

15.11 ADOPTION OF THE FLAT ROCK CREEK FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

ATTACHMENTS:

- 2. EXECUTIVE SUMMARY OF REPORT**
- 3. FLAT ROCK CREEK FLOODPLAIN RISK
MANAGEMENT STUDY AND PLAN**
- 4. ACTION PLAN INITIATIVES – MAPPED**
- 5. COMMUNITY CONSULTATION SUMMARY
(ATTACHMENTS 2-5 TO BE DISTRIBUTED
SEPARATELY)**

EXECUTIVE SUMMARY

STUDY OBJECTIVE

The main objective of this Floodplain Risk Management Study and Plan is to identify floodplain risk, analyse floodplain strategies for the management of risk and to put forward priorities and approximate costed recommendations for flood risk mitigation in the catchment. It also aims to educate the community about flood risks so that they can make more informed decisions regarding their individual exposure and responses.

CATCHMENT DESCRIPTION

The Flat Rock Creek 7km² catchment (Figure 1) is on the north side of Sydney Harbour and drains the residential and commercial areas in the suburbs of Artarmon, Willoughby, Naremburn, Northbridge, St Leonards, Cammeray and Crows Nest before flowing across Tunks Park and discharging to Long Bay in Middle Harbour.

PAST STUDIES

A number of past studies have looked at flooding in the Flat Rock Creek catchment. The latest being the August 2018 Flat Rock Creek Flood Study (Reference 1). This study established a computer model (TUFLOW) which was calibrated to historical flood data and used to determine design flood levels, depths and velocities for a range of design flood events.

STAKEHOLDER AND COMMUNITY CONSULTATION

Throughout this study and the preceding Flood Study there has been consultation with the key stakeholders as well as with the community through newsletters, questionnaires and workshops included as part of the public exhibition period.

EXISTING FLOOD PROBLEM

Flooding has occurred in the past but there are few recorded flood marks. On the southern side of Flat Rock Creek where it runs between the extension of Grandview Street and Park Road flood levels have been recorded in the August 1986, March 1994 and April 1998 events.

Very limited information was provided by the respondents relating to specific flooding patterns in the study area as part of the August 2018 Flood Study community consultation process. Rainfall data for a subsequent flood in November 2018 approximated the 10% AEP ARR1987 design rainfall. However, Council has only one record of above floor inundation (Hector Road) and no record of any notable flood damage, apart from fences in the rear of several properties in this event.

PREVIOUS FLOOD MITIGATION MEASURES UNDERTAKEN

Past flood mitigation measures in the catchment include retarding basins at Gore Hill Oval, Artarmon Reserve and in the rail reserve and along the Gore Hill Freeway.

POSSIBLE FLOODPLAIN MANAGEMENT MEASURES

Management measures can be subdivided into flood modification (changes the nature of flooding), property modification (change to the property) or response modification (changes the

response of people) measures as summarised below.

Flood Modification	Property Modification	Response Modification
Levees	House raising	Flood warning
Temporary defences	Voluntary purchase	Flood emergency management
Channel construction	Flood proofing	Community awareness
Channel modification	Land use zoning	Improved evacuation access
Major structure modification	Flood planning levels	Flood plan / recovery plan
Drainage network modification	Flood planning area	
Drainage maintenance	Changes to planning policy	
Retarding basins	Modification to S10.7 Certificate	
	Flood Insurance	

Each possible measure was investigated considering the positive and negative social, economic, hydraulic and environmental effects. As a result many measures were eliminated due to not being considered feasible. High and medium priority works should be considered in future capital works programs in conjunction with future grant funding applications.

FLOODPLAIN MANAGEMENT PLAN OUTCOMES

Option	Section in Study	Priority	Responsibility	Costing	Timeframe	Rank (Total)
SES review flood emergency management	6.4.2	High	Council / SES	Low	Short	1
Improve flood warning and response	6.4.1	High	Council / SES	Medium	Medium	2
Update S10.7 certificate information	6.5.8	High	Council	Low	Short	3
Small Street feeder pipe	7.8	Medium	Council	High	Medium	4
Update flood awareness	6.4.3	High	Council / SES	Medium	Medium	5
Waltham Street upgraded trunk drain	7.4	Medium	Council	High	Long	6
Incorporate updated flood planning area mapping	6.5.6	High	Council	Low	Short	7
Changes to land use zones must consider potential flooding implications	6.5.4	High	Council	Low	Short	8
Install temporary flood barriers	6.3.2	Medium	Council	Low	Medium	9
Urtic Lane diversion of stormwater	7.16	Medium	Council	High	Long	10
Consider depth indicators on roads	6.4.4	High	Council	Low	Short	10
Consider various planning policy updates	6.5.7	High	Council	Low	Short	12
Creek and drainage maintenance	6.3.7	Medium	Council	Medium	Short	13
Continually review all specific flood modification measures	7.1	High	Council	Low	Short	13
Reduce overtopping and improve awareness of overtopping of Hampden Road	7.2	Medium	Council	High	Long	13
Drainage network upgrade - over time	6.3.6	Medium	Council	High	Long	16
Update on site detention policy	6.3.8	High	Council	Low	Medium	17
Hampden Road new trunk drain	7.2	Low	Council / Sydney Trains	High	Long	17
Flood proofing by property owner	6.5.3	Medium	Landowner	Low	Short	19
Gore Hill Park Reserve retarding basin	7.5	Low	Council	Medium	Long	19

New trunk drain along Willoughby Road	7.11	Low	Council	High	Long	21
Artarmon Masterplan - trunk drain upgrade	7.15	Low	Council	High	Long	21
Underground temporary floodplain storage in Hampden Lane	7.13	Medium	Landowner / Council	Low	Long	23
Artarmon Reserve outlet reduction	7.3	Low	Council	High	Long	24
Talus Street Reserve tennis courts + upstream Northcote Street basin	7.6	Low	Council	High	Long	24
Upgrade pipe capacity beneath railway at Hampden Road	7.12	Low	Council / Sydney Trains	High	Long	24
Gore Hill Park Reserve basin and upstream Northcote Street basin	7.7	Low	Council	High	Long	27
Basin between Godfrey Road and Sydney Street	7.9	Low	Council	High	Long	28
Basin at Cordia Way	7.1	Low	Council	High	Long	29

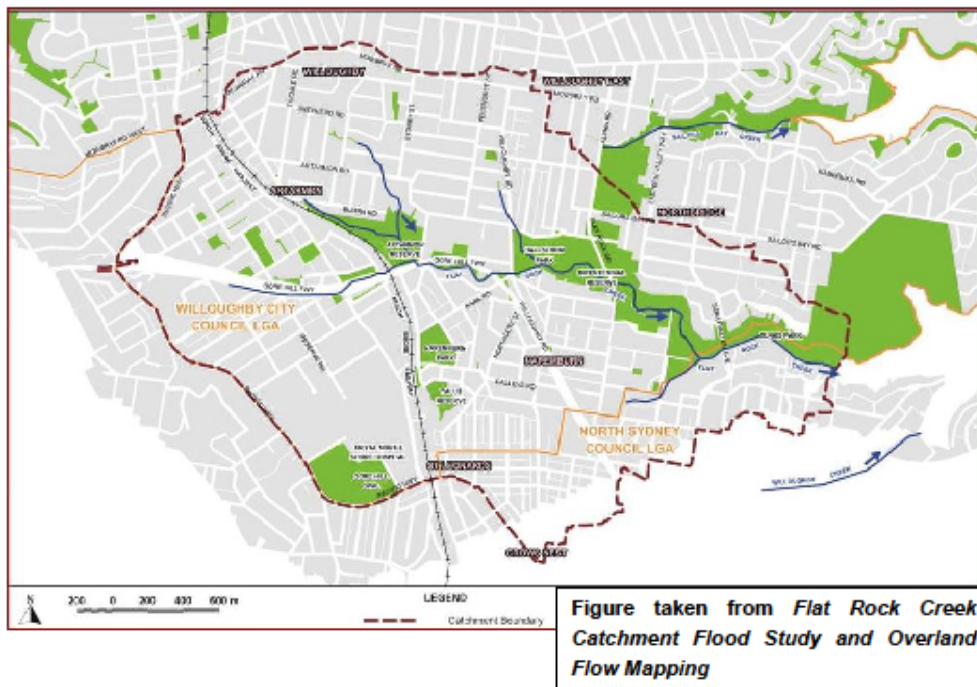
Table 24: Matrix of Management Measures Investigated in Study (sorted by rank)

Option	Section in Study	Impact on Flood Behaviour	Number of Properties Benefited	Technical Feasibility	Community Acceptance	Economic Merits	Financial Feasibility	Environmental / Ecological Benefits	Impact on SES	Political / Admin Issues	Long Term Performance	Risk to Life	Total Score	Rank (Total)
SES review flood emergency management	6.4.2		2	3	3	3	3		3		2	3	22	1
Improve flood warning and response	6.4.1		3	3	3	3	3		2		2	2	21	2
Update S10.7 certificate information	6.5.8		3	3	3	3	3			2			20	3
Small Street feeder pipe	7.8	2	2	3	3	1	3		1		3	1	19	4
Update flood awareness	6.4.3		3	3	2	-2	-2		3		2	1	18	5
Waltham Street upgraded trunk drain	7.4	3	3	3	3	3	-2		1	-1			17	6
Incorporate updated flood planning area mapping	6.5.6			3	2	3	3			2	3		16	7
Changes to land use zones must consider potential flooding implications	6.5.4		2	2	3	3	3			-2	3	1	15	8
Install temporary flood barriers	6.3.2	1	1	2	2	3	3				1		13	9
Link Lane diversion of stormwater	7.16	1	2	1	2		2				3	1	12	10
Consider depth indicators on roads	6.4.4			3	2	2	2		1	-1	1	2	12	10
Consider various planning policy updates	6.5.7		2	3	-1	3	3			-2	3		11	12
Creek and drainage maintenance	6.3.7	1	2	2	3		1	1			-2		8	13
Continually review all specific flood modification measures	7.1	1	1	1	1	1	1			1	1		8	13
Reduce overlapping and improve awareness of overlapping of Hampden Road	7.2	2	2	-2	3	-2	-1		2		2	2	8	13
Drainage network upgrade - over time	6.3.6	2	2	1	2	-2	-2				3		6	16
Update on site detention policy	6.3.8			1			2				2		5	17
Hampden Road new trunk drain	7.2	2	3	-1	2	-2	-3		1	-1	3	1	5	17
Flood proofing by property owner	6.5.3	2	1	1	1	1	-1			-1	-1		3	19
Gore Hill Park Reserve retarding basin	7.5	1	1	1		-2	1			-1	2		3	19
new trunk drain along Vero Road	7.11	2	3	-2	1	-2	-3			-1	3	1	2	21
Artarmon Masterplan - trunk drain upgrade	7.15	1	1	-2	2	-1	-3				3	1	2	21
Underground temporary floodplain storage in Hampden Lane	7.13	1	1	-1	2	-1	-2				1		1	23
Artarmon Reserve outlet reduction	7.3		1	2	-2	-2	-1	-1			2		-3	24
Talus Street Reserve tennis courts + upstream Northcote Street basin	7.6	2	1	-2		-2	-2	-1		-2	2	1	-3	24
Upgrade pipe capacity beneath railway at Hampden Road	7.12			-3	2	-3	-3			-1	3	2	-3	24
Gore Hill Park Reserve basin and upstream Northcote Street basin	7.7	2	1	-2		-3	-3	-1		-3	2	1	-6	27
Basin between Godfrey Road and Sydney Street	7.9	1	1	-2	-1	-3	-3	-2			2	1	-10	28
Basin at Cordia Way	7.1			-2	-1	-3	-3	-2		-2	1		-12	29

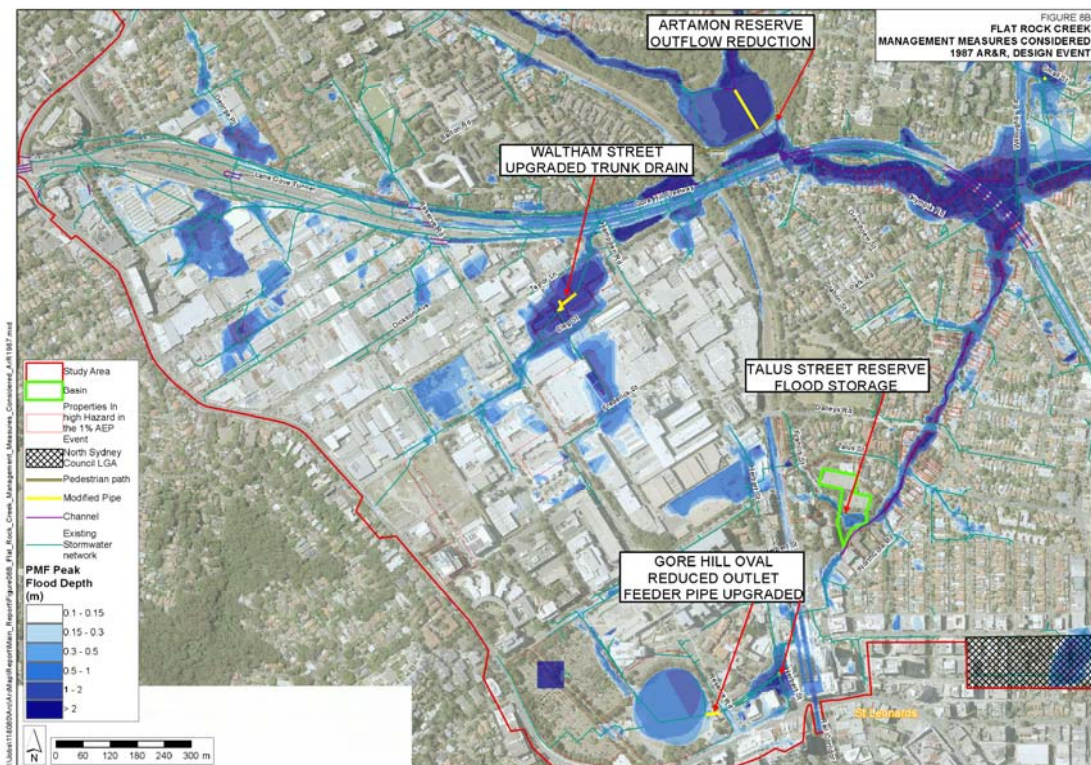
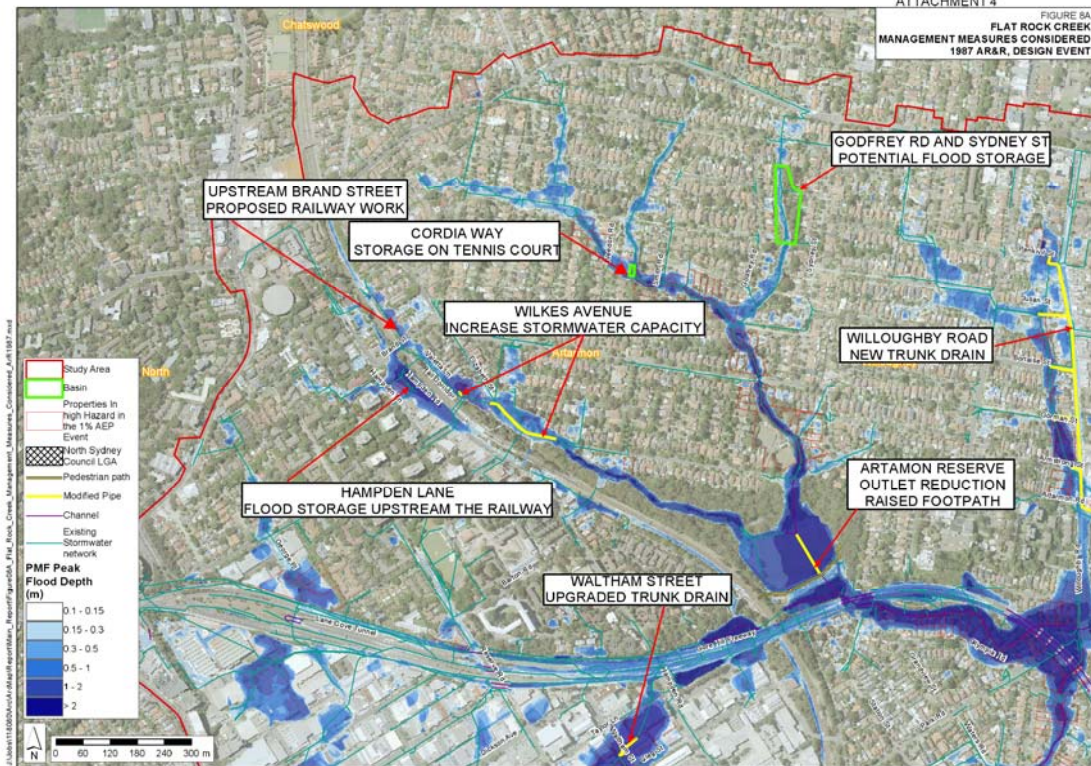
Notes
Costing: Low < \$40K, Medium \$40K to \$100K, High > \$100K
Timeframe: Short < 2 years, Medium 2 to 4 year, Long > 4 years

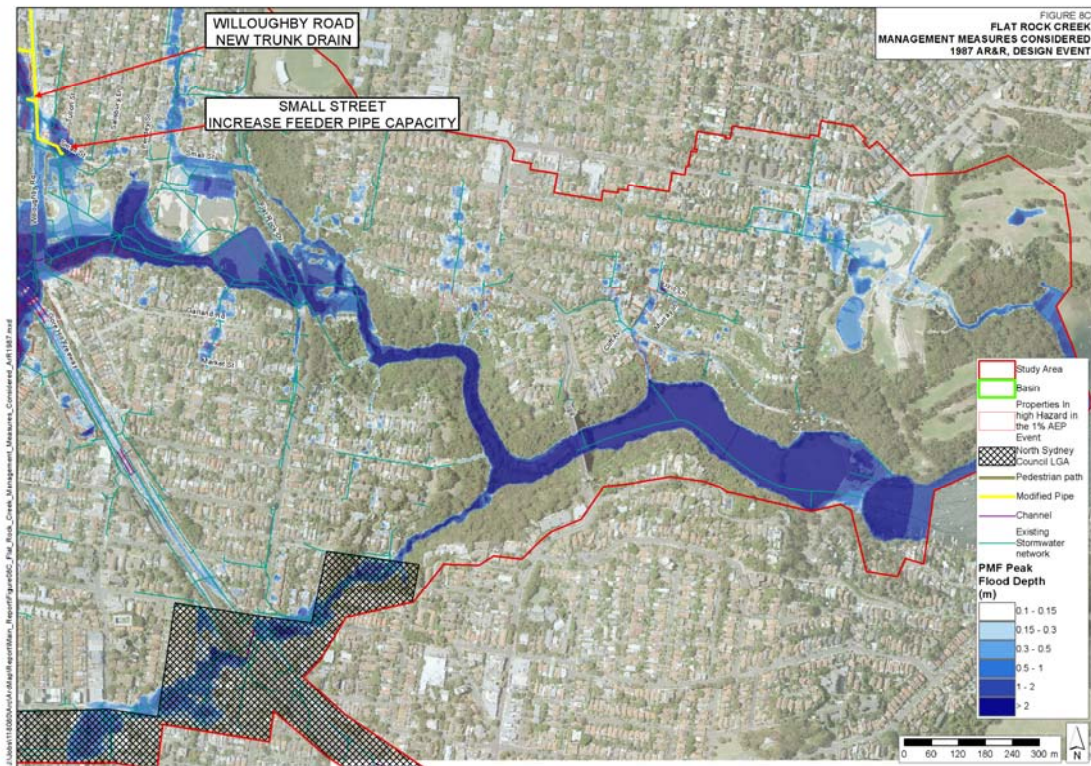


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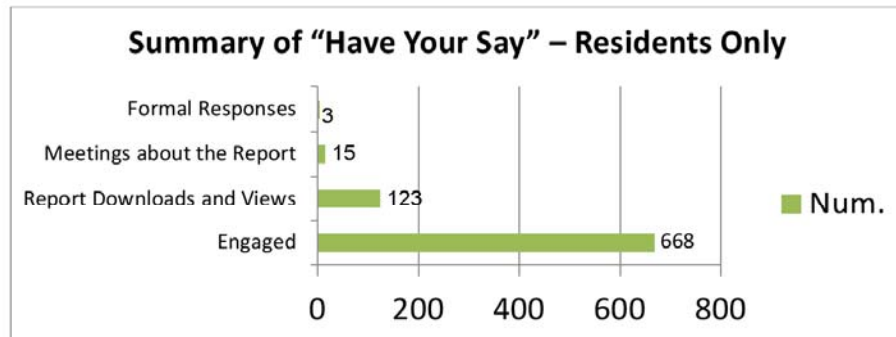
October 2020





Community Consultation Summary (Edited from respondents own words)

Flat Rock Creek Floodplain Risk Management Study and Plan



ISSUE (Number of responses received in brackets)	RESPONSE
1. Nuisance Flooding	
<ul style="list-style-type: none"> Reports of Inter allotment flooding between properties at multiple locations (3) – Baroona Road, Small St, Cleland Road 	<ul style="list-style-type: none"> Officers met with residents on site where required and acted as advocates with internal / external stakeholders such as Sydney Trains to find a resolution.
<ul style="list-style-type: none"> Reports of nuisance flooding from Roadway (2) – Hotham Parade, Small St. 	<ul style="list-style-type: none"> Projects were added in Ulric Lane and Small St to address issues raised by residents.
2. Impact of Study	
<ul style="list-style-type: none"> Most common response was the impact on the resident's property. (7) 	<ul style="list-style-type: none"> Meetings with Officers and/or Consultants to discuss the impact of the study.
<ul style="list-style-type: none"> Impact of reduced rainfall and flood levels. (2) 	<ul style="list-style-type: none"> Flood Planning Levels generally fell across the catchment which was communicated to residents and in the documented in the report.
<ul style="list-style-type: none"> Clarify the purpose of study (2) 	<ul style="list-style-type: none"> To reduce the risk of flooding and provide greater information to residents. Identifies potential future works for Council to continue to reduce the impact of flooding
<ul style="list-style-type: none"> Implications around Project (Internal / External) and future development (3) 	<ul style="list-style-type: none"> Discussed with residents the impact and how this information will be used for development purposes.
<ul style="list-style-type: none"> Purpose of Floor Level Survey and how this was conducted (1) 	<ul style="list-style-type: none"> Gave greater information to residents / Council about when flooding occurs and done via a combination of Street View and site inspections.
3. Reduce Risk of Flooding and Increase Awareness	
<ul style="list-style-type: none"> What should residents do in large storm events? 	<ul style="list-style-type: none"> Advice to residents that shelter in place is the general recommendation. Added greater information to the report and will focus on this with the NSW SES. Roads impact is detailed in the report. Council to prioritise this inlet screen as part of future Capital Works Programs. Noted by Project Control Group as a good suggestion.
<ul style="list-style-type: none"> What access roads are flooded 	
<ul style="list-style-type: none"> Council should implement a "Inlet Screen" on the Western side of Artarmon Reserve to reduce the risk of flooding and increase community safety given flooding detailed in report. 	

