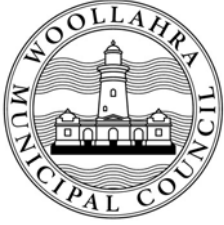


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# **APPENDIX A**

## **COMMUNITY INFORMATION SHEET & QUESTIONNAIRE**



# Double Bay Flood Study

Community Information Sheet 1

August 2006

## Introduction

Under the NSW Government's Flood Prone Land Policy, management of flood prone land is primarily the responsibility of councils.

Woollahra Council has appointed Bewsher Consulting Pty Ltd (Water Engineers) to carry out a Flood Study of the Double Bay Catchment.

The Study will define the nature and extent of flooding. It will provide a basis for sound floodplain management planning for the catchment, which recognises the demands for development and change, the need for good urban and environmental outcomes, and the social and economic benefits of reducing flood damage.

It is being funded under the NSW Government's Floodplain Management Program.

## The Study Area

Double Bay has a catchment area of approximately 2.4 sq km which drains to Sydney Harbour (Figure 1). It includes Double Bay and parts of Edgecliff, Woollahra, and Bellevue Hill.

The upper section of the catchment comprises urban development, commercial and retail premises and limited areas of open space. Stormwater within this section is carried within the underground piped network, or when this is exceeded, along roads or through private property. There have been some instances of flooding of roads and property in the past 20 years. However, it should be noted that most of the drainage infrastructure was built in the 1930's.

The lower section comprises the area where stormwater collects into the open channel downstream of Lough Park and the receiving covered channel which passes under New South

Head Road and the Double Bay retail area. New South Head Road itself forms a significant barrier to major flood flows which exceed the capacity of the open and covered channel system and the resultant floodwaters will pond in the lower areas that lie immediately south of the road.

Detailed hydraulic modelling will be undertaken in the lower section from Lough Park to the Sydney Harbour foreshore (Photographs 1-4). Elsewhere, peak pipe and overland flows will be calculated.



Figure 1: Catchment Map

## Community Consultation Program

Community involvement is important at all stages of the Floodplain Management Process. Residents' local knowledge of the catchment and personal experiences of flooding provide an invaluable source of data to define the nature and extent of flooding at the Flood Study stage.

During the latter stages where management and planning strategies are outlined, it is important to get community input and feedback to ensure proposed measures meet the needs of the local community.

The importance of community involvement is recognised through the implementation of a community consultation program that is an integral part of each stage of the Floodplain Management Process.

At the Flood Study stage information on actual flooding or drainage problems that have taken place is very helpful in ascertaining the performance of the existing drainage system and identifying problem areas.

At the Floodplain Risk Management Stage members of the community will be asked by local newspaper advertisement to provide information and feedback in planning the best way to improve the management of the catchment with regard to minimising flood risk.



Photograph No. 1. Open channel next to Kiaora Road, looking towards New South Head Road

## Questionnaire

We have prepared a brief set of questions to help us identify potential sources of flood related information (see attached). If you (or anyone you know) can assist us, please fill out the details on the attached questionnaire and return it using the reply-paid envelope enclosed (no stamp required). We are particularly interested in photographs of flooding or marks showing where floodwaters have reached.

## Floodplain Management Process

The first step in the process (Diagram 1) is data collection and preparation of the Flood Study.

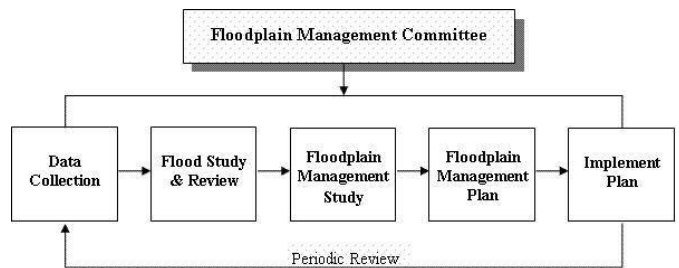


Diagram 1: The Floodplain Risk Management Process

The second step is the preparation of the Floodplain Risk Management Study (FRMS) that identifies a range of floodplain management measures to address the problems and areas of concern.

The third stage involves preparation of a Plan that documents how the proposed measures identified in the FRMS are to be implemented in terms of resources and timing. The final stage of the process is the undertaking of the works.

## The Flood Study

The Flood Study involves a comprehensive technical investigation of the nature and extent of flooding within the catchment.

Computer modelling of the upper catchment is undertaken to determine flow rates in the pipe and overland flow areas for storms of varying severity

(hydrologic modelling). These flow rates are then used to determine corresponding water levels, velocities and flood extents (hydraulic modelling) within the lower section of the catchment. Wherever possible predicted flood behaviour from



Photograph No. 2. Covered channel between Jamberoo Lane and Cross Lane, looking towards New South Head Road.

these models is calibrated and verified through the collection of historical flood data.

The key objectives of the Flood Study are to:

- ▶ define the flows in the upper catchment for a range of design events including the largest probable event (termed the Probable Maximum Flood),
- ▶ define the flood behaviour of the open channel system and its associated floodplain in the lower section of the catchment,
- ▶ identify the hydraulic category (floodway, flood storage or flood fringe) and hydraulic hazard category (high hazard or low hazard) for flood prone land within the lower section of the catchment,
- ▶ develop hydrologic and hydraulic models of the catchment that can be used to assess the impact of development and mitigation measures during the Floodplain Risk Management Study phase.

The Flood Study provides a technical basis for the subsequent Floodplain Risk Management Study.

## The Floodplain Risk Management Study (FRMS)

The objectives of the FRMS are to:

- ▶ manage flooding as an integral part of the planning and development process,
- ▶ systematically identify and address flooding problems,
- ▶ prepare a schedule of strategies to manage the existing flood problem and reduce future flood damage,
- ▶ implement a unified approach,
- ▶ ensure sustainable development principles are achieved,
- ▶ maintain and enhance the quality of the drainage system, and
- ▶ gain community participation in the decision making process.

## Management Measures

Possible floodplain management measures to address the various problems may be categorised under the following headings:

- ▶ *Flood Modification* - structural works to modify flood behaviour, may include widening channels, enlarging culverts, or constructing levees.
- ▶ *Property Modification* - works to modify buildings and land uses; may include raising house floors or sealing entrances.
- ▶ *Response Modification* - planning, education and awareness measures which aim to ensure the community is as prepared as possible for flooding and acts promptly to minimise the flood hazard.

The overall objective is to reduce the risk to life and damage to property.

Whilst most people have heard of a 100 year flood, unfortunately larger floods do occur. These are obviously very rare events but examples are February 1984 at Dapto and November 1996 at Coffs Harbour. Council wishes to ensure that should such an event occur the community is as prepared as possible.



## How Do I Get Involved?

Community input to the Flood Study (and the subsequent Floodplain Risk Management Study) is essential. To make a comment or seek clarification on any issue, please contact us.

The Project Manager is: **Don Still**

He can be contacted at:

Bewsher Consulting

PO Box 352

EPPING NSW 1710

Telephone: 9868 1966

Facsimile: 9868 5759

Email: [dstill@bewsher.com.au](mailto:dstill@bewsher.com.au)

### **Myl Senthilvasan,**

Asset Management Engineer - Drainage,

Woollahra Municipal Council

Telephone: 9391 7131

Facsimile: 9391 7044

Email: [Myl.Senthilvasan@woollahra.nsw.gov.au](mailto:Myl.Senthilvasan@woollahra.nsw.gov.au)

You can also participate in the study process through your local community contact person who can represent your views as a member of Council's Floodplain Risk Management Committee. Contact details are:

### **Tony Gregory**

Double Bay Residents Association

26 Glendon Road,



Photograph No. 3. Covered channel next to Sherbrooke Avenue, looking towards harbour.

## Public Exhibition of Draft

A draft of the Flood Study will be placed on public exhibition for comments and questions prior to finalisation. We will advise the date in due course.

Once the Flood Study has been completed, and the flood behaviour of the catchment is defined, Council will then commence the next stage of the project, the Floodplain Risk Management Study. This is likely to begin in 2007.

We will inform you of this and provide contacts for you to give input or voice any questions or concerns you may have.

In the meantime, if you have any feedback that



Photograph No.4. View of harbour foreshore with main stormwater outlet in foreground.

would be of use in the preparation of the Flood Study it would be most welcome.

# DOUBLE BAY CATCHMENT FLOOD STUDY

## IMPORTANT QUESTIONNAIRE

### Concerning Flooding in the Double Bay Catchment

The extent of Double Bay which will be studied is defined in Figure 1 of Community Information Sheet 1.

Please complete this questionnaire for the property in which you have an interest.

All information provided will remain confidential and only used for the purpose of this study.

House No \_\_\_\_\_ or Lot No. \_\_\_\_\_ Street Name \_\_\_\_\_

Name (optional) \_\_\_\_\_

Name of Business/Organisation (if applicable) \_\_\_\_\_

#### PART A — GENERAL INFORMATION

##### 1. Type of development?

(Tick one or more boxes)

- a. House
- b. Business. Please indicate type \_\_\_\_\_
- c. Vacant land
- d. Other. Please specify \_\_\_\_\_

##### 2. Your residential status of the property

- a. Owner residing or conducting business at property
- b. Tenant only
- c. Owner not residing nor conducting business at property
- d. Other (please specify) \_\_\_\_\_

##### 3. How long have you owned, lived at or conducted business at this property?

- a. Less than 1 year
  - b. 1 year to 5 years
  - c. 5 years to 20 years
  - d. More than 20 years
- If more than 20 years, how long? ( \_\_\_\_\_ Years)

#### PART B — FLOOD EXPERIENCE

##### 4. Have you ever experienced a flood at the property?

- a. No  (go to Question 7)
- b. Yes

If yes, which floods?

- a. Nov 1961
- b. Nov 1984
- c. Jan 1989
- d. Jan 1991
- e. Other

If other, please specify \_\_\_\_\_

##### 5. What was the date of the biggest flood you have experienced?

In that flood was the property flooded above floor level?

- a. No
- b. Yes

If yes, what was the depth of the water over the floor? \_\_\_\_\_ (inches)

or \_\_\_\_\_ (centimetres)

6. In the biggest flood, what was the maximum depth of water in the property (as best you can remember)?

\_\_\_\_\_ (inches)

or \_\_\_\_\_ (centimetres)

7. Have you ever observed flooding in the local area?

- a. No   
b. Yes

Location \_\_\_\_\_  
\_\_\_\_\_

How many times have you observed flood waters there? \_\_\_\_\_

Over how many years have those observations been made? \_\_\_\_\_

If at a road location, how many of those times was the road so badly flooded that cars could not drive through the water? \_\_\_\_\_

Can you identify the month and year of the worst flooding at the low point? \_\_\_\_\_

8. This question is a repeat of Question 7 for those persons who are able to provide information for more than one location.

- a. No   
b. Yes

Location \_\_\_\_\_  
\_\_\_\_\_

How many times have you observed flood waters there? \_\_\_\_\_

Over how many years have those observations been made? \_\_\_\_\_

If at a road location, how many of those times was the road so badly flooded that cars could not drive through the water? \_\_\_\_\_

Can you identify the month and year of the worst flooding at the low point? \_\_\_\_\_

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Please place your completed questionnaire in the postage paid envelope provided and return it by 31 August 2006.

No postage stamp is required. If you have misplaced the supplied envelope or wish to send an additional submission the address is:

Reply paid Permit Number 352  
**FLOOD QUESTIONNAIRE**  
Bewsher Consulting Pty Ltd  
P.O. Box 352,  
**Epping NSW 1710**

For additional questionnaires or further information, please contact:

Mr Myl Senthilvasan  
Woollahra Municipal Council  
PO Box 61  
DOUBLE BAY NSW 1360  
Phone: (02) 9391 7131  
Facsimile: (02) 9391 7044  
E-mail: Myl.Senthilvasan@Woollahra.nsw.gov.au

OR

Mr Don Still  
Bewsher Consulting Pty Ltd  
PO Box 352  
EPPING NSW 1710  
Phone: (02) 9868 1966  
Facsimile: (02) 9868 5759.  
E-mail: [dstill@bewsher.com.au](mailto:dstill@bewsher.com.au)

*Thank you again for being part of this study*