



DRAFT MINUTES

Meeting held from 9:00am on Tuesday 9 August 2022 at the Clarence Valley Council Maclean Chambers, 50 River Street, Maclean.

ITEM 1 INTRODUCTION: WELCOME AND APOLOGIES

Meeting opened at 9:00am by Cr. Novak with an acknowledgement of country paying respects to past, present and emerging elders from the Bundjalung, Gumbaynggirr and Yaegl people.

Attendance:

Voting: Cr Debrah Novak, Cr Ian Tiley (alternate), Andrew Skinner, Danielle Adams, Deanna Fernance, Desmond Harvey, Ross Farlow, Stephen Madden, Tim Small, Sue Chapple (arrived 09:02)

Observers: Cr Steve Pickering

DPE: Toong Chin

CVC Officers: Bligh Grant, Greg Mashiah, Peter Wilson, Laura Black, Robyn Monk; Jamie Fleeting, Murray Lane

Presenters: Barry Rodgers – BMT (Online); Eoghain O'hanlon, Sam Andrews and Dan Rodgers – JBPacific (Online)

Apologies received from:

Name	Committee Role	Organisation / Role
Nathan Cameron	Committee member	Community member

Quorum: 7 (currently 12 members).

Total Members at todays CV FPRMC: 9 Quorum reached – **Yes /No**

Council's Governance Officer Bligh Grant outlined to the Committee its Terms of Reference, the Advisory Committee Handbook and Code of Conduct and that the advisory committee page for the FRMC is on Councils website at -

<https://www.clarence.nsw.gov.au/Council/Governance-and-transparency/Committees/Advisory-Committees/Floodplain-Risk-Management-Advisory-Committee> .

ITEM 2 DECLARATIONS OF INTEREST

- Nil

ITEM 3 CONFIRMATION OF PREVIOUS MINUTES

MOTION: That the minutes of the Clarence Valley Floodplain Risk Management Committee meeting of 21st June 2021 be confirmed.

Moved: Ross Farlow Secoded: Desmond Harvey CARRIED.

ITEM 4 BUSINESS ARISING FROM THE MINUTES

Items from last meeting not discussed elsewhere include:

- Letter to State Government regarding recurrent floodplain maintenance funding – letter from Mayor to Minister Tuckerman was included in the agenda.

- *Progress on changes requested to the Local Government Act – Council report 07.22.026 was included in the agenda.*

Des Harvey enquired what representations had been made to Local Member Chris Gulaptis MP regarding these issues? Cr Tiley has advised that he has informally raised the maintenance funding matter with Chris Gulaptis, and the General Manager advised that the resolution regarding changes to the Local Government Act included making representation to Chris Gulaptis and a letter was sent.

MOTION: *That the matter of floodplain maintenance funding be formally raised with Local Member Chris Gulaptis MP.*

Moved Des Harvey, Seconded Tim Small CARRIED

ITEM 6 UPDATING THE CLARENCE RIVER FLOODPLAIN RISK MANAGEMENT PLAN

Barry Rodgers (BMT Global) gave the attached PowerPoint presentation to the committee.

Questions and comments from the Committee:

- *Ross Farlow – what consideration is given to river siltation in the 1 in 100-year event? BR – the model relies on the latest bathymetry data at a point in time; rivers are dynamic and big floods do scour some of the siltation. There can be a sensitivity test with higher bed levels to test siltation as part of scenario testing.*
- *Cr Tiley – the JRPP is considering two major residential developments on the floodplain. How can the models assist Council staff with assessing the developments? BR – the modelling should be completed within 3 weeks and can be used to assist Council assess floodplain development.*

ITEM 5 WOOLI FLOOD STUDY AND FLOODPLAIN RISK MANAGEMENT PLAN

Dan Rodgers (JBPacific) gave the attached PowerPoint presentation to the committee.

Questions and comments from the Committee:

- *Cr Tiley – what consideration has been given to frontal dune erosion? DR - This has not been considered in the flood study but is being considered as part of the Coastal Management Program Stage 2 Hazard Study.*
- *Peter Wilson – could a redesign of the river outlet improve sand nourishment on the beach? DR – this would likely need shortening of the training walls which would be a very costly option.*
- *Murray Lane – any comments on evacuating high risk people from Woolli rather than sheltering in place? DR – this is an issue for emergency managers. There are four bridges which are cut so road evacuation is difficult and consideration of options such as a helipad may need to be considered as a possible option in the adopted plan.*

(Laura Black and Bligh Grant left the meeting)

ITEM 7 2022 FLOODS DISCUSSION

- *Committee members outlined their experiences from the flood event.*
 - *DF – long duration floods have a significant impact on farmland; flood preparedness needs to be adaptable as an aging population means that different approaches are required to historic plans.*
 - *TS - how does flood forecasting interact with people's expectations and knowledge of the impact on their individual properties, particularly regarding evacuation of commercial areas?*

- RF – the cane industry has held numerous meetings with Ministers regarding floodplain drainage. John Cullerton has been engaged by the State Government to facilitate removal of “red tape” for maintaining flood infrastructure. The community needs to take “ownership” and responsibility of information provided in flood warnings.
- AS – there is a lot of damage to floodplain infrastructure (drains and floodgates).
- DH – ponding has been an issue on the southern side of the new bridge. Education is an issue – new residents are not aware of floods and do not realise what might happen and what action they need to take. There are lessons learned from Lismore that businesses need to be taken into consideration.
- SM - there were two issues in Iluka – water coming down the river and local stormwater flooding. The RFS was tasked with evacuation as there was no SES, and only around 50% of the community evacuated. Evacuation centres do not facilitate evacuation of elderly people.
- DA – capacity of businesses to recover – with the highway blocked north and south food services were an issue. Cr Novak advised Clarence Food Security Inc is raising food security.
- SP – community awareness is an issue – people who were being informed of evacuation warnings were ignoring the warnings (and even drinking alcohol) which would be an issue if they needed to be rescued; BoM warning indicating “similar to March 2021” caused confusion; people and pets entering floodwaters caused illness; levee heights at Ulmarra are inconsistent – there were two flood peaks in Ulmarra – one from the levee overtopping and one from the Coldstream River; damage to properties take a long time; there is no funding for resilience activities
- SC – a significant issue is people not taking early action to protect their property contents. SES focus is on community education – transitioning to national warning system (like RFS for bushfire). Community education is the key for preparing people for flooding.
- TC – Lismore flood was 2 metres higher than 1% flood. Need to focus on message that floods which are larger than 1% can occur. State floodplain program – grants will be called in February. Northern Rivers Reconstruction Corporation (NRRC) – will be holding meetings following release of flood inquiry.
- GM – summarised CVC’s operational flood response. Significant ponding in Maclean and Grafton were from rainfall exceeding pump capacity (gravity drainage could not work due to elevated river levels). There were similar drainage issues in Yamba – over 522mm of rain was recorded in 24 hours which has a greater than 200 year return interval. As shown in the BMT presentation the river level at low tide was above the spring high tide level so gravity drainage could not work and rainfall ponded until the river dropped. Ponding at Yamba and Iluka was exacerbated by high groundwater – groundwater monitoring at Iluka has been in place since 2009 and indicated levels up to 1.5m higher than had previously been recorded.

(Cr Tiley and Murray Lane left the meeting)

ITEM 8 CVC UPDATES

Greg Mashiah updated the Committee on the following issues:

1. Progress with the prioritisation list for Floodplain projects adopted by Council at its meeting of 25 August 2020 (copy was attached to agenda) – An application has been submitted under the State floodplain program for Esk River Flood Monitoring; the Maclean levee project was identified in CVC’s “Major Project” list as third priority; as outlined below Federal funding has been received for the Alice Street levee project; consolidation of the

Floodplain Risk Management Plans is being undertaken using the NDRA Part D funding (the Flood Study update being undertaken by BMT is the first stage of this update).

2. Voluntary House Raising – currently 60 properties have expressed interest; 10 houses are ineligible for house raising due to hazard rating; statewide funding program will likely provide funding for only 2 to 3 properties per annum.
3. Alice Street Levee – Funding under the Federal National Flood Mitigation Infrastructure Program 21-22 has been allocated but a formal offer is yet to be received by Council.
4. NDRA Part D funding projects – Council allocated \$1 million of funding at its April 2022 meeting. Progress with the Flood Study was outlined in the earlier presentation; Bacon Street pump has been ordered; Ardent Street pump will be ordered soon; Yamba Road flood immunity is currently being investigated; Iluka flood improvements are currently being investigated.
5. CLIRP Grant Application for improving Wherrett Park flood resilience – a grant announcement is imminent. This project proposes improving the pumping capacity at Wherrett Park to reduce the duration and depth of inundation.
6. Coutts Crossing – BoM installation of Automatic Flood Gauge. Updated advice is that the automatic gauge will be installed by October 2023.

ITEM 9

GENERAL BUSINESS AND DISCUSSION

- RF - Wanted to acknowledge and recognise Council staff for their work on a Harwood flood drain, which is environmentally sensitive. The standard of works is outstanding.
- RF – the Yuragir fire trail potentially provides all weather gravel access to Yamba (from Brooms Head Road to Angourie) for food vehicles and emergency vehicles and could be explored as an option. JF – this would need to be explored further by Council staff.
- DH – raising building floor levels from 100mm to 500mm above flood levels. GM advised that Murray Lane will be bringing a report to a future meeting regarding flood levels.

ITEM 10

NEXT MEETING

Likely in November to consider:

- Wooli Flood Study
- Clarence Flood Study
- Flood Inquiry Report

ITEM 11

CLOSE OF MEETING

Meeting closed 11:44pm

Attachments:

- Presentation from BMT-WBM
- Presentation from JBPacific



"Where will our knowledge take you?"

Lower Clarence Flood Model Update

Clarence Valley
Floodplain Management Committee
Barry Rodgers, BMT
9 August 2022



Current Assessment

- **Update Flood Model**
 - **Higher resolution**
 - **Include significant recent development**
- **Calibrate and verify updated model**
- **Update flood frequency assessment at Grafton**
- **Simulate updated design flood events**



What is a 'flood model'?

Hydrologic Model + Hydraulic Model = Flood Model

Hydrologic Model: converts rainfall into flow

Hydraulic Model: models flow and produces flood maps/levels

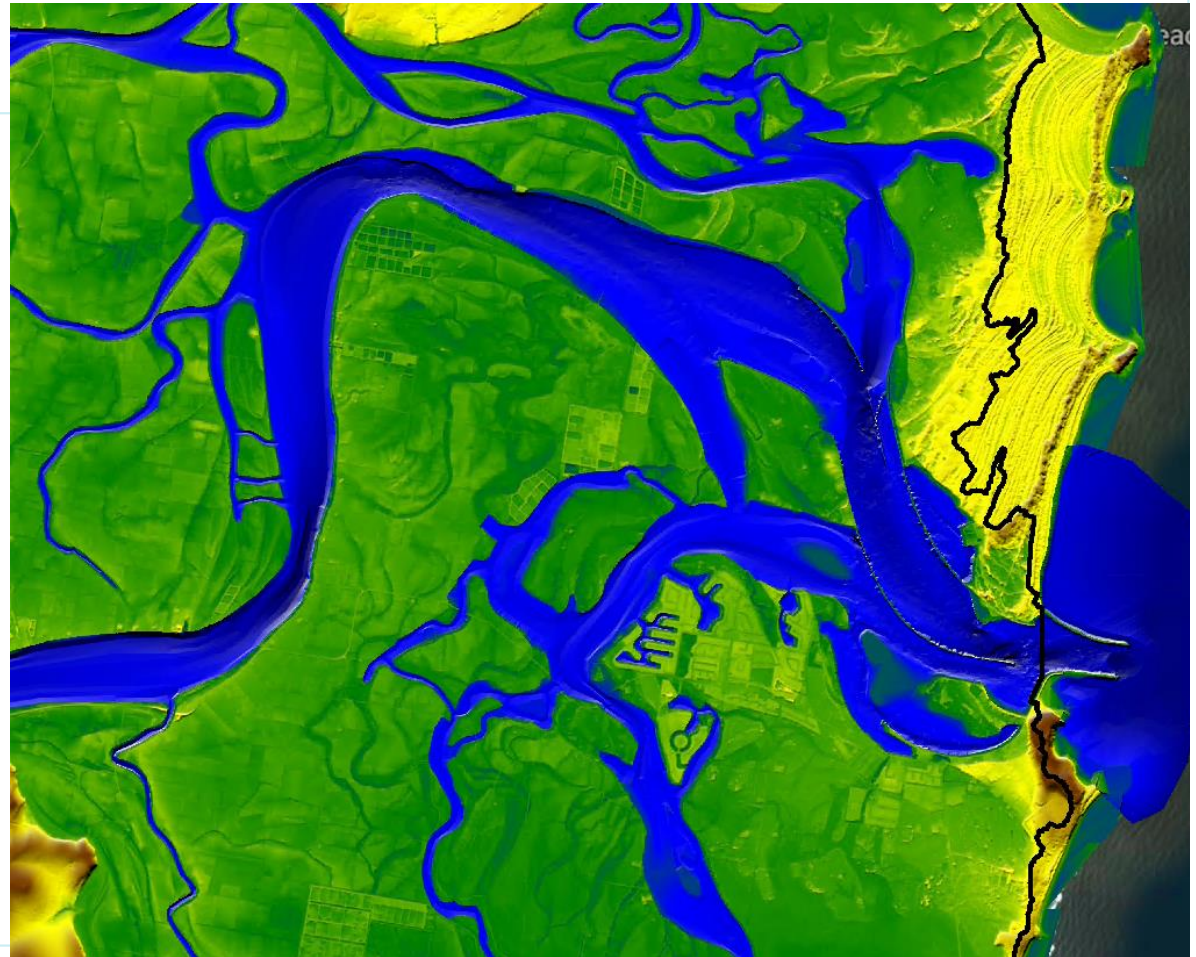
Why is it needed?

- Helps inform planning levels
- Assists with disaster planning
- Can be used to assess floodplain management measures
- Ensures floodplain development is assessed in consistent manner

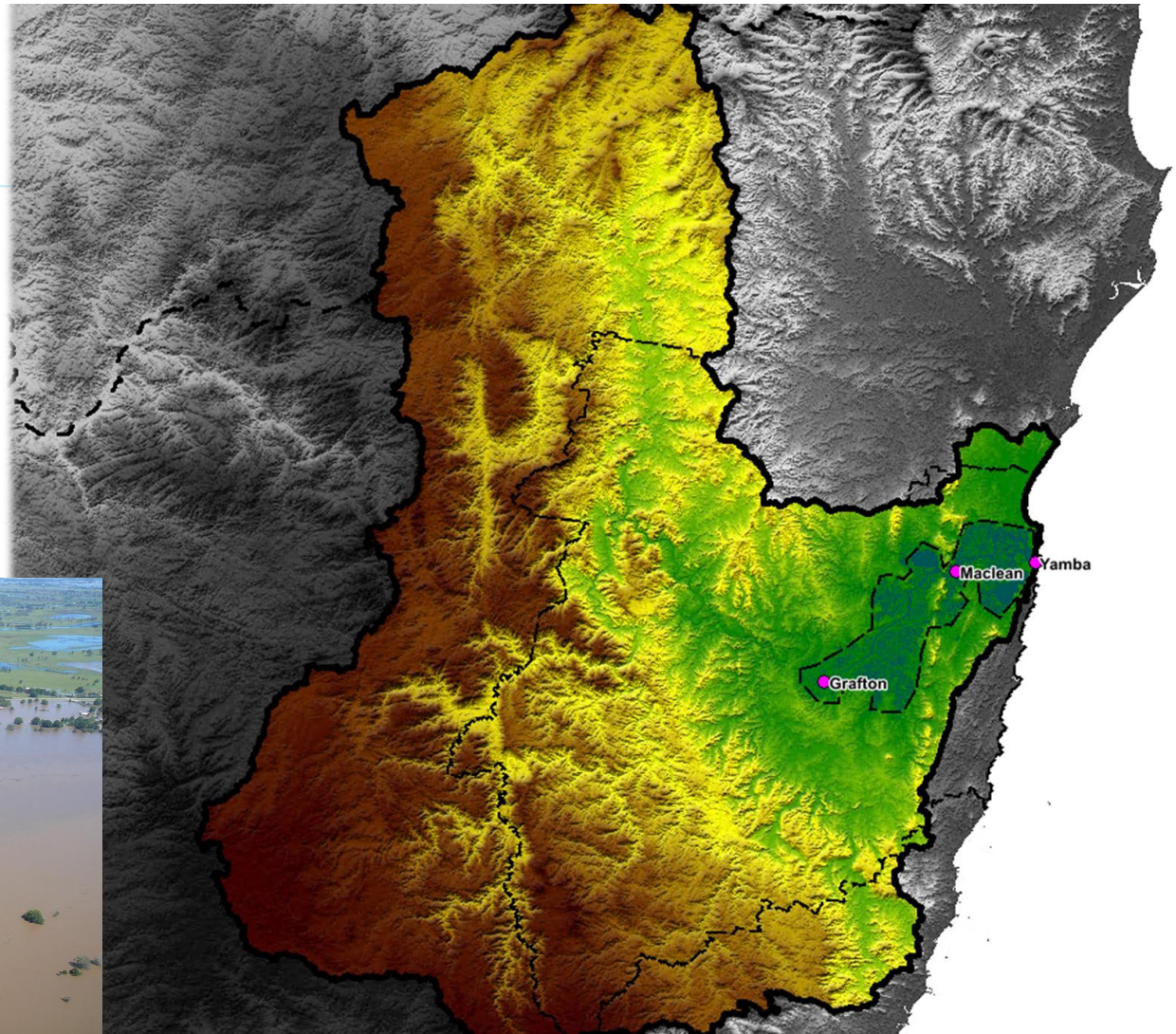


Hydraulic Models

- 2D models predominantly used
- Digital Elevation Model represents the surface as a grid of cells
- LiDAR is key dataset
- Model Resolution refers to the size of each grid cell eg 20m

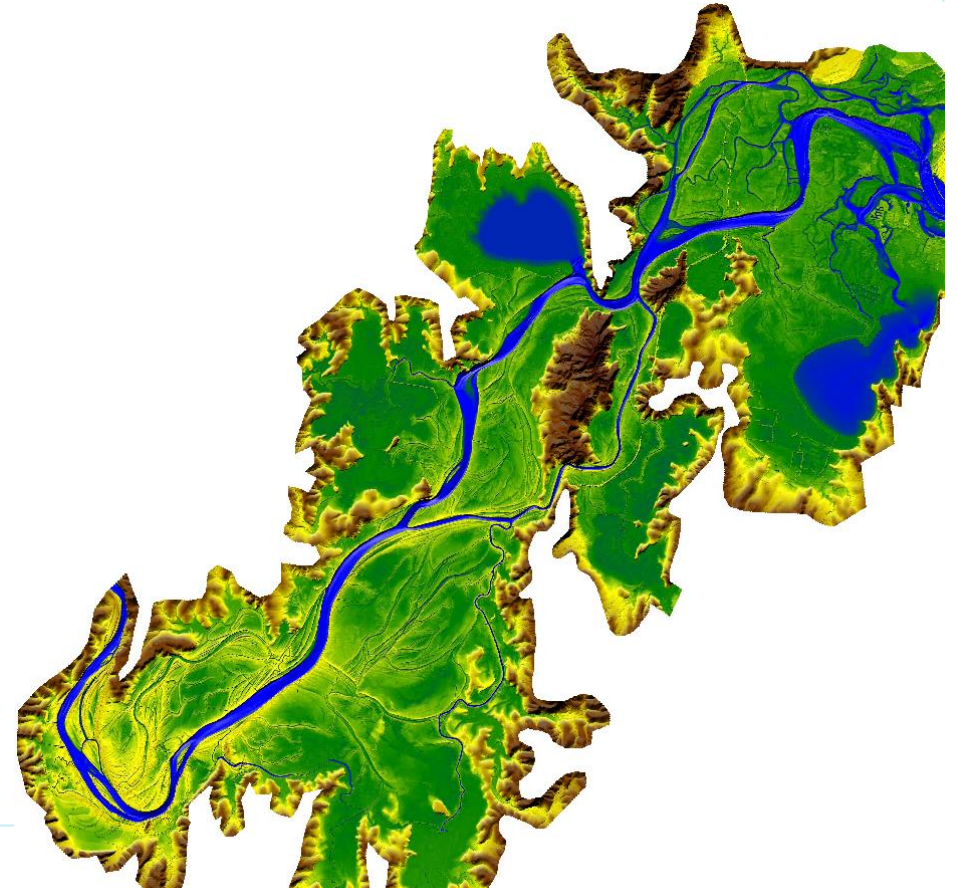


Clarence River Catchment

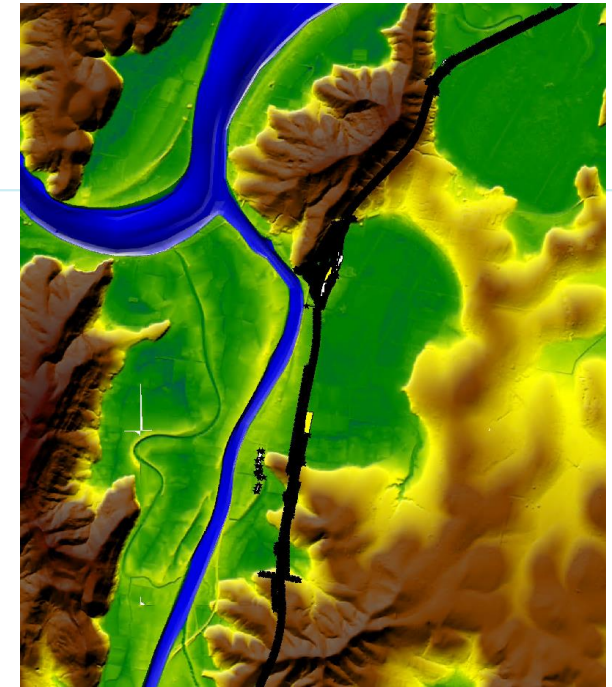




Model Update - Hydrology



Model Update - Hydraulics



Higher Resolution:

- 20m and 10m grid cells (previously mostly 60m)

Significant Developments Included

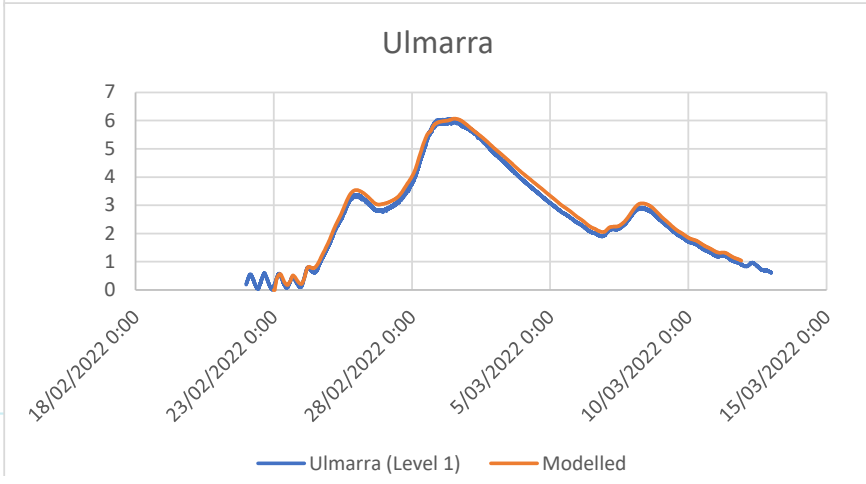
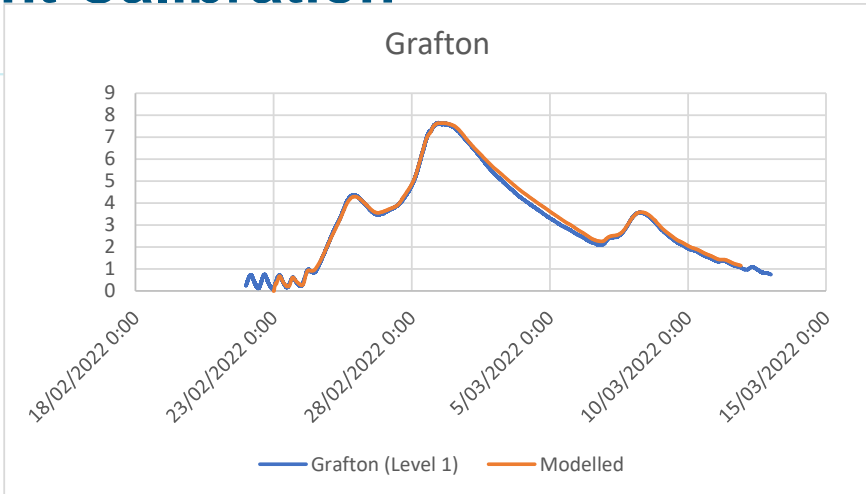
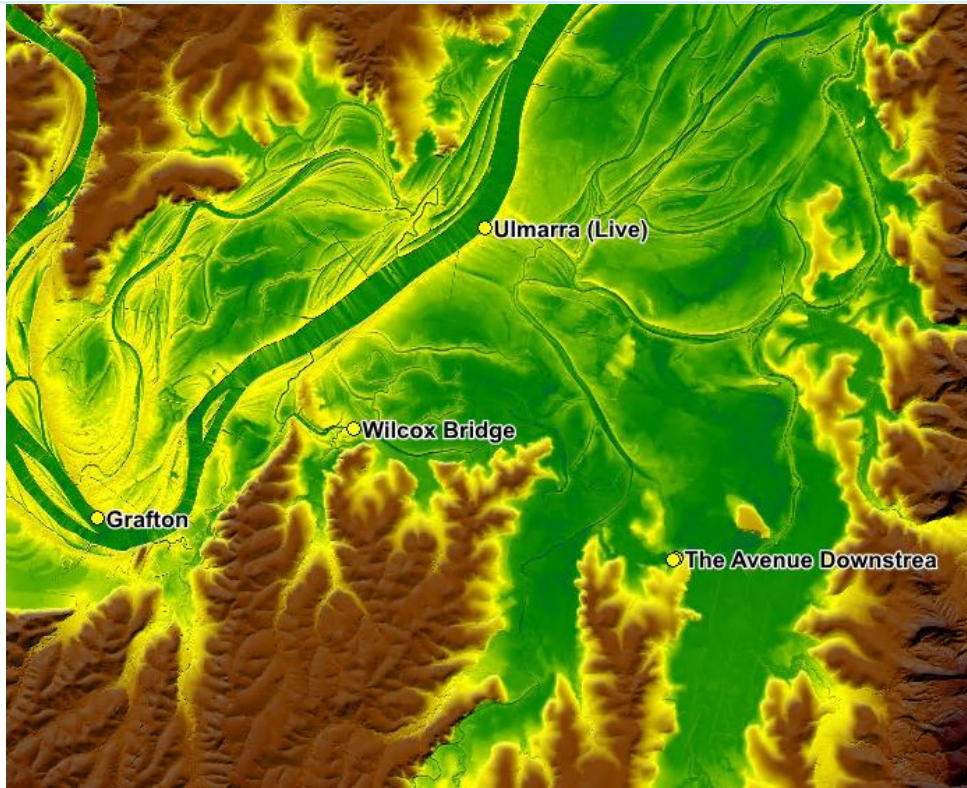
- Pacific Highway Upgrade
- 2nd Grafton Bridge and Approach Roads
- Various levee surveys captured since 2013



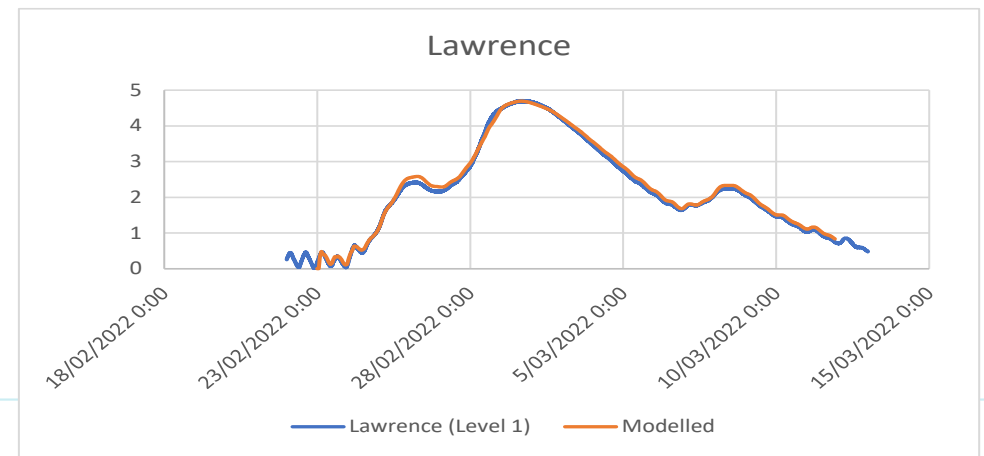
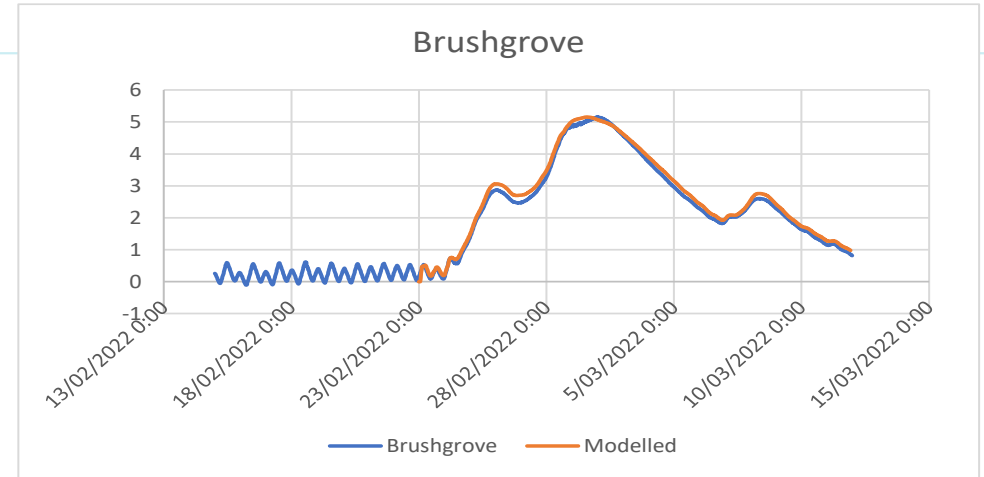
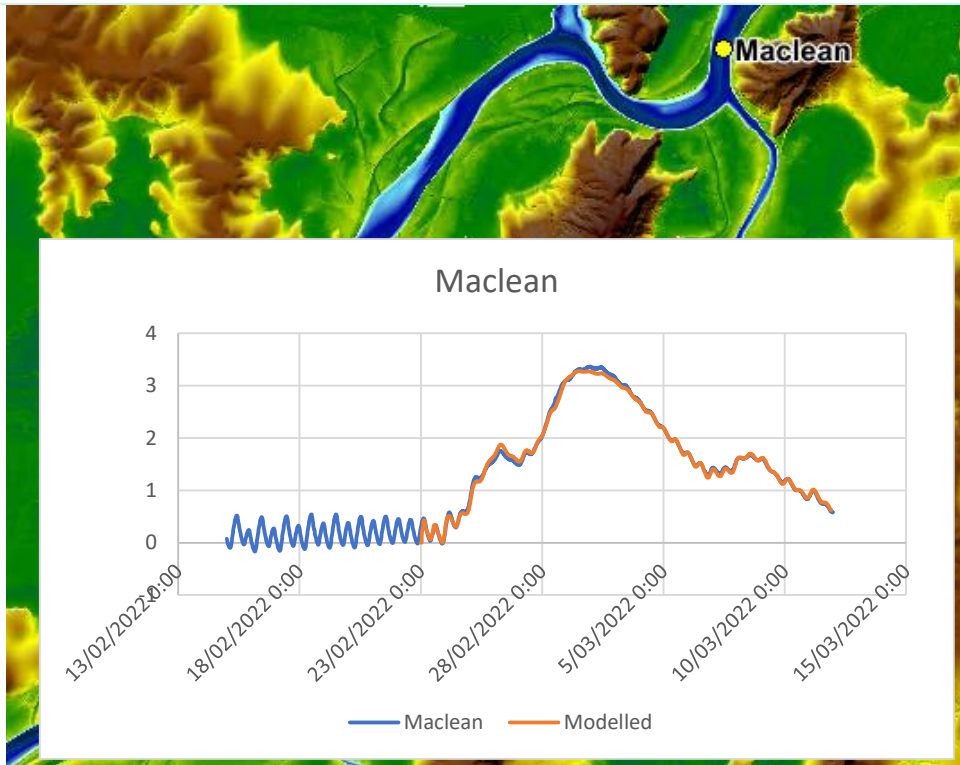
Model Update - Hydraulics



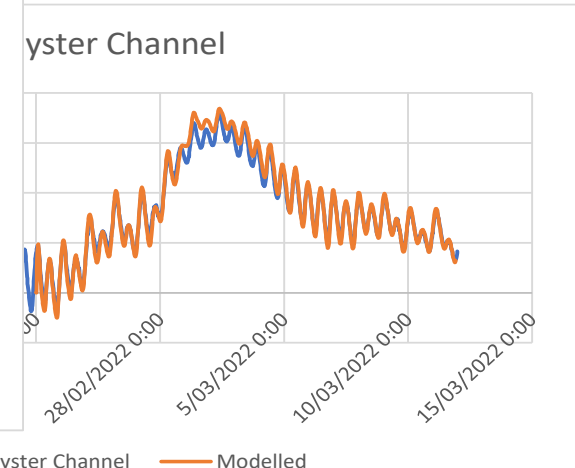
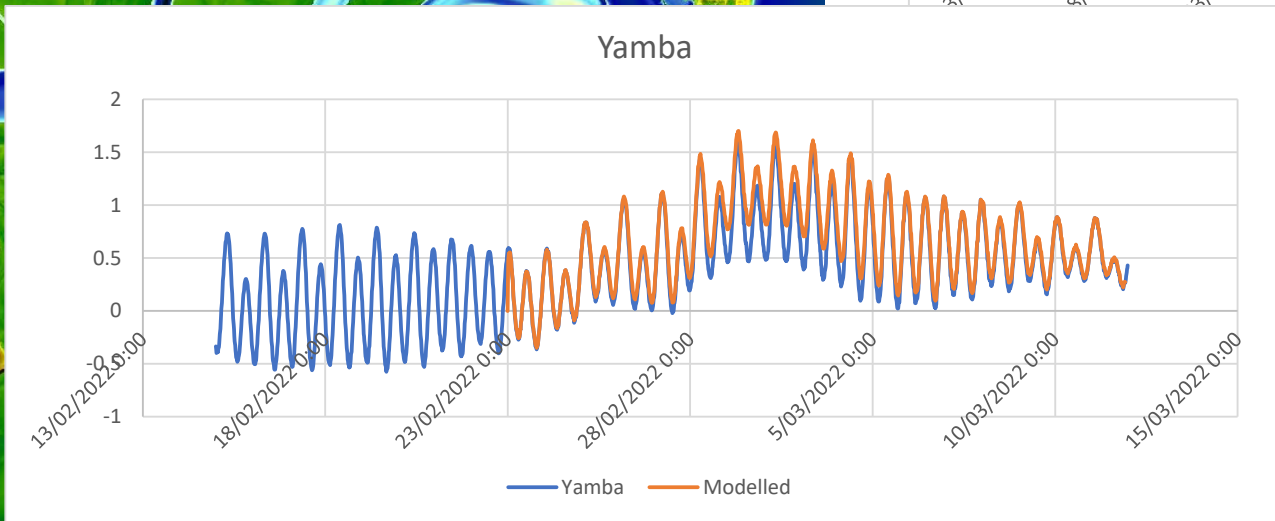
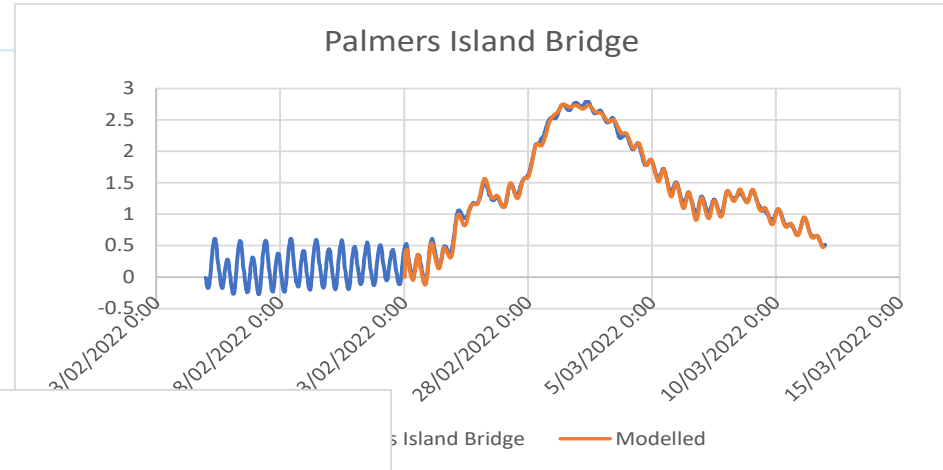
March 2022 Event Calibration



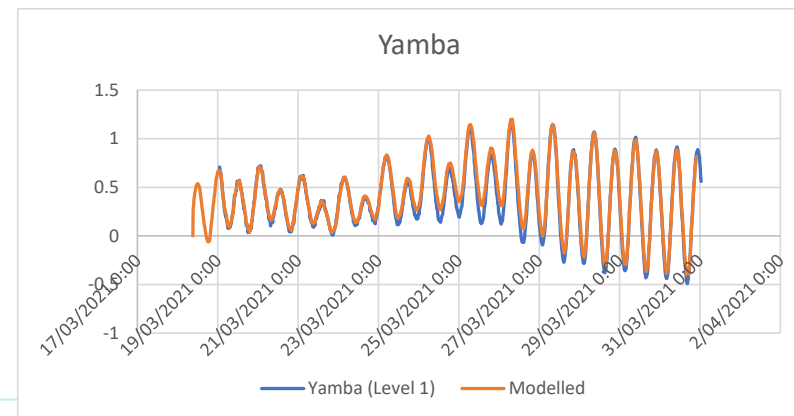
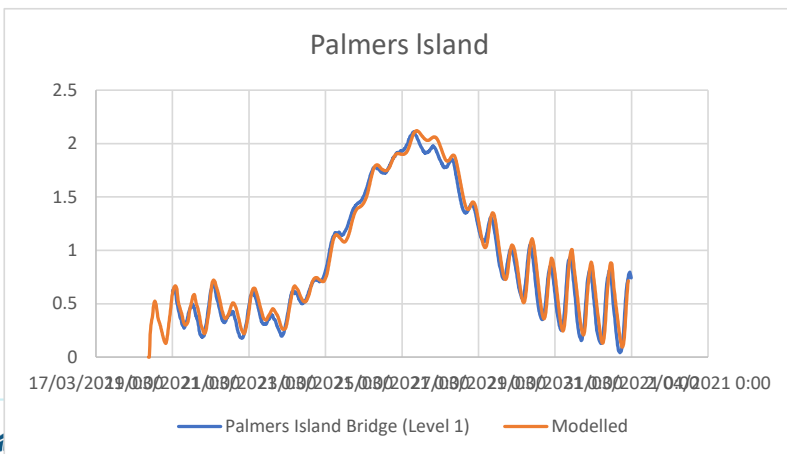
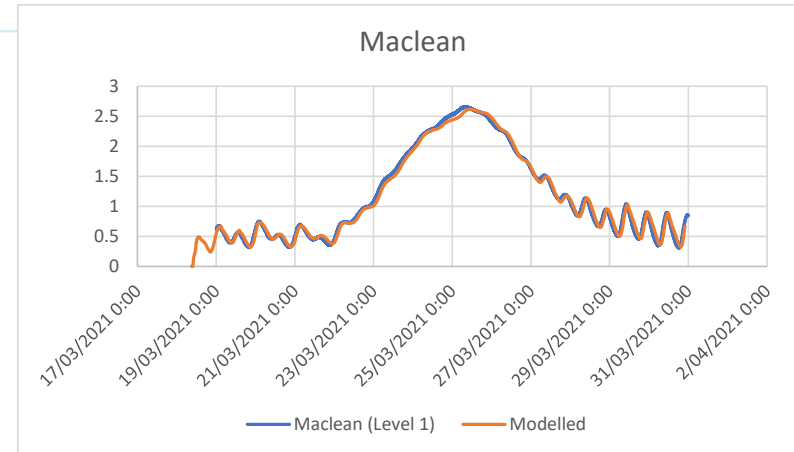
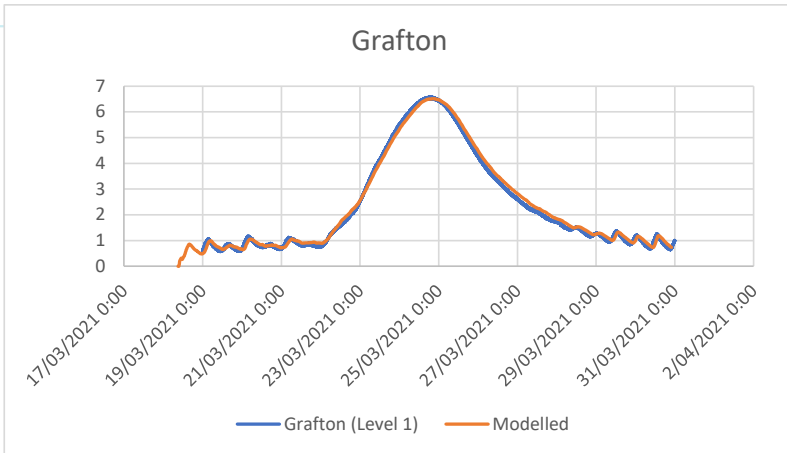
March 2022 Event Calibration



March 2022 Event Calibration



March 2021 Event Verification

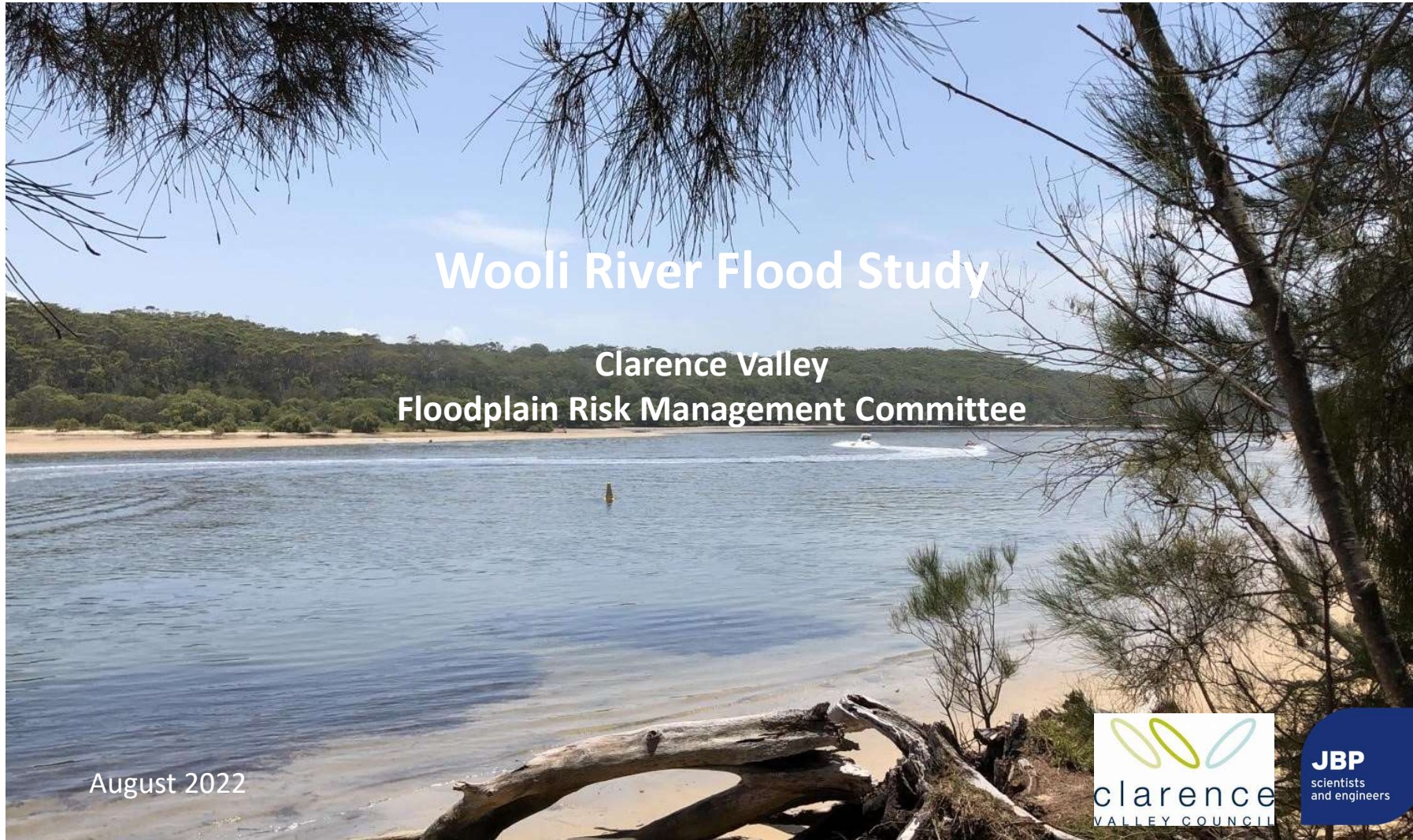


Next Steps...

- **Update flood frequency analysis at Grafton**
- **Update design flood events (eg 1 in 100 AEP)**

Thank you for listening!







Purpose

The purpose of this presentation is to present:

- The technical investigations
- The mapping results
- The peak flood levels
- The summary of the Floodplain Management Plan

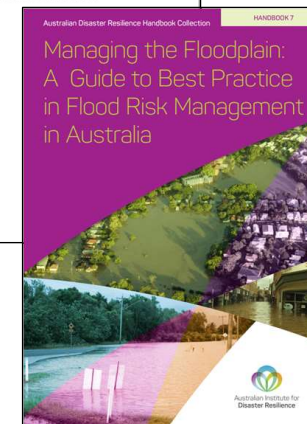
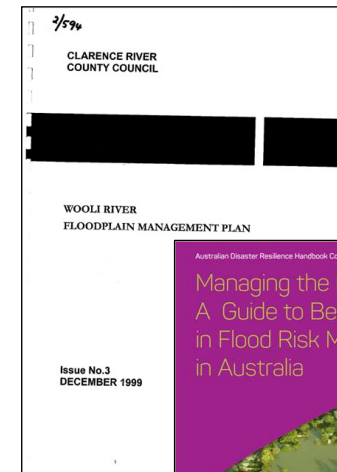
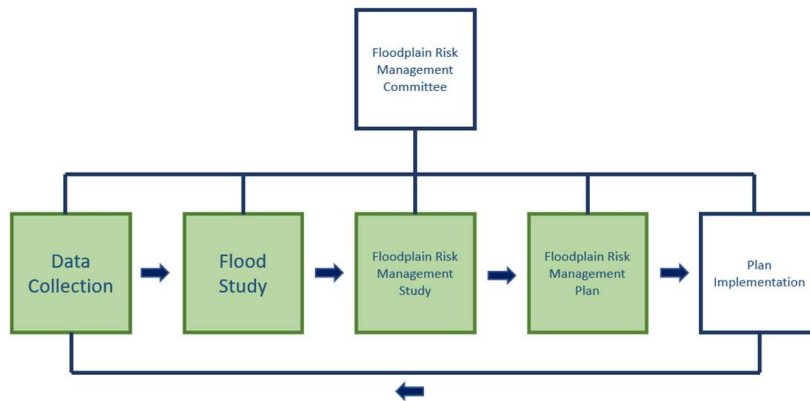




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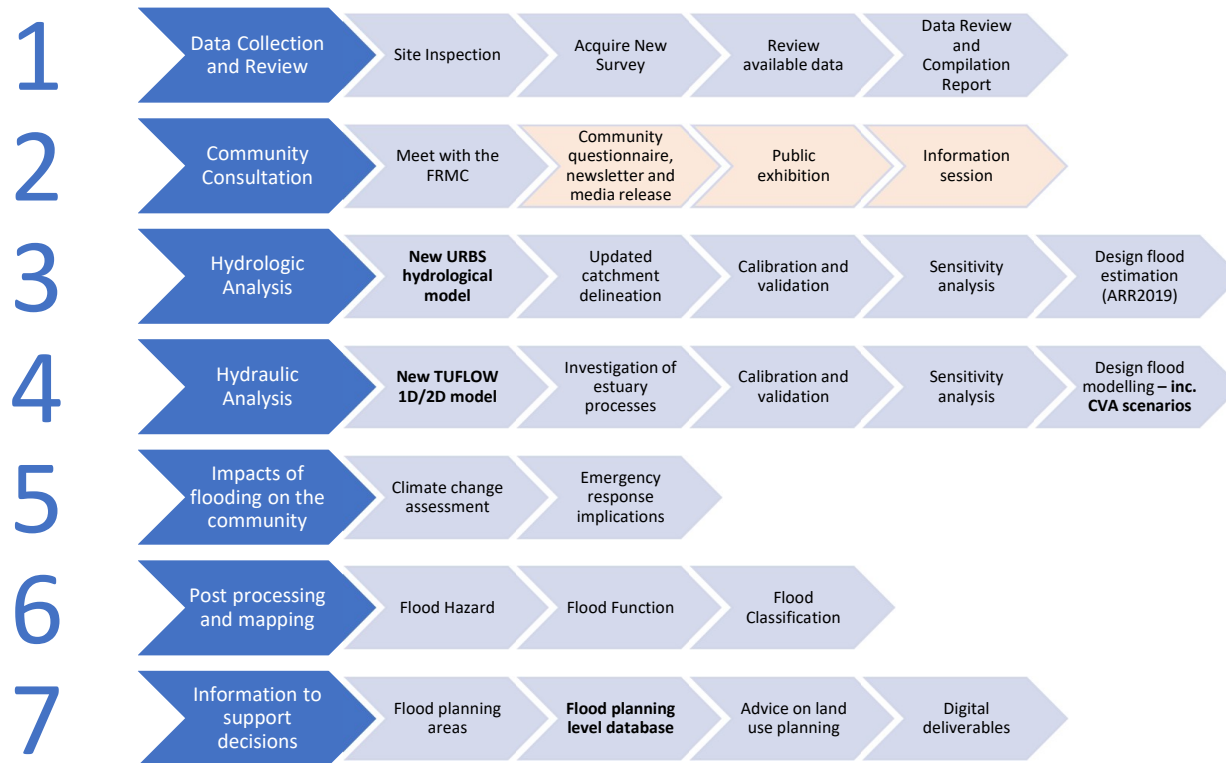
JBPacific has been engaged to:

- 1. Update the Woolli River flood modelling
- 2. Deliver an updated flood study
- 3. Review the floodplain risk management study and plan





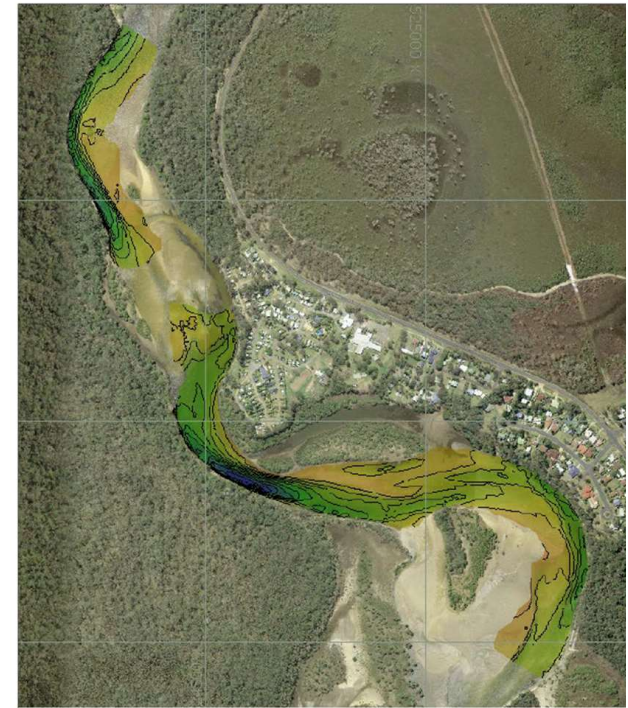
Background





Background

1



Background

Calibration

1. Five events + historic validation
2. Challenges in the swamp, tidal areas

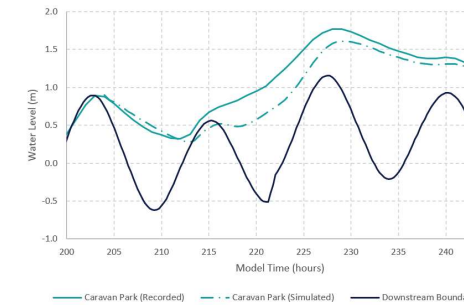


Figure 4-5: February 2020 hydraulic model calibration |

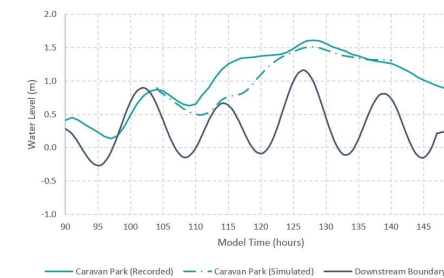


Figure 4-6: February 2013 hydraulic model calibration|

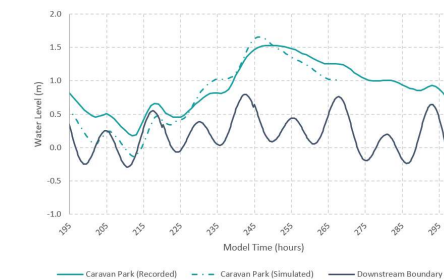


Figure 4-8: March 2021 hydraulic model calibration

Table 4-3: Hydraulic model comparison at Caravan Park

Event	Recorded peak (m AHD)	Simulated peak (m AHD)	Difference (m, %)	Timing comparison	Shape comparison
Feb 2020	1.77	1.61	-0.16, -9%	Good	Good
March 2021	1.53	1.66	0.13, -8%	Good	Fair
June 2016	1.26	1.54	0.28, 22%	Fair	Fair
Feb 2013	1.61	1.51	-0.1, -6%	Good	Good
Historic 1974	2.55	2.67	0.12, 5%	NA	NA



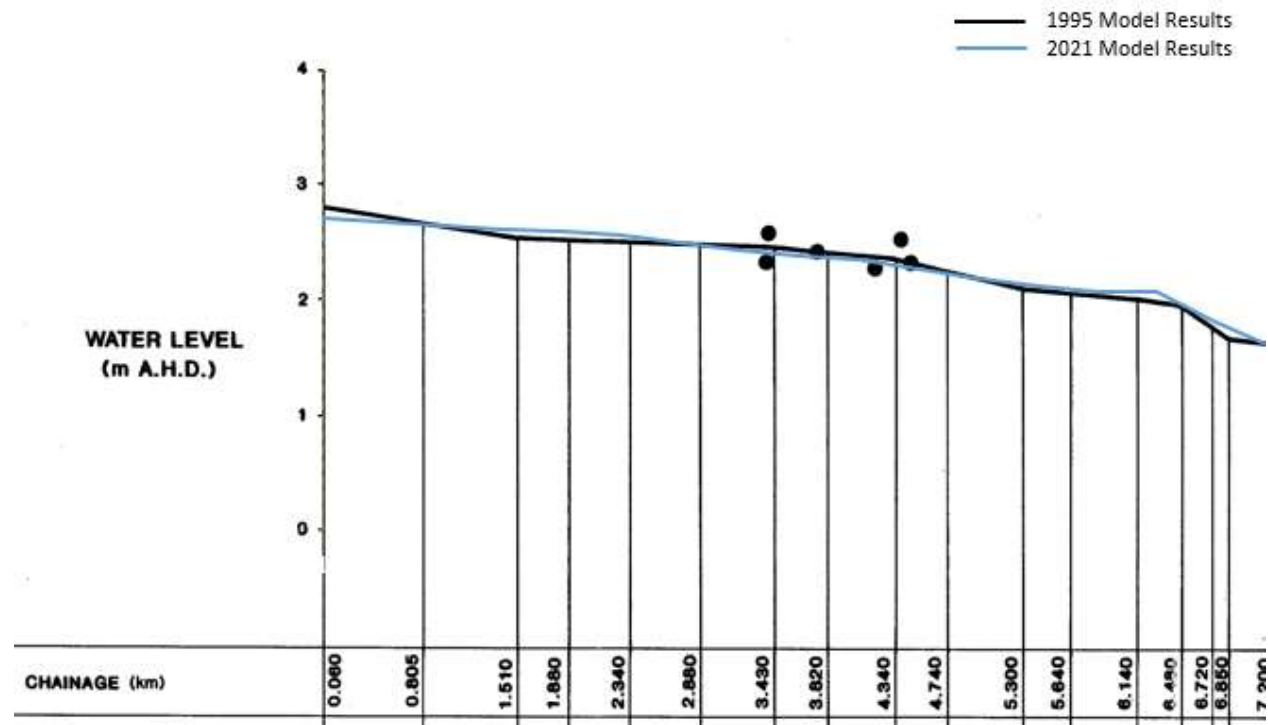


Background

1974 historic event

Validated against:

- Surveyed flood marks
- 1995 Wooli Flood Study





Design floods

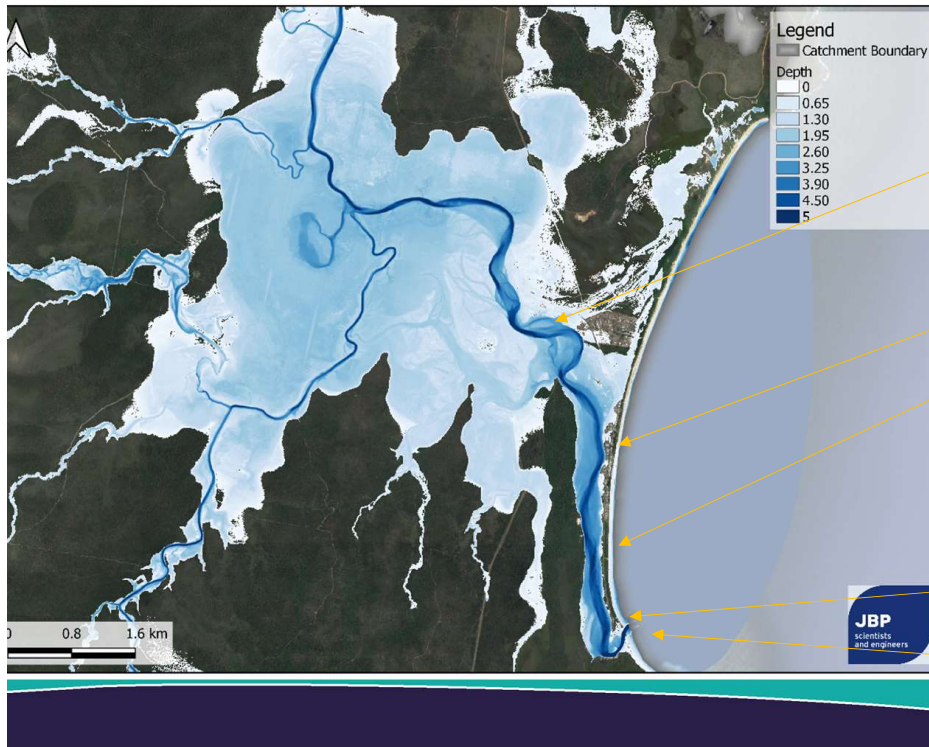
Table 5-9: Combinations of Catchment Flooding and Oceanic Inundation Scenarios - Floodplain Risk Management Guide

Design AEP for peak levels	Catchment Flood Scenario	Ocean Water Level Boundary Scenario
50% AEP	50% AEP	HHWS(SS)
20%	20% AEP	HHWS(SS)
10%	10% AEP	HHWS(SS)
5%	5% AEP	HHWS(SS)
2%	2% AEP	5% AEP
1%	Coastal dominated sim: 5% AEP	1% AEP
	Catchment dominated sim: 1% AEP	5% AEP
0.5%	0.5% AEP	1% AEP
0.2%	0.2% AEP	1% AEP
PMF	PMF	1% AEP
1% catchment	1%	HHWS(SS)
PMF catchment	PMF	HHWS(SS)



Design floods

Design flood results



Location	1% combined peak flood level	1995 Flood Study 1% peak flood level	Change
1 (Wooli Swamp)	2.48	2.98	-0.5
2	2.45	2.86	-0.41
3 (Caravan Park Reporting)	2.43	2.72	-0.29
4 (Hotel/Motel)	2.40	2.68	-0.28
5	2.39	2.67	-0.28
6	2.37	2.64	-0.27
7	2.35	2.64	-0.29
8 (Bowling Club)	2.32	2.59	-0.27
9 (Caravan Park)	2.30	2.52	-0.22
10 (Harold Lloyd Park)	2.29	2.44	-0.15
11	2.25	2.25	0
12	2.22	2.2	0.02
13	2.19	2.17	0.02
14	2.18	2.17	0.01
15 (Entrance Reporting)	2.17	2.07	0.1
16	2.10	2.11	-0.01
17 (River Entrance)	2.10	2.16	-0.06



Design floods

Coastal / Fluvial Event Modelling

Planning horizon	Design AEP	Tidal Boundary	Peak flood level Wooli Caravan Park (m AHD)	Peak flood level Entrance (m AHD)
Present Day	1%	PD 5% extreme sea level	2.40	2.10
1995 Study	1%		2.72	2.16
2100 - RCP 4.5	1%	PD 5% extreme sea level + 0.75m	2.76	2.75
2100 - RCP 8.5	1%	PD 5% extreme sea level +0.75m	2.99	2.84





Floodplain Management Plan

Summary of FMP review

- Catchment risk
- Initial options

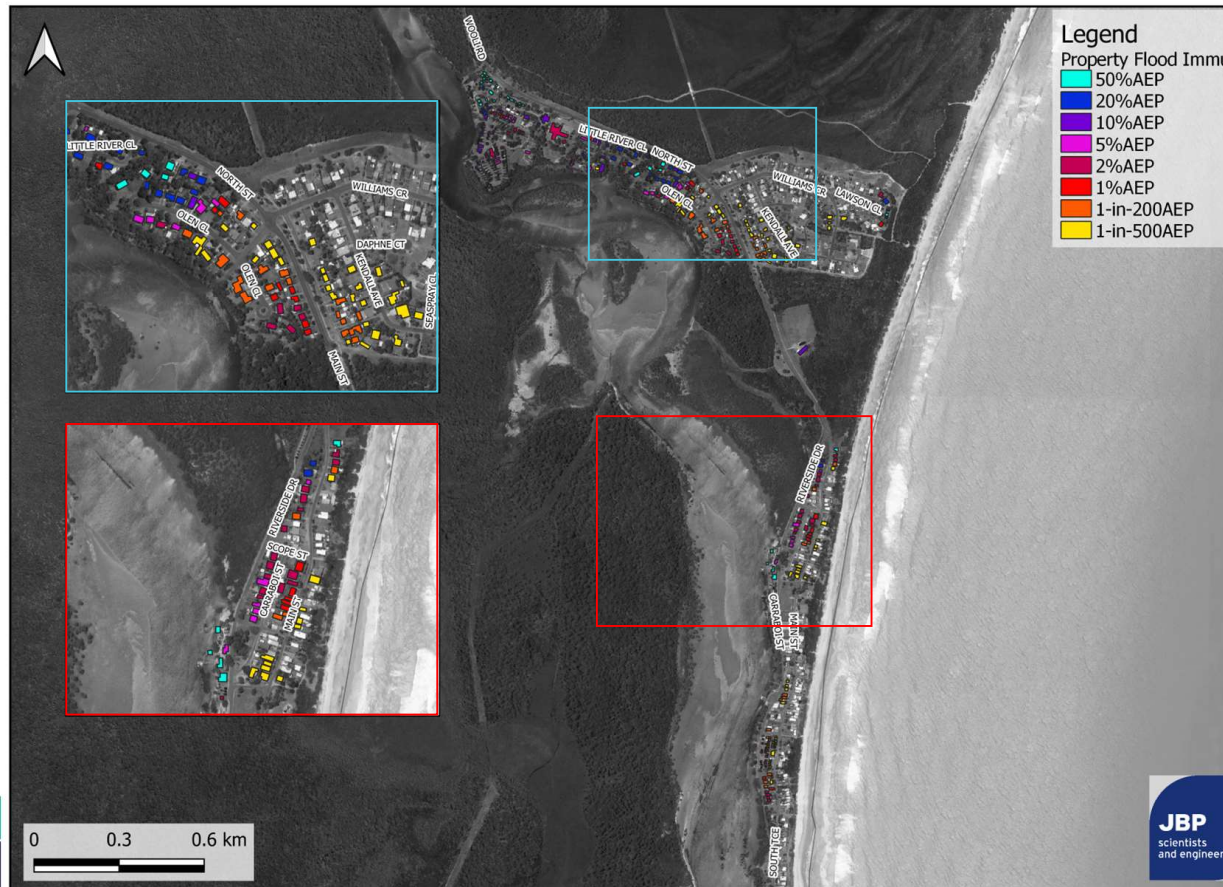




Floodplain Management Plan

Catchment risk

- Property Hotspots:
 - Caravan Park
 - Little River/ Olen Close
 - Riverside Drive





Floodplain Management Plan

Catchment risk

- Road Hotspots:
 - Wooli Road
 - Little River/ Olen Close
 - Main Street





Floodplain Management Plan

Initial options

1. Evacuation and Isolation Planning
2. Recovery Planning
3. Flood Education/Awareness Program
4. Flood Forecasting, Warning and Monitoring System
5. Assessment of structural mitigation options





Floodplain Management Plan

Initial options

1. Evacuation and Isolation Planning
2. Recovery Planning
3. Flood Education/Awareness Program
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5. Assessment of structural mitigation options

*Flood education has been conducted previously.
More targeted education now proposed.*

Wooli specific:

- *Isolation focus*
- *Flooded road dangers*
- *Signage*
- *Evacuation areas*
- *etc*

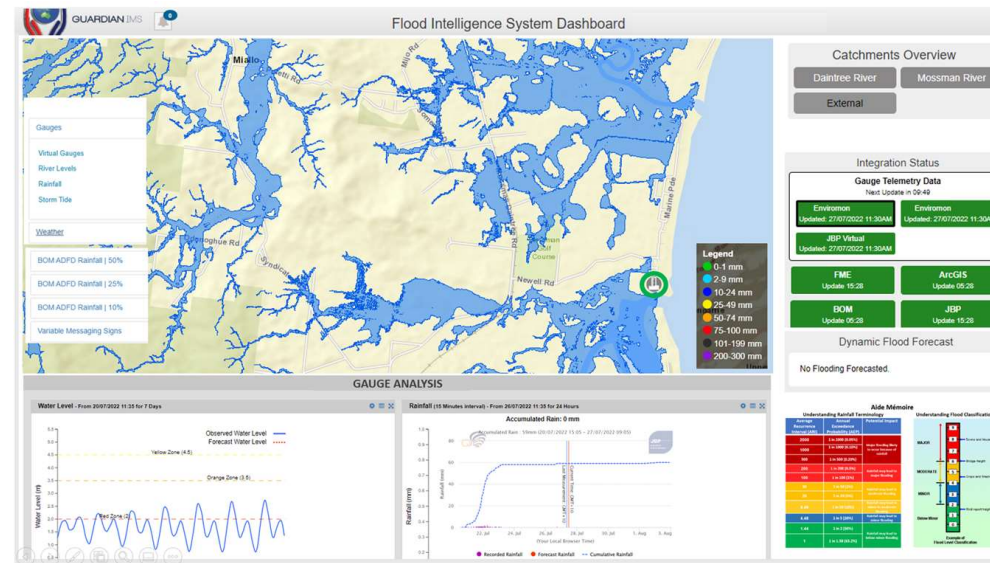




Floodplain Management Plan

Initial options

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5. Assessment of structural mitigation options



Floodplain Management Plan

Initial options

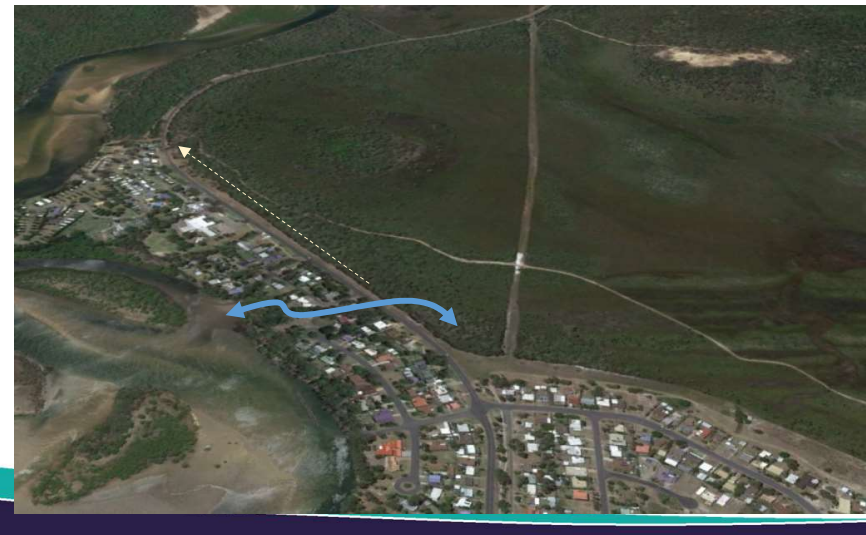
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 3. Entrance testing and dredge shoal testing



Floodplain Management Plan

Initial options

1. Evacuation and Isolation Planning
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Floodplain Management Plan

Initial options

1. Evacuation and Isolation Planning
2. Recovery Planning
3. Flood Education/Awareness Program
4. Flood Forecasting, Warning and Monitoring System
5. **Assessment of structural mitigation options**
 1. Caravan Park levee analysis
 2. Flood and drainage investigation at Little River Close and Olen Close drain
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Floodplain Management Plan

Hydraulic constraints

- Breakwalls

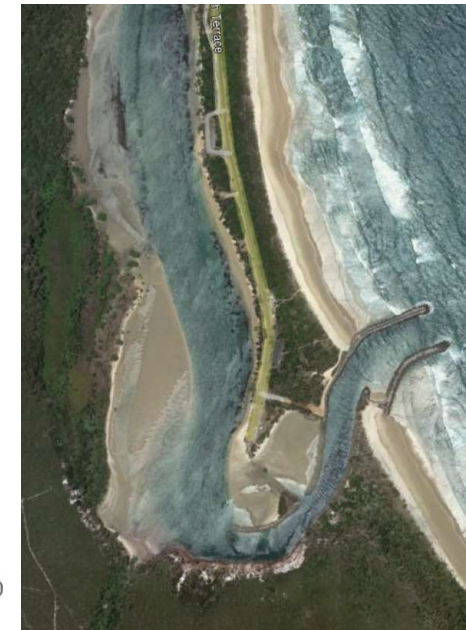
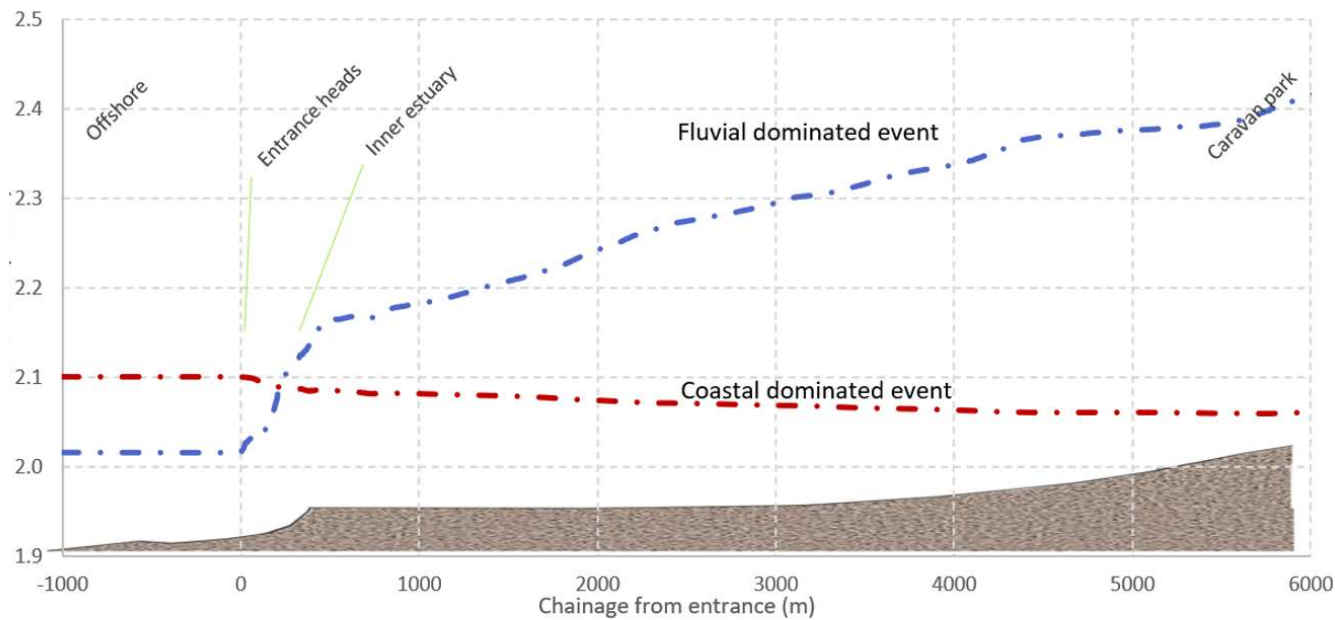


Figure 5-10: Hydraulic model envelope curve long section



Design floods

Coastal / Fluvial Event Modelling





Design floods

Coastal / Fluvial Event Modelling





Summary

- Update from 1995 Flood study and 1999 FRMP
- Well calibrated URBS/Tuflow model, now in 2D with maps
- No significant change in flood levels
- Several mitigation options presented



Background

How did they do it before?

1. 1D model
2. Various inflows and offline storages

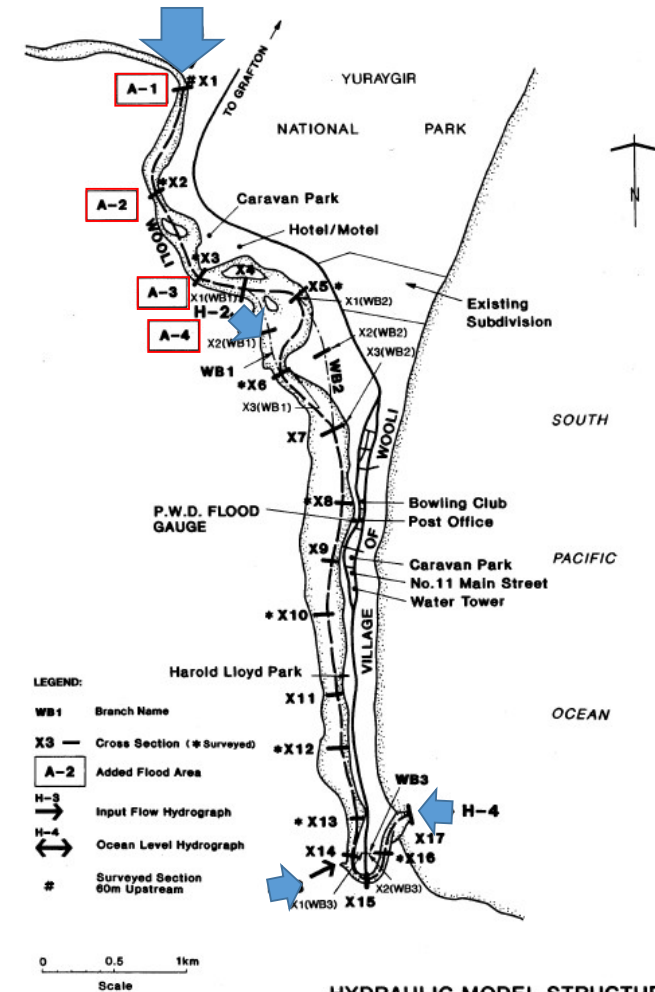


Figure 1