

Floodplain Risk Management Study

**APPENDIX A**  
RESIDENT BROCHURE AND SURVEY



## Glossary

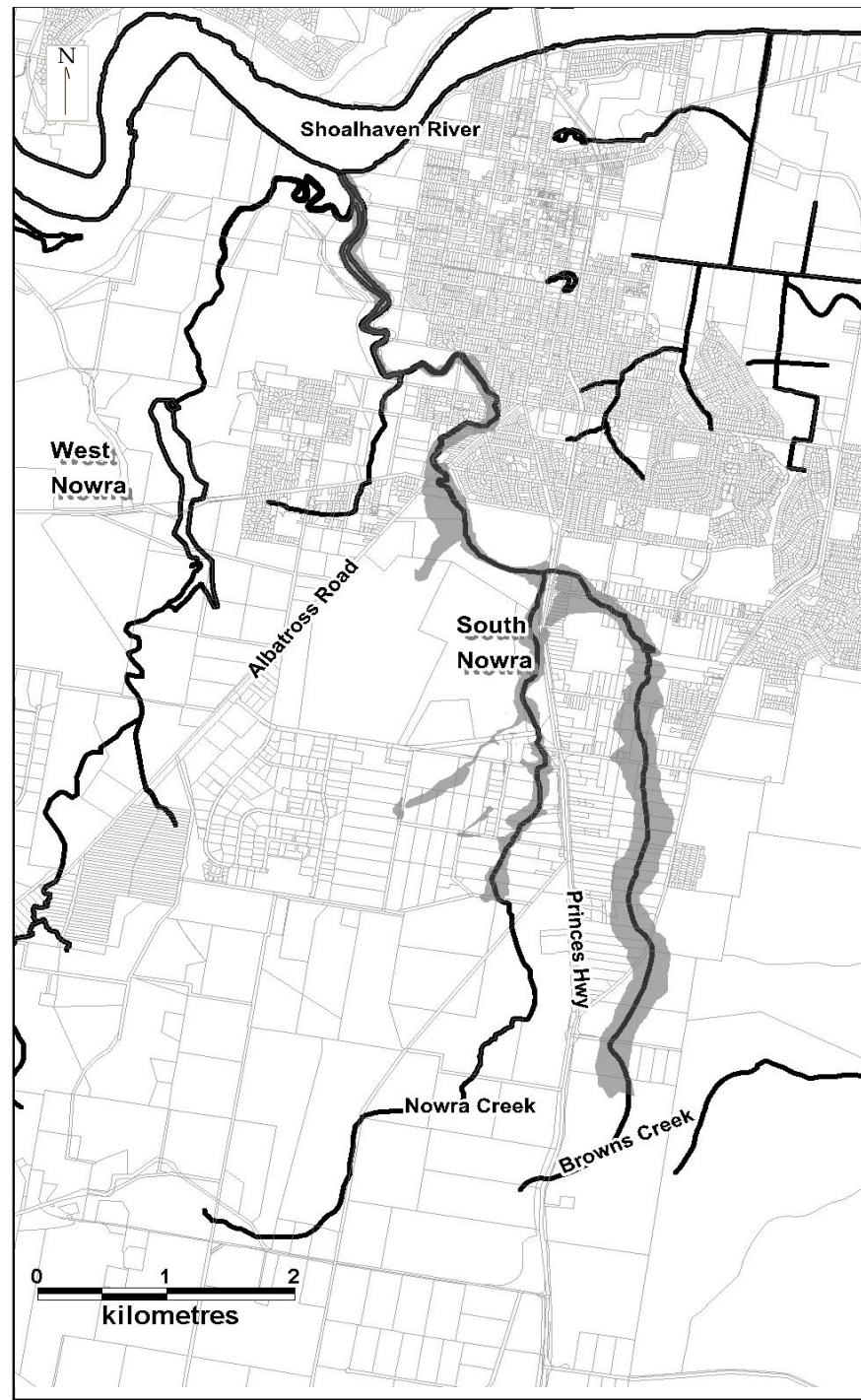
**Culvert** – a drain or covered channel that passes under a road or railroad.

**Levee Banks** – An embankment usually constructed from earth or concrete built along the banks of a river to help prevent overflow of its waters.

**Retarding/Detention Basin** - A naturally occurring or constructed depression in the land surface that detains stormwater runoff by allowing it to slowly drain out of the basin into the adjoining natural drainage line or creek.

**Stormwater Harvesting** - the collection, storage, treatment and use of stormwater runoff from urban areas.

If you have any further comments that relate to the Nowra and Browns Creek Floodplain Risk Management Study and Plan, please express them in the space below. Please feel free to attach additional pages if necessary.



**YOUR PERSONAL INFORMATION WILL REMAIN CONFIDENTIAL**

If you have any queries, please contact:

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Thank you for providing the above information. Please remember to return the completed survey in the reply paid envelope by 26th October 2012. A representative from Cardno may contact you in the near future to discuss your response.

SEPTEMBER 2012

# NOWRA AND BROWNS CREEK Floodplain Risk Management Study & Plan Local Resident/Business/Land Owner Survey

\*Note: information supplied will remain completely confidential.

Q1. Could you please provide us with the following details? We may wish to contact you to discuss some of the information you have provided us.

Name: .....  
 Address: .....  
 Daytime Ph: .....  
 Email: .....

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Q2. Is your property (please tick)

<input type="checkbox"/> Owner occupied	<input type="checkbox"/> Occupied by a tenant
<input type="checkbox"/> Business	<input type="checkbox"/> Other

Operating hours: .....

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Q3. What type of structure is your property/business? (please tick)

<input type="checkbox"/> Freestanding house	<input type="checkbox"/> Apartment/ dual occupancy
<input type="checkbox"/> Caravan/mobile home	<input type="checkbox"/> Other (Please Specify)

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Q4. How long have you lived, worked and/or owned your property? ..... Years

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Q5. How long have you lived in the Nowra and Browns Creek Study Area? ..... Years

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Q6. How many people live/work at your property? .....

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Q7. Number of permanent residents at this address aged:

<input type="checkbox"/> 0 - 4 years	<input type="checkbox"/> 5 - 24 years
<input type="checkbox"/> 25 - 64 years	<input type="checkbox"/> 65+ years

Our team appreciates the diverse effects of flooding – from its dynamic shaping of the environment through to its potential negative social and economic impact. With this knowledge we analyse and develop comprehensive plans.

Q 8. Have you ever experienced flooding since living/working in the Nowra and Browns Creek catchment? (please tick relevant boxes)

Yes, floodwaters entered my house/business

Yes, floodwaters entered my yard

Yes, the road was flooded and I couldn't drive my car

Yes, the creek broke its banks

Yes, other parts of my neighbourhood were flooded

No, I haven't experienced a flood (go to Q.11)

Q 9. If you have experienced a flood, how did the flooding affect you and your family/business? (please tick relevant boxes)

Parts of my house/business building were damaged

The contents of my house/business were damaged

My garden, yard, and/or surrounding property were damaged

My car(s) were damaged

Other property was damaged (specify) .....

I couldn't leave the house/business

Family members/work mates couldn't leave/return to the house/business

The flood disrupted my daily routine

The flood affected me in other ways (specify) .....

The flood didn't affect me

Q 10. Do you have any materials or photos you can provide to evidence the flooding you experienced? If yes, when did the flooding occur?

Yes  No

The flooding occurred on .....

Q 11. Do you think your property would be flooded sometime in the future? (please tick relevant boxes)

No

Yes, but only a small part of my yard

Yes, most of my yard/outdoor areas of business could be flooded

Yes, my house/office/business could flood over the floor

Q12. Where have you looked for information about flooding on your property? (please tick relevant boxes)

Council's customer service centre

Other information from Council (specify) .....

Viewed a Property Planning (Section 149) Certificate

Information from a real estate agent

Information from relatives, friends, neighbours, or the previous owner

Other information (specify) .....

No information has been sought

I do not believe my property is affected by flooding

If you answered yes to having looked for information on Council's website:

What information have you looked for? (Please specify) .....

Where were you able to find information? (Please specify) .....

Q13. As a local resident who may have witnessed flooding/drainage problems, you may have your own ideas on how to reduce flood risks. Which of the following management options would you prefer for the Nowra and Browns Creek catchment (1=least preferred, 5=most preferred)? Please also provide comments as to the location where you think the option might be suitable.

Proposed Option	Preference (please circle)	Location/Other Comments?
Stormwater harvesting, such as rainwater tanks	1 2 3 4 5	
Retarding or detention basins; these temporarily hold water and reduce peak flood flows	1 2 3 4 5	
Improved flood flow paths	1 2 3 4 5	
Culvert/ bridge/pipe enlarging	1 2 3 4 5	
Levee banks (note Glossary on next page)	1 2 3 4 5	
Diversion of creeks and channels	1 2 3 4 5	
Environmental channel improvements, including removal of weeds & bank stabilisation	1 2 3 4 5	
Planning and flood-related development controls	1 2 3 4 5	
Education of community, providing greater awareness of potential hazards	1 2 3 4 5	
Flood forecasting, flood warning, evacuation planning and emergency response	1 2 3 4 5	
Other (please specify any options you believe are suitable). Please attach extra pages for other suggestions	1 2 3 4 5	

Q14. What do you think are the best ways to get input and feedback from the local community about this project? (please tick relevant boxes)

Council's website

Emails from Council

Council's Floodplain Management Committee

Formal Council meetings

Council's information page in the local paper

Other articles in the local paper

Information days in the local area

Community meetings

Mail outs to all residents/business owners in the study area

Q15. What is the main language spoken at home?

English

Other (specify) .....

## Floodplain Risk Management Options

The following list of Floodplain Risk Management options presents some preliminary strategies that could be considered to minimise the risk and reduce the impact of flooding throughout the Nowra and Browns Creek catchment. These options will be considered in further detail during the preparation of the Management Study and Plan.

### Examples of Flood Management Options

#### Description

##### Flood Modification Options

- Construction of levees where properties are most at risk
- Upgrading of drainage systems i.e. construction of detention/retarding basins
- Stabilisation works along drainage channels

##### Property Modification and Planning Control Options

- Building and development controls
- Voluntary house raising program (for selected properties)
- Voluntary house rebuilding subsidy scheme (for selected properties)
- Voluntary property purchase program (for selected properties)

##### Emergency Response Modification Options

- Revision of the Local Disaster Plan (DISPLAN)
- Public awareness and education—locality based flooding information for residents
- Public awareness and education—flooding information for schools
- Flood depth markers at major (flood affected) road crossings
- Continuation of existing public awareness and education campaigns
- Data collection strategies for future floods

## Consultation

During the Floodplain Risk Management Study and Plan process, consultation will be undertaken with the community in order to establish a comprehensive list of management options.

During the Floodplain Risk Management Study and Plan process, consultation will be undertaken with the community in order to establish a comprehensive list of management options. The first consultation phase was the mail-out survey which sought community input into what flood risk mitigation strategies they would like investigated.

This workshop is the second phase of the consultation programme. It is designed to give the community an opportunity to comment on the preliminary mitigation options identified and to suggest any further options that they would like identified. Based on this feedback, selected options will be assessed in more detail to quantify how effective they are at reducing flood risks and damages.

The final phase of the community consultation will occur during the public exhibition period of the draft Floodplain Risk Management Study and Plan. A second workshop will be held to provide the community with an opportunity to comment on the on the draft study and plan before Council adopts the findings and outcomes from the project.

For further information regarding this project please contact either Shoalhaven City Council or Cardno via the details below.

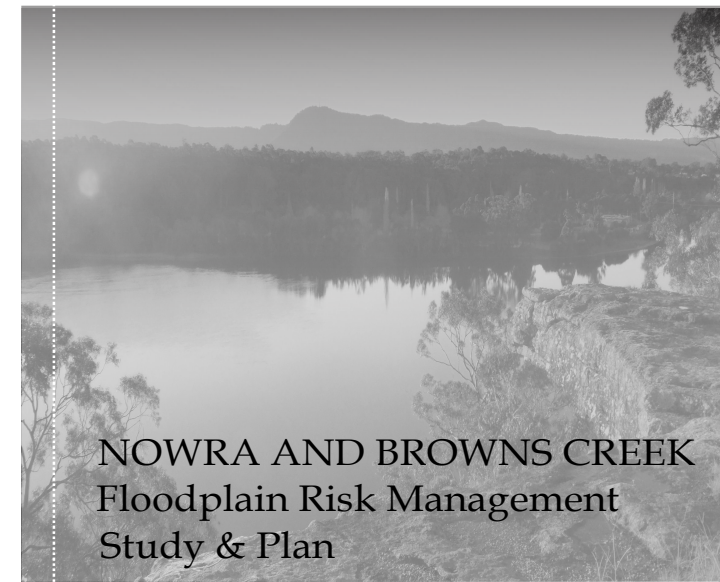
### Contact Us



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## NOWRA AND BROWNS CREEK Floodplain Risk Management Study & Plan

### Information Brochure

Shoalhaven City Council has engaged Cardno to assist with the preparation of the Nowra and Browns Creek Floodplain Risk Management Study and Plan.

The Risk Management Study and Plan follows from the Flood Study, completed in 2005, which identified the existing flooding behaviour in the Nowra and Browns Creek catchment. The purpose of this Risk Management Study and Plan is to identify and recommend appropriate actions to manage flood risks in the Nowra and Browns Creek catchment.

This brochure provides an introduction to the Risk Management Study and Plan and informs you of its objectives.

prepared for



prepared by



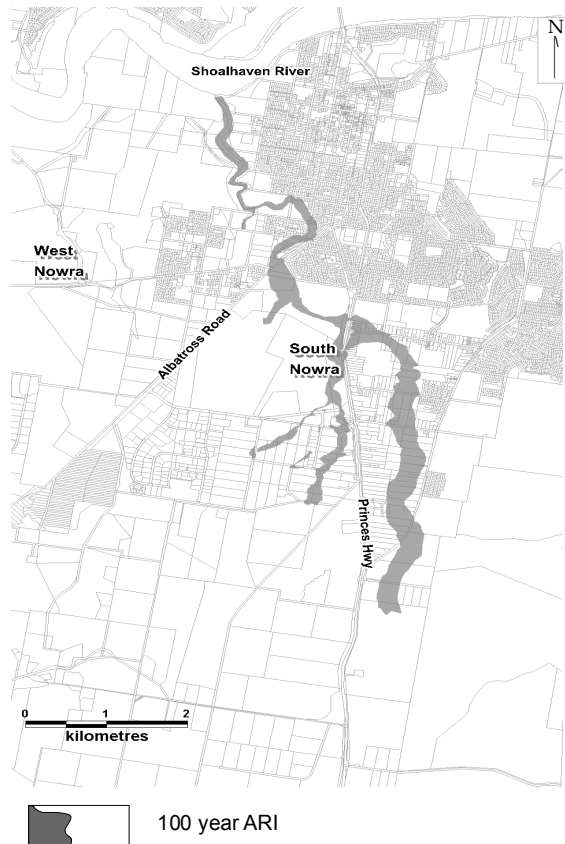
## Existing Flooding Issues

Nowra has experienced significant flooding in the past including 1974, 1978, 1989 and 1999.

In the past, floodwaters have exceeded the capacities of both Nowra and Browns Creeks resulting in overland flow between the respective floodplains.

The causes of flooding has been attributed to intense rainfall within the catchment, backing up of water due to channel constrictions, mainstream flooding in the Shoalhaven River and inadequate stormwater drainage network in places.

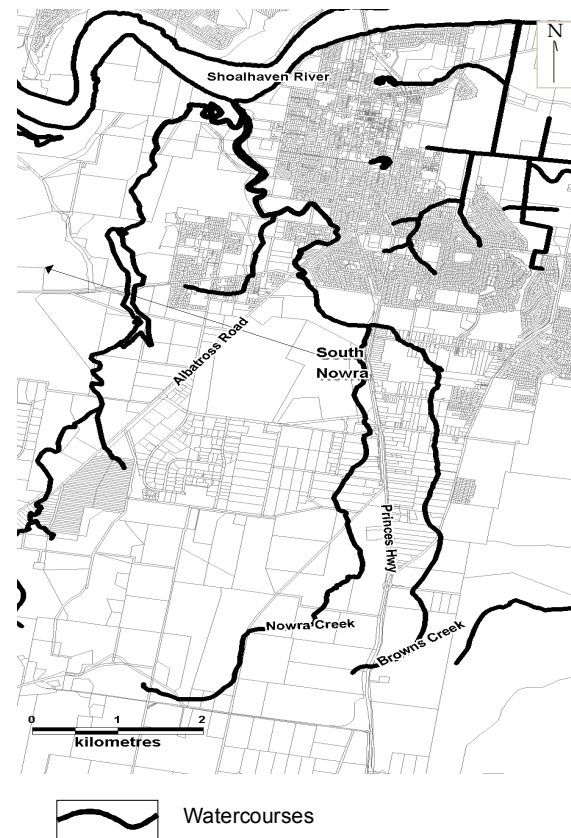
The expected flood extents for the 1 in 100 year event are shown below.



## Study Area

The Nowra and Browns Creek catchment has an approximate area of 20km<sup>2</sup>. Nowra Creek is a tributary of the Shoalhaven River and drains an area southwest of Nowra CBD including major residential areas. Nowra Creek joins the Shoalhaven River west of Nowra CBD. Browns Creek is a tributary of Nowra Creek which it joins south of Nowra and drains part of the catchment east of Princes Highway.

The catchment is a combination of residential and industrial land use with some bushland.



## Floodplain Management Process

Council's Floodplain Risk Management Committee (the Committee) oversees the Floodplain Management process. The Committee meets regularly and includes representatives from Council, Office of Environment and Heritage (OEH), State Emergency Service (SES), Catchment Management Authority (CMA), and representatives of the local community.

## Floodplain Risk Management Study and Plan Objectives

The objectives of the study and plan are:

### Floodplain Risk Management Study

Find an appropriate mix of management measures and strategies to effectively manage the full range of flood risk in accordance with the NSW Government Floodplain Development Manual (2005) through an effective public participation and community consultation program. The information from this study will enable Council to formulate a Floodplain Risk Management Plan for the study area.

### Floodplain Risk Management Plan:

Formulate a cost effective plan for the study area based on the findings of the Floodplain Risk Management Study and provide a priority program for implementation of the recommended works and measures in accordance with the Manual. The plan will detail how the existing and future flood risk within the study area will be managed.