

CLARENCE VALLEY FLOODPLAIN RISK MANAGEMENT COMMITTEE

DRAFT MINUTES

Meeting held from 9:00am on Monday 15 May 2023 at the Clarence Valley Council Maclean Chambers, 50 River Street, Maclean.

ITEM 1 INTRODUCTION: WELCOME AND APOLOGIES

Meeting opened at 09:00 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), Nathan Cameron, Deanna Fernance (arrived 9:10), Tim Small (on line), Ross Farlow, Andrew Skinner, Desmond Harvey, Danielle Adams (on line – arrived 09:15), Mark Seccoid (SES), Belinda Devine (SES)

Observers: Cr Steve Pickering, Cr Bill Day, Cr Jeff Smith, Cr Greg Clancy, Cr Toms (arrived 9:41)

DPE: Toong Chin (On Line), Mikayla Ward (On line)

CVC Officers: Greg Mashiah, Bryan Green, Laura Black (arrived 9:23), Robyn Monk; Jamie Fleeting, Adam Cameron, Stephen Timms, Murray Lane

Presenters: Barry Rodgers – BMT (Online)

Apologies received from:

Name	Committee Role	Organisation / Role
Sue Chapple	Committee member	SES
Stephen Madden	Committee member	Community

Quorum: 6 (currently 12 committee members).

Total Members at todays CV FPRMC: 10 Quorum reached – **Yes /~~No~~**

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 9 August 2022 be confirmed.

Moved: Cr Tiley **Seconded:** Des Harvey **CARRIED.**

ITEM 4 BUSINESS ARISING FROM THE MINUTES

Items from last meeting not discussed elsewhere include:

- Cr Tiley suggested that the letter previously sent to Chris Gulaptis MP be sent to the new member for Clarence, Richie Williamson MP. A copy of the letter will be circulated to the committee.
- The Woolli Flood Study is proposed to be exhibited concurrently with the Clarence Flood Study as it was considered that if the Woolli flood study was exhibited separately there would have been submissions related to the Clarence River.

ITEM 5

LOWER CLARENCE FLOOD MODEL UPDATE 2022

Cr Novak noted that the presentation by Barry Rogers (BMT) will be recorded and requested that questions for this section be held over until the end of the presentation. Barry Rodgers gave the attached PowerPoint presentation to the committee.

Questions and comments from the Committee:

- *DN – How often will a 2% flood event occur? BR – There is a 2% chance in any given year of a flood of this magnitude or greater occurring.*
- *RF – what will be the impact of river siltation on flood levels due to changes in the channel's carrying capacity? BR: As channel changes during a flood are unknown the model cannot account for changes; the best available current bathymetry information is used with the channel "fixed". In Grafton for example the bathymetry for the new bridge showed minor changes from previous bathymetry and the May 2022 NSW Ports Authority survey was used for the section downstream of Harwood Bridge.*
- *RF – Lake Wooloweyah flood level correlation in the model due to local rainfall? GM: The model was calibrated to the MHL gauges in Lake Wooloweyah and Oyster Channel gauges, and showed good correlation.*
- *TS – will siltation have an impact on flood velocity? BR – Potentially although siltation can also scour away during a flood event. Typically vegetation can have a greater impact on velocities than siltation.*
- *TS – Updating of PMP and peak flow at Mountain View of 20,000m³/s? BR: The 20,000m³ is approximately a 1% AEP event; the inflow in the extreme flood will be approximately three times this. An AEP is not typically applied to a PMF flood but the flood is very rare and could be, for example, between 0.00001% (1 in 100,000) and 0.000001% (1 in 1 million).*
- *IT- planning impact considerations from the flood model? BR: The change in the extreme flood/PMF could have significant impact on planning considerations for emergency management. The flood hazard (which is determined by multiplying depth by velocity) needs to be considered; not just the depth of inundation – in some areas the extreme flood depth may be relatively shallow but have a high flood hazard whereas other areas may have a greater flood depth but a low flood hazard.*
- *TS – will flood animations be available on the website? GM: The current flood animations are on the website and it is proposed to put animations from the new model on the website.*
- *SP – has the model indicated any difference in flood behaviour from the additional infrastructure on the floodplain such as the motorway? BR – scenario testing (before and after) was not undertaken as part of the study; the flood studies for the Motorway may not have considered events larger than the 1% AEP.*

The FRMC recommends to Council that it:

- 1. Adopt the revised Lower Clarence Flood Model Update, 2022.**
- 2. Endorse the revised flood model Climate Change 1 (RCP4.5) as the basis for establishing flood planning levels (residential floor levels) in accordance with Council's existing floor heights policy (with the exception of North Grafton for the time being).**
- 3. Notes the extreme flood level requires further validation using a hydrologic assessment of the Probable Maximum Flood.**
- 4. Prepare a planning proposal to amend the Clarence Valley Local Environmental Plan 2011 to replace the existing flood mapping with the revised flood mapping for Climate Change 1 (RCP4.5) scenario, as contained in the Lower Clarence Flood Model Update 2022.**
- 5. Commence preparation of a Floodplain Risk Management Study**

and Plan in accordance with the NSW Floodplain Development Manual, noting that this process will also determine flood planning levels in North Grafton and the extreme flood/probable maximum flood.

Moved: Des Harvey Seconded Andrew Skinner

CARRIED

ITEM 6

CSIRO NORTHERN RIVERS RESILIENCE INITIATIVE UPDATE

Greg Mashiah gave an update to the Committee:

1. *LiDAR survey of Clarence*
2. *Tranche One funded project - "Install box culverts through levee near North Street (Grafton) to improve local drainage prior to floodgates closing" (\$615,734)*
3. *Tranche 2 - \$100 million funding.*

Questions and comments from the Committee:

- *IT – will the additional LiDAR data change the flood model? GM – the CSIRO LiDAR data is at much finer resolution than the updated model. While it is unlikely there will be significant change from the updated LiDAR data on the overall flood model, it will enable better assessment of flood impacts from individual development proposals as the model software allows a finer grid (with the finer LiDAR data) to be modelled over a small area.*
- *AS – Is raising of the Maclean levee being considered? GM – not as part of this project as it is not currently identified but it may be considered as part of the PWA levee program which is discussed at Item 7.*

ITEM 7

CVC UPDATES

Bryan Green (Floodplain Coordinator) updated the Committee on CVC

Floodplain topics:

1. *CLIRP grant – upgrading of Wherrett Park and Essex Drain – the new pumps in Wherrett Park increase capacity by about 33% and in Essex Drain by about 100%*
2. *DRRF grant - Real Time Remote Monitoring of Flood Pumps – hardware has been purchased and SCADA software is in development.*
3. *Floodplain Management Program 2022-23 - Esk River Flood Monitoring Project – two remote warning road closed signs will be installed at Iluka and Woombah.*
4. *National Flood Mitigation Infrastructure Program 2021-22 - Alice Street Levee Rehabilitation Project – A Project Manager has been appointed. Issue with private infrastructure on river side of levee. Construction proposed to commence in February 2024. Possible issue with state agency approval delays.*
5. *North Street Flood Pump Station (waiting on assessment and approval from Infrastructure Betterment Fund) – no update has been received on the proposal.*
6. *Public Works Authority - Flood Levee Repair and Maintenance Program – NSWPWA – assessing urban levees in Grafton, Ulmarra, Maclean and Iluka. Raising of Marandowie Levee at Iluka and Maclean Levee in Maclean has been raised with PWA. Survey is currently being undertaken and on ground assessments will be undertaken in July 2023.*
7. *NSW Government Drainage Reset Program - \$5 million for seven Councils (with a co contribution from the Councils). Three projects nominated – Taloumbi Ring Drain, Narho Creek at Harwood and Edwards Creek. RF – outlined concerns about rollout of drainage reset program and approval requirements.*

Motion: The FRMC recommends that Council make representation through the Northern Rivers JO regarding concerns with the rollout of the Drainage Reset program.

Moved: Ross Farlow **Seconded:** Andrew Skinner **CARRIED**

8. *Alamy Creek Rehabilitation Project – it is proposed that the creek carrying capacity be restored. This is being funded from DRFA.*

ITEM 8

GENERAL BUSINESS AND DISCUSSION

- The email from Geoff Beresford re West Yamba was read to the committee.
- RF – Frequency of committee meetings due to amount of business – suggests quarterly meetings. It was noted that this committee will end when the current Council's term is completed.

Motion: *The FRMC recommends to Council that its meeting frequency be increased to four times per year.*

Moved: Ross Farlow **Seconded:** Tim Small **CARRIED**

- RF – Yamba residents have raised concerns re changes in flood behaviour at the canal draining into Yamba Bay from Deering Street which could be addressed with flood gates at the outlet.
- JF – outlined drainage studies currently being undertaken, including assessment of drainage performance at Yamba and Iluka and the Stormwater Management Service Charge for future stormwater works (including stormwater quality works).
Action: *An information report be brought to the next FRMC meeting.*
- AS – Concern about the delay in flood projects receiving funding. IT – outlined lobbying being undertaken by ALGA for increased infrastructure funding.
Action: *An update report to be provided to the FRMC on floodplain funding lobbying*
- TC – DPE will be providing comments on the Lower Clarence Flood Study update.
- ML – if the FRMC recommendation is adopted by Council, the updated flood model will be used to update flood planning processes. High risk development applications have the developer's flood assessment peer reviewed.
- DN – is proposing to submit a NoM to the next Council meeting and will circulate to committee members for comments.

ITEM 9

NEXT MEETING

Subject to Council adopting the recommendation regarding meeting frequency, approximately 3 months.

ITEM 11

CLOSE OF MEETING

11:15

Attachments:

- Presentation from BMT



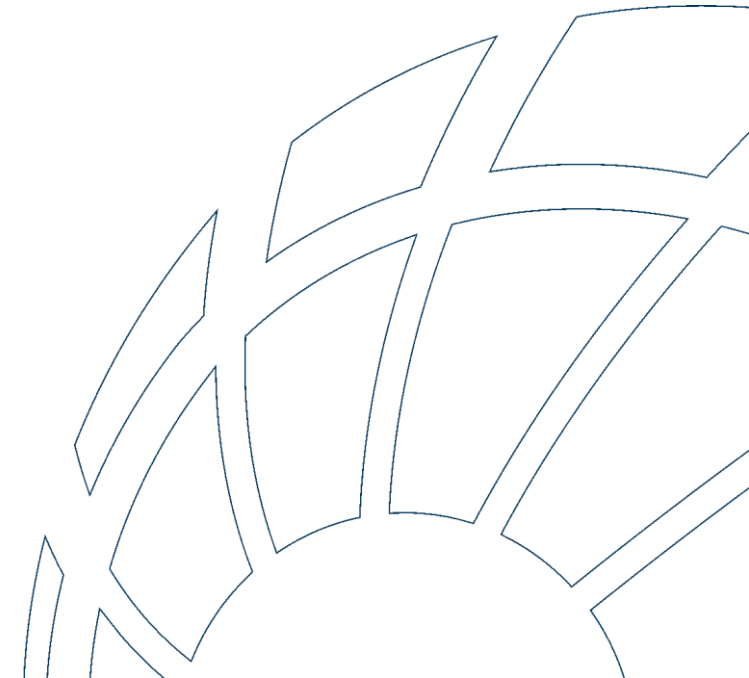
"Where will our knowledge take you?"

Lower Clarence Flood Model Update

Clarence Valley Floodplain Management Committee

Barry Rodgers, BMT

15 May 2023



Overview

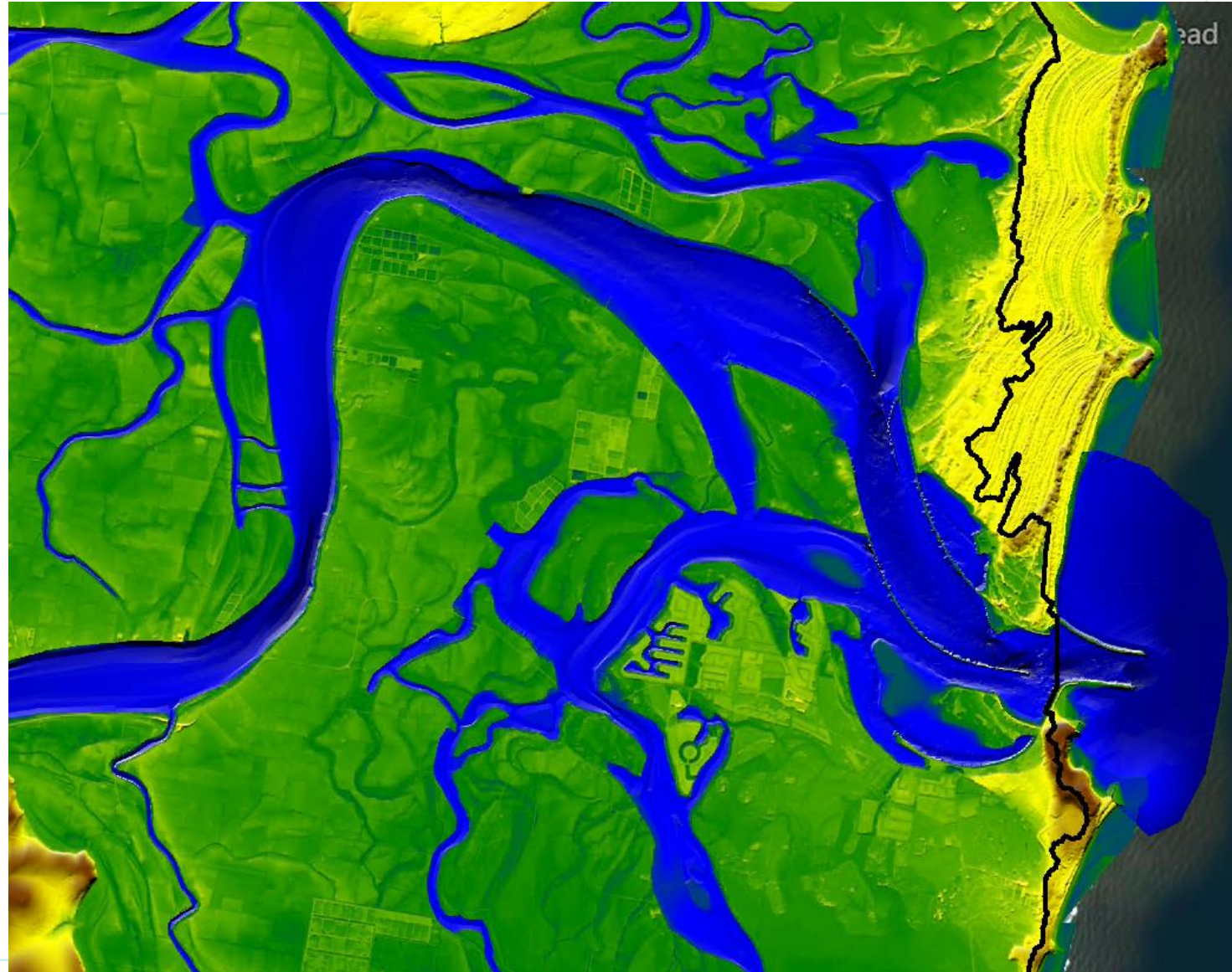
- **Update Flood Model**
 - **Higher resolution**
 - **Include significant recent development**
- **Calibrate and verify updated model**
 - **February/March 2022, March 2021, January 2013**
- **Design flood modelling**
 - **Update flood frequency assessment at Grafton**
 - **Review tailwater assumptions (storm tide)**

Model History

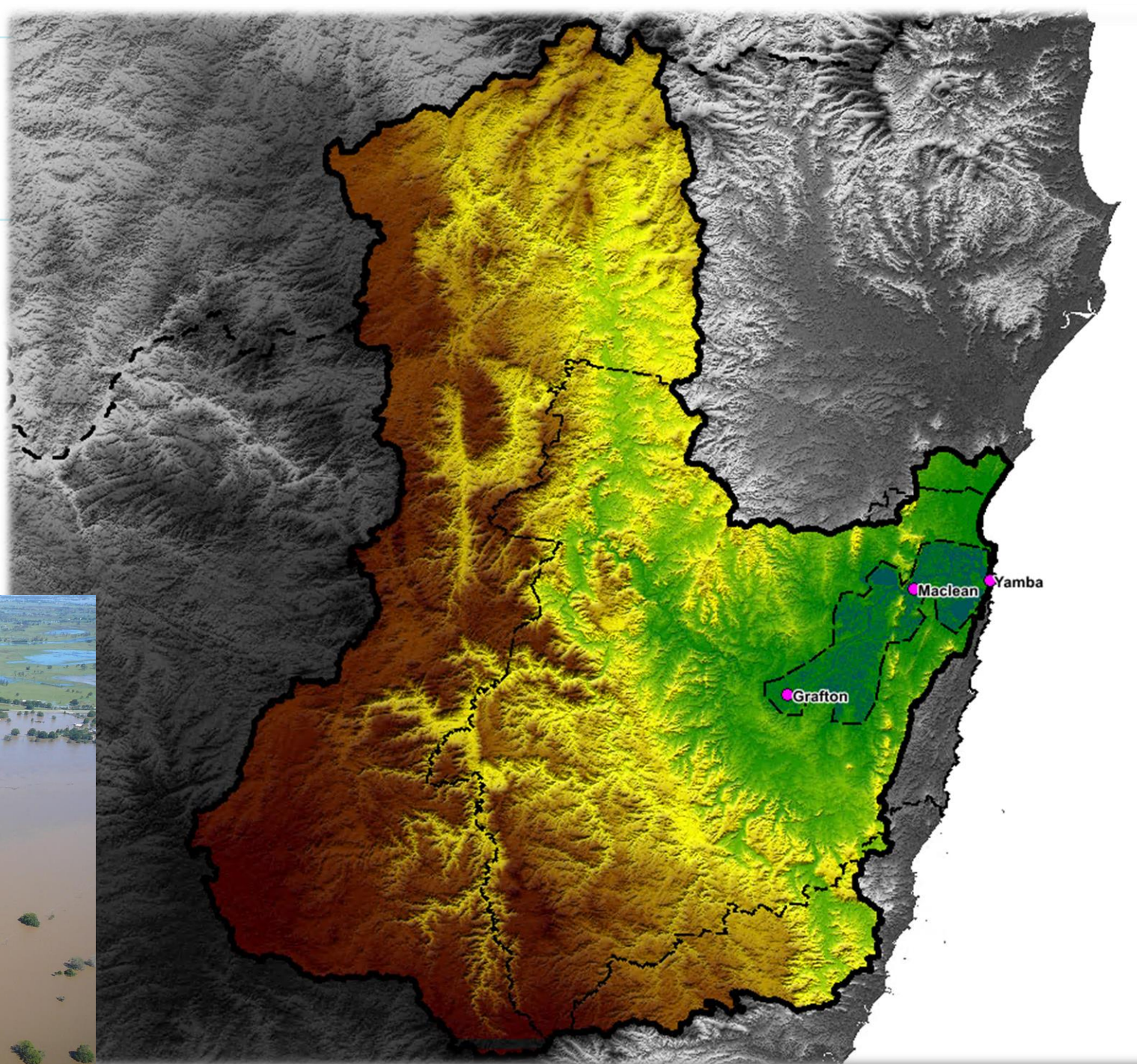
- **Lower Clarence River Flood Study (1988)**
 - **1D model of floodplain**
 - **Storm surge boundary derived**
- **Lower Clarence River Flood Study Review (2004)**
 - **2D model of floodplain (60m resolution)**
 - **Maintained storm surge from 1988 study**
- **Lower Clarence River Flood Study Update (2013)**
 - **2D model of floodplain (multiple resolutions 60m/30m/10m)**
 - **Maintained storm surge from 1988 study**

Hydraulic Models

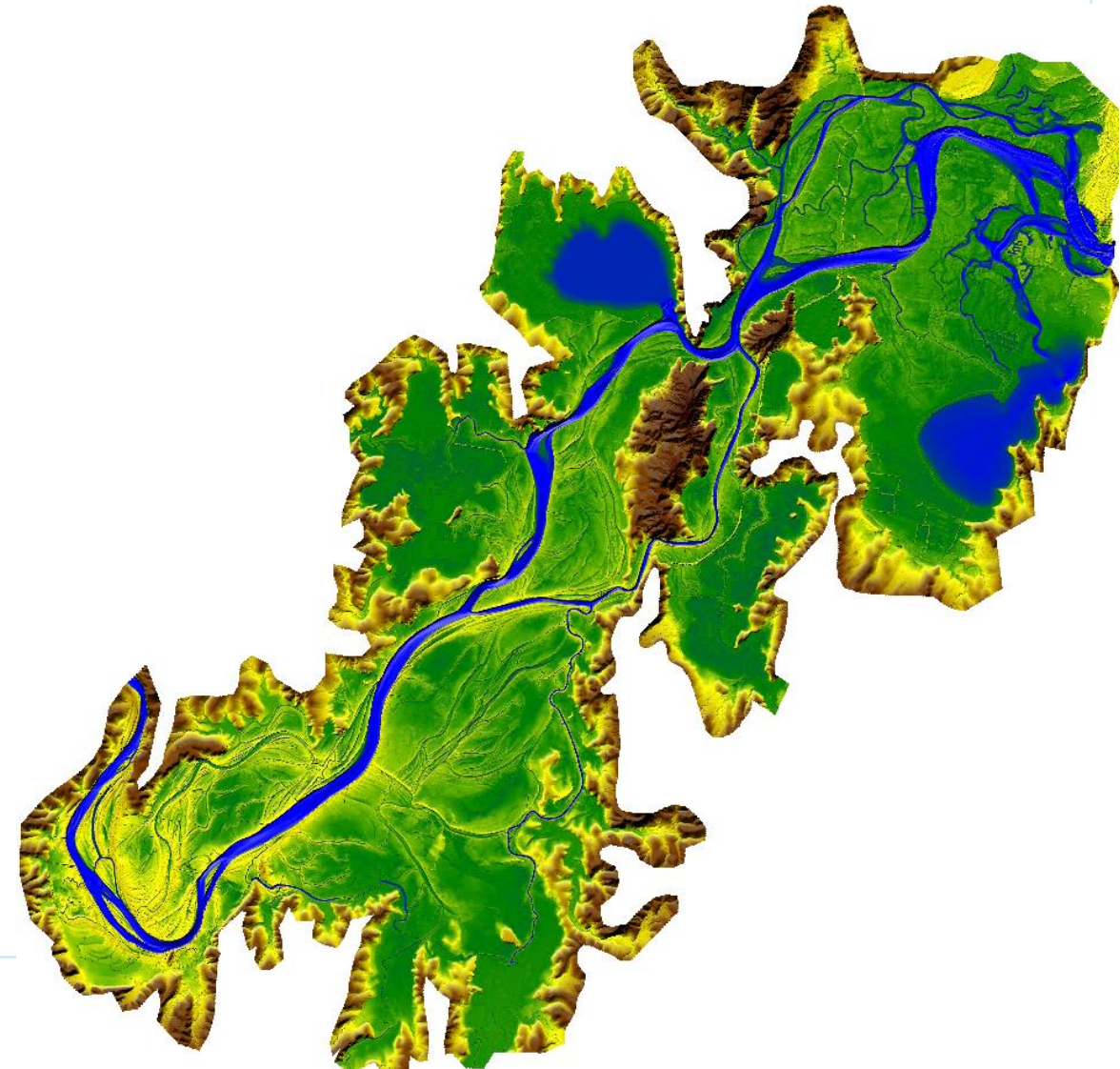
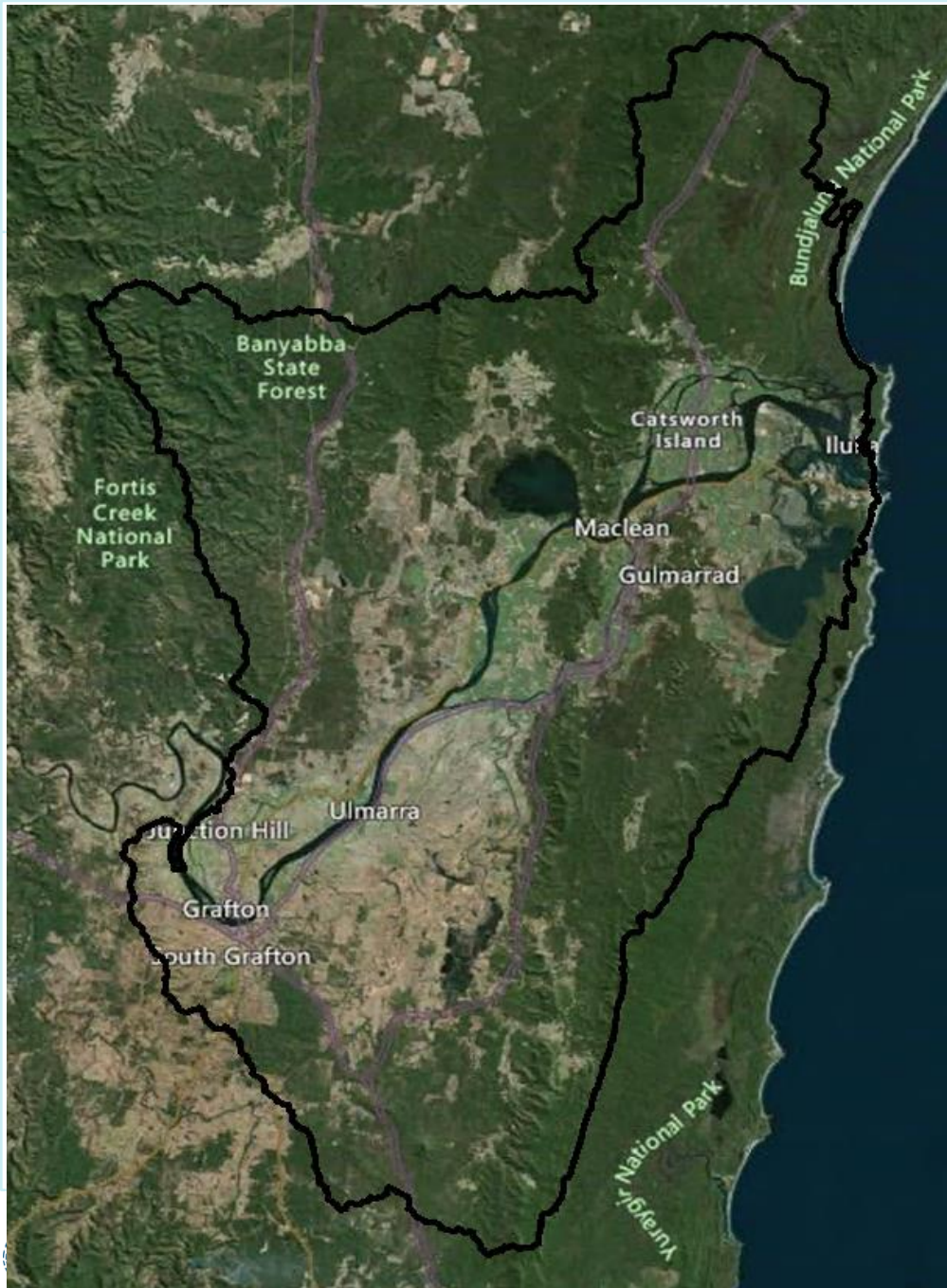
- 2D models predominantly used
- Digital Elevation Model represents the surface as a grid of cells
- LiDAR is key dataset
- Model Resolution refers to the size of each grid cell eg 20m



Clarence River Catchment



Model Update - Hydrology



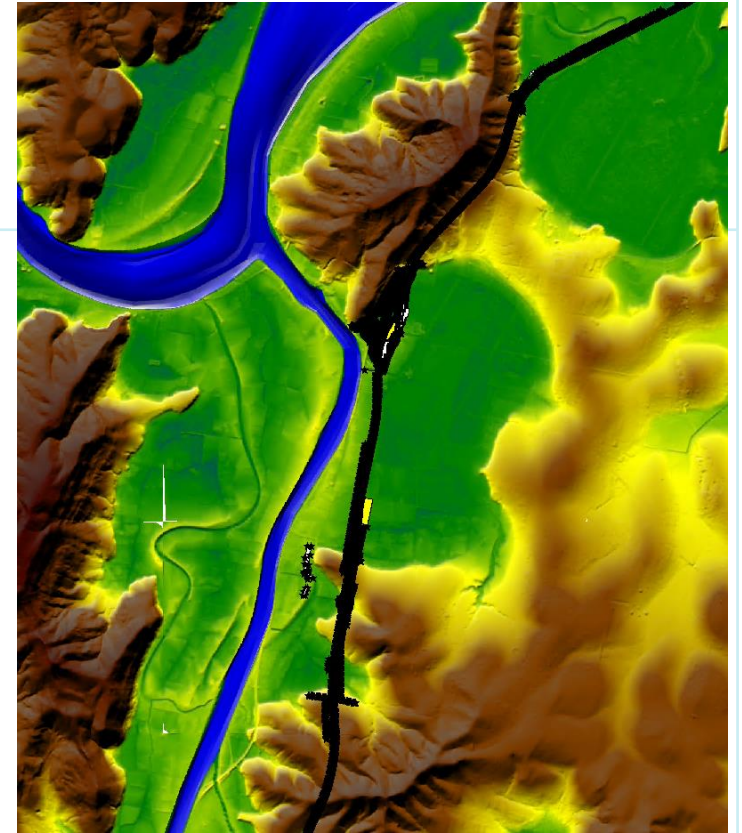
Model Update - Hydraulics

Higher Resolution:

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

Significant Developments Included

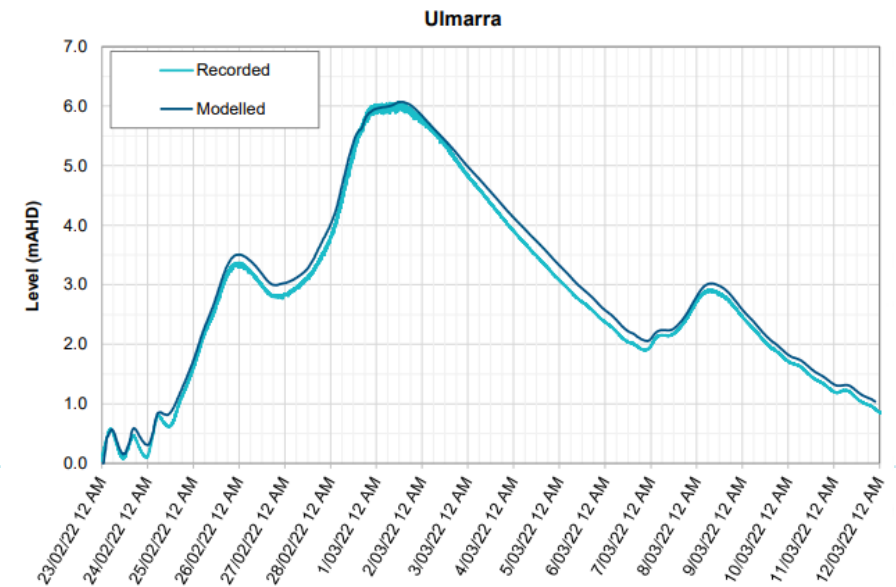
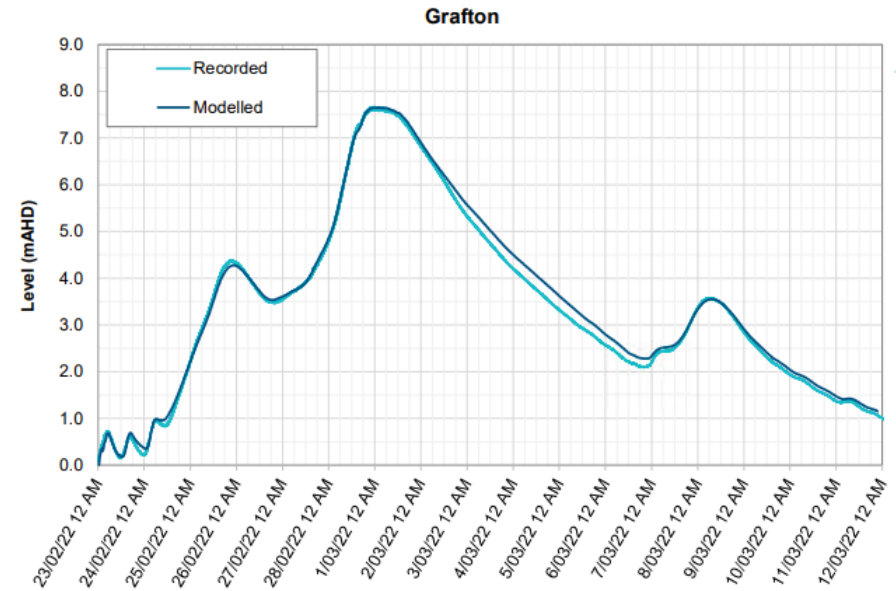
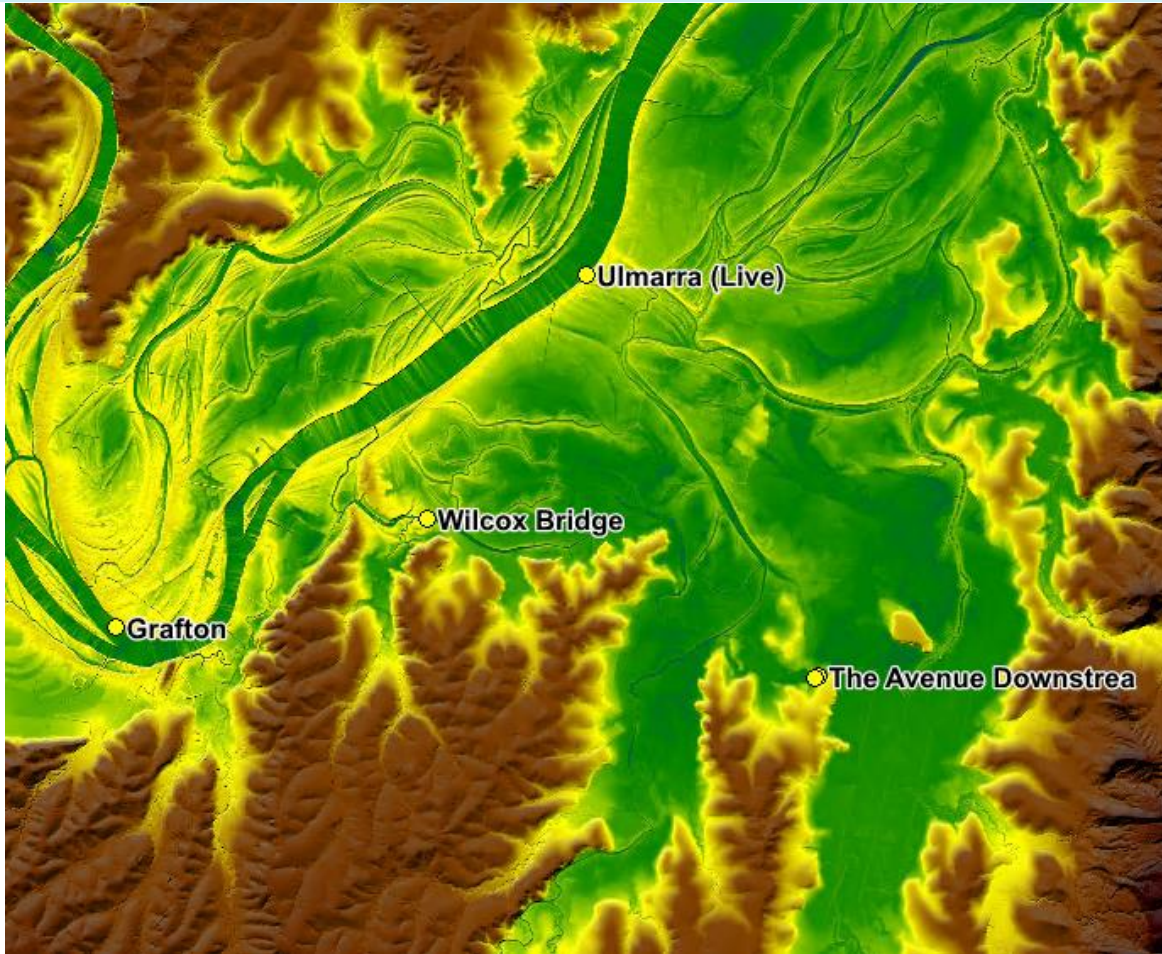
- Pacific Highway Upgrade
- 2nd Grafton Bridge and Approach Roads
- Various levee surveys captured since 2013



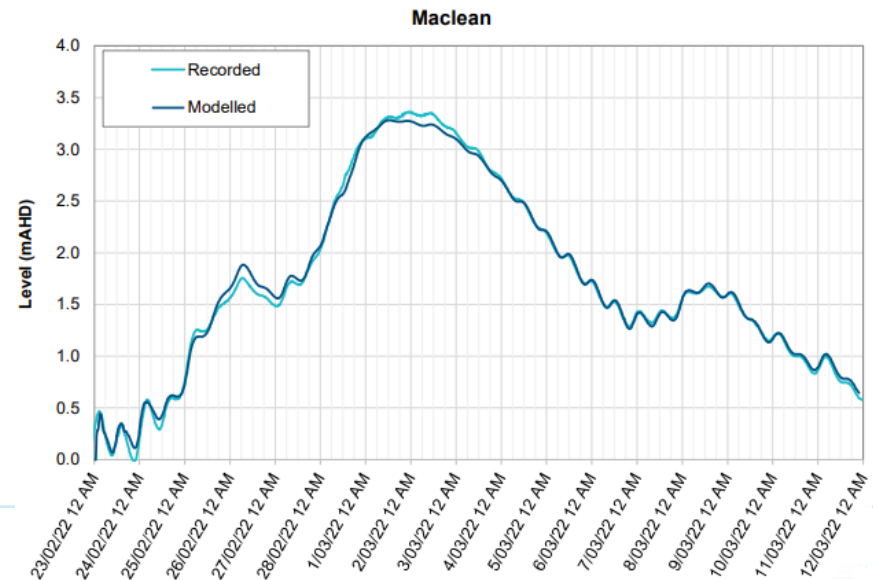
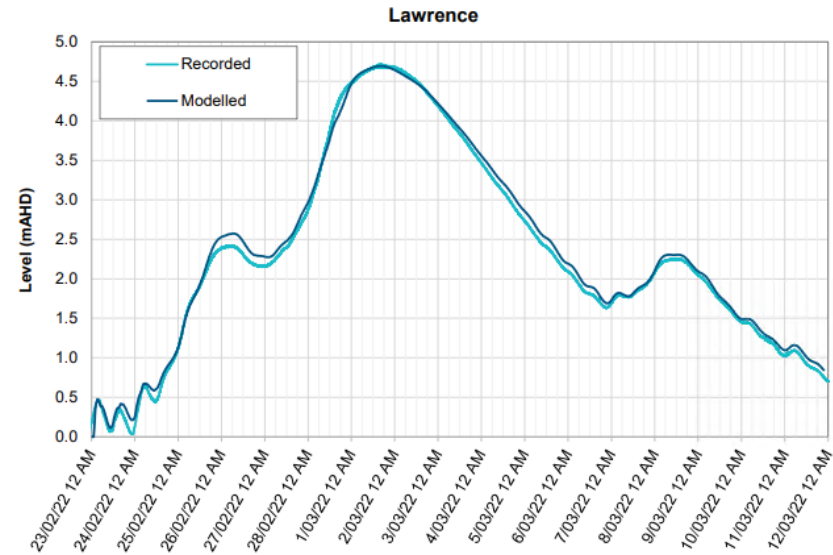
Model Update - Hydraulics



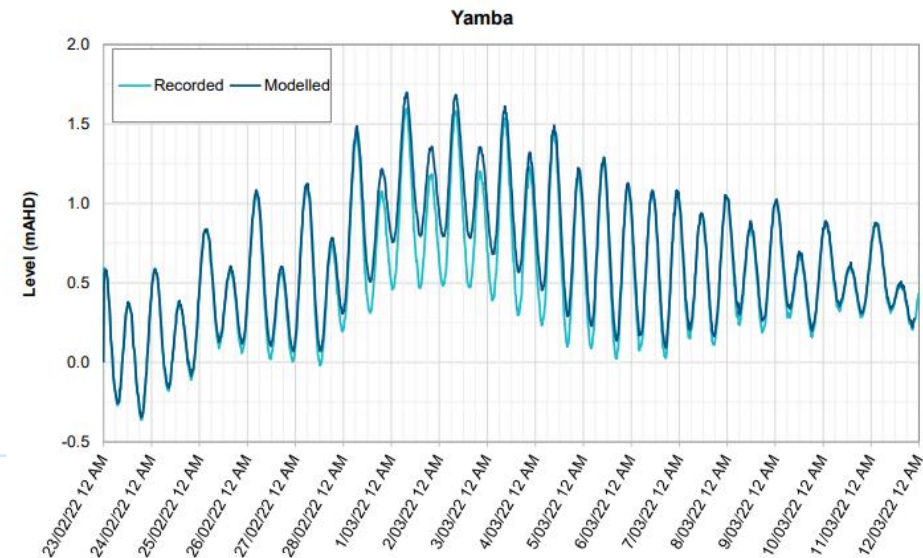
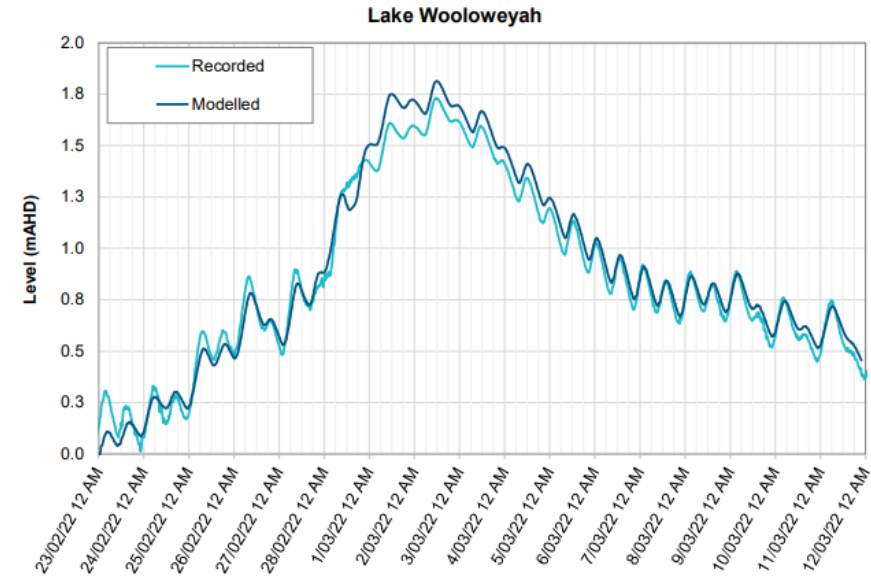
March 2022 Event Calibration



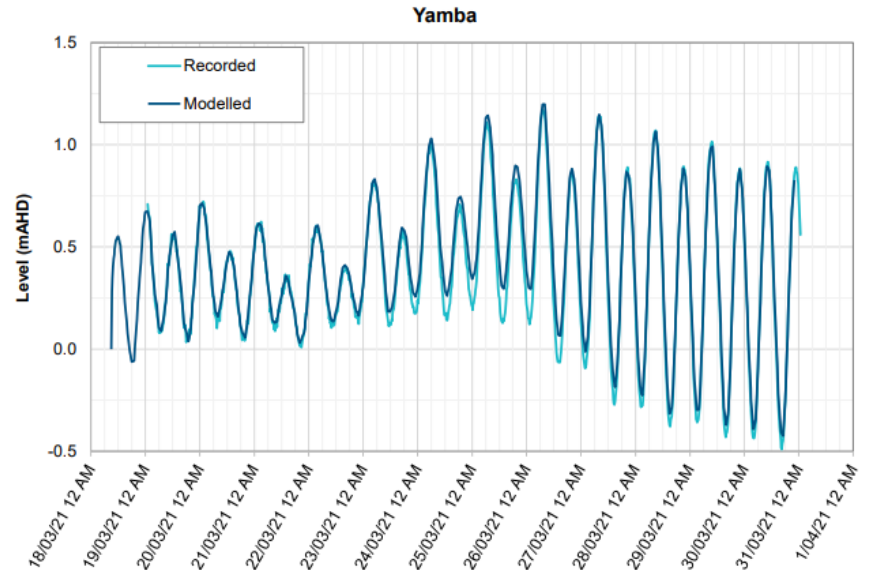
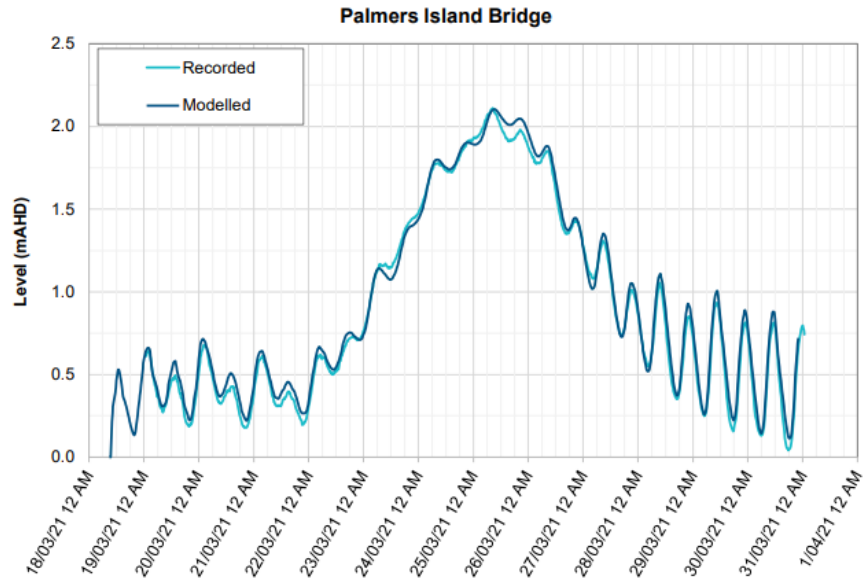
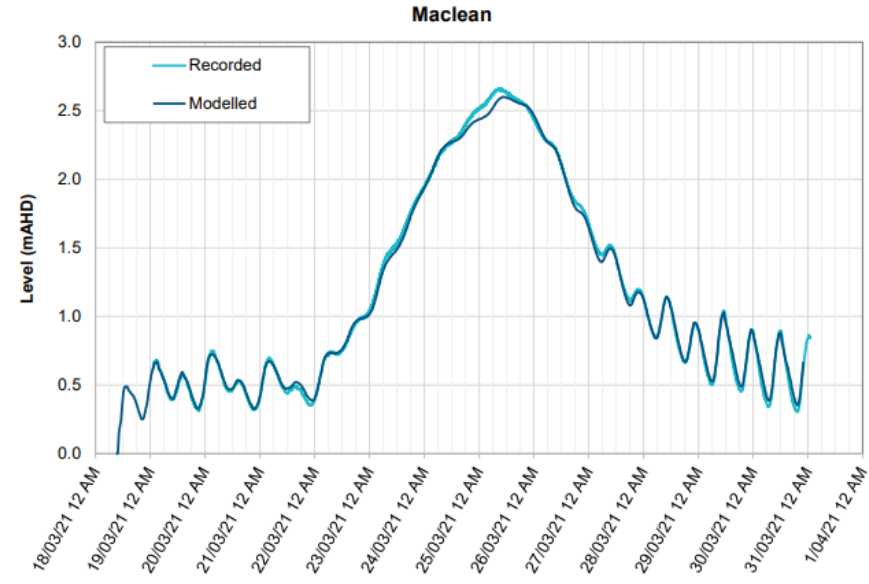
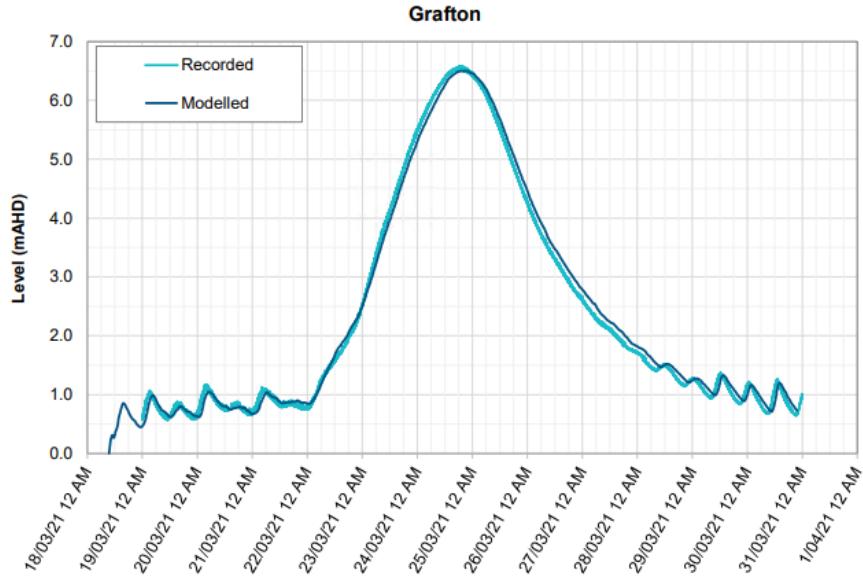
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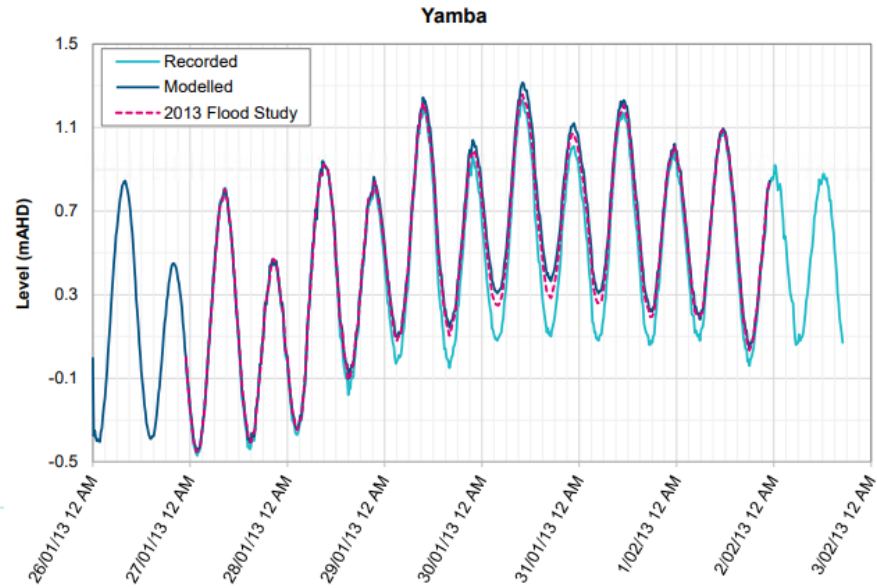
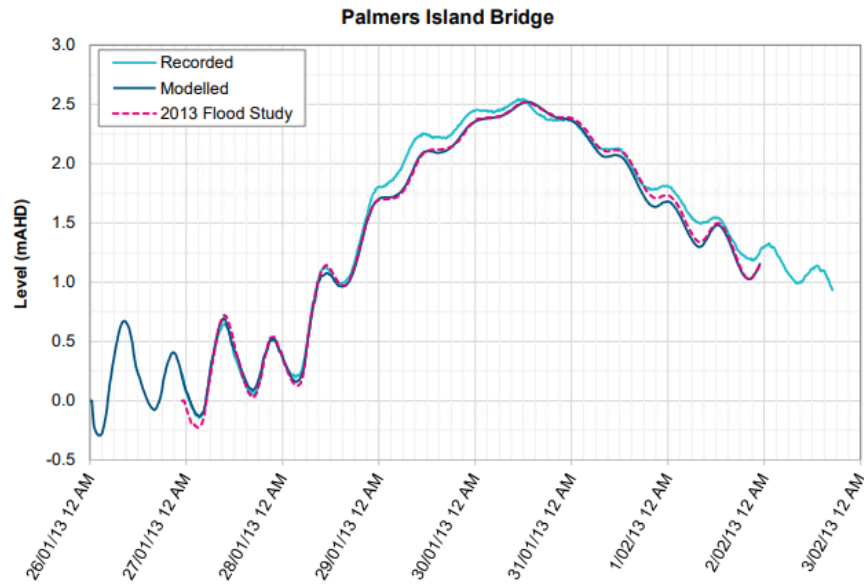
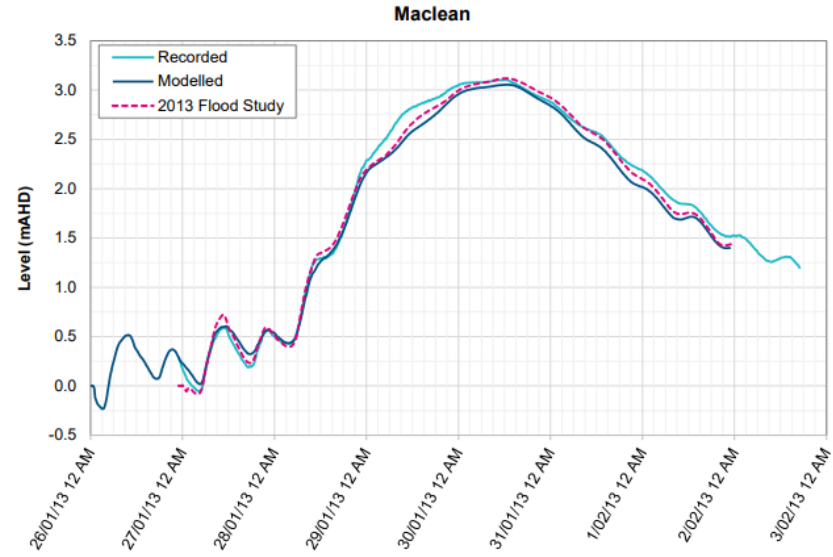
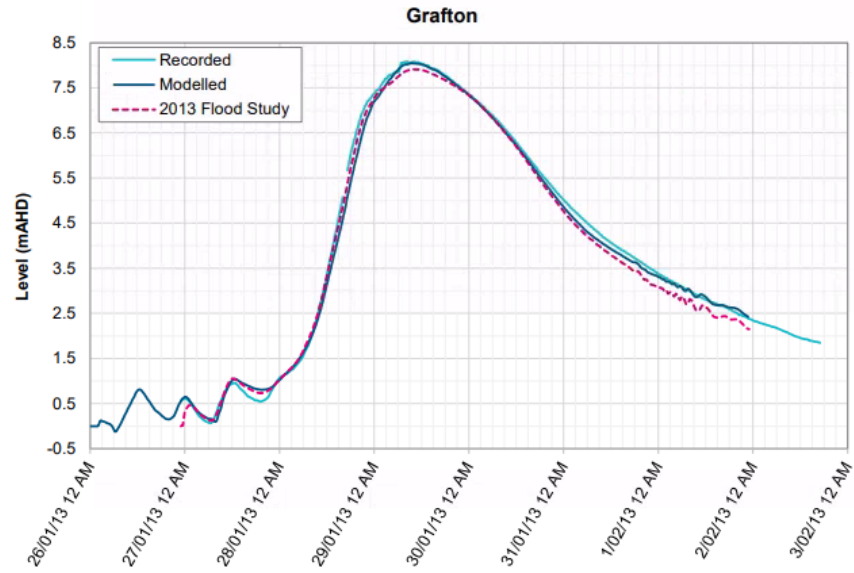
March 2022 Event Calibration



March 2021 Event Verification



January 2013 Event Verification



Design Events

- **Events Modelled:**
 - 20%, 5%, 2%, 1%, 0.5%, 0.2%, Extreme Event
 - 1% AEP with Climate Change (RCP4.5 and RCP8.5)
- **Main Clarence River Inflow from Flood Frequency Analysis (updated for this assessment)**
- **Design flood storm tide updated**

Flood Frequency Analysis: Grafton

- **FFA used to derive main Clarence River inflow**
- **Last updated in 2002**
- **Additional 20 years of data**
- **Recorded levels at Grafton over 163 years**
- **Flood Levels converted to a flow at Mountain View via a rating curve**

Rating Curve	Description	Applicable Period of Record
1	Natural State	1839 to 1909
2	Works in place at 1910	1910 to 1973
3	Works in place at 1974	1974 to 1995
4	Works in place at 1996	1996 to present

Flood Frequency Analysis: Top 10 Peak Flows

Rank (for peak flow)	Event Year	Peak Level at Grafton (mAHD)	Peak Flow (Mountain View) (m ³ /s)
1	1890	7.83	20,411
2	1887	7.78	20,157
3	1893	7.68	19,648
4	1876	7.43	18,377
5	1950	7.73	17,408
6	1954	7.67	17,068
7	1893	7.15	16,977
8	1963	7.58	16,728
9	1967	7.55	16,614
10	2013	8.09	16,433

Flood Frequency Analysis: Updated Inflows

AEP (%)	2004 Flood Study	2022 Flood Study
20	9,360	9,240
10	13,710	13,670
5	16,280	16,380
2	18,220	18,500
1	19,060	19,460
0.5	19,590	20,080
0.2	20,000	20,590

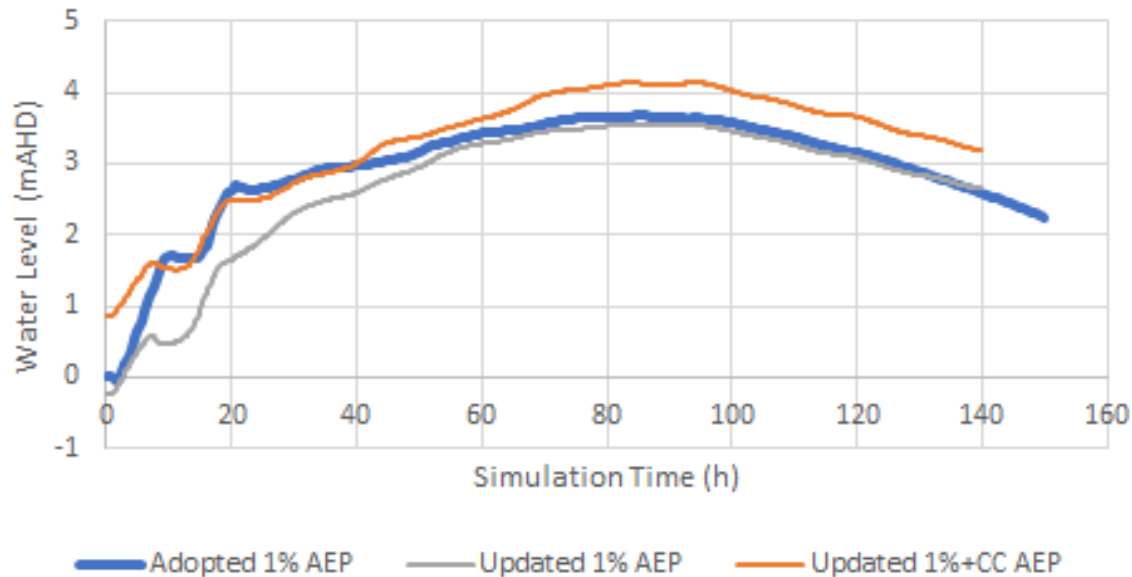
Design Storm Tide: Magnitude

- **Last updated in 1988**
 - **1988 study had a peak 1% AEP storm tide level of 2.6mAHD**
 - **Widely regarded as overly conservative**
 - **FRMS attributed 0.4m of this peak to climate change**
- **Current study adopts 1.62mAHD as 1% storm tide**
 - **Based on storm tide investigation assessment (Risk Frontiers, 2021)**
 - **Similar to 1% AEP estimate from State guideline (1.55mAHD for Type A entrance).**
- **1% AEP climate change adds 0.76m to this to account for sea level rise (RCP 4.5)**

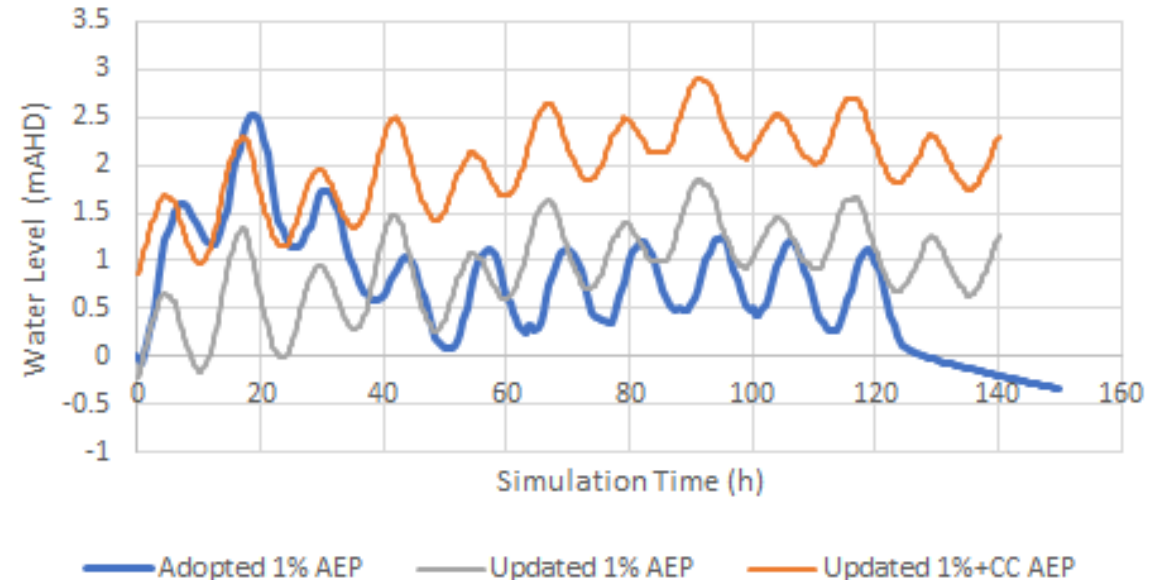
Design Storm Tide: Timing

- Previous assessments had storm tide occurring before peak of catchment runoff
- The updated study follows OEH guideline and coincides a 1% AEP catchment runoff peak with a 5% AEP storm tide

Maclean



Yamba



Extreme Event

- **Extreme Event is a proxy for the Probable Maximum Flood (PMF)**
- **Previous Extreme Event scaled 1% AEP flow by factor of 1.53**
 - **Based on PMP rainfall which has significantly increased under updated guidelines**
 - **Extreme Event therefore understated**
- **Updated Extreme Flood maintains similar assumptions but is informed by updated PMP estimates**
- **Updated Extreme Flood uses a factor of 3.0 on the 1% AEP event**
- **This is a significant increase**

Updated Results


Table 6.3 Peak Design Flood Levels at Gauges (mAHD)

Gauge	20% AEP	5% AEP	2% AEP	1% AEP	0.5% AEP	0.2% AEP	Extreme	1% AEP (CC1)	1% AEP (CC2)
Grafton (Prince St)	6.27	8.11	8.38	8.44	8.48	8.59	13.58	8.72	8.73
Ulmarra	5.08	6.15	6.38	6.42	6.48	6.58	12.71	6.66	6.71
Brushgrove	4.24	5.14	5.40	5.66	5.87	6.09	12.50	6.22	6.29
Tyndale	3.91	4.61	5.25	5.50	5.69	5.90	12.34	6.03	6.10
Lawrence	3.51	4.65	4.89	5.14	5.34	5.57	12.10	5.70	5.79
Maclean	2.41	3.18	3.41	3.55	3.69	3.85	8.56	4.02	4.14
Palmers Island Bridge	1.96	2.59	2.86	2.99	3.12	3.24	7.77	3.53	3.68
Oyster Channel	1.08	1.41	1.94	2.07	2.24	2.41	7.17	2.94	3.20
Lake Wooloweyah	0.88	1.32	1.92	2.08	2.26	2.44	7.20	2.96	3.22
Yamba	1.17	1.34	1.79	1.85	1.94	2.01	6.07	2.62	2.92

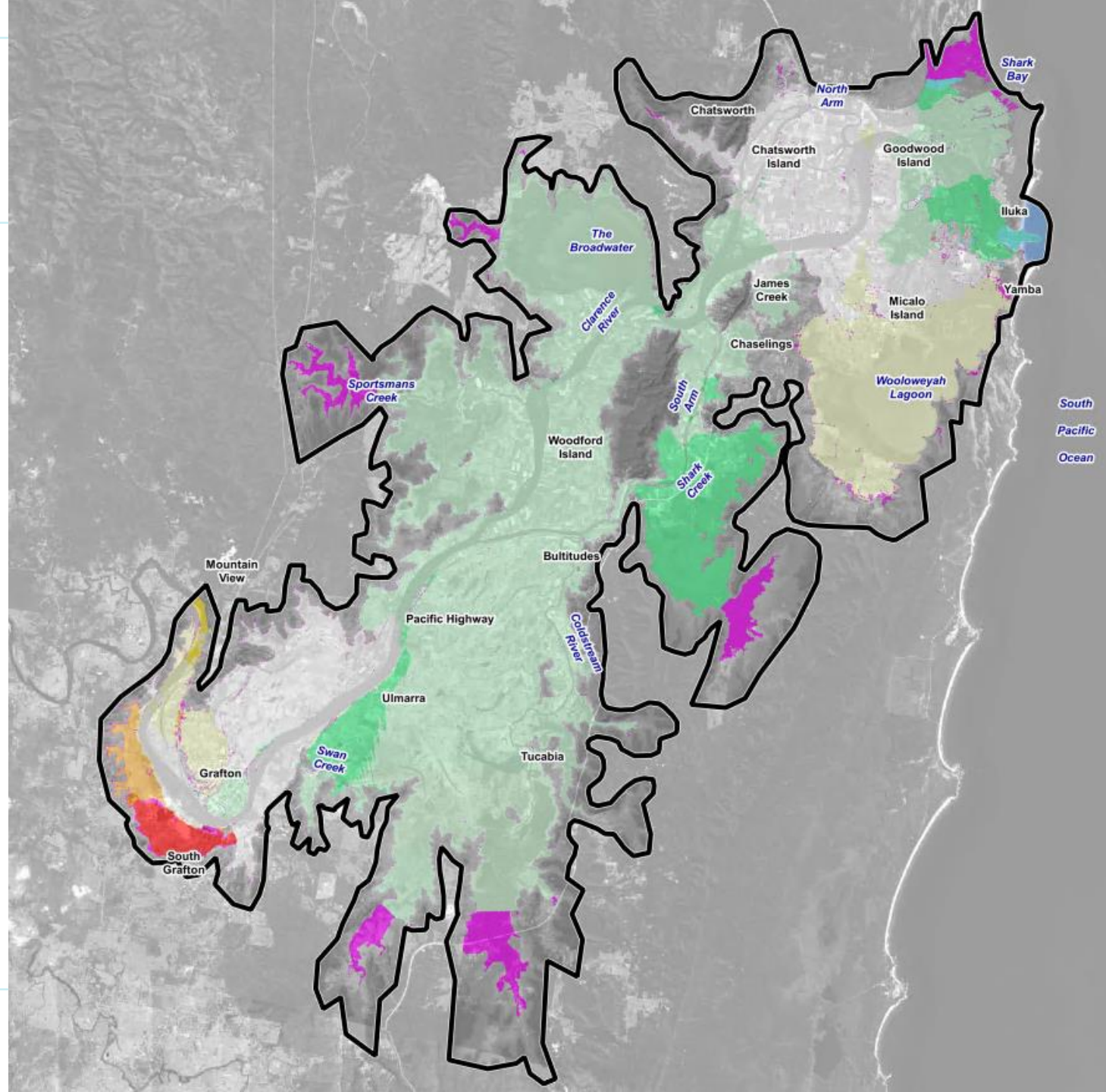
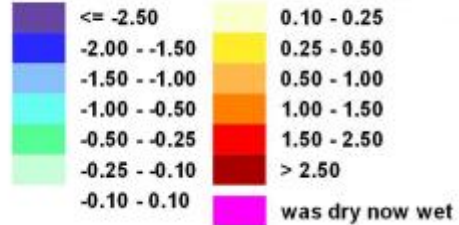
Updated Results

- 1% AEP Comparison to adopted model

LEGEND

 Study Area

Peak Flood Level Difference (m)



Animations...