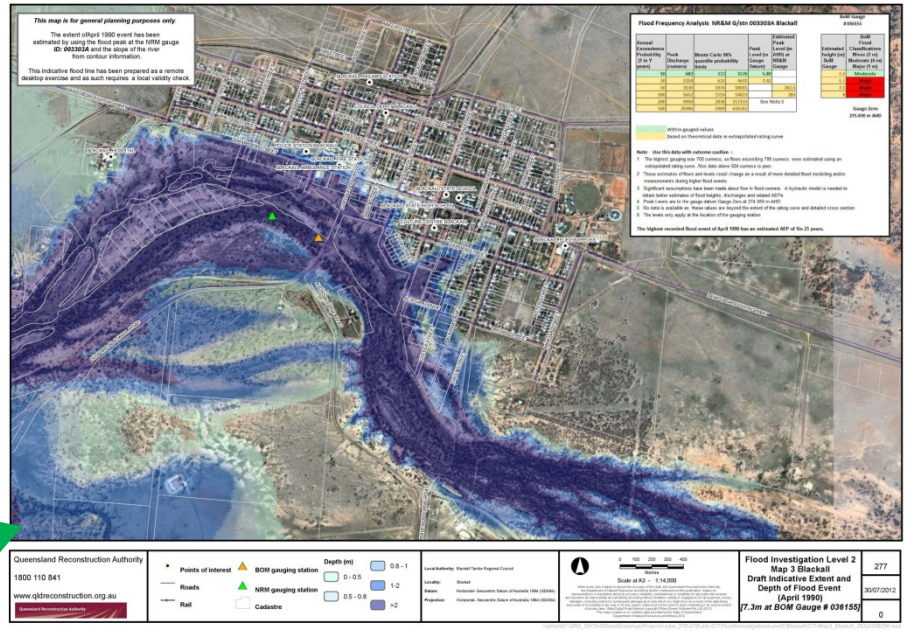
Comparison of IFAO to 2012 Floodline – Roma



Level 2 – Flood investigations for key towns

STATUS - UNDERWAY





Flood investigations being delivered for BoM identified towns across Qld. Investigations result in hazard maps that can be used for land use planning and emergency management purposes

Level 2 investigations

- Utilising various existing datasets including contour information, DEM and stream flow data
- Perform Flood Frequency Analysis to understand AEPs for different historic events
- Enables flood(s) to be selected and investigated
- Apply flood slope calculated from event data – using GIS-based techniques
- Add velocity information where it exists
- Delivers a flood hazard map
- Meets Commission of Inquiry recommendations
- Cost effective around <$20k per investigation (St George Pilot - $13k)

Level 2
MODERATE
Mid-level Investigation

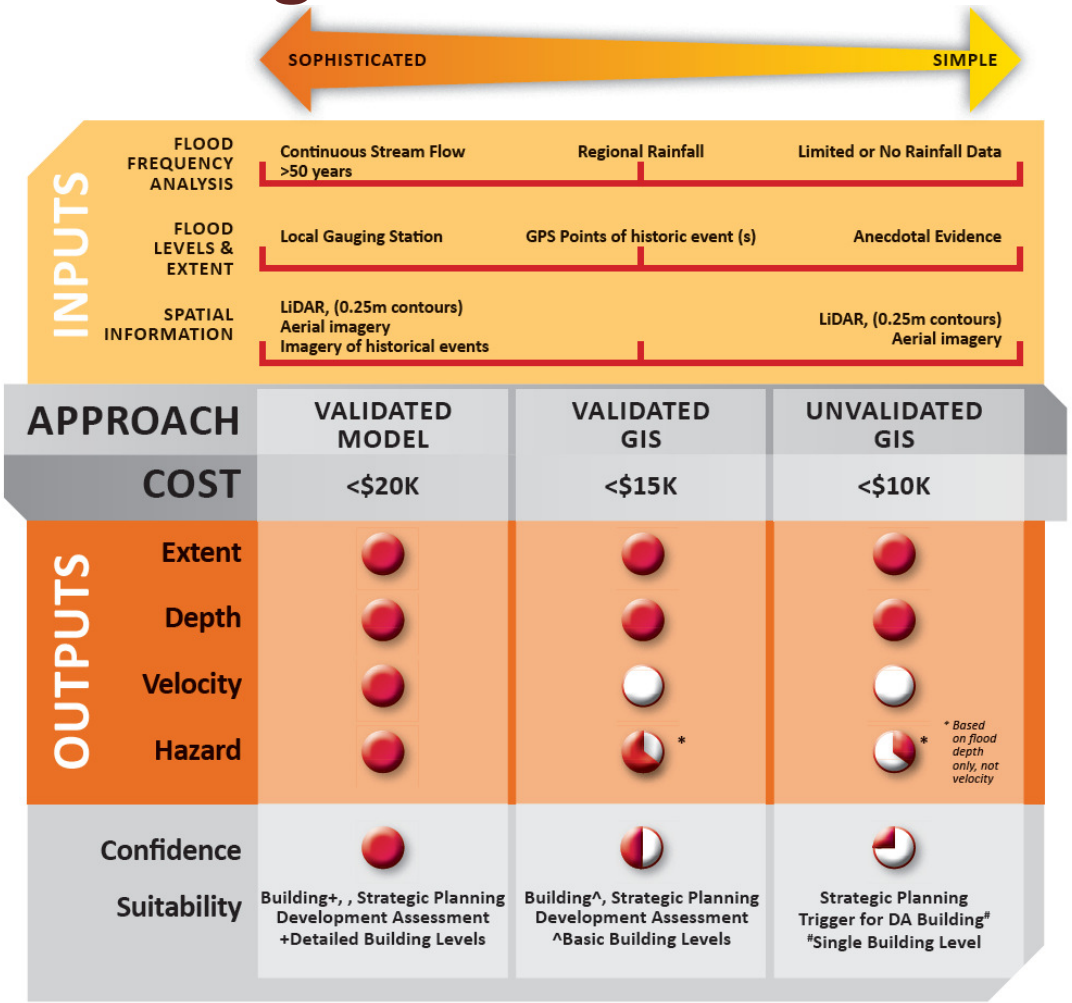
Standard Data Inputs
+
Flood Frequency Analysis
=
Basic Hazard Mapping, incl. height & velocity + AEPs

It is not feasible, nor is it necessary, for sophisticated flood mapping to be completed on a state-wide basis.

CoI Final Report, March 2012, pg 67

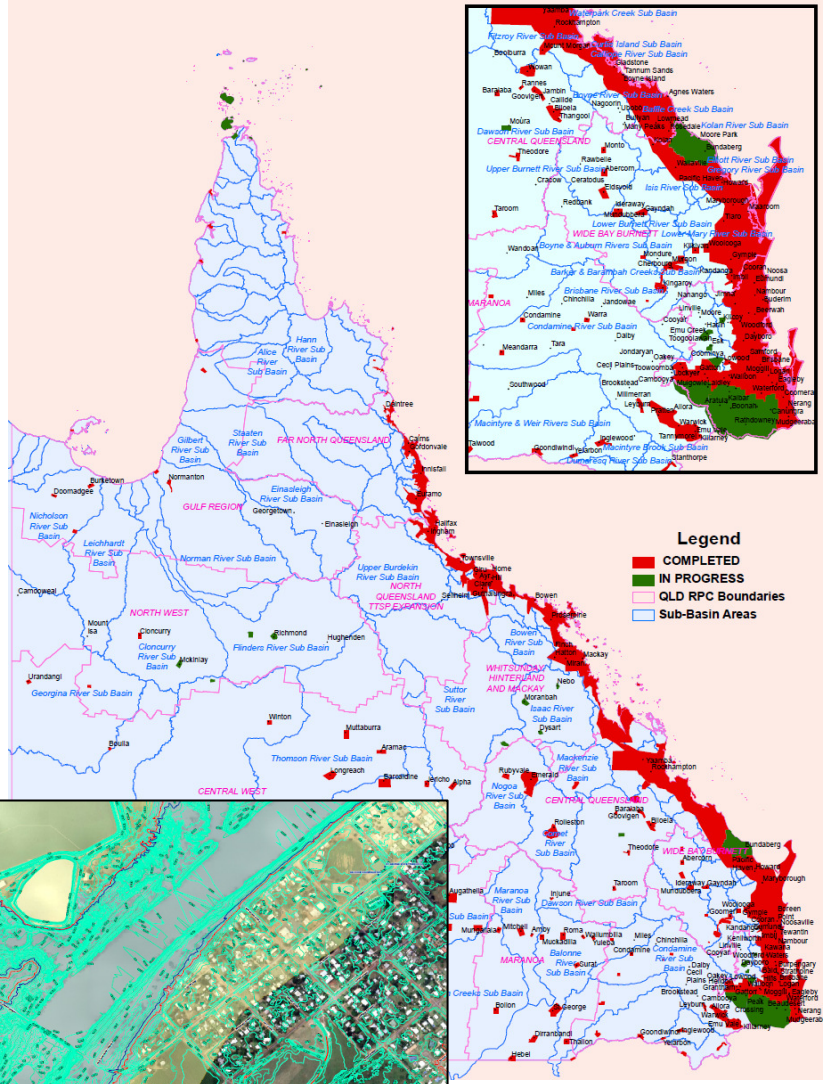
Types of Level 2 Flood Investigations

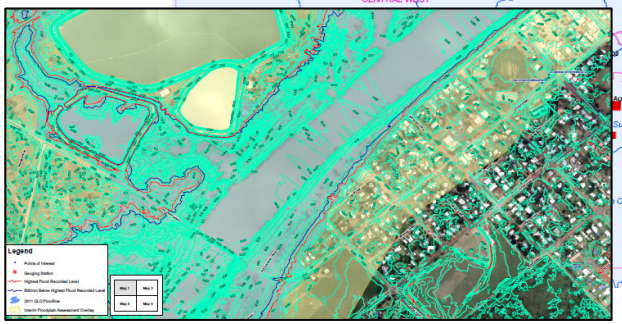
- Approx. 140 towns identified (to date) based on BoM flood prone towns that could be delivered – This number will increase with additional LiDAR coverage
- Towns cover 45 Local Government Areas Cost Estimate - $12-15k per Investigation
- 6 month program for up to 100 towns to be delivered by QldRA and Industry
- 20 Level 2s have been completed in-house
- Up to 100 towns completed by 31 January 2013

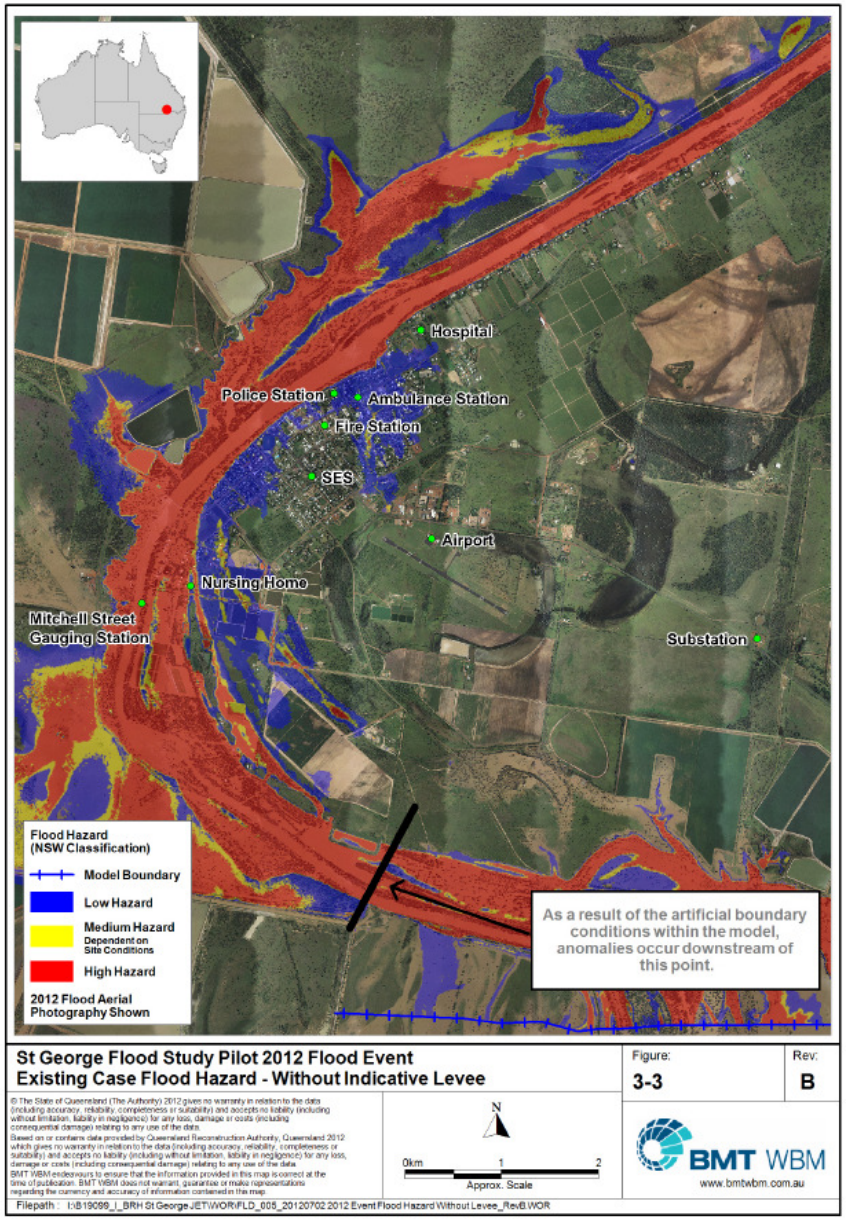


LiDAR Capture

- Many townships still only have 10m contours
- LiDAR can deliver 0.25m contours, DEM and aerial imagery
- Core “ingredient” to Level 2
- Inland towns project has seen 80+ towns captured
- Further 60 currently underway based on BoM identification
- Further approx. 80 towns still required – up to $1m.
- Supports hazard mapping and emergency management
- Substantially reduces cost of studies ie. by 30% +







Flood Study Pilot for Township of St George

2012 Event – Without Indicative Levee

BMT WBM

TUFLOW

Level 2 – Validated Model : Condamine-Balonne Basin

Flood Study Pilot – Condamine-Balonne Basin

Extreme Flood Event (120 hours storm)

Flood Water Depth (metres)

BMT WBM

TUFLOW
Flood and Tide Simulation Software

Example of Level 3 - Modelling

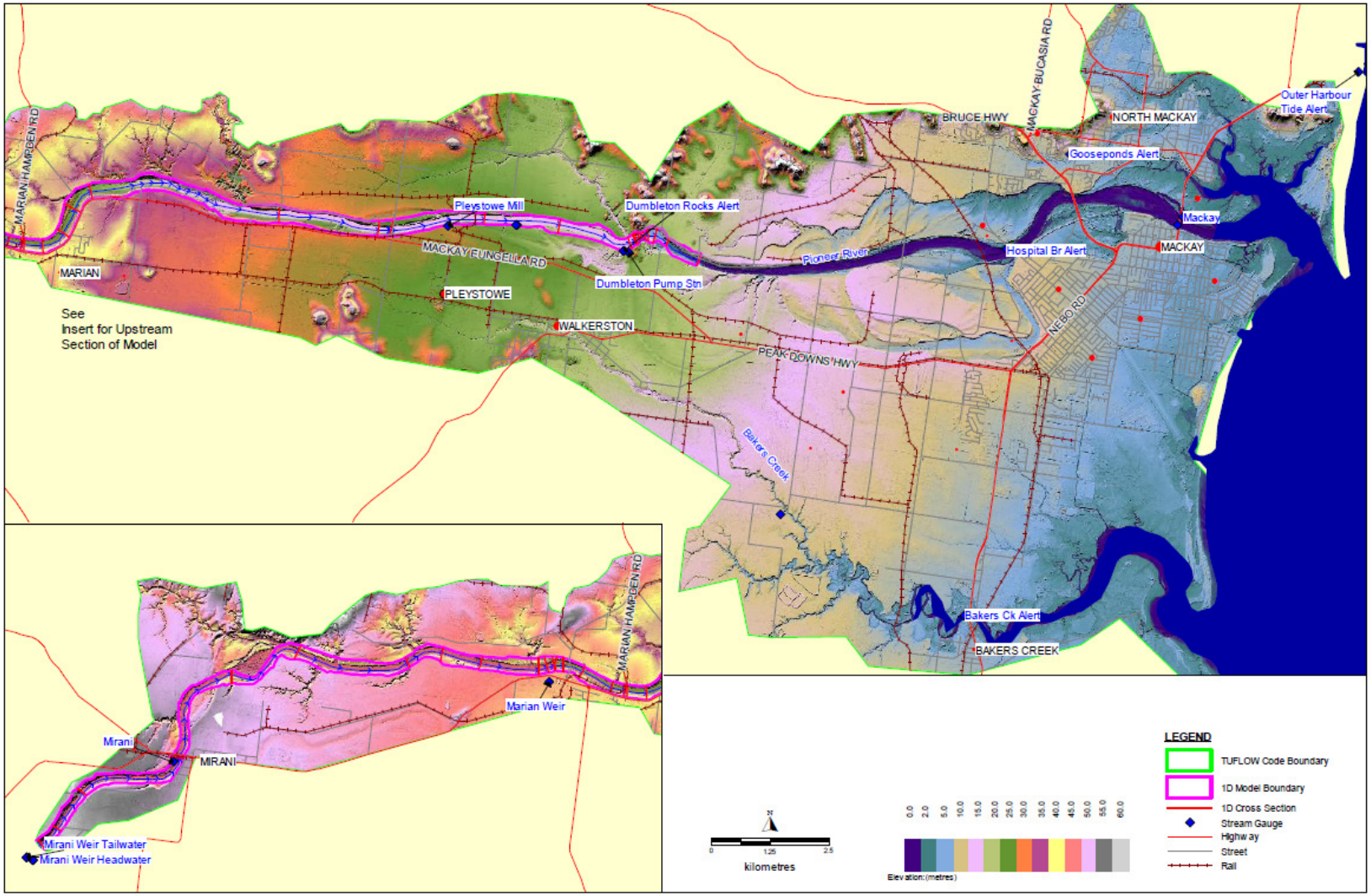
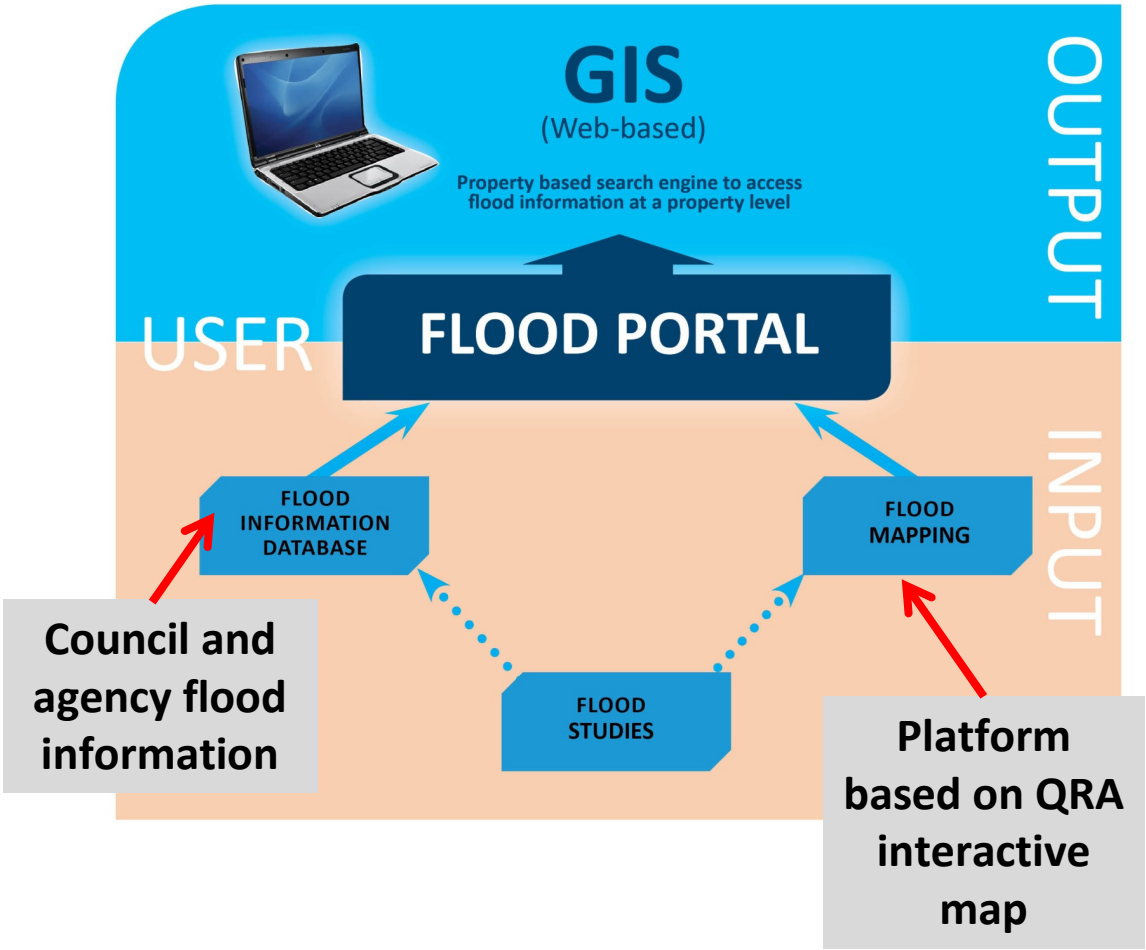


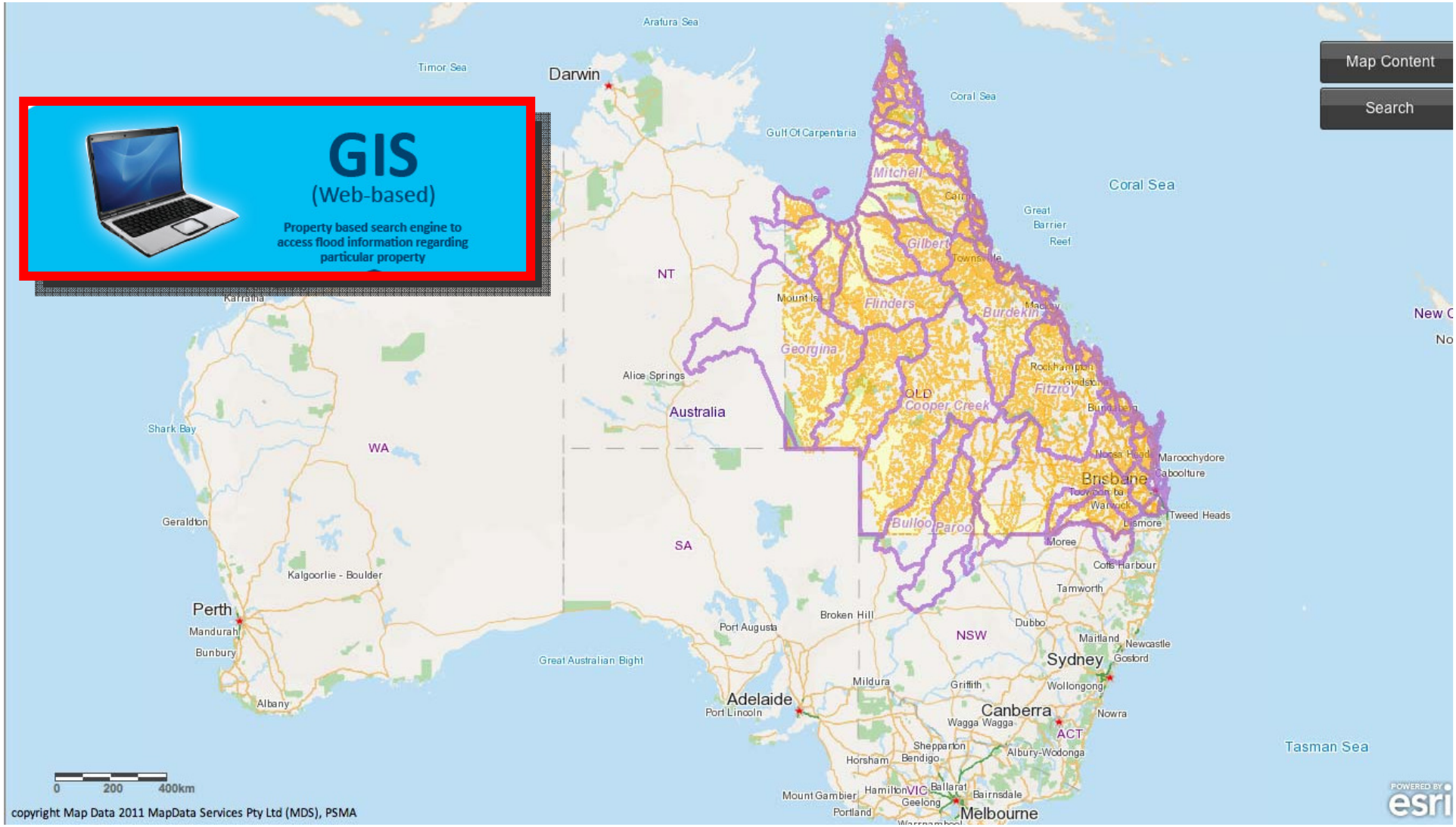
Figure 5.1 Configuration of Pioneer River TUFLOW Model

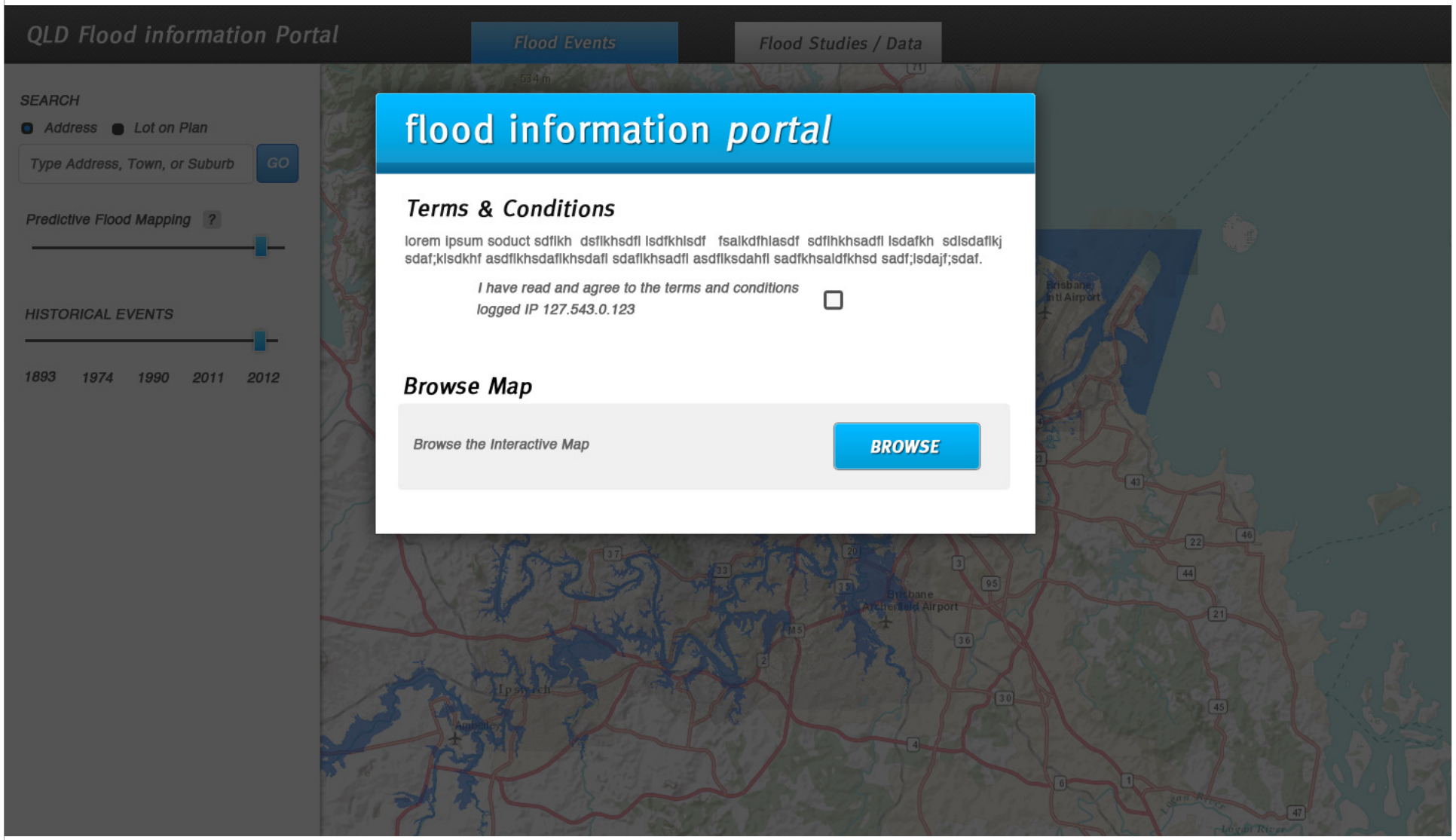
Qld Flood Portal

- QFCoI recommendations 2.11, 2.16 and 2.19 relate to a repository of flood data, publication of flood information and flood property flag
- QRA developing the **Qld Flood Information Database** which will be a collated of existing flood information across the State
- QRA also developing **Qld Flood Information Portal** which will draw information from the database and display in a GIS web-based application



Qld Flood Information Portal




QLD Flood information Portal
Flood Events
Flood Studies / Data
SEARCH
Address
Lot on Plan
Type Address, Town, or Suburb
GO
Predictive Flood Mapping
?
HISTORICAL EVENTS
1893
1974
1990
2011
2012
flood information portal
Terms & Conditions
lorem ipsum soduct sdflkh dsflkhsdfl lsdfkhlsdf fsalkdfhlasdf sdflhkhsadfl lsdafkh sdlsdaflkj sdaf;klsdkhf asdflkhsdaflkhsdafl sdaflkhsadfl asdflksdahfl sadfkhsaldfkhsd sadf;lsdajf;sdaf.
I have read and agree to the terms and conditions
logged IP 127.543.0.123
Browse Map
Browse the Interactive Map
BROWSE

Queensland Reconstruction Authority

QLD Flood information Portal

Flood Events | Flood Studies / Data

SEARCH

Address Lot on Plan

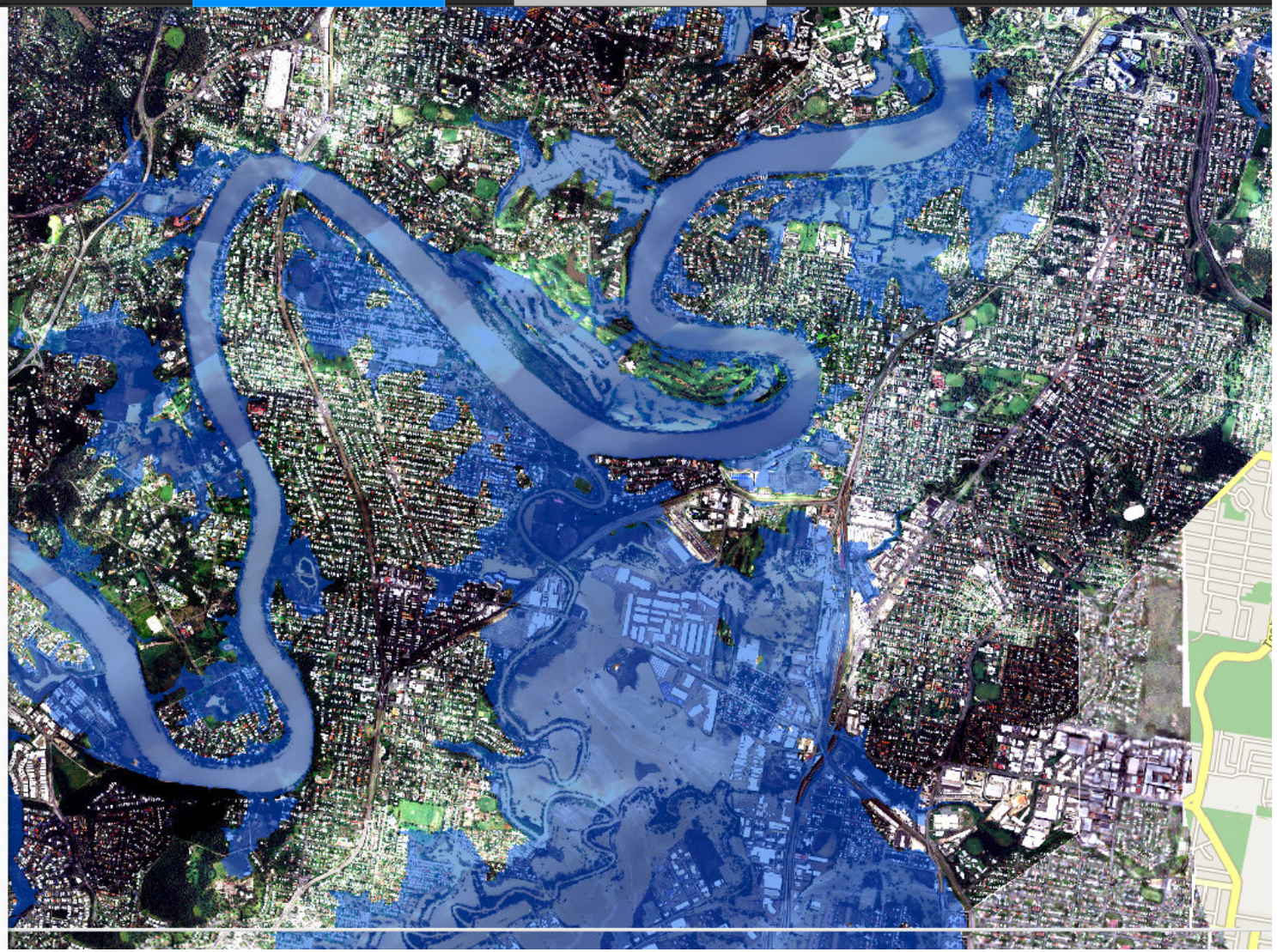
Type Address, Town, or Suburb GO

Predictive Flood Mapping ?

HISTORICAL EVENTS

1893 1974 1990 2011 2012

COMPILE SELECTED DATA INTO REPORT



QLD Flood information Portal

Flood Events

Flood Studies / Data

SEARCH

Address Lot on Plan

Type Address, Town, or Suburb GO

SELECT AREA GO

Predictive Floodplain Mapping

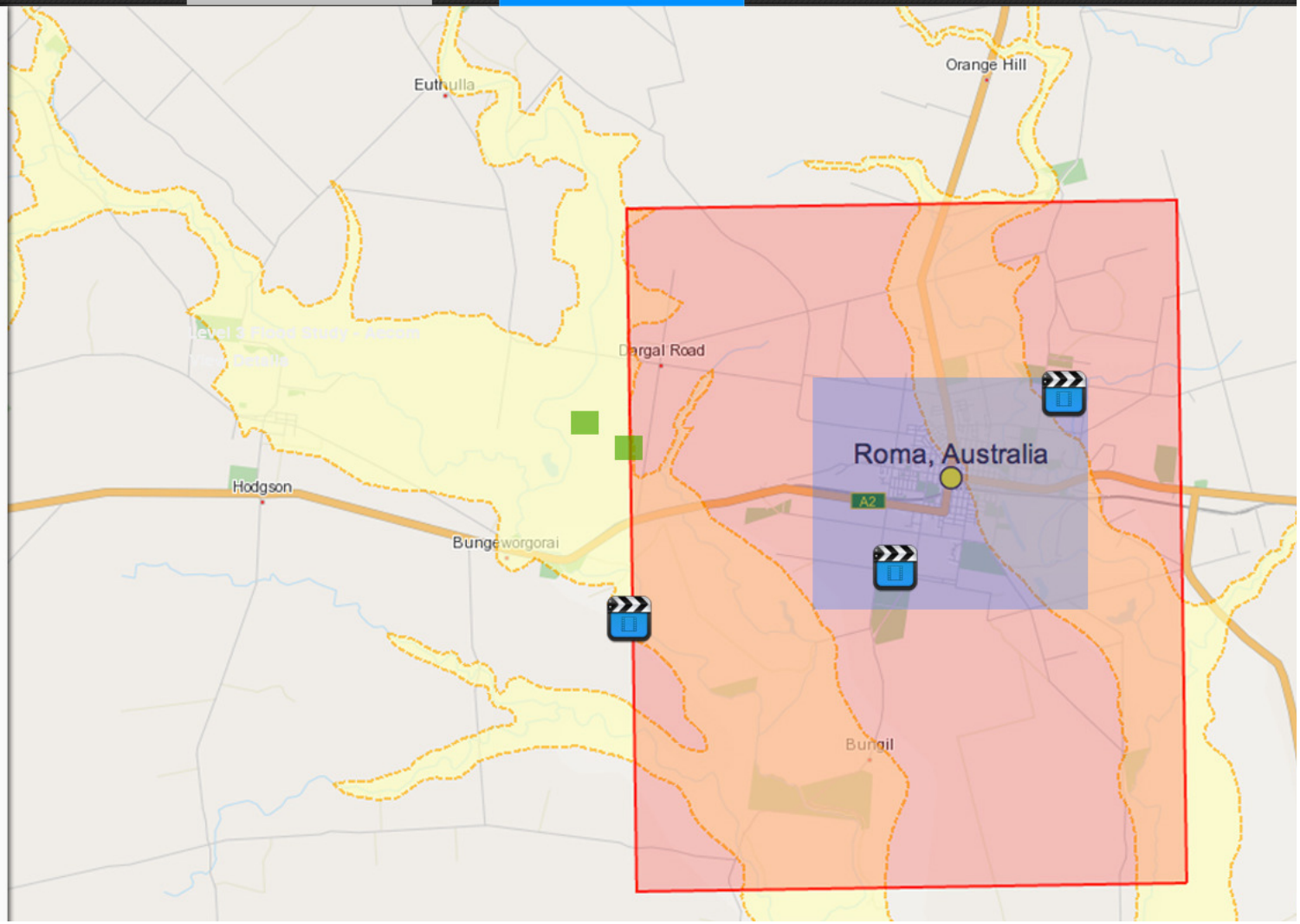
Town Area Flood Studies

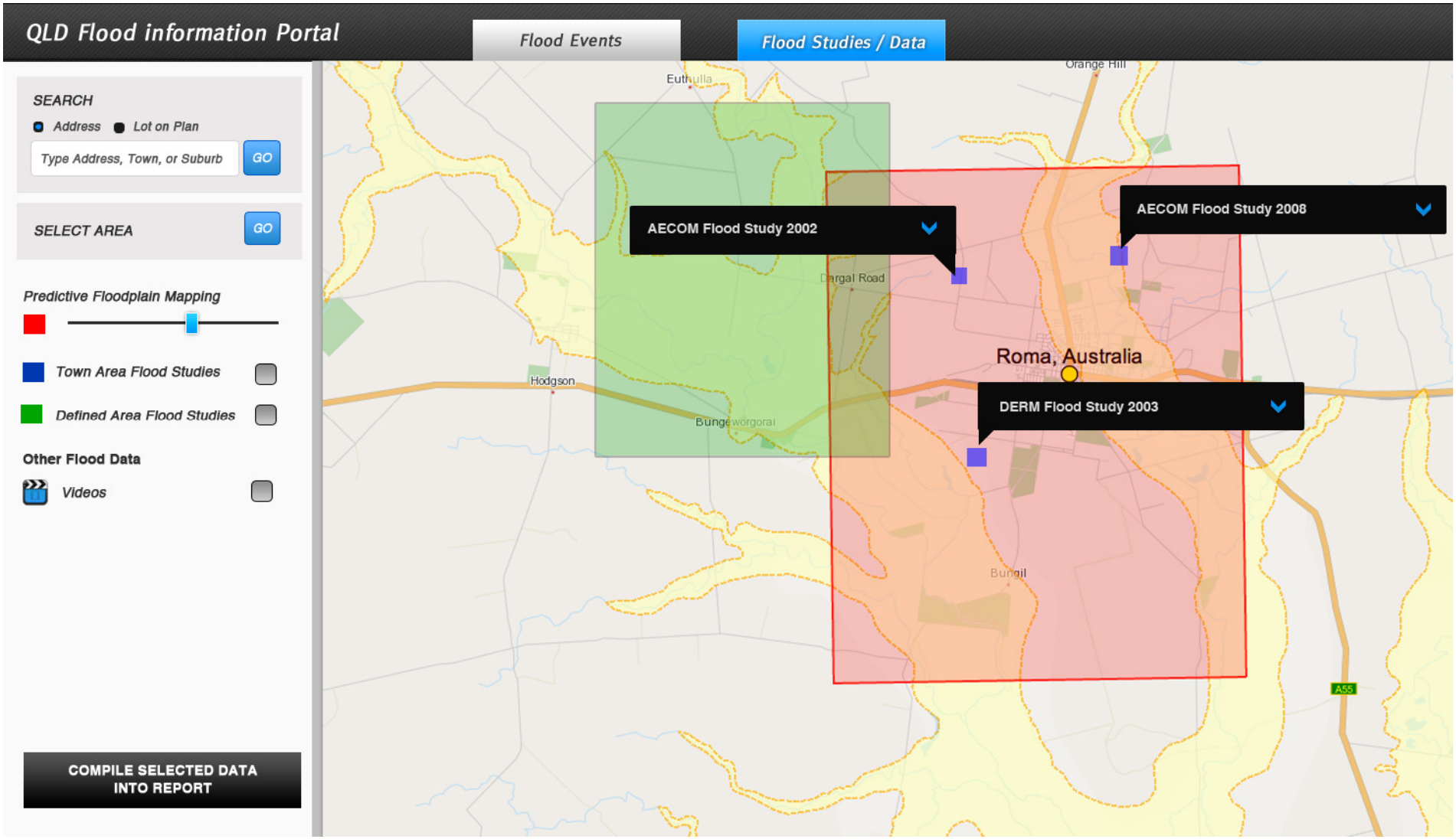
Defined Area Flood Studies

Other Flood Data

Videos

COMPILE SELECTED DATA INTO REPORT




QLD Flood information Portal
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COMPILE SELECTED DATA INTO REPORT
Euthulla
Orange Hill
AECOM Flood Study 2002
AECOM Flood Study 2008
Dargal Road
Roma, Australia
Hodgson
DERM Flood Study 2003
Bungeworgorai
Bungil
A55

Queensland Reconstruction Authority

QLD Flood information Portal

Flood Events | Flood Studies / Data

SEARCH

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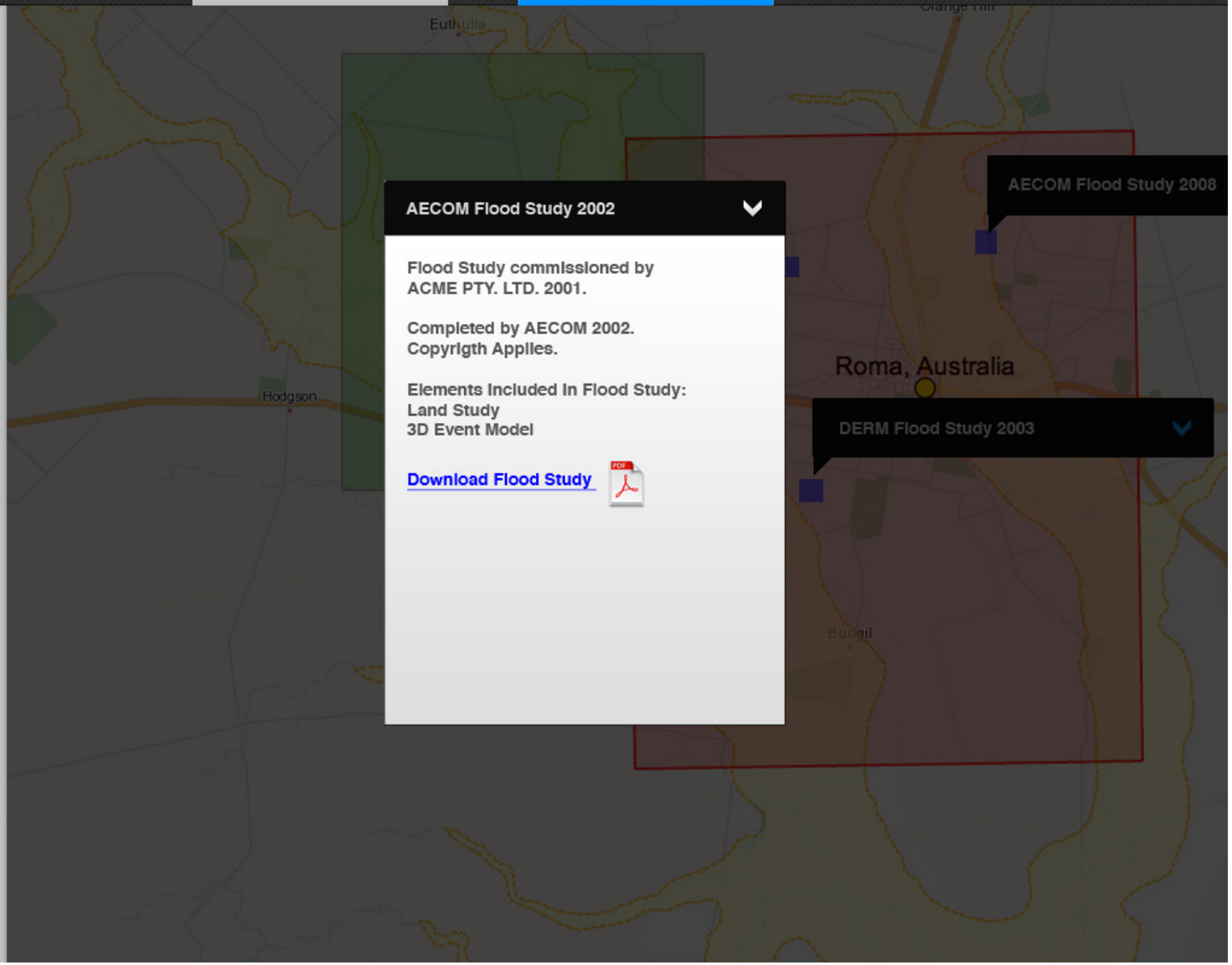

AECOM Flood Study 2002

Flood Study commissioned by ACME PTY. LTD. 2001.

Completed by AECOM 2002. Copyrigth Applies.

Elements included in Flood Study:
Land Study
3D Event Model

Download Flood Study

QLD Flood information Portal

Flood Events

Flood Studies / Data

SEARCH

Address Lot on Plan

Type Address, Town, or Suburb GO

SELECT AREA GO

Predictive Floodplain Mapping

Town Area Flood Studies

Defined Area Flood Studies

Other Flood Data

Videos

COMPILE SELECTED DATA INTO REPORT

Flood Information Report

Address/Lot-Plan/Area

165 James street.
NEW FARM 4005 QLD.

This area has the following flood infromation available.

Information available from this portal

State-wide Overlay
Brisbane City Flood Study (2001)
Brisbane City Flood Study (2000)
Brisbane Interim Flood Lines 2010/2011 Event

Download PDF Report including these details

Other Information Available from local government

Brisbane Floodwise report.

Information Available from QGIS Queensland.

Brisbane DEM

Information Available from Other Organisations

James St study, AECOM (1998)