

# Bonalbo Floodplain Risk Management Plan

Prepared for Kyogle Council

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## Executive Summary

The Bonalbo Floodplain Risk Management Plan (FRMP) has been prepared for Kyogle Council in accordance with the NSW Flood Prone Land Policy and the principles of the Floodplain Development Manual (NSW Government, 2005).

This FRMP is to be considered in combination with the Bonalbo Floodplain Risk Management Study (FRMS) and its attached Appendices, which have been prepared as a separate document to this FRMP. The FRMS (BG&E, 2023) was prepared under the Floodplain Risk Management framework and assessed and recommended a number of floodplain risk management measures. The findings of this study was used in the recommendations presented in this FRMP.

The objective of this Floodplain Risk Management Plan is to provide information on the management of flood risk in the future. It outlines a range of measures to manage existing, future and residual risk effectively and efficiently. It also outlines an implementation strategy to guide the implementation of the proposed measures.

The Bonalbo Floodplain Risk Management Plan was placed on public exhibition and an information session was held at the community markets to explain the study methodology and findings while seeking any concern or feedback. Post the public exhibition period Kyogle Council adopted the Bonalbo Floodplain Risk Management Plan on 22 April 2024 with the resolution number CO/0424/11.

## Study Area

The project study area (refer Figure 1) includes the township of Bonalbo and Clarence Way / Woodenborg Road area around Peacock Creek. At Bonalbo Peacock Creek has a catchment area of 121 km<sup>2</sup>, there are external catchments to Peacock Creek that drain through the town. These have an accumulative catchment area of 5 km<sup>2</sup>. The hydraulic model extent is approximately 6.3 km<sup>2</sup>.



Figure 1: Study Area

## Flood Risk

The Bonalbo township can be impacted by different types of flooding behaviour.

- Mainstream flooding from Peacock Creek. The town of Bonalbo is situated adjacent to Peacock Creek with properties located less than 70 m from the creek. In events larger than the 5% AEP event floodwaters flow into the town from the creek. This affects the properties on the south-eastern side of town around the Oval and eastern end of Sandilands Street.
- Local catchment flooding as a result of rainfall from the upstream catchments of the town. This type of flooding is typically a shorter duration (1 to 2 hours) for most design floods. Overland flows drain from the upper catchments in the north and north west through the urban area in the existing drainage network and discharges into a channel on the southern side of town eventually connecting to Peacock Creek. There is a local catchment drainage path on the eastern side of town which flows on the southern side of Woodenbong road through the oval area, pre-school and properties on the eastern end of Sandilands Street.

## Community Consultation

A community consultation strategy was undertaken as part of this FRMS and FRMP. This includes the following:

- Community questionnaire
- Project Website
- Publication of FRMS
- Community information (drop-in) sessions
- Agency Consultation (NSW SES, DPE)
- Stakeholder Meetings
- Public Exhibition of the FRMS and FRMP

## Floodplain Risk Management Study

The key outcomes of the Bonalbo FRMS are as follows:

- Update of the Bonalbo township flood model to include latest topographical information and calibration to the February 2022 flood event.
- Evaluation of flood risk for the Bonalbo township using the most recent hydraulic model results. This analysis of flood risk includes identifying areas of flooding hotspots, flood hazard within the town and for access and egress routes, flood risk to critical land uses such as hospitals and schools and an economic damages assessment.
- Review of the flood planning policy and flood related controls covered by the LEP and DCP. A draft Flood Planning Area (FPA) is presented within the document.
- Identification of potential flood mitigation measures to reduce the flood risk within the town of Bonalbo. These modification measures were assessed and evaluated using a Multi-Criteria Assessment (MCA). The use of an MCA allows for a comparative assessment of all the flood mitigation measures against economic, social, environmental and safety aspects.

The FRMP has been based off the analysis in the FRMS and presents recommended measures for managing flood risk at Bonalbo, as well as a strategy to implement these measures.

## Recommended Floodplain Risk Management Measures and Implementation Program

The floodplain risk management measures analysis undertaken in the FRMS was used to derive this FRMP. The detailed assessment of all the measures can be seen in Section 10 of the FRMS. Table 1 summarises the recommended floodplain risk management measures and an implementation timeframe.

**Table 1: Summary of Recommended Floodplain Risk Management Measures**

Mitigation Type	Option ID	Option Name	Estimated Total Cost	Estimated Cost to Council	Responsibility	Priority
Property Modification	PM1	Zoning and Development Control	n/a	n/a	Council	High
Response Modification	RM1	Education and Flood Awareness (including flood signage)	n/a	n/a	Council	High
	RM2	Flood Emergency Response - Local Flood Plan	n/a	n/a	SES	High
	RM3	Flood Prediction and Warnings	n/a	n/a	SES, WaterNSW	Medium
Flood Modification	FM1	Pipes Connecting Overflow from Basin to Peacock Creek	\$217,000	\$43,400	Council	Low
	FM2	Levee along the West Side of the Oval, with Connecting Pipes or Swale from Basin to Peacock Creek	\$385,000	\$137,000	Council	Medium
	FM3	Bund on the North Side of Oak Street	\$70,000	\$14,000	Council	High
	FM4	Bund Upstream of Woodenbong and Cope Street Intersection with Additional Culverts under Sandilands Street and Woodenbong Road through Town	\$1,070,000	\$214,000	Council	Medium

The estimated cost to council is based on the apportionment of the funding ratio between Council and State is 1:4, as part of the NSW government's Floodplain Management Program. Council may seek this funding from the program to implement the findings of this document. Figure 2 shows the location of the proposed flood modification options.



**Figure 2: Location of Flood Modifications**

Priorities and timeframes for each option have been classified as High, Medium and Low through the following system:

- High Priority
  - Have a relatively low effort and cost to implement
  - Achieved a high score in the MCA within the FRMS (overall rank of 5 or higher)
- Medium Priority
  - Have a high effort and cost to implement
  - Achieved a high score in the MCA within the FRMS (overall rank of 5 or higher)
- Low Priority
  - Achieved a low score in the MCA within the FRMS

The MCA used to assess these options within the FRMS is listed below in Table 2.

Table 2: Multi Criteria Analysis

Reference	Description	Impact on Road Flooding	Impact on Property Flooding	Impact on Risk to Life	Technical Feasibility	Community Acceptance	Economic Value	Cost and Available Funding	Environmental Impact	Impact on SES	Political Feasibility	Total Score	Rank
<b>Property Modification Measures</b>													
PM1	Zoning and Development Control	0	3	1	3	0	3	0	0	2	2	14	2=
<b>Response Modification measures</b>													
RM1	Education and Flood Awareness (including flood signage)	0	0	2	2	2	1	1	0	2	2	12	4=
RM2	Flood Emergency Response - Local Flood Plan	0	0	2	2	2	0	2	0	2	2	12	4=
RM3	Flood Prediction and Warnings	0	0	1	1	2	1	0	0	2	0	7	8
<b>Flood Modification Measures</b>													
FM1	Pipes Connecting Overflow from Basin to Peacock Creek	1	2	2	2	1	1	-1	-1	1	2	10	7
FM2	Levee along the West Side of the Oval, with Connecting Pipes from Basin to Peacock Creek	1	3	3	2	-1	2	-2	0	3	3	14	2=
FM3	Bund on the North Side of Oak Street	1	3	2	3	2	3	0	-1	2	3	18	1
FM4	Bund Upstream of Woodenbong and Cope Street Intersection with Additional Culverts under Sandilands Street and Woodenbong Road through Town	2	2	2	1	2	1	-3	0	2	2	11	6

## Conclusions and Recommendations

The Bonalbo FRMP provides a framework and implementation plan for managing existing, future and residual risk effectively and efficiently. Overall, the flood risk within Bonalbo can be managed through the implementation of selected flood mitigation measures ranging between property modification, response modification and flood modification.

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