

## 9. Floodplain Risk Management Plan

### 9.1 Objective

The overall objective of the Blackbutt Creek Floodplain Risk Management Plan (FRMP) is to develop a long-term approach to flood and floodplain management in the catchment that addresses the existing and future flood risks in accordance with the general desires of the community and in line with the principles and guidelines laid out in the NSW Floodplain Development Manual.

This will ensure that the following broad needs are met:

- Reduce the flood hazard and risk to people and property, now and in the future; and
- Ensure floodplain risk management decisions integrate economic, environmental and social considerations.

### 9.2 Recommended Measures

The recommended measures for the FRMP have been selected from the suite of options introduced in Chapter 7 and evaluated in Chapter 8, after an assessment of each measure's impact on flood risk, as well as consideration of economic, environmental and social factors. The recommended measures are presented in Table 9-1.

### 9.3 Plan Implementation

#### 9.3.1 Costs

The total capital cost of implementing the Plan is minimal as highlighted in Table 9-1. However, a number of the assessed structural options are recommended to be included in to the Council's capital works programs where they can be accommodated.

There are significant intangible benefits associated with the recommended improvements to emergency management planning and community flood awareness and readiness. Future risk will be contained, and with redevelopment existing risk can gradually be reduced, through the proposed revisions to Council's planning policies.

#### 9.3.2 Priorities and Timing

Each measure in Table 9-1 includes a priority and a timeframe. The priority reflects the urgency of the option from a reduction in flood risk perspective, particularly to reduce the risk to life. The estimated timing reflects what is likely to be practical given the required capital expenditure, and the complexity of issues such as further investigation, stakeholder and community consultation and approvals.

#### 9.3.3 Resourcing

Plan implementation will be dependent on adequate resourcing of its implementation and maintenance. Resources may include financial and human resource and come from a number of sources.

Potential contributors of resources include:

- Council – financial resources from capital and operating budgets and staff time
- NSW State Government – financial grants for investigations, mitigations works and programs, and OEH and SES staff time
- Commonwealth Government – financial grants for investigations, mitigations works and program
- Developers – Section 94 contributions
- Community – volunteer time.

#### 9.3.4 Plan maintenance

A FRMP is a live plan that should continue to evolve. Hence, the Blackbutt Creek FRMP is a dynamic instrument requiring review and modification over time. Catalysts for change could include flood events, revised flood modelling, better information about potential climate change flood impacts, social changes, legislative and planning changes or variations to the availability of funding.

It is recommended that a review of the Plan be undertaken every five (5) years to ensure its ongoing relevance.

It is envisaged that the Plan will be implemented progressively over an initial 5 year timeframe, with some of the capital works beyond this period. Timing of the proposed works and measures will depend on the overall budgetary commitments of Council and the availability of funds from other sources.

Table 9-1 Floodplain Risk Management Plan

Option No.	Description	Responsibility	Initial Cost	Ongoing Cost	Priority for action*	Timing (Years)	Resourcing	Comments
<b>Non-structural options</b>								
PM1	Amendments to LEP and DCP	KRGC	\$0	Minimal	1	0-1	KRGC	High priority reflects need to amend planning instruments
RM1	Ongoing public awareness campaign	KRGC	\$0	Minimal	1	0-1	KRGC	High priority reflects need for community awareness
RM2	SES emergency flood management and response plan	KRGC	\$0	Minimal	2	1-2	KRGC SES	High priority reflects need for adequate flood response
<b>Structural options</b>								
FM1	Upgrading pit network in the vicinity of St Johns Avenue	KRGC	Not costed at this stage	Minimal	3	>3	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.
FM2	Centre median to contain flood waters with the roadway along Vale Street	KRGC	Not costed at this stage	Minimal	3	>3	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.
FM3	Water level management in the Killara Golf Course dam prior to flooding event	KRGC	Not costed at this stage	Minimal	2	>2	KRGC OEH	Negotiations required with Golf Course management.
FM4	Raising footpath levels to contain flood water within the roadway along Norfolk St	KRGC	Not costed at this stage	Minimal	2	>2	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.
FM5	Constructing a raised mound within the drainage easement along the property boundary with number 59 Bolwarra Avenue to confine flood waters within the drainage easement	KRGC	Not costed at this stage	Minimal	3	>3	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.

Option No.	Description	Responsibility	Initial Cost	Ongoing Cost	Priority for action*	Timing (Years)	Resourcing	Comments
FM6	Upgrading pit and pipe network in the vicinity of 21- 27 Moree St	KRGC	Not costed at this stage	Minimal	3	>3	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.
FM7	Raising channel bank levels adjacent to property number 8 Calvert Avenue to confine flood waters within the channel	KRGC	Not costed at this stage	Minimal	3	>3	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.
FM8	Raising the footpath level along Ryde Road to confine flood waters within the roadway to avoid overflowing on to access road area	KRGC	Not costed at this stage	Minimal	3	>3	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.
FM9	Upgrading pit network along Browns Road	KRGC	Not costed at this stage	Minimal	3	>3	KRGC OEH	Low priority indicates minimal benefits. Council to consider further investigation. Potential Council funding and/or request to OEH for grant funding.

## 10. References

- NSW Government, 2005, Floodplain Development Manual, Management of Flood Liable Land.
- NSW DECC 2007, Practical Consideration of Climate Change, NSW Department of Environment & Climate Change.
- Engineers Australia, Australian Rainfall and Runoff, 2001.
- GHD 2012, Coastal Zone Management Plan for Boambee/Newports Estuary, Coffs Harbour City Council, February 2012.
- Hawkesbury-Nepean Floodplain Management Steering Committee, Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas 2006.
- Jacobs, 2014, Blackbutt Creek Flood Study.
- Ku-ring-gai Council, 2016, Development Control Plan.
- Ku-ring-gai Council, 2013, Draft Local Environmental Plan.
- NSW Government, 1979, Environmental Planning and Assessment Act.
- NSW Government, 2000, Environmental Planning and Assessment Regulation.