Narromine
SHIRE COUNCIL

Supplementary Council Report to Item No 2 of the Committees Report

ORDINARY MEETING OF COUNCIL 8 FEBRUARY, 2017

1. FLOODPLAIN MANAGEMENT COMMITTEE

Introduction

This supplementary report provides Council with a substitute document to be provided to the Peer Reviewer to be adopted for Item No 2 of the Committees Report.

Background

The Floodplain Management Committee held a meeting on 31 January, 2017 wherein a draft document was presented including issues that were to be put to the Peer Reviewer for their consideration.

The Committee resolved "*that the Floodplain Management Committee adopt the amended submission for the purposes of presenting to the Peer Reviewer as part of the consultation process with the additional comments of Jack Cooper included.*" At the time of the business papers being finalised, the information had not been received from Mr Cooper.

Summary/Conclusion

Written advice has now been received from Mr Cooper with regards to the comments that the Committee resolved to include in the document to be provided to the Peer Reviewer. These comments have been added to the existing document and are now provided to Council **(see Attachment No. 1).**

RECOMMENDATION

That the information be noted.

Kerrie Murphy
Director of Infrastructure and Engineering Services

…….. Mayor

ISSUES FOR PEER REVIEW 2017

FEBRUARY 8, 2017

NARROMINE SHIRE COUNCIL
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❖ INTRODUCTION

The following points have been compiled from questions raised overtime by members of the Floodplain Management Committee, in regards to the numerous flood studies/reports undertaken for the Macquarie River at Narromine.

These issues have been put to the Committee and concurrence has been sought.

Narromine Shire Council have resolved to accept that these issues be put to the Peer Reviewer.

❖ BEWSHER REPORT – 1998

- 1955 flood was 14.96 m on new gauge – biggest ever
- Flow between 3400 and 7090 m3/s. Agreed to 5800 m3/s
- 1956 flood was 14.66 and flow 4440 m3/s
- If Burrendong was in place in 1956, flow rate would have been around 4000 m3/s.
- Set 1% at 3800m3/s at 14.66m.

❖ LYALL REPORT – 2009

- Same conclusion on height at 14.66 m for 1% but stated water would enter town through Crossley Drive and most of town would be flooded.
- 0.5% flood, (post dam) flow at 5600 m3/s, less than 1955 flood (flow agreed as 5800 m3/s).
- How do we justify a "1% at 14.94m with 5800 m3/s", when after Burrendong "at 14.94 m with less flow of 5600 m3/s is a 0.5%?"
- Bridge gauge at 14.8 m.

1956 FLOOD WAS THE SAME HEIGHT AS MODELLED BY BEWSHER AT 14.66 M AND IT IS FACTUALLY KNOWN THAT WATER DID NOT ENTER THE TOWN.

- Report states that existing levee was built in 1950 and would be overtopped by 1% (14.66 m).
    - This is not correct, levee was built after 1955 flood and withstood 1956 flood.
- States that Burrendong has a significant effect on the majority of flood events at Narromine, and that had it been in existence in 1955, the February flood would have been significantly reduced.
    - This report says the 1% in 1955 was 14.96 m so how substantial would the 14.96 m be reduced by, now that the Dam is in place?
- States 1% flood would inundate most of the town however, it has already been established that 1% flood at 14.66 m (coincidentally same level as 1956 flood) does not enter town.
- States that due to changes on floodplain over 50 years, if a 1955 flood occurred now, would produce similar depth of inundation to the 0.5% design flood.
    - Report has already stated that the construction of Burrendong would substantially reduce the height of 1955 flood so how can they say this if 1955 flood = 14.96 in this report?

❖ LYALL REPORT – 2012/2013 (POST 2010 FLOOD)

- Report states 1% flood should be raised by .45m to 15.11m at flow 4000m3/s due to increased roughness.
- 15.66 m was used for 1955 flood which was the old gauge and different to new gauge by 0.5m.
- Recommend that a 1% would be 4000 m3/s at 15.11 m due to increase in roughness.
- 0.5% flood should remain at 5800 m3/s.
    - This is the same flow as the 1955 flood that gave Narromine a height of 14.96.
- The 2010 flood stayed >12 m at Baroona for almost 5 days.
- The 1990 flood remained >12 m at Baroona for two and a half days.

- Common advice sought suggests that it is wrong to disregard the times the levels are sustained on a floodplain. There is a large ponding area and a choke in the river below it just east of town which must contribute to the length of time the flood level holds.

- A TUFLOW model was used to predict water heights at Narromine. The model was calibrated using data from the August 1990 and December 2010 flood events. To make the model match the observed river heights they had to increase the Manning Values (increase surface roughness) for the 2010 flood event.

  However, there is little justification for this except that predicted river heights better match the observed heights. Land use along the section of river in this study changed little between 1990 and 2010. The majority of land on the southern bank is residential lots, while MIKE 11 chainage 1.35 to 3.25 is a travelling stock reserve and the vegetation has not changed. Most of the land on the northern side of the river is used for agriculture, but there was little or no change in land use from 1990 to 2010.

- Lyall & Assoc. did not consider that flow rate at Narromine may have been higher in 2010 than in 1990, and therefore responsible for the higher peak river level observed in 2010. This is a definite possibility.

- The flow rates used by Lyall & Assoc. were from the Baroona gauging station. In justifying the use of this data Lyall & Assoc. claim the gauge is 12 km upstream of Narromine (page E1) with no significant tributary between the gauge and Narromine. However, as the report by Lyall & Assoc. states on page 5 (and S1), the Baroona gauge is actually 23 km upstream of Narromine. Brummagen Creek, which drains a large area of the Sappa Bulga Range, does enter the river below Baroona gauge plus many minor waterways.

- In the August 1990 flood most of the water came from the Bell River upstream of Dubbo. However, in 2010 peak flows at Dubbo were less than in 1990 (Table 1), therefore much of the water reaching Narromine entered the river downstream of Dubbo. The flow at Baroona was greater in 2010 than in 1990, and it is likely that even more water entered the river in the 23 km between Baroona and Narromine.

  Table 1

	Dubbo	**Baroona**	**Narromine**
	Max. Height	Max. Flow	Max. Height
August 1990	10.1m	2078 m^3/sec	13.48m
December 2010	9.75m	2200	14.07m

- If allowance was made for a higher flow rate in 2010, the change in Manning values (n) may not have been necessary to make the TUFLOW model match observed river heights at Narromine. Lyall & Assoc. used the higher Manning values (n) in calculating river levels for a 1 in 100 year flood, and I think this is why the river heights predicted for a 4000 m3/sec flow bear no relation to historic data for the 1956 flood with a flow of 4400 m3/sec.

❖ **END OF DOCUMENT**