

7. FLOODPLAIN RISK MANAGEMENT PLAN

7.1 RECOMMENDATIONS

A Floodplain Risk Management Plan (FRMP) showing the preferred floodplain risk management measures for the Macquarie Park study area is presented in this chapter. The recommended measures have been selected from the range of measures discussed in **Chapter 6**, after an assessment of each measure's impact on flood risk, as well as consideration of environmental, social, and economic factors. The recommended measures are presented in **Table 7.1** and on **Figure 7.1**. The principal components of the Plan are presented below according to priority, which is assessed on the basis of how easily (quickly) each measure can be implemented and on value for money. The timing of the proposed works will depend on Council's overall budgetary commitments, and the availability of funds from other sources.

7.2 PRIORITISED MEASURES

High priority measures include:

- ▶ Maintain integrity of existing Dunbar Park detention basin (Measure No. 3.1);
- ▶ Scoping study to assess feasibility of enlarging detention basin in Macquarie Uni to improve Talavera Road drainage at University Creek (Measure No. 3.3b);
- ▶ Maintain drainage pits routinely, especially in the catchment above the Doig Avenue shops (Measure No. 4.3c);
- ▶ Brendon Street sag point works (Measure No. 4.10);
- ▶ Rehabilitate Shrimptons Creek riparian corridor (Measure No. 4.13);
- ▶ Study to address micro-scale influences on inundation regime at Rogal Place/Fontenoy Road/Tuckwell Place, Macquarie Park (Measure No. 5.3);
- ▶ Remove shrubs from entrance to 'Officeworks' culvert inlet and maintain as short grass cover (*property owner*) (Measure No. 6.2c);
- ▶ Arrange MOU between SES, Council and Hills Motorway to ensure emergency access to and from SES LHQ via Porters Creek Depot (*SES*) (Measure 6.5e);
- ▶ Continue and promote the River Avenue VP scheme, and remove three dwellings with a high flood risk from the floodplain (*OSL*) (Measure No. 7.2);
- ▶ Arrange MOU between SES and Northern Suburbs Crematorium to ensure emergency access to River Avenue via Quebec Road (*SES*) (Measure No. 7.3);
- ▶ Add planning matrix for Macquarie Park to draft floodplain management DCP provisions (Measure No. 8.3);
- ▶ Prepare City of Ryde Local Flood Plan (*SES*) (Measure No. 8.5a);
- ▶ Prepare Macquarie University Flood Emergency Plan (*MU*) (Measure No. 8.5b);
- ▶ Prepare Macquarie Shopping Centre Flood Emergency Plan (*AMP Capital*) (Measure No. 8.5c); and
- ▶ Consolidate flood data into Council's GIS (Measure No. 8.6a).

Medium-high priority measures include:

- ▶ Overland flow works in Danbury Close/Herring Road area including VP of one property (Measure No. 4.2b); and
- ▶ Prepare a brochure summarising potential flood-proofing techniques and distribute (Measure No. 8.2).

Medium priority measures include:

- ▶ Improve Waterloo Road drainage by lowering downslope ground levels (Measure No. 1.2);
- ▶ Create detention basin at Waterloo Park (Measure No. 1.3);
- ▶ Improve Epping Road drainage at Mars Creek by lowering median strip and downslope verge (Measure No. 2.2b);
- ▶ Improve Epping Road drainage at University Creek by lowering median strip (Measure No. 3.2b);
- ▶ Overland flow works in Santa Rosa Park (Measure No. 4.7b);
- ▶ Create detention basin at North Ryde Golf Club (Measure No. 4.12);
- ▶ Overland flow works at rear of Peachtree Road units (Measure No. 4.15);
- ▶ Consider opportunities to increase conduit capacity through Macquarie Centre during redevelopment (Measure No. 4.16b);
- ▶ Install debris control structure upstream of Shrimptons Creek culvert at Waterloo Road (Measure No. 4.16c);
- ▶ Improve Pittwater Road drainage by lowering downslope ground levels (Measure No. 7.1);
- ▶ Invite owners of two properties to redevelop in flood-compatible manner with \$50K Government subsidy (Measure No. 8.1);
- ▶ Provide flood certificates at regular intervals (Measure No. 8.6b); and
- ▶ Prepare FloodSafe brochure for Macquarie Park (SES) (Measure No. 8.6c).

Medium-low priority measures include:

- ▶ VP five properties upslope of Epping Road flyover embankment and redevelop (Measure No. 5.1b); and
- ▶ VP at least four properties upslope of Epping Road at Porters Creek and redevelop (Measure No. 6.2e).

Low priority measures include:

- ▶ Improve Talavera Road drainage at Mars Creek by drainage upgrade (Measure No. 2.3);
- ▶ Overland flow works in Rocca Street including VP of one property (Measure No. 4.5);
- ▶ Formalise Industrial Creek overland flow paths during redevelopment (Measure No. 5.2);
- ▶ Upgrade drainage between Officeworks and M2 during redevelopment (Measure No. 6.3); and
- ▶ Formalise Porters Creek overland flow paths during redevelopment (Measure No. 6.4).

7.3 FUNDING AND IMPLEMENTATION

The total capital cost of implementing the Plan is estimated to be \$10.7M, with \$65K annual maintenance costs. The timing of proposed works will depend on overall budgetary commitments of Council and the availability of funds from other sources. It is envisaged that the Plan would be implemented progressively over a 5 to 10 year time frame.

A variety of sources of funding may be drawn upon to implement the Macquarie Park FRMP including:

- ▶ Council funds;
- ▶ State funding for flood mitigation measures through DECCW;
- ▶ Commonwealth and State funding through the Natural Disaster Resilience Program;
- ▶ Funds from other organisations (e.g. RTA, SES) and private owners;
- ▶ Commonwealth funds through Caring for Our Country grants (which incorporates the Natural Heritage Trust, the National Landcare Program and the Environmental Stewardship Program), and funds through the Sydney Metropolitan Catchment Management Authority, to assist in rehabilitating the creek corridors; and
- ▶ Section 94 Contributions from future development where flooding may be exacerbated by such development;
- ▶ Volunteer labour from community groups.

Council can expect to receive the majority of financial assistance through DECCW. These funds are available to implement measures that contribute to reducing existing flood problems. Funding assistance is usually provided on a 2:1 basis (State:Council) or a 1:1:1 basis (Commonwealth:State:Council).

Although much of the Plan may be eligible for Government assistance, funding can not be guaranteed, since the limited Government funds are allocated on an annual basis to competing projects throughout the State. Options that receive Government funding must be of significant benefit to the community. Funding of investigation and design activities as well as any works is normally available. Maintenance, however, is usually the responsibility of Council.

7.4 ON-GOING REVIEW OF PLAN

The *Macquarie Park FRMP* should be regarded as a dynamic instrument requiring review and modification over time. The catalyst for change could include flood events, revised flood modelling, better information about potential climate change flood impacts, legislative change, alterations in the availability of funding, or changes to the area's planning strategies. In any event, a thorough review every five years is recommended to ensure the ongoing relevance of the Plan.

TABLE 7.1 – MACQUARIE PARK FLOODPLAIN RISK MANAGEMENT PLAN

Measure No.^	Description	Capital Expenditure		Maintenance		Priority
		Est. Cost (\$)	Funding Sources	Est. Cost (\$ pa)	Funding Sources	
CULLODEN CREEK CATCHMENT						
1.2	Improve Waterloo Road drainage by lowering downslope ground levels	\$70K	COR, DECCW	N/a		Medium
1.3	Create detention basin at Waterloo Park	\$350K	COR, DECCW	N/a		Medium
MARS CREEK CATCHMENT						
2.2b	Improve Epping Road drainage at Mars Creek by lowering median strip and downslope verge	\$160K	COR, DECCW	N/a		Medium
2.3	Improve Talavera Road drainage at Mars Creek by drainage upgrade	\$450K	COR, DECCW	N/a		Low
UNIVERSITY CREEK CATCHMENT						
3.1	Maintain integrity of existing Dunbar Park basin	N/a		~\$2K	COR	High
3.2b	Improve Epping Road drainage at University Creek by lowering median strip	\$110K	COR, DECCW	N/a		Medium
3.3b	Scoping study to assess feasibility of enlarging detention basin in Macquarie Uni to improve Talavera Road drainage at University Creek	\$40K	MU, COR, DECCW	N/a		High
SHRIMPTONS CREEK CATCHMENT						
4.2b	Overland flow works in Danbury Close/Herring Road area including VP of one property	\$1.2M	COR, DECCW	N/a		Medium -High
4.3c	Routinely maintain drainage pits, especially in the catchment above the Doig Avenue shops	N/a		~\$50K	COR	High
4.5	Overland flow works in Rocca Street including VP of one property	\$1.0M	COR, DECCW	N/a		Low
4.7b	Overland flow works in Santa Rosa Park	\$250K	COR, DECCW	N/a		Medium
4.10	Brendon Street sag point works	\$35K	COR, DECCW	N/a		High
4.12	Create detention basin at North Ryde Golf Club	\$130K	COR, DECCW	N/a		Medium
4.13	Rehabilitate Shrimptons Creek riparian corridor	Funded separately	COR, Sydney Metropolitan CMA	~\$10K	COR	High
4.15	Overland flow works at rear of Peachtree Road units	\$160K	COR, DECCW	N/a		Medium
4.16b	Consider opportunities to increase conduit capacity through Macquarie Centre during redevelopment	Funded as redeveloped	Property owner	N/a		Medium
4.16c	Install debris control structure upstream of Shrimptons Creek culvert at Waterloo Road	\$100K	COR, DECCW	~\$1K	COR	Medium
INDUSTRIAL CREEK CATCHMENT						
5.1b	VP five properties upslope of Epping Road flyover embankment and redevelop	\$3.0M*	COR, DECCW, RTA	N/a		Medium -Low
5.2	Formalise Industrial Creek overland flow paths during redevelopment	Funded as redeveloped	Developer	N/a		Low
5.3	Study to address micro-scale influences on inundation regime at Rogal Place/Fontenoy Road/Tuckwell Place, Macquarie Park	\$25K	COR, DECCW	N/a		High
PORTERS CREEK CATCHMENT						
6.2c	Remove shrubs from entrance to 'Officeworks' culvert inlet and maintain as short grass cover	\$2K	Property owner	Minimal	Property owner	High
6.2e	VP at least four properties upslope of Epping Road at Porters Creek and redevelop	\$3.2M*	COR, DECCW	N/a		Medium -Low
6.3	Drainage upgrade between Officeworks and M2 during redevelopment	Funded as redeveloped	Developer	N/a		Low

Measure No. [^]	Description	Capital Expenditure		Maintenance		Priority
		Est. Cost (\$)	Funding Sources	Est. Cost (\$ pa)	Funding Sources	
6.4	Formalise Porters Creek overland flow paths during redevelopment	Funded as redeveloped	Developer	N/a		Low
6.5e	Arrange MOU between SES, Council and Hills Motorway to ensure emergency access to and from SES LHQ via Porters Creek Depot	Nil	SES	N/a		High
LANE COVE CATCHMENT						
7.1	Improve Pittwater Road drainage by lowering downslope ground levels	\$140K	COR, DECCW	N/a		Medium
7.2	Continue and promote the River Avenue VP scheme, and remove three dwellings with a high flood risk from the floodplain	Nil (already being implemented)	Office of Strategic Lands (OSL); COR	N/a		High
7.3	Arrange MOU between SES and Northern Suburbs Crematorium to ensure emergency access to River Avenue via Quebec Road	Nil	SES	N/a		High
OTHER FLOODPLAIN MANAGEMENT MEASURES						
8.1	Invite owners of two properties to redevelop in flood-compatible manner with Gov't subsidy	\$100K	COR, DECCW	N/a		Medium
8.2	Prepare a brochure summarising potential flood-proofing techniques and distribute	\$25K	COR, DECCW	N/a		Medium-High
8.3	Add planning matrix for Macquarie Park to draft floodplain management DCP provisions	Minimal	COR	N/a		High
8.5a	Prepare City of Ryde Local Flood Plan	SES staff costs	SES	Minimal	SES	High
8.5b	Prepare Macquarie University Flood Emergency Plan	MU staff costs	Macquarie University	Minimal	Macquarie University	High
8.5c	Prepare Macquarie Shopping Centre Flood Emergency Plan	AMP Capital staff costs	AMP Capital	Minimal	AMP Capital	High
8.6a	Consolidate flood data into Council's GIS	\$25K	COR, DECCW	N/a		High
8.6b	Provide flood certificates at regular intervals	N/a		~\$2K	COR	Medium
8.6c	Prepare FloodSafe brochure for Macquarie Park	\$30K	SES, COR, sponsors	N/a		Medium
	TOTAL	\$10.7M		\$65K		

[^] To locate the report section in which the measure is described, for Measure No. 1.2 read Section 6.1.2, and so on.

* Capital costs can be reduced by the partial redevelopment of the site in a flood-compatible manner and with a suitable land use