When the Manning River Rose – Wingham Water Dropped & the MidCoast Team Stepped Up

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ABSTRACT

In May 2025, the MidCoast region of NSW experienced the most extreme flood on record with the Manning River peaking above the 0.2% AEP event. Amongst the widespread impact on infrastructure, MidCoast Council's Water and Sewer team demonstrated agility, expertise and resilience in maintaining essential services for around 43,000 connections

This paper presents a case study of the impacts experienced as well as the operational strategies and emergency actions undertaken during the flood, including key responses across sewerage systems, water treatment plants and the water supply to Wingham. It also outlines the system recovery process, infrastructure adaptation measures and key learnings for flood resilience planning in regional water utilities.

INTRODUCTION

MidCoast Council, formed from the amalgamation of three former councils and MidCoast Water, is responsible for managing a $5.8B infrastructure portfolio across the region. This includes six (6) water supply schemes, 14 sewerage schemes and 10 recycled water networks. The Council's infrastructure services support a geographically dispersed and climatically diverse area along the NSW Mid-North Coast.

Figure 1 - The MidCoast Local Government Area

Prior to 2025, the region had already endured major droughts, fires, storms, floods and a 1% Annual Exceedance Probability (AEP) or 1-in-100 year flood event. This experience helped to prepare our teams for future events. In May 2025, a record-breaking flood event triggered unprecedented challenges, placing critical water and sewer assets under severe pressure. This event was approximately 100mm above the 0.2% AEP, or 1-in-500 year flood level, surpassing the 1929 record level. It was a statistically significant event that resulted in impacts on the community far beyond what anyone had previously envisioned.

During the peak of the flood, Council's main office was operating as an emergency evacuation and triage centre for nine helicopters, numerous boats and a fleet of emergency service vehicles that resembled something as close as possible to a war but without guns.

THE RAINFALL & FLOOD

Whilst the 2021 and 2025 events were in different months, they happened to coincide on the same days of the month; the 19th to 23rd. During the lead-up to the 2025 event, the region experienced wet conditions for 3 months, with the last 3 weeks comprising recurring storms. This rendered the catchment primed for a significant flood. However, what occurred was beyond anyone's predictions.

Comparing the rainfall data for two key sites at Careys Peak (upper catchment) and Taree Airport (floodplain) in the graph below, the primary difference in the events was the level of rainfall on the second day of the events (20th). The 2025 rainfall was roughly double what was received in 2021. This had the impact of generating a significant flood event in the upper catchment whilst the lower catchment was trying to cope with a massive influx of stormwater issues. The peak rainfall intensity was between 4 - 5 am on the 20th, with 87mm of rainfall recorded over the hour.

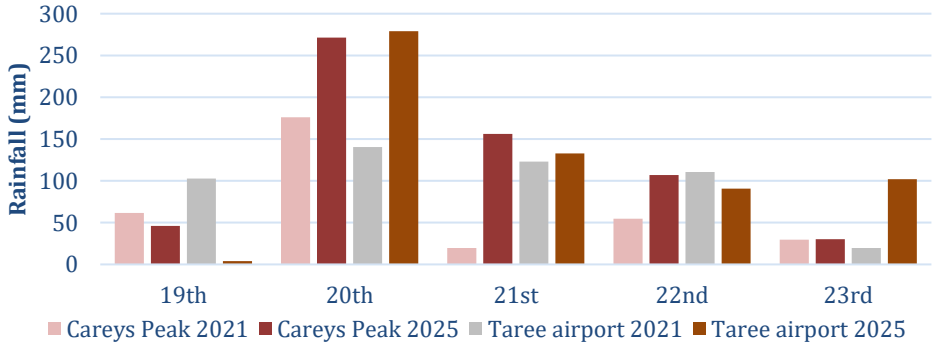

Figure 2 - Rainfall comparison during flooding in 2021 &2025

Looking at the river flow data recorded since 1941, the impact of the stormwater on the lower floodplain is evident. In the upper catchment, the river flow in the Barrington River, a major upper tributary of the Manning River, was only marginally above the previous record events. Yet, the resulting flood was much more significant on the floodplain.

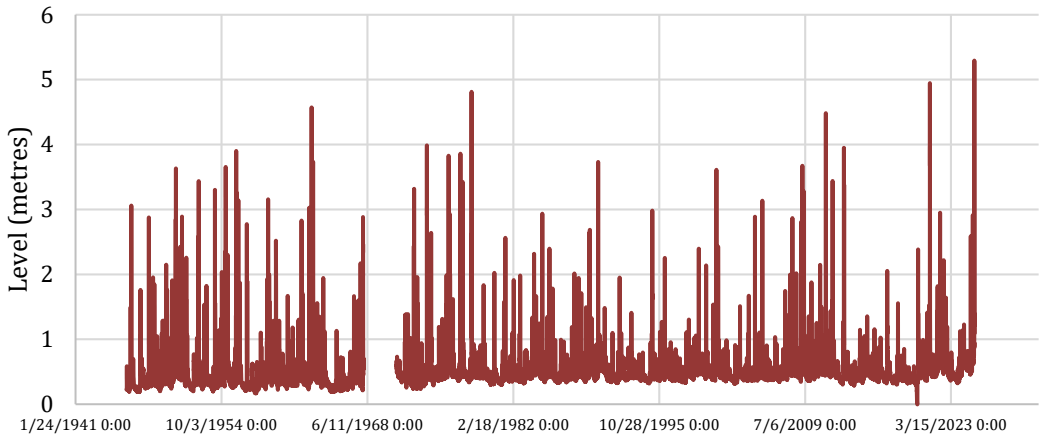

Figure 3 - Barrington River Levels @ Rocky Crossing

When the upper catchment flood flows eventually reached and combined with the stormwater already on the floodplain, the result was a flood much greater than expected. This is evidenced by the difference in river levels at Taree where the flood was considerably higher than previous records, reflecting the magnitude of the event.

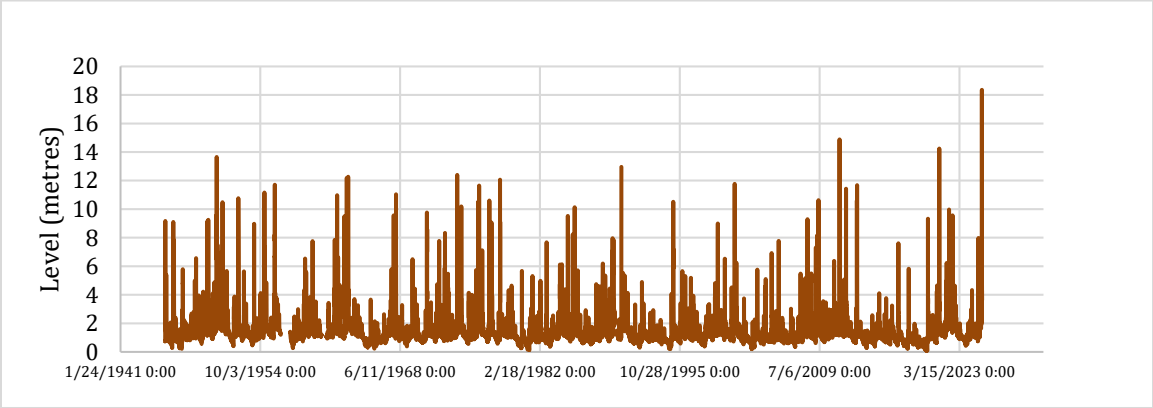

Figure 4 - Manning River Levels @ Killawarra Bridge

THE SEWER NETWORK

Like most utilities, the effectiveness of the sewer network quickly diminishes during a significant flood event. Our sewer systems in low-level and flood-prone areas experienced high flows from infiltration ahead of power failures and the resulting communications failures as flooding increased.

Figure 5 - Taree SPS#4 - Flood Rack & Mud

Council operates 210 sewer pump stations (SPSs). At the peak of the 2025 flood:

- 45% of Taree and Wingham SPSs were offline due to power or comms failure. A further 28% were in high-level alarm due to inundation/infiltration.
- 17% of SPSs in the Southern Region were in high-level alarm due to inundation/infiltration, with a few offline due to power outages/submersion.
- Our largest SPS, Taree #06 dry pump well, was flooded and isolated. Our operators managed to remotely modify the PLC code to enable one of the submerged pumps to continue transferring sewage to Dawson Sewage Treatment Plant. Whilst the generator could still operate, the length of the flood peak meant that refueling it became a manual task.
- Vacuum sewer systems at Harrington and Manning Point performed markedly better than in 2021 due to upgraded vacuum pot controllers and raising the worst controller above ground level.
- We experienced major stormwater infiltration in the Harrington system due to runoff from the National Park north of the town, also known as 'The Big Swamp'.
- Our fleet of mobile generators and the hard-wired generators at critical sites were invaluable in this operation, allowing pumping to commence quickly ahead of the power being restored to the sites.
- Previous efforts to raise switchboards above flood heights were helpful. Even though some of these switchboards were still impacted, the level of damage meant that they could be partially rewired quickly rather than having to be fully rewired. Many of these sites ended up with water getting into the pump motors

Figure 6 - Inundated SPS Switchboard

after tracking down the cables from the switchboard. Had the cable connections been fully sealed, we would have had less damage to our pumps from the event.

Despite widespread inundation, rapid system recovery enabled all SPSs to be restored within two days of the peak, except for seven (7) SPSs in Taree that remained inundated by floodwater. This recovery was aided by the spare switchboards held in our depot that could be swapped over quickly for ones that had been fully emersed in floodwater. Other boards were rewired with new components held as spares or cannibalised from other sites.

Figure 7 - Taree SPS #6 - Flooded over the floor height but still operational & refueling the generator

SEWAGE TREATMENT PLANTS

The Wingham Sewage Treatment Plant (STP) was completely submerged during the event, suffering substantial damage and accumulating mud and debris throughout the plant. Pre-planning for the event allowed for the relocation of some critical equipment prior to the flood.

Recovery included the removal of substantial mud and debris. Control cabinets were washed down, dried and rewired. Screen and temporary settlement were implemented within two days of the peak. Secondary treatment was resumed four days later.

Figure 8 - Wingham STP - Immediately Post Flood

Figure 9 - Wingham STP - Post Flood Damage & Cleanup

WATER SUPPLY IMPACTS

Overall, our water systems performed very well during the event.

Plants treating raw water from the river systems in Stroud, Bulahdelah and Gloucester experienced high turbidity. However, the work previously done to optimise the conventional treatment processes at these facilities has provided a dividend with the systems operated to achieve <0.2NTU most of the time. This was an outstanding result as shown in the charts adjacent.

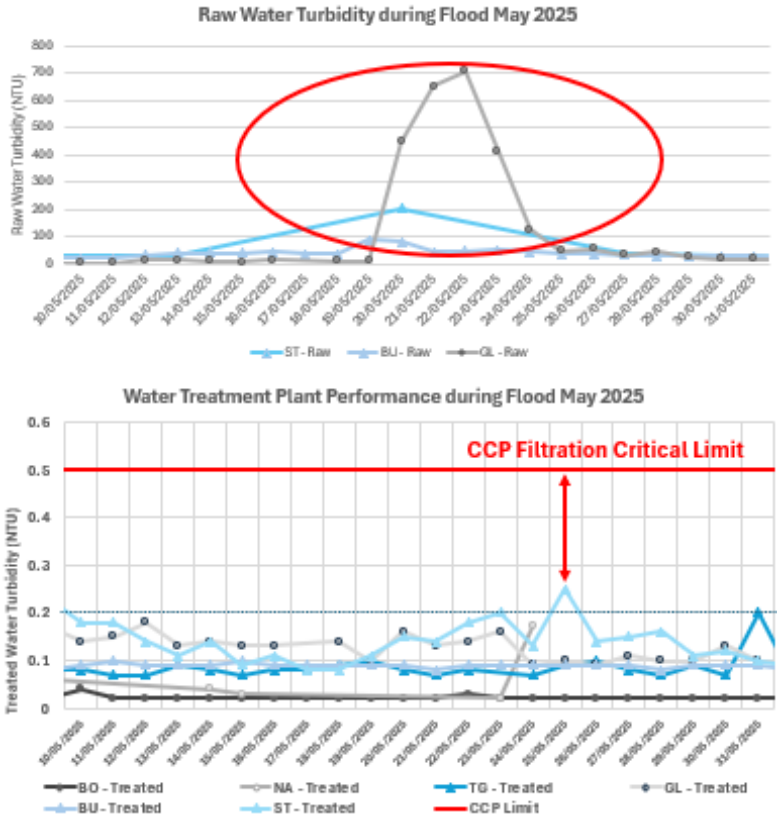

Figure 10 - Raw Water V's Filtered Water Turbity (NTU)

The significant inflow of rainfall to our off-creek storage dam consumed much of the available freeboard in the dam. The Dam Safety Emergency Plan was triggered and operators dropped the level of the dam during the event by releasing water from scour valves in two locations. This had a negligible impact on downstream properties.

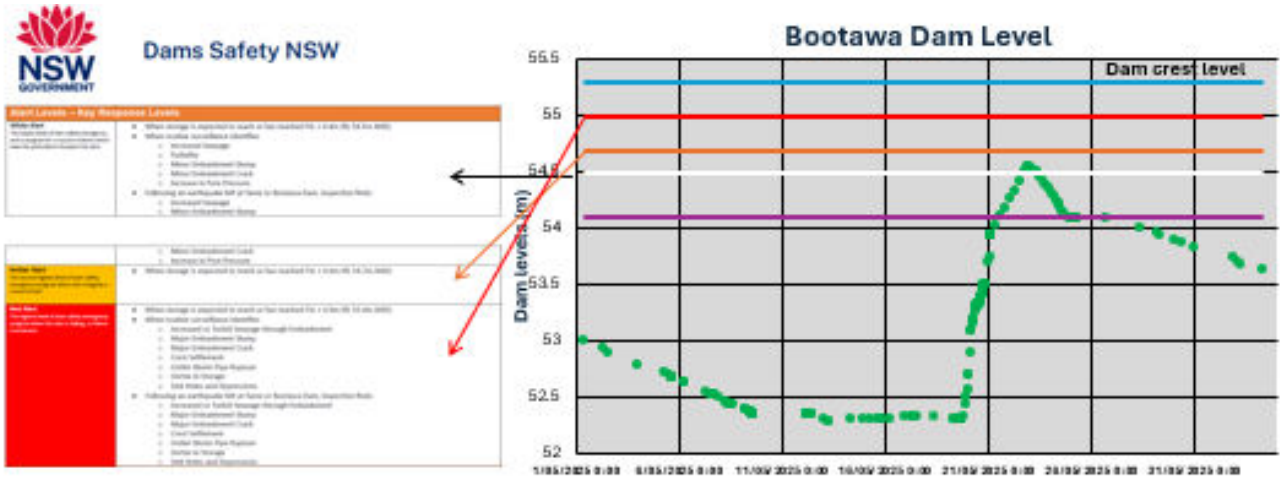

Figure 11 - Bootawa Dam Levels V's DSEP Trigger Levels and Action Framework

WINGHAM WATER SUPPLY

The northern region of the Manning Water Scheme was disrupted following damage to the trunk main crossing of the Manning River between Bootawa and Wingham. Reliance on an alternate feed proved to be problematic under gravity with the level in Wingham Reservoir slowly reducing, prompting multiple emergency actions to be enacted concurrently.

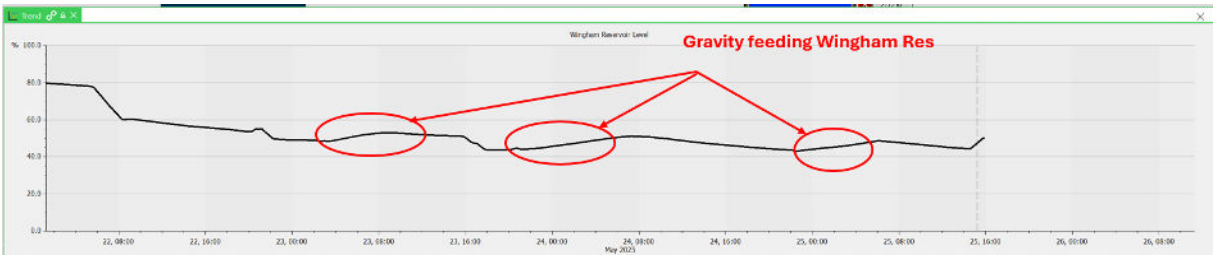

Figure 12 - Decline in Wingham reservoir levels under alternate gravity feeding constraints

The flood had caused extensive erosion of the riverbank where the trunk main crossing had been constructed in 1968. Originally, the welded mild steel main was trenched through the riverbed, anchored with concrete trench stops and protected with rock-filled wire bags of a type similar to gabion baskets. Much of the protection has since disappeared.

When divers were finally able to enter the river safely, they confirmed that the

Figure 13 - Approximate Location Of Pipeline Damage

damage to the pipeline resulted in the broken end being bent approximately 90 degrees towards downstream, rendering it unrepairable.

The emergency response included:

- *Alternative Supply* - As noted above, gravity alone was insufficient. Initial efforts to pump water back to Wingham resulted in water main breaks. On the fifth attempt, we were able to reverse pumping in the system from Taree back to Wingham and restore water supplies.
- *Bulk water carting and bottled water distribution* – Our team distributed over 22,000 bottles of water to residents during the disruptions. An alternate tanker supply was organised for the hospital and residents also had access to a bulk tanker for larger quantities of water. With the help of McColls Transport and local agents, we were able to commence bulk water carting to Wingham in 36 hours. This helped to maintain supply whilst the pumping system eventually recovered levels.
- *Fault investigation and planning for pipeline replacement* – Council resolved to accelerate a project to underbore the river estimated at $5M with plans for this work to be complete within 5 months. Work is advancing quickly, including the construction of access roads ahead of the drilling equipment mobilising to the site.

Whilst there was some dirty water caused from the disruptions, overall, water quality was preserved despite the low pressure and no pressure experienced in some areas of the Wingham reticulation system.

CONCLUSION & KEY TAKEAWAYS

Whilst we are still recovering and restoring the full system capacity in many areas, the key learnings or takeaways from our experience with this event include:

- ***Organisational Capacity*** – Every effort put into maintaining capacity will pay dividends. We have implemented a good fatigue management policy that helped to manage our workforce during the flood. We also benefit from highly skilled teams that are highly autonomous, even during an emergency. A lot of effort has been put into our trainee program and making sure all our operators have the skills necessary to excel at their jobs. This supports a dispersed and delegated decision-making framework, improving our agility on the ground to respond and manage the event. We also had contract resources available to support most of our operational teams as needed.
- ***Sewer Pumping Stations*** – We could have put more effort into making sure the pump cable connections were sealed. Whilst we raised a lot of

switchboards, the magnitude of this event partially submerged some of them, resulting in water entering the pump cables, damaging their motors. We were able to use spare boards kept at the depot to simply switch out with the flooded ones, returning them to service quickly. We also rewired those with minor damage.

- ***Communications*** – We maintained communications with Essential Energy to prioritise their resources for restoring power in line with our operational needs. Through contact with the Local Emergency Management Officer and committee, we were able to get support from other government agencies and the SES. In hindsight, we needed many more StarLink mobile satellite communications devices as mobile phones failed, rendering communications impossible. We were trialling four StarLink units and bought all other units available locally during the flood. Dual SIM card phones were considered as another alternative.
- ***Infrastructure Resilience*** – We have started adapting our risk management framework to our operational assets and renewal program. This work wasn't complete and the example at Wingham demonstrates the level of opportunity to improve our system in the future with renewals targeting high risk infrastructure in the network. Our work on the vacuum sewer systems was invaluable. Very few resources were required to keep these systems operating compared to 2021. Our investment in mobile and fixed generators paid off, aiding operation both during and immediately after the event. Our infiltration program is continuously adding to the system resilience by eliminating sources of stormwater and floodwater entering the system.

The May 2025 Manning River flood event tested MidCoast Council's resilience. Through agile asset control, emergency planning, water quality monitoring and decisive leadership, services were maintained. The event underscores the value of pre-planning, infrastructure adaptation and operational agility.

ACKNOWLEDGEMENTS

The authors acknowledge the extraordinary efforts of MidCoast Council staff, Essential Energy, Fire & Rescue NSW, McColls Transport, contractors and the Wingham community for their cooperation, dedication and resilience throughout the emergency.

We deliver benefits for our community in a way that adds value and builds trust!