

NSW GOVERNMENT FLOOD INQUIRY
LGA: BYRON SHIRE COUNCIL
LOCATION: BRUNSWICK HEADS

WHY NOW AND NOT BEFORE DID THE WATER LEVEL RISE AT AND
BRUNSWICK HEADS NSW, FEBRUARY 2022?

SUMMARY: *The low pressure system that had 'stationed' itself off the east coast produced an unprecedented 'rain bomb'. By 28th February 2022 the water table had risen to the surface level following intensive and extensive rains*

Rising water levels at both properties exposed a drainage system that is not fit for purpose and has been in that condition for decades. Whilst it would be impossible to have a drainage system able to cope with the volume and velocity in its catchment in this case, a 'fit for purpose system' would have been able to mitigate storm water damage by allowing it to get away on the outgoing tide before the morning high tide at 7.45hrs.

Natural water storage areas have been infilled for residential development with consequent impacts on the immediate allotments as well as forcing water to find its own level elsewhere either naturally and/or because of inadequate drainage associated with that infill.

Council's LEP has meant that permeable land on residential allotments is being lost to hard surfacing which is exacerbating the drainage issue because the catchment area of the roof tops feeds into the immediate drainage system.

The then Roads and Traffic Authority's engineering in the local area for the M1 dual carriageway has exacerbated the stormwater runoff problem at Riverside Crescent with its 'watershed' configuration at the roundabout and inadequate drainage system from the paper bark swamp on the west to the salty marshes on the eastern side of highway. Water subsequently built up and turned back to find an alternative path to the river.

The collection system to the Brunswick Valley Sewerage Treatment Plant is not fit for purpose in rain events, a condition that has been known for decades. Diluted raw sewage from overflowing gravity mains added contaminants to the rising waters. A properly functioning collection system would have mitigated damage from contaminants, reduced the inflow into the STP and minimized any alleged sewage overflow from manholes.

Siltation of the Brunswick River forces waters from the catchment to find their own level and broke the banks of the river in places on an outgoing tide.

'NORMAL' WET WEATHER CONDITIONS BEFORE FEBRUARY 2022 AT BRUNSWICK HEADS NSW 2483

1. I have lived at _____, Brunswick Heads, NSW 2483 for 36 years... It adjoins the Brunswick River to the north and has, until February 2022, been a dry block for that time
2. To the south of the block is _____. The laneway's gradient is from east to west. The lane's camber is from north to south.
3. There is a large stormwater drain on the western end of _____ with an opening into it on either side of Mona Lane. This drain's purpose is to channel storm water into the Brunswick River.
4. To the east of the laneway is Memorial Park. South and parallel to _____ is _____. To the west is Tweed Street
5. Under 'normal wet weather events', storm water pools on the western side of Memorial Park then overflows into the gutters of _____ adding to the stormwater already feeding from the adjoining dwellings into the drainage system. Because of the lane's camber, dwellings no 4 and in particular 2, would get water into their downstairs area. Over the years, No 2 in particular, has used bound rolls of coconut fibre to stop this water. Summed, local knowledge about the drainage system meant that households in the laneway could 'manage' a rainfall event. Being on the higher level of the road camber, Nos _____ and _____ have never experienced any wet weather problems.
6. A noticeable change in the last couple of years is the impact of a development at No _____. The discharge from this development, in both volume and velocity fills the gutter on the northern side of _____ to within a few millimeters below the storm water outlets from No _____. Previously, there had been a lot of open space on the 1,078sqm block and rain could readily soak through porous soils into the water table. Now, with the extent of hard surfacing rainwater is initially fed into an en-site tank with excess going into the drainage system. Given the high rainfall regime current to the local area, that tank is generally full so storm water continues to feed into the drainage system. Similarly, the renovations/extensions to No _____ have increased the runoff from the now flat roof and ground level hard surfacing. The loss of permeable land under Council's LEP is blatant in terms of its consequences on the infrastructure.
7. The gutters in _____ are not fit for purpose. They are not cleaned and have accumulated silt, sediment and grass so storm water cannot get away efficiently as was intended. This has been the case for decades.
8. The storm water pipes at the end of _____ feeding directly into the river are normally choked with leaf litter which, in part is induced by peoples' behavior.

WHAT HAPPENED IN LATE FEBRUARY 2022

9. By February 28th, there had been extensive rains and the water table at _____ was at surface level. The extent and intensity of rainfall would be recorded by BOM but those figures are from a rainfall collection point inland from Brunswick Heads at Fairview Farm. However, an indication of the rainfall can be gleaned by looking at the inflow figures on Council's website for the Brunswick Valley Sewerage Treatment Plant (BVSTP) whose collection system includes Brunswick Heads and Mullumbimby.

The design capacity of the BVSTP is 3,800kL/day. Normal Average Dry Weather Flow (ADWF) is 1,300kL/day. The STP has inflow/infiltration problems because the gravity mains are not fit for purpose. Surface water and a rising water table allows water to get into the earthen ware pipes. This means the STP is treating stormwater at inflows above its design capacity. The following daily inflow figures are indicative of the storm water entering the collection system over the relevant period.

DATE	INFLOW kL/day
22.2.22	1,971.09kL
23.2.22	8,438.54kL or 2.22 times design capacity
24.2.22	13,580.20kL or 4.36 "
25.2.22	8,949.11kL or 2.35 "
27.2.22	17,726.86kL or 4.67 "
28.2.22	20,694.40kL or 5.45 "
01.3.22	14,544.50kL or 3.83 "
02.3.22	9,214.47kL or 2.42 "
03.3.22	8,072.30kL or 2.12 "
04.3.22	8,990.85kL or 2.37 "

10. High tide was at 7.45hrs with a height of 1.80m and again at 20.01hrs at a height of 1.25m. However, the water level in the downstairs area of [redacted] was rising well before the night time high tide. It didn't pose a problem at the morning's high tide that day.

11. It was obvious earlier in the day that the drainage system could not cope with the volume/velocity of storm water feeding into it. The water level in the gutter at the entry to [redacted] was about knee deep but had not entered the dwelling or the undercover garage area.

12. Later, in the day, and adding to the problem of rising water in [redacted], was water that had flowed from west to east across Tweed Street from west of Pandanus Court and Byron Street. The area west of Byron Street was originally a swamp. It was filled with material dredged to create the Brunswick Boat Harbour and then developed for residential purposes in Bower and Cudgen and part of Fingal Street.

13. The water coming from the west flowed across into Fawcett Street and added to the volume of water already flowing into the drainage system from the east along [redacted]. Water also flowed from south to north across and along Tweed Street from approximately the corner of Tweed and Mullumbimbi Street. This water added to the rising waters in Veteran's Lane.

14. Since the drainage system was already unable to cope with the volume and velocity of water flowing into [redacted], water flowing south to north down Tweed Street towards Massy Green Holiday Park and Mona Lane acted like a dam. Water backed up. The water level on the western side of the dwelling at [redacted] was raised and pooled on the lawn to the north. To the south of the block, the garden was virtually covered. Rising water also flowed throughout the downstairs of the dwelling. This was occurring well before the high tide at 20.10hr which meant that rising water levels were occurring on an outgoing tide. There are varying heights between the cement slab and the ceiling under the house. At the highest, the water level was at knee level at the bottom of the stairs on the south of the house to the hob leading into the downstairs area proper.

15. The gravity main was overflowing and diluted raw sewage from the inspection points at and was also flowing into the water in .

16. , being slightly more elevated, did not incur any damage. downstairs flats only incurred minor damage with water touching the kickboards in each kitchen. downstairs garage and flat were damaged. downstairs garages and bathrooms/laundries were flooded. basement area filled to waist high. downstairs area was flooded with water depths of varying levels up to knee level. The two cars, which could not be moved because of the water level in were had water through them. One of the cars was subsequently written off. downstairs laundry and garage area was flooded.

17. For the first time in 36 years of living here I witnessed the Brunswick River breaking its banks in front of only. That break did not extend to any other part of the foreshore. Water pooled in a slight hollow adjoining the foreshore. It caused minor flooding directly from the river with dimensions approx 5m wide x 8m long x 10cm in depth in a convex shape to 1.5m north of the Norfolk Pine.

I am aware that opposite the Brunswick Hotel, the river broke its banks and flowed across part of Banner Park and Mullumbimbi Street to the pub's brick fence. The question is why couldn't the river accommodate the waters from the catchment feeding Simpson's Creek? The siltation of the estuary, together with that elsewhere is known to locals. Over the period of 36 years, the visible evidence of increasing siltation of the Brunswick River has been massive. To give you an example; in 1986 when I first came to Brunswick Heads, I could swim over arm across Simpson's Creek and barely touch bottom at low tide. Now I can walk across that same width at low tide on exposed sand. To the east of the rock walls, known as the 'dog-leg' have function as a sand catchment area which now extends west to the tip of the eastern rock wall of the caravan park. The one remaining operating trawler in Brunswick Heads oftentimes gets stuck on the extending sand bank.

, BRUNSWICK HEADS

'NORMAL' WET WEATHER CONDITIONS BEFORE FEBRUARY 2022 -

1. I have owned this dwelling since August 2001. I researched its history before purchasing the dwelling from flood level marks recorded at . had always been a dry block during all prior flood events. In fact, it was the only dry block within the loop road adjoining the 12 dwellings because the site had been infilled at the time of construction in the early 1970s.
2. The adjoining drainage system is not fit for purpose and no attempt has been made to make it so;
 - (i) There is a deep drain on the eastern side of Ferry Reserve Holiday Park that has been blocked for decades.
 - (ii) There is a shallow drain on the southern side of the holiday park opposite which similarly has been blocked for decades.
 - (iii) There is a vegetated shallow drain adjoining , and .

- (iv) There is a vegetation shallow drain adjoining [redacted] and [redacted]
 - (v) There is a deep drain on the southern side of the loop road adjoining dwellings nos [redacted] and [redacted]. That drain collects water principally from the drainage system on the adjoining agricultural property to the south. It has been blocked/vegetated for decades. During rainfall events it is also influenced by tidal movements.
 - (vi) There is a deep drain across the foreshore on the western side of the loop road opposite Riverside Crescent. It is vegetated and like all the other drains, not fit for purpose. This drain is on Crown Land.
3. The then RTA constructed a new 'back road' as part of the new M1 to access the 12 dwellings. Prior to that, entry and exit was along the then public road adjoining the foreshore. The gradient of this new 'back road' slopes from east to west promoting surface runoff into a drainage system unfit for purpose. Engineers chose to ignore local knowledge about the drainage system when doing the back road. They also ignored local knowledge about the natural flow of salt water through the paper bark swamp across the area now taken with the M1, to the river.
 4. During a rainfall/storm event, No [redacted] has never flooded be it from stormwater in the drainage system or the Brunswick River breaking its banks along the foreshore. Surveyed height levels for the locale are available in the Plans of Management Ferry Holiday Park December 2013 at Appendix B. Sheet 4 is relevant to the elevation levels. The manhole in front of No [redacted] is 1.39m. With infill at No [redacted], this puts the elevation above that and in fact makes it the highest elevated land within the loop road. The allotment has only been recently deemed in a flood study as of 'intermediate' risk.

CONDITONS IN FEBRUARY 2022

5. High tide on 28th February was at 7.45am at a height of 1.80m and 20.01pm at 1.25m
6. Well before the morning's high tide, water was coming from the south-west. Google Earth gives a clear visual of both the natural and man made drainage system in the area. Water used to flow from those drains into the
 - (i) natural outlets in the Nature Reserve and enter the river on the eastern side of the highway via the salt marsh flats and paper bark swamp that spanned east and west of the road. The then RTA's poor drainage system for the M1 has been inadequate from the start because it makes it difficult for waters from the west to access the river on the east of the highway. The evidence of how the RTA blocked the natural flow of water through the paper barks and salt marsh swamp is well known to locals because the area was good for mud-crabbing. Once the M1 was constructed the crabs, who are dependent on salt water, no longer inhabit the area.
 On the 28th given poor maintenance of the RTA's drains, plus the inadequacy of them, the water could not get under the M1. Consequently 4hrs before the morning high tide at

7.45am, the waters turned back and onto _____ at which time local residents had to open the barricades at Ferry Holiday Park themselves and move vehicles to higher ground. Waters continued to rise well before the high tide.

(ii) the drain on the southern side of the loop road, _____ has never been fit for purpose because it is blocked with a mangrove system reclaiming land and trees reclaiming the road reserve. The result was that rising water backed up and sought the lowest pathway to the river. The lowest point in the loop road has to be where water stagnates in front of Nos _____ and _____.

7. A combination of prolonged rainfall, a saturated ground water table at site No _____ meant that stormwater entered the downstairs area of the house.
8. Diluted raw sewage from the gravity main manhole near No _____ would have added to the problem of rising waters given the gradient of _____ is from west to east.
9. It is undisputed the river broke its banks at a time after water had already entered the downstairs area of the dwelling.
10. Rising waters was thus a combination of both stormwater runoff and the river breaking its banks during an unprecedented 'rain bomb' event.

Brunswick Heads 2483

04.05.2022