APPENDIX

P

COMMUNITY CONSULTATION REPORT

Stantec

Community Consultation

Parramatta River Flood Study

59916074

Prepared for
City of Parramatta

02 September 2019

Cardno

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1 Introduction

Cardno was engaged by City of Parramatta Council to prepare the Parramatta River Flood Study in accordance with the NSW Floodplain Development Manual (2005). This Flood Study focuses on all mainstream flooding and overland flow paths within the City of Parramatta Council former Parramatta Local Government Area (LGA) prior to Council amalgamations in 2016. This includes the Parramatta River and its tributaries, and a portion of Terrys and Devlins Creeks which flow to the Lane Cove River. Following the amalgamation of the former Parramatta LGA with parts of The Hills Shire, Auburn City Council, Hornsby Shire and Holroyd City Council LGAs to form the City of Parramatta, the model was updated to include part of Duck River that is within the City of Parramatta LGA.

This report summarises the community and stakeholder engagement undertaken for the Parramatta River Flood Study. The NSW Floodplain Development Manual (NSW Government, 2005) emphasises the role of broad community involvement in every stage of the floodplain management process, noting that it is important for community acceptance of the findings of the Flood Study and subsequent investigations, and ultimately for community commitment to the Floodplain Risk Management Plan.

Community and stakeholder engagement is an important aspect of the Flood Study with respect to gaining information on historic flood events that community members have experienced. Photographs, data and other feedback provided by community members can assist in identifying flood levels and extents from historical events, which may be useful for calibration of the flood model. It is also useful for purposes of gaining an appreciation of the community's level of flood awareness and for initiating a discussion about the potential impacts of flooding in the local area.

This report presents the results of the community survey undertaken for the Flood Study.

2 Survey Methodology

A newsletter containing information about the Parramatta River Flood Study was prepared by Cardno and distributed to in the catchment area by Council via mail and electronically. The purpose of the newsletter was to inform residents about the Flood Study and advertise the online survey. A copy of the newsletter is provided in **Appendix A**. The community survey was also advertised via Council's City of Parramatta website: https://www.cityofparramatta.nsw.gov.au/recreation-environment/floodsmart-parramatta/share-your-flood-experiences.

The project team, comprising Council, Cardno and Orima, prepared a list of 36 questions, comprising 31 multiple choice questions and 5 open ended questions. The aim of the survey was to obtain information about historical flooding events and to gauge the level of flood awareness within the community. A copy of the survey is provided in **Appendix B.**

The community survey was made available via an online survey platform between 17 September 2018 and 18 January 2019, and data was collated and analysed by ORIMA Research. The survey relied on households and businesses voluntarily accessing the survey via the City of Parramatta Council's website. When respondents arrived at the survey website, they were asked to register by an email ID and password system. These enabled respondents to come back in and out of the survey multiple times to complete sections, and to upload photos or other material that they may not have immediate access to when first completing the survey (especially if doing so from a mobile device).

All data collected via the survey was checked and cleaned to ensure its quality and integrity. Data validation procedures conducted included:

- Checking the logic of responses;
- Validation of questionnaire filtering to ensure survey questions were only answered by appropriate respondents:
  - Orima's online programming incorporated detailed and strict rules that governed a respondent's progress through the survey;
  - As it was not mandatory for respondents to answer all questions before submitting their response, there are some missing responses in the final dataset;
- 'Back-coding' of verbatim survey responses (within 'other (please specify)' response options) into pre-existing or new survey response categories for applicable questions:
  - New response categories were added if a relatively high number of respondents provided similar responses that could not be grouped into a pre-existing category. These are outlined **Table 2-1**.

Table 2-1 New survey response categories following back-coding of 'other (please specify)' responses (after: Orima, 2018)

Question	New response category
q15. Which of the following describes the disruption to you and your household from this flood experience?	'Damage to property'
q19. How often – to the best of your knowledge – does flooding happen at this location?	'After heavy rainfall'
q24. Are you aware of any reasons which may have increased flooding at your property?	'Nearby development or building' 'Insufficient cleaning of stormwater areas or drains'

3 Results

3.1 Response Rate

A summary of the key community survey outcomes is presented in **Table 3-1**. A total of 264 responses to the community survey were received. **Figure 3-1** shows the location of respondents, with several from the Parramatta CBD as well as a spread across the wider study area.

Table 3-1 Survey Results from community

Profile Responses	Count
No. of users who have submitted photo/photos	24
Number of registrations	264
Number of substantive completions	196
Total number of flood experiences recorded	190

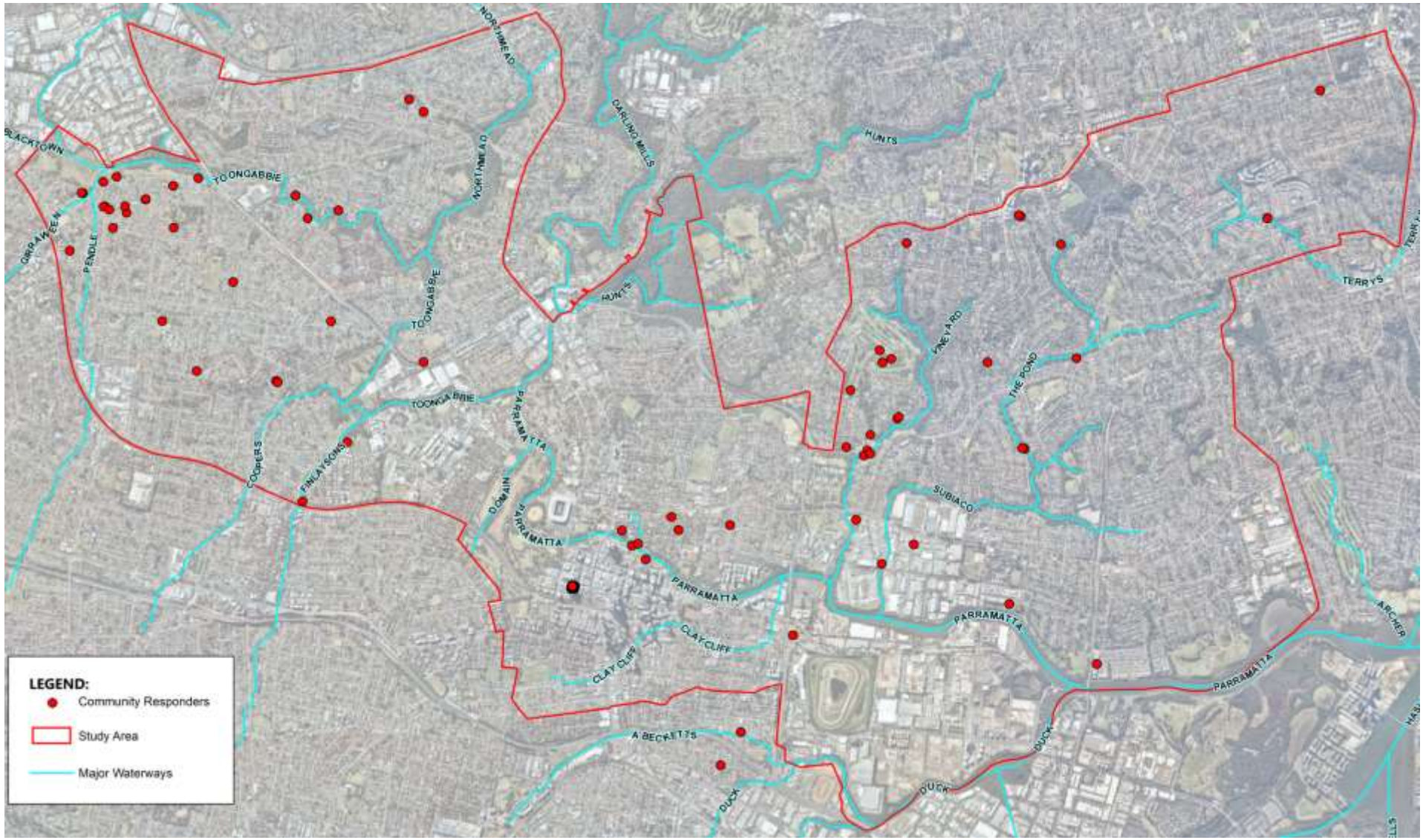


Figure 3-1 Location of Respondents

3.2 Survey Responses

The survey responses presented here have been summarised based on survey outputs provided by Orima (2018).

3.2.1 Property Types

Question 1: Within the City of Parramatta area: do you or anyone in your household:

1) *Own and live in a residential property*
2) *Rent Residential Property*
3) *Own or lease commercial premises*
4) *None of these*

Residents were asked to provide information about their current address and the time of residence. The majority of respondents (78 %) describe their properties as owner occupied with approximately 10% described as tenants who are renting the residential property.

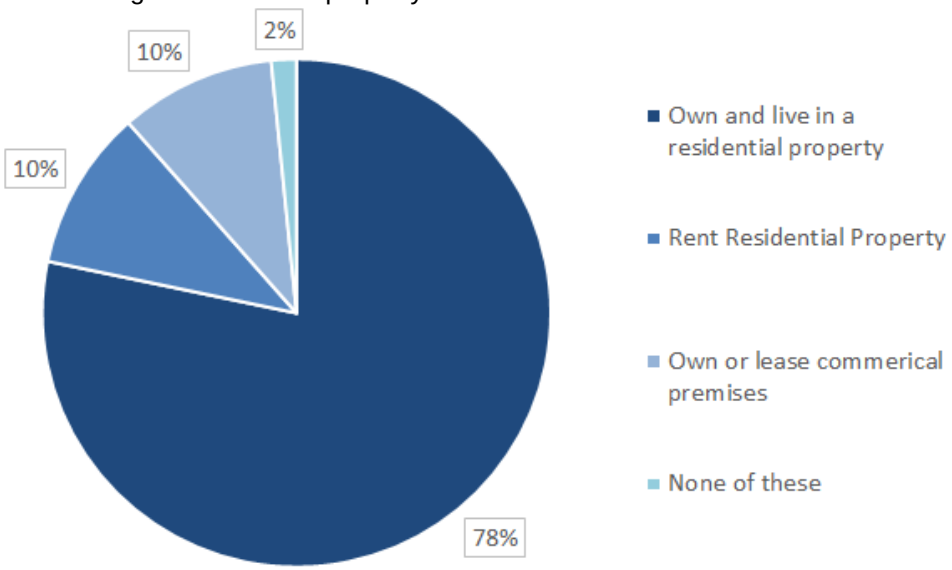


Figure 3-2 Property Types (after: Orima, 2018)

3.2.2 Period of Occupancy- Residential

Question 21: How long have you lived:

1) *In the City of Parramatta? _____ years*
2) *At your current Property? _____ years*

The respondents were asked to specify their period of occupancy at their property. Of the 264 respondents, there were 161 who indicated their duration of occupancy. The results were then grouped according to years. There were 22% of respondents who have stayed in the City of Parramatta for a period of 40 to 50 years. However, 21% have stated that they have stayed at their current property for less than 5 years.

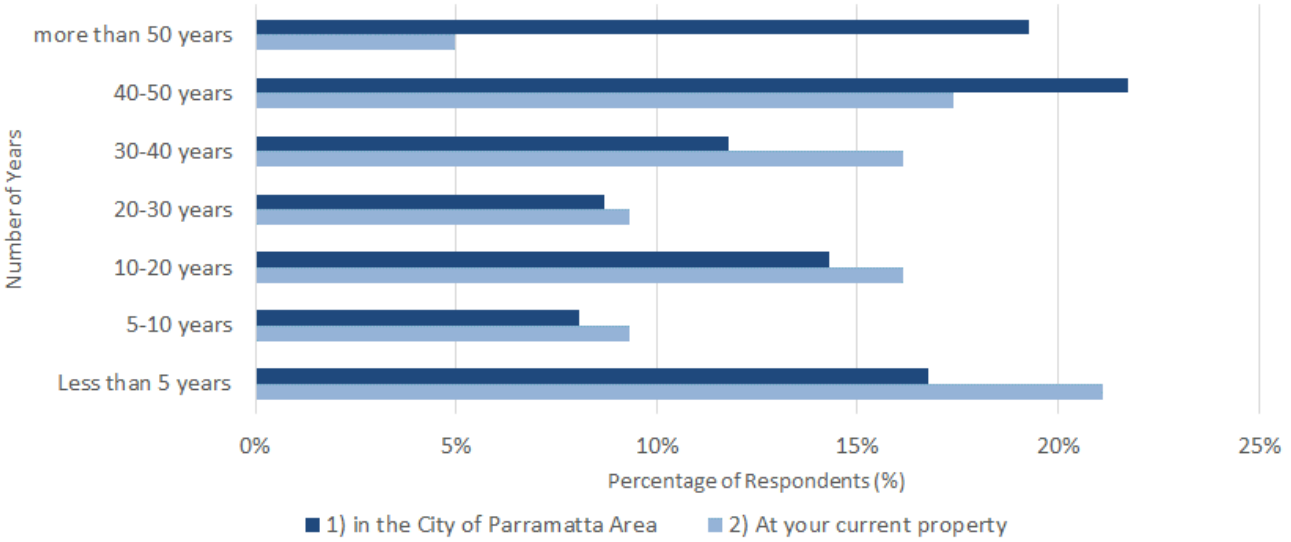


Figure 3-3 Period of Occupancy (Residential) (after: Orima, 2018)

3.2.3 Period of Occupancy- Business

Question 22: How long have you worked or run a business:

3) *In the City of Parramatta?* _____ *years*

4) *At your current location?* _____ *years*

In Question 22, the respondents were asked to specify their period of occupancy in their businesses. Out of the 264 respondents, there were a total of 81 respondents who indicated their duration of occupancy. There were 22% of respondents who have worked or ran a business within the City of Parramatta for most than 50 years. When asked about the period of business occupancy at their current property, 17% of respondents have stated that they have stayed at their current property for a period of 40 years to 50 years.

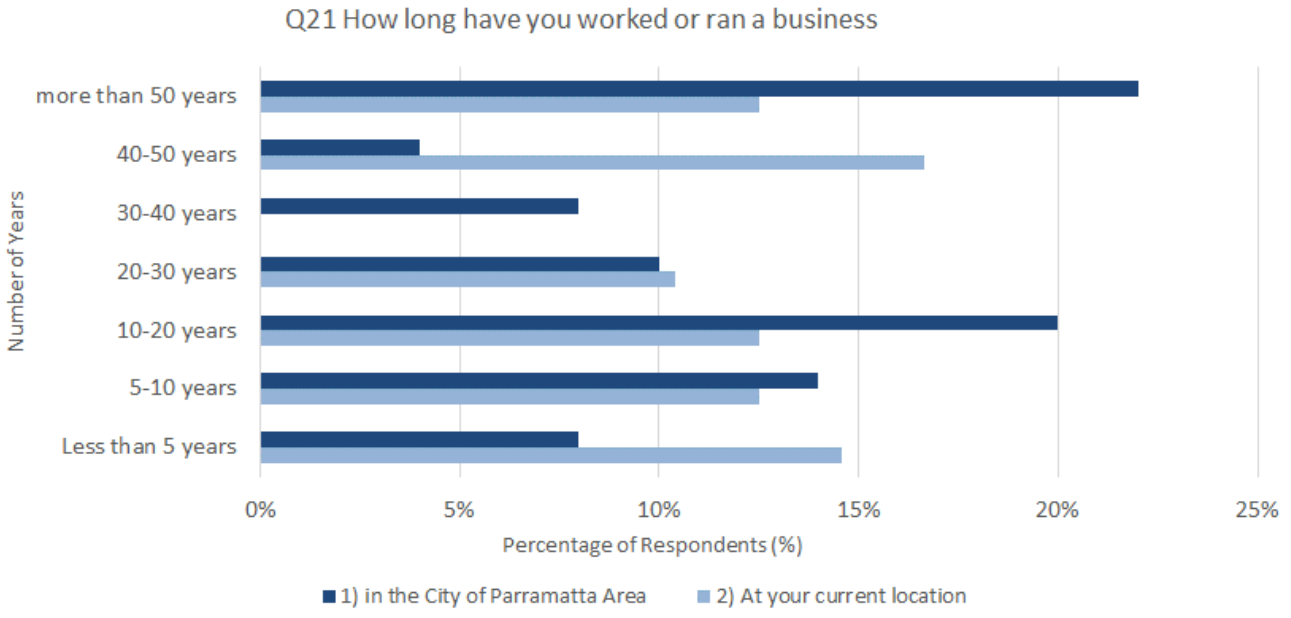


Figure 3-4 Period of Occupancy (Business) (after: Orima, 2018)

3.2.4 Flooding Experiences

Question 4: Within the city of Parramatta, have you or anyone in your household ever:

1) *Experienced flooding that affected your home*

2) *Experienced flooding that affected your workplace or business*

3) *Been affected by flooding while travelling around or through the area*

4) Witnessed or seen any other flooding in the area

5) Never seen or experienced any flooding in this area

In Question 4, respondents were asked about their flooding experiences within the City of Parramatta. A total of 32% of the respondents said that they have witnessed flooding in the study area, and 29% of the respondents indicated that they have experienced flooding that affected their home.

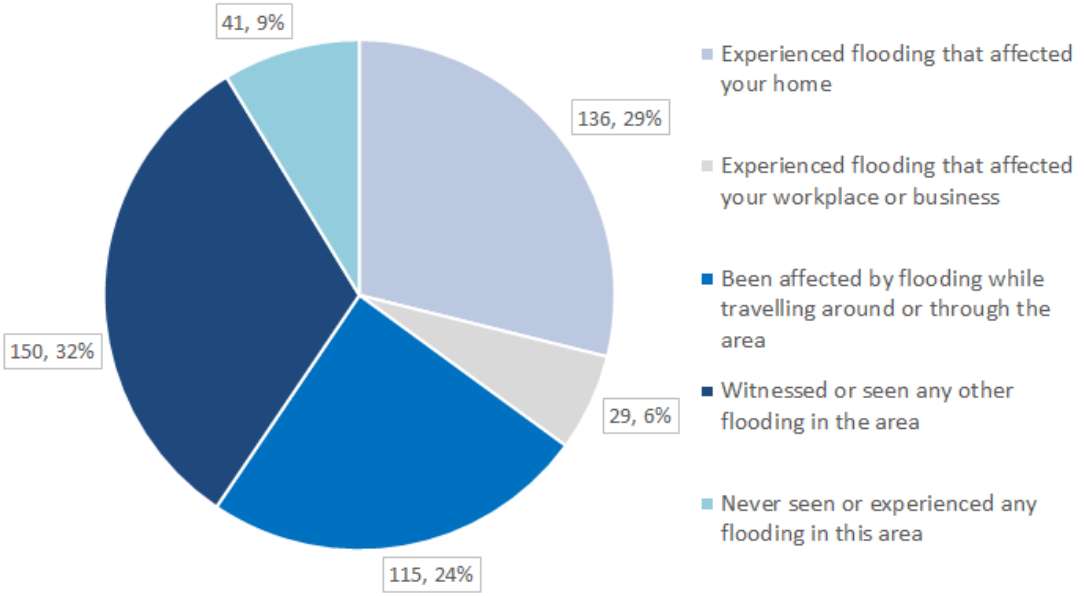


Figure 3-5 Flooding experiences for within the City of Parramatta (after: Orima, 2018)

3.2.5 Historical Flooding Information

In Questions 5 and 6, respondents were asked about well-known flood events that was experienced in the City of Parramatta (refer **Figure 3-6** and **Figure 3-7**). Of the 300 respondents to these questions, 24% experienced flood impacts in June 2016 and 20% recalled experiencing the April 2015 flood event (see **Figure 3-6**). Around ten percent of respondents had experienced each of the other well known flood events. Nine percent of the respondents also recorded other flooding occasions that they have also experienced and provided details about these events (see **Figure 3-7**).

The information gathered about the flood events is relevant for the flood model calibration / verification process, and it also assists in capturing data on issues with emergency management and evacuation.

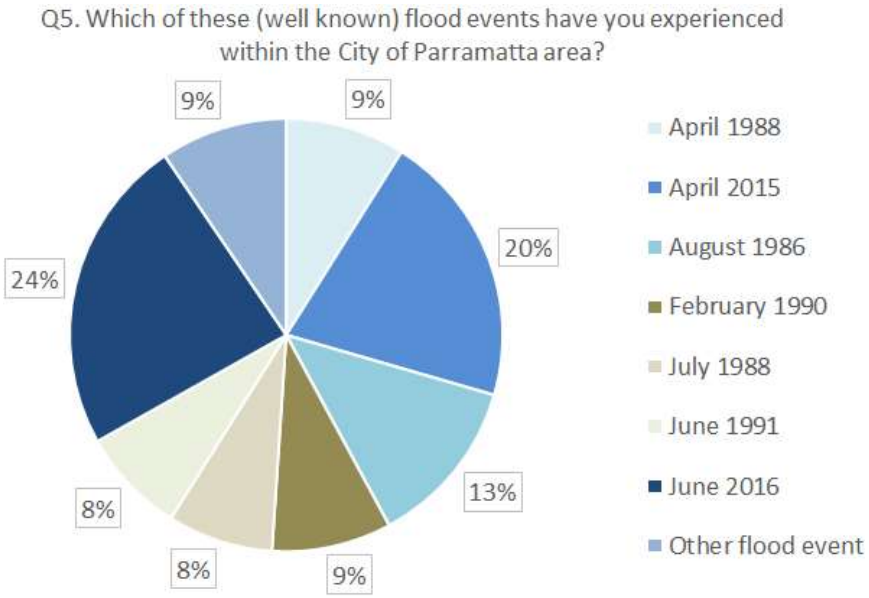


Figure 3-6 Flood experiences in the City of Parramatta (after: Orima, 2018)

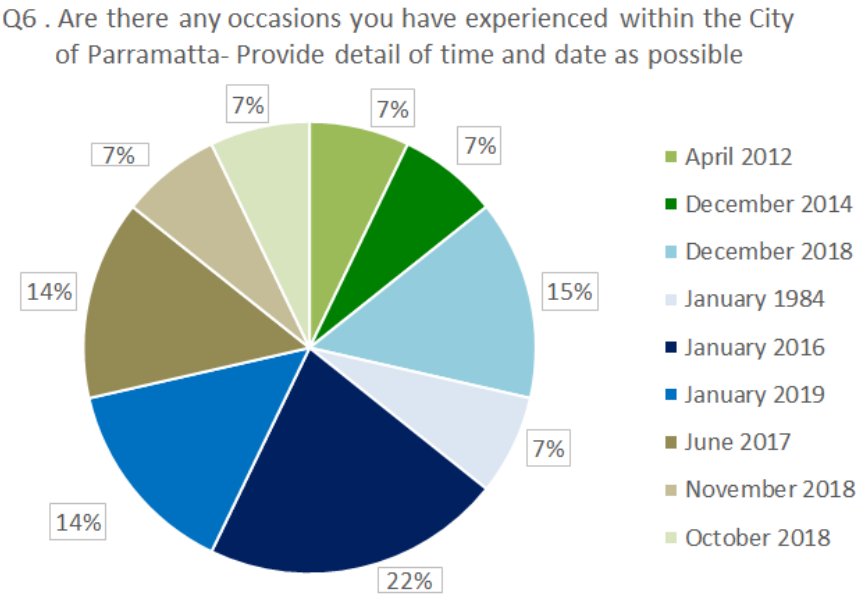


Figure 3-7 Responses to Question 6- Other occasions of flood experiences in the City of Parramatta (after: Orima, 2018)

Based on the reported experience of flooding, respondents were also asked to provide further information about the specific flood events they had experienced. This was achieved by providing the location of the observation as a street address, indicating a point location on the online web map and by providing historical photos. A total of 125 photos were uploaded by respondents from the locations mapped in **Figure 3-8** and **Figure 3-9**.

The information provided for these historical flood events also included flood depths, with a total of 35 levels from 14 different historical flooding events provided. **Table 3-2** records the number of responses that provided estimated flood depths for the sub-set of well-known flood events, and a description of where the associated flood marks were recorded.

Table 3-2 Responses with water depth and their locations

Flood events (month & year)	No. responses with water depth values	Most recorded flood locations
August 1986	5	Flooding over the floor of a living or working area Flooding of the street or footpaths
April 1988	2	Flooding of the street or footpaths
April 2015	11	Backyard flooded
June 2016	5	Flooding of the street or footpaths

The community provided details about the locations affected by the flood and the disruption caused during the flood event. There majority of responses observed flooding at public spaces (roads, footpaths, park or open spaces) (38%) followed by residential areas (32%). The majority of observations reported the duration of flooding of approximately 4-12 hours at the subject location (20%).

The majority of the respondents experienced disruption to normal household routine (32%), followed by normal commute (28%).

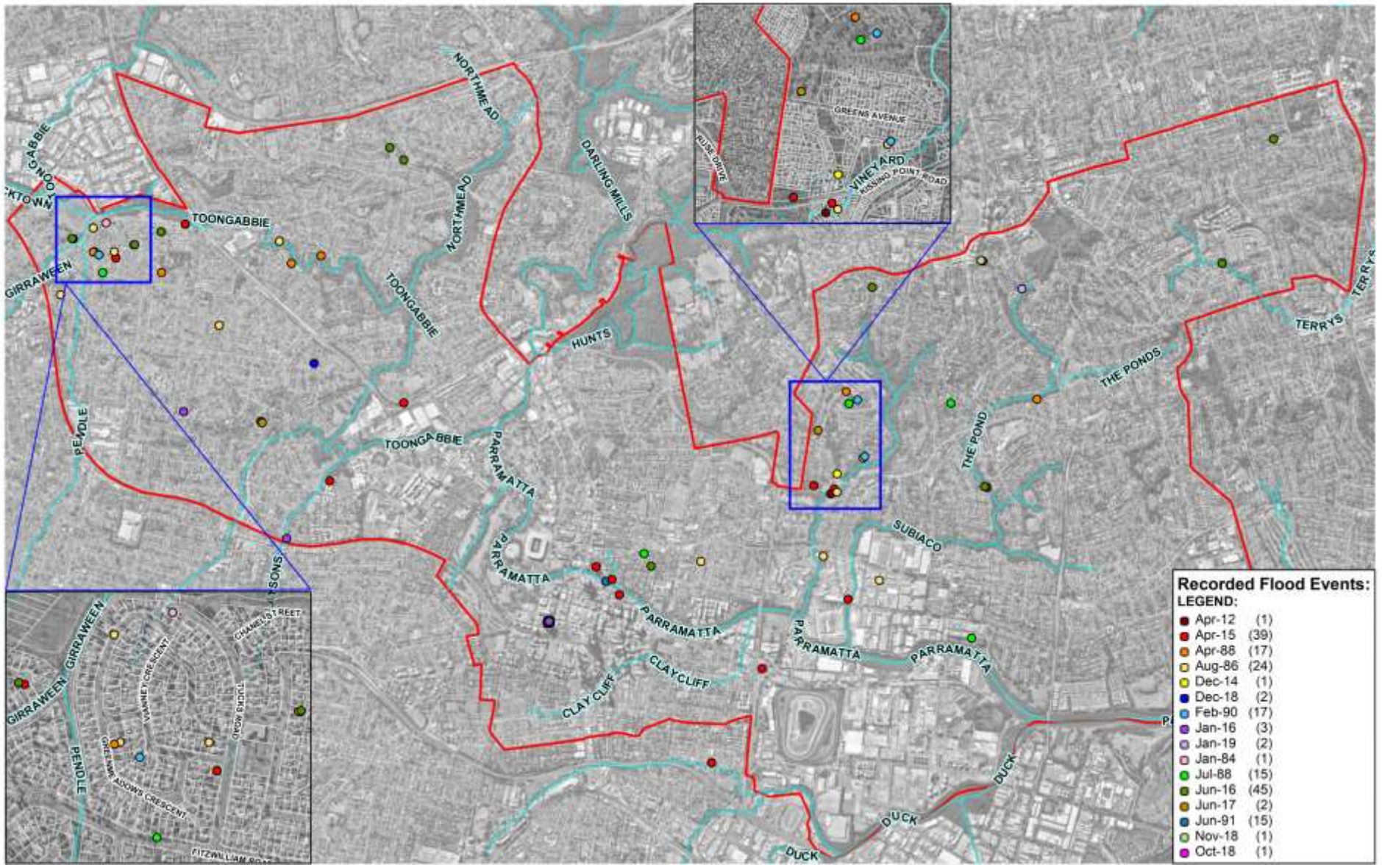


Figure 3-8 Locations and occasions of flood experiences

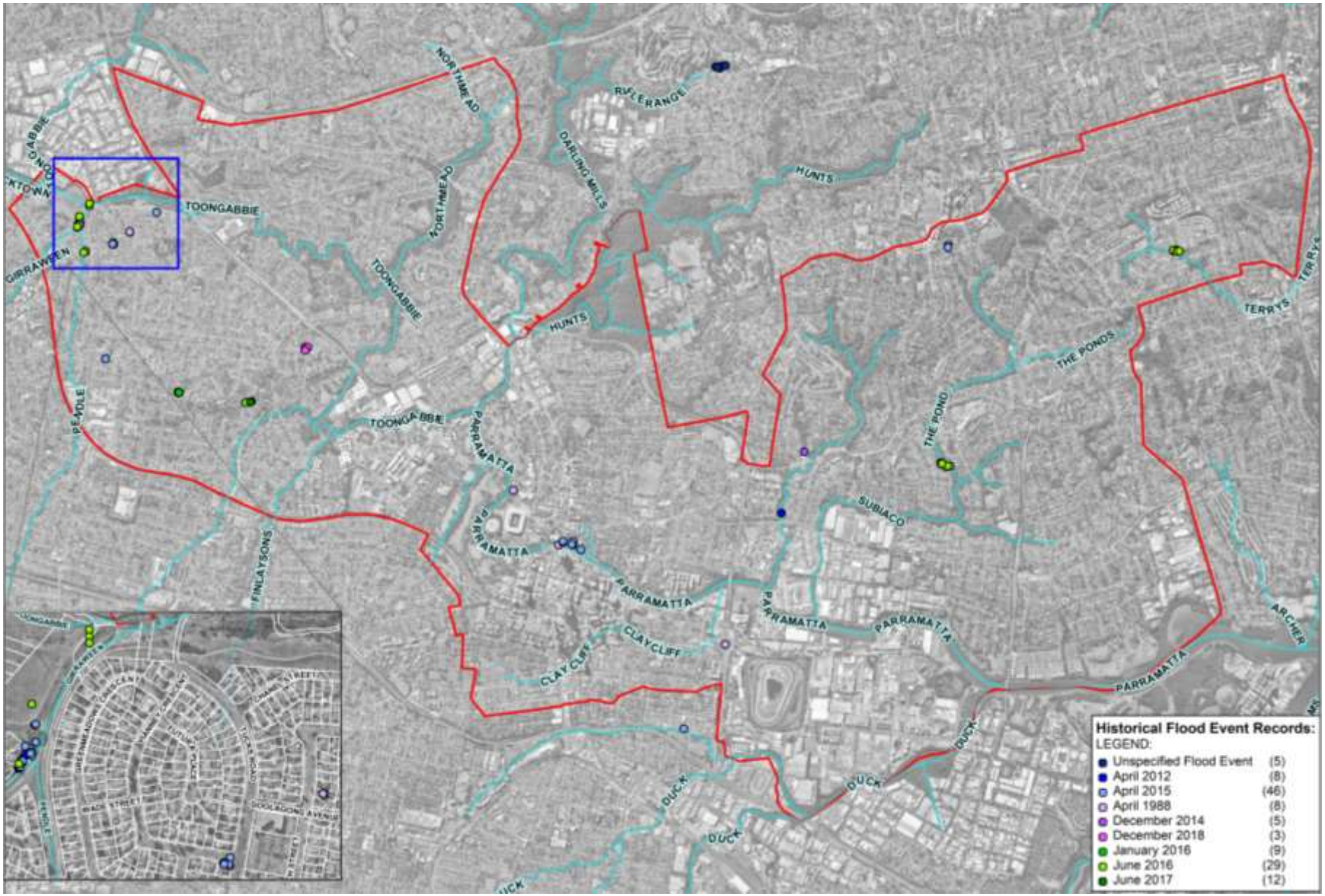


Figure 3-9 Locations of where respondents included photos in their survey responses

3.2.6 Frequency of Flooding

How often- to the best of your knowledge- does flooding happen in this location? please circle the number that applies.

1) *Several times a year*
2) *Approximately once a year*
3) *Approximately once every 3 years*
4) *Approximately once every 5 years*
5) *Approximately once every 7 years*
6) *Was a "one off" event*
7) *Other *(please specify)_____*
8) *Can't say*

The responses to question 19 indicated the general exposure within the catchment to flood risk and property damage in particular areas. The majority of respondents (21%) have not experienced flooding in the catchment.

Of those that have experienced flooding, there were 18% of those who have experienced flooding at frequencies not listed in the question. Some of the respondents have experienced flooding once every 2-6 months.

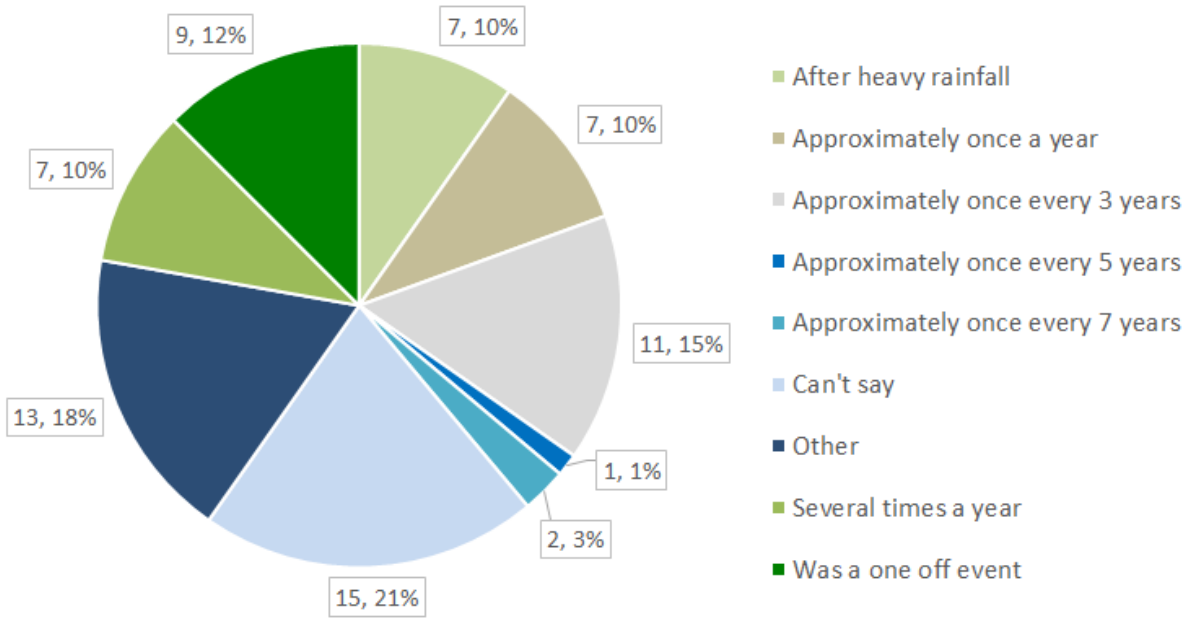


Figure 3-10 Frequency of flooding (after: Orima, 2018)

3.2.7 Community Flood Awareness

Question 26: Do you have a Flood Plan, or have you considered how you would deal with flooding at your property? please circle the number that applies.

1) *Yes- have a **clear Flood Plan***
2) *Yes- have given **specific consideration** to how we would deal with flooding*
3) *Yes - but have **given only a little thought** about what we would do if there was flooding*
4) ***No** - this is not something we have thought about*

Question 31: Do you have a Flood Plan, or have you considered how you would deal with flooding at your business? please circle the number that applies.

1) *Yes- have a **clear Flood Plan***
2) *Yes- have given **specific consideration** to how we would deal with flooding*

3) *Yes - but have **given only a little thought** about what we would do if there was flooding*

4) ***No** - this is not something we have thought about*

The community was asked about awareness of flooding and flood preparedness. Question 26 concerned flooding of residential properties and Question 31 concerned about flooding of businesses.

This information can assist Council and State Emergency Service (SES) in the development of appropriate education campaigns to raise awareness of flooding both generally and in relation to specific hazardous locations in the catchment.

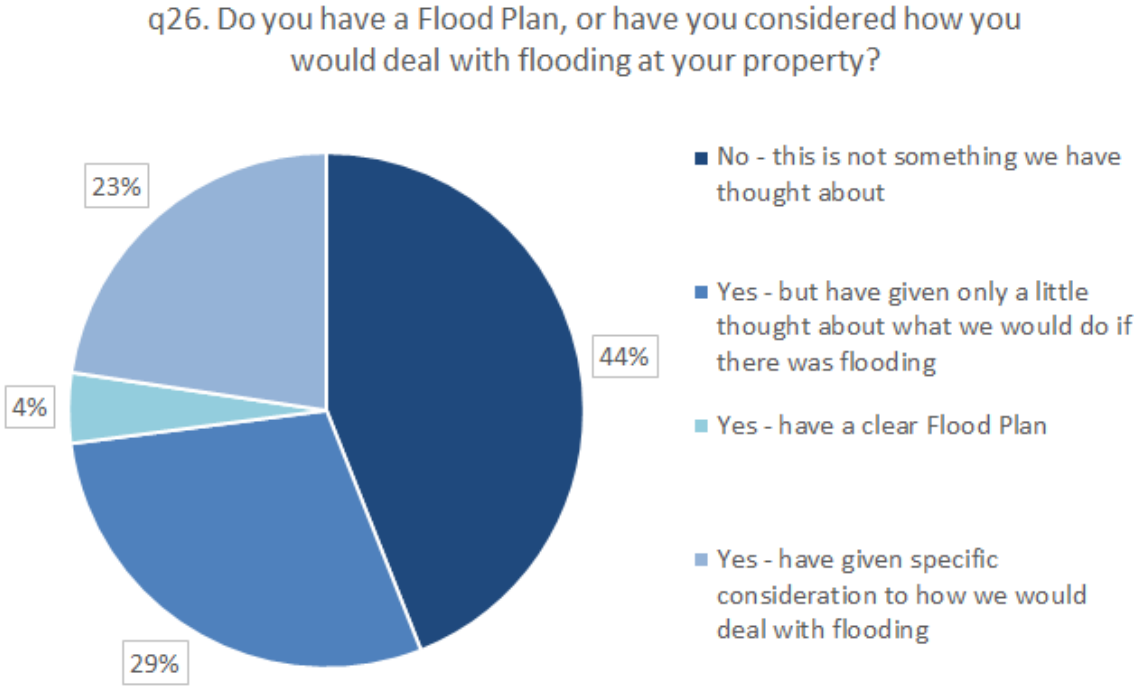


Figure 3-11 Consideration of Flood Plan for property owners (after: Orima, 2018)

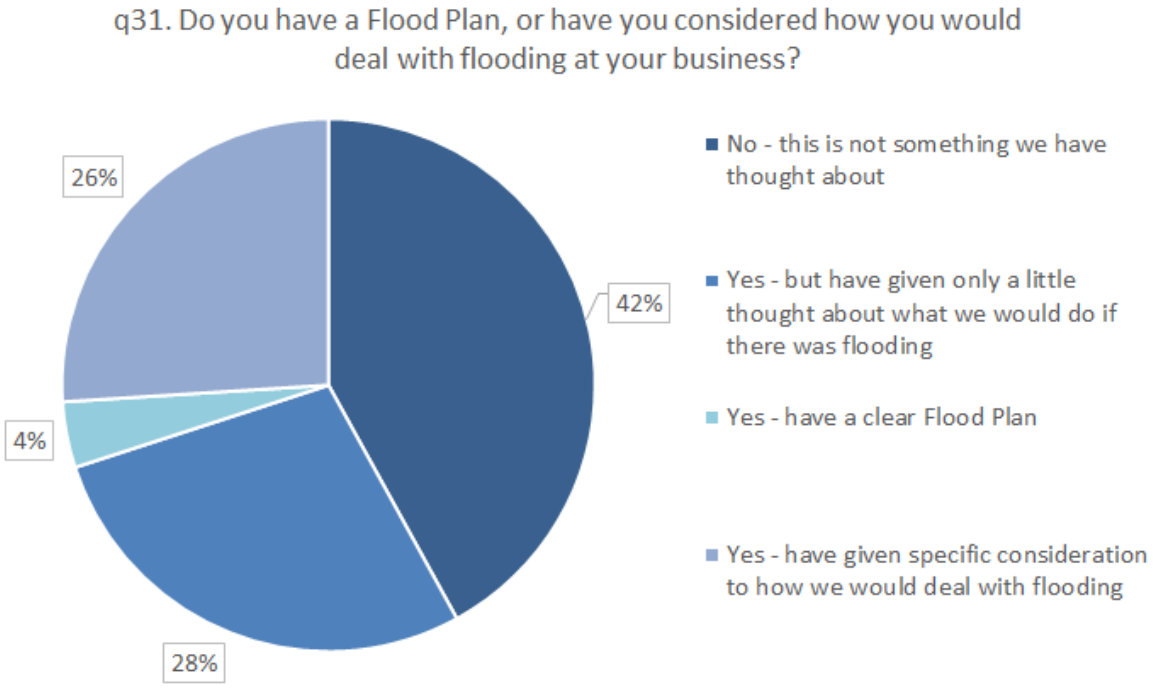


Figure 3-12 Consideration of Flood Plan for business owners (after: Orima, 2018)

3.2.8 Changes in Flood Impacts

3.2.8.1 Reduction in Flood Impacts

The community responded to Question 23 regarding their awareness of any works carried out in the City of Parramatta to help reduce flooding at their properties. Of the 206 responses, the top three responses were:

- Improvements to drainage and stormwater (33%);
- Nothing (32%); and
- Creek capacity enlarged (13%).

There were 11% of responses who have indicated “something else” and had given a further description of other works carried out to reduced flooding.

The community was also asked a similar question to Question 28 regarding their awareness to any works carried out to reduce flooding at their businesses. Of the 25 people who responded, the top three responses were:

- Improvements to drainage and stormwater (52%);
- Nothing (32%); and
- Something else (16%).

The responses who have indicated “something else” gave further description about works carried had given a further description of other works carried out to reduced flooding.

3.2.8.2 Reasons for Increased Flood Impacts

The Community responded to questions regarding their reasons for increased flooding at their properties. Of the 189 responses, the top three responses were:

- Nothing (32%);
- Changes to creeks and drainage (24%); and
- Something else (12%).

The were 53 responses to Question 29 which regards the reasons for increased flooding at their properties. The top three responses were:

- Nothing (13%);
- Changes to creeks and drainage (6%); and
- Something else (6%).

The responses who have indicated “something else” gave further details about their reasoning for increased flooding. The majority of the responses concerned increased rainfall intensities and development of high rise buildings.

3.2.9 Future Flooding

The responses to Question 25 & 30 concerns about the community’s flood awareness to future flood impacts to their properties or businesses. The results can be seen in **Figure 3-12.**

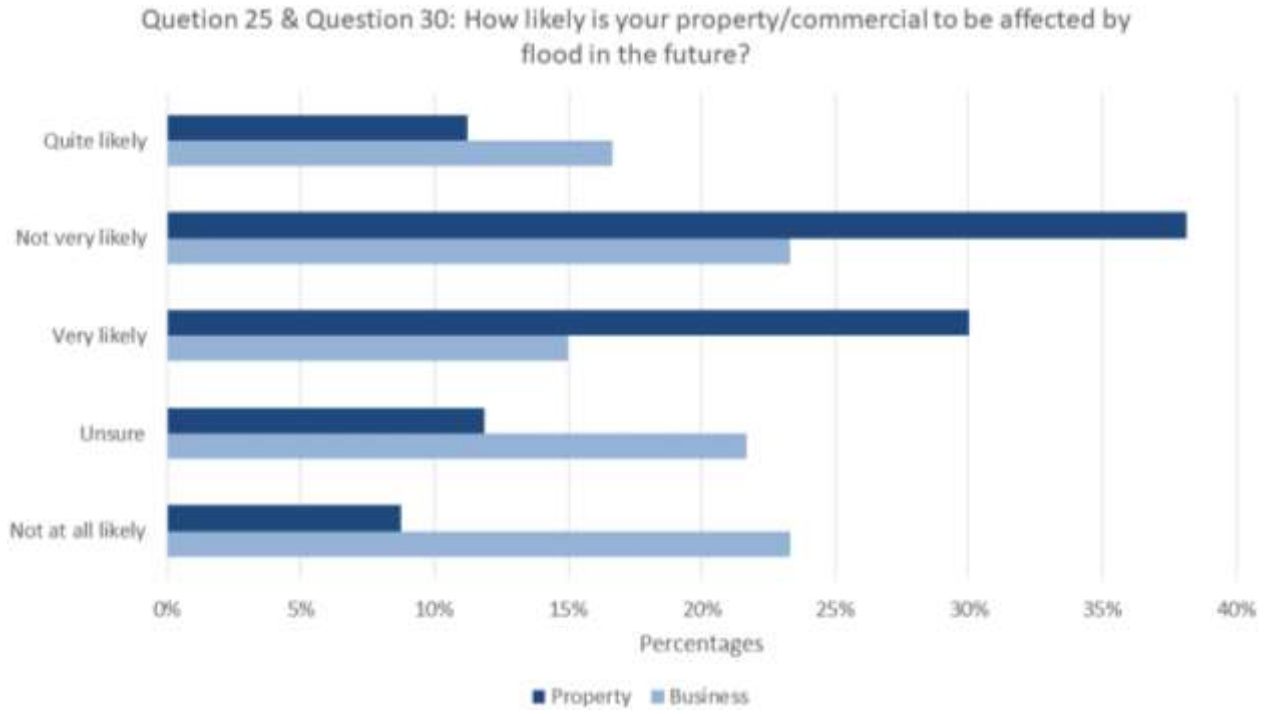


Figure 3-13 Likelihood of future flooding affecting properties and business (after; Orima, 2018)

4 Conclusions

The purpose of this report is to summarise the community consultation survey undertaken for the Parramatta River Flood Study. The survey was carried out through an online web portal by Orima and 264 responses were collected. It will be used to derive information to assist in model validation and is also useful to understand the community's level of flood awareness.

The community recalled April 2015 and June 2016 as the most severe flood events experienced in the City of Parramatta. Responses of flood experiences were focussed around:

- Parramatta CBD and Parramatta CBD Foreshore area;
- Toongabbie - behind Chanel St levee at Pendle Creek and Toongabbie Creek confluence downstream of McCoy Park Basin;
- Vineyard Creek catchment - Oatlands and Dundas near Kissing Point Road;
- The Ponds Creek catchment - Dundas near Bennetts Road

Other areas which also had flood observations include:

- Constitution Hill – Coopers Creek catchment
- Westmead – Finlaysons Creek
- Rosehill – Clay Cliff Creek
- Winston Hills – Northmead Gully catchment

The common issues raised by the community in their responses were:

- Flood impacts disrupting daily household routine and work;
- Concerns about over-development of home units from developers;
- Concerns about a lack of stormwater management; and
- Concerns that debris is blocking waterways at creeks and stormwater drainage.

There were only 4% of respondents who have implemented Flood Plans for their properties and businesses. Therefore, it is important that more education and flood advice is required in order to raise flood awareness to the community.

This consultation report will form the basis of future community consultation activities and will hope to assist Council and emergency services in flood planning and initiate a discussion with the community about the potential impacts of flooding in the local area.

5 References

NSW Government (2005) Floodplain Development Manual: the management of flood liable land. Department of Infrastructure, Planning and Natural Resources.

Orima (2018) *City of Parramatta Council Community Engagement Survey 2018*.

APPENDIX A

NEWSLETTER

Have Your Say

Parramatta River Flood Study

Community Information Newsletter - May 2016

Flooding in Parramatta

Flooding is a significant issue that affects existing and future development in the Parramatta Local Government Area (LGA). Parramatta City Council has recently commenced a Flood Study for the Parramatta River with the support of the NSW Government.

The Parramatta River Flood Study will describe the existing flood behaviour in the LGA for a range of different flood events. These flood events will be modelled in a computer based catchment-wide flood model. The study findings will be used to guide strategic planning, development and emergency management in the Parramatta LGA.

What is the Floodplain Risk Management Process?

In NSW, floodplain management is undertaken in accordance with the requirements of the NSW Floodplain Development Manual.

The Flood Study is the third step of a staged floodplain management process. Following the Flood Study, a Floodplain Risk Management Study and Plan will be prepared, which will consider specific management options to mitigate the flood risk to people and property.

The Study Area

The Parramatta LGA covers 61.4 km^2, however the Parramatta River catchment covers 212 km^2 and overlaps the borders of six other Councils. There are 32 tributary creeks that flow into the Parramatta River

The most recent flood event in the Parramatta CBD was on 22 April 2015. This event was around a 1 in 10 year flood event. The flood waters at Riverside Theatre were about 3.75 metres above the normal water level in the Parramatta River.

Charles Street Weir - April 2015

Toongabbie Creek - April 2015

The Floodplain Risk Management Process

- ✓ Formation of a Committee
- ⇩
- ✓ Data Collection
- ⇩
- **Flood Study**
- ⇩
- Flood Risk Management Study
- ⇩
- Flood Risk Management Plan
- ⇩
- Implementation of Plan

This project is supported by the NSW Government's Floodplain Management Program

NSW GOVERNMENT Office of Environment & Heritage

What can I do?

The local knowledge and personal experience of flooding on people who live and work in the area are an invaluable source of data. We would appreciate your input to the Flood Study., Please tell us about your flooding experiences in the Parramatta LGA by completing our survey.

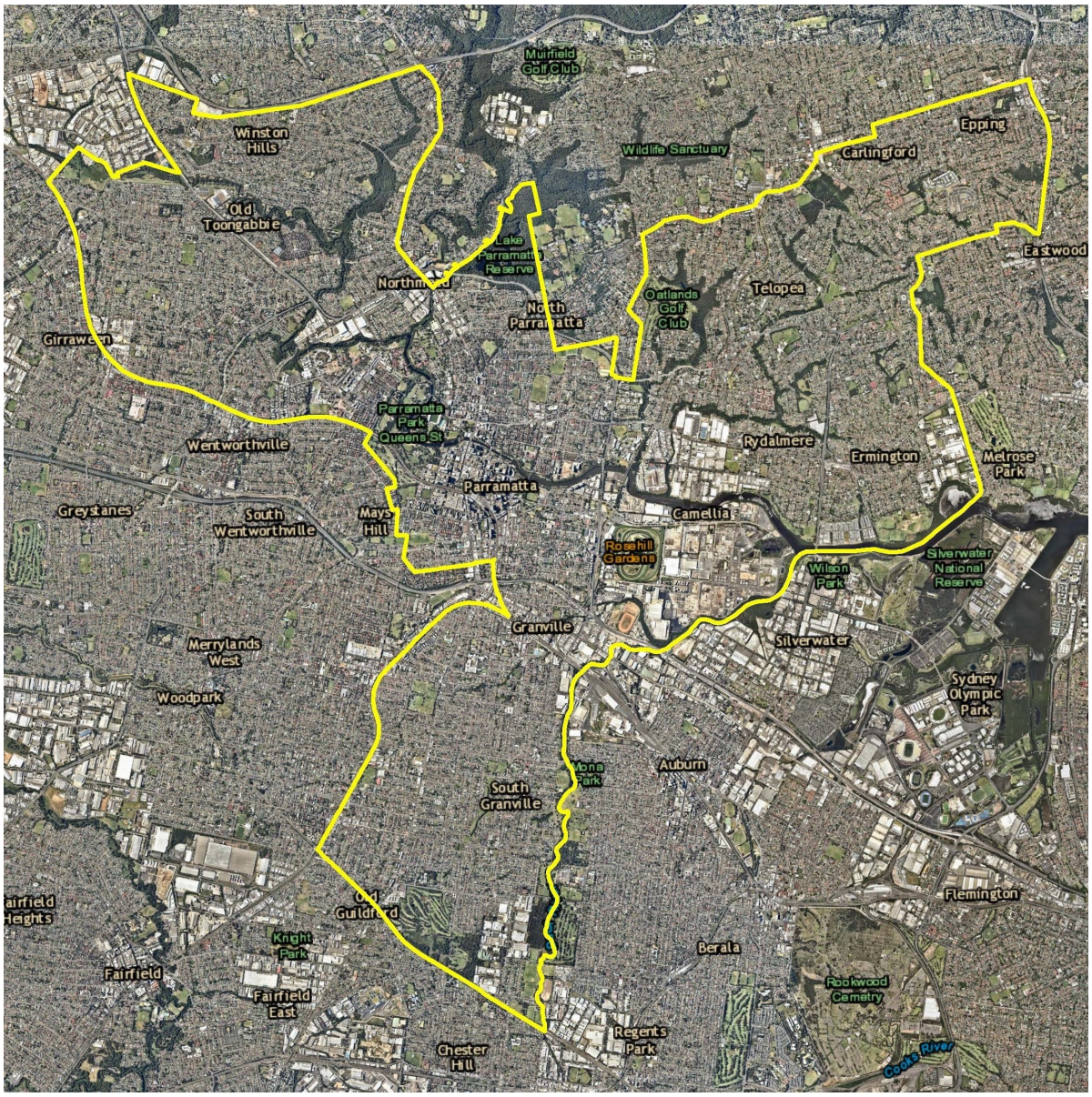
The information you provide will help the project team understand local flood issues and how they impact on the community.

Please complete the survey online at www.surveymonkey.com/ParramattaRiverFloodStudy

The survey will remain open until 30 June 2016.

I have questions. Who can I contact?

If you have any questions regarding the study or the survey, please feel welcome to contact Council by using the contact details located at the bottom of this page.



Visit www.surveymonkey.com/ParramattaRiverFloodStudy to complete the survey
You can also visit Council's webpage for more information.

02 9806 8252

RKedarath@parracity.nsw.gov.au

www.parracity.nsw.gov.au

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APPENDIX

B

COMMUNITY SURVEY QUESTIONS

CITY OF PARRAMATTA COUNCIL

PARRAMATTA RIVER FLOOD STUDY

COMMUNITY ENGAGEMENT SURVEY 2018
METHODOLOGY REPORT

January 2019

MELBOURNE CANBERRA SYDNEY BRISBANE
www.orima.com

ORIMA RESEARCH

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I. Survey Background and Methodology

A. Background and Objectives

Areas within the City of Parramatta are subject to flooding from rivers, creeks, and other drainage systems such as gutters and pipes. To reduce future flooding, the City of Parramatta Council is creating a computer flood model of the Council area, which will help inform future project planning.

As information about past flooding is a vital part of developing flood models, the City of Parramatta Council commissioned ORIMA Research collaboratively design and then host a Community Engagement Survey. The main objective was to collate the experiences, thoughts and ideas of residents, business owners and those working within the City of Parramatta about flooding within the Parramatta River Catchment (including the Terry's Creek and Devlin's Creek Catchment). The survey also provided an opportunity for them to include photos, videos and other material about their experiences that could assist the development of the computer modelling.

B. Research Methodology

Questionnaire Development and Online Programming

The City of Parramatta project team initially developed a draft set of questions of interest prior to commissioning ORIMA. In consultation with the project team, ORIMA reviewed and refined the questionnaire. The draft questionnaire was circulated to the City's project team and the engineering consultants commissioned to do the modelling for comment. The questionnaire was then updated through several iterations to incorporate the results of this consultation process and was cleared by the City's project team.

The questionnaire was then programmed and hosted online by ORIMA Research. Prior to the administration of the online survey, a comprehensive testing and validation process was undertaken by ORIMA and the City. This testing process focussed on the reliability and usability of the online form. The online form was modified as a result of the pilot testing process before final clearance from the City project team.

Data Collection Approach

The survey relied on households and businesses voluntarily accessing the survey via the City of Parramatta Council's website. The survey was promoted by the City through a variety of communications mechanisms through late 2018 and early 2019. When respondents arrived at the survey website, they were asked to register by an email ID and password system. This enabled respondents to come back in and out of the survey multiple times to complete sections, and to upload photos or other material that they may not have immediate access to when first completing the survey (especially if doing so from a mobile device).

The survey was administered between 17 September 2018 and 18 January 2019.

Data Processing and Validation

All data collected via the survey was checked and cleaned to ensure its quality and integrity. Data validation procedures conducted included:

- Checking the logic of responses.
- Validation of questionnaire filtering to ensure survey questions were only answered by appropriate respondents.
  - Our online programming incorporated detailed and strict rules that governed a respondent's progress through the survey, but it is good practice to confirm that this has been done accordingly through data filtering.
  - As it was not mandatory for respondents to answer all questions before submitting their response, there are some missing responses in the final dataset.
- 'Back-coding' of verbatim survey responses (within 'other (please specify)' response options) into pre-existing or new survey response categories for applicable questions.
  - New response categories were added if a relatively high number of respondents provided similar responses that could not be grouped into a pre-existing category. These are outlined in the table below.

Table 1: New survey response categories following back-coding of 'other (please specify)' responses

Question	New response category
q15. Which of the following describes the disruption to you and your household from this flood experience?	'Damage to property'
q19. How often – to the best of your knowledge – does flooding happen at this location?	'After heavy rainfall'
q24. Are you aware of any reasons which may have increased flooding at your property?	'Nearby development or building' 'Insufficient cleaning of stormwater areas or drains'

Presentation of final dataset

The final dataset is presented as follows:

- Both SPSS ('*#3589_Parramatta River Flood Study_FINAL DATA_30.01.19.sav*') and Excel '*#3589_Parramatta River Flood Study_FINAL DATA_30.01.19.xlsx*') versions of the final dataset have been provided.
- Each record (i.e. Row) in the final dataset represents a flood event record entered by respondents.
  - Respondents may therefore appear across multiple rows in the dataset if they entered more than one flood event.
- Attached to each flood event record is the respondent's demographic data as provided in the '*General Information about Your Household*' and '*About Yourself*' sections.
  - For ease of reference, this demographic data has been shown repeatedly if a respondent provides multiple flood events, however, a filter can be applied using the

'Unique_Demo_filter' variable described in Table 2 to view a unique set of demographic data.

- All free-text questions are denoted with the '$' symbol as part of the variable name (e.g. *Q11.6$. What type* of *residence was it? [Other (please specify)]).*
- Additional and derived variables were generated to assist the City with their analysis (see Table 2) below.

Table 2: Derived variables

Variable name	Variable description
userID	A unique identifier for each respondent who participated in the survey.
eventID	A unique identifier for each event record.
UserEventID	A concatenation of userID and eventID used as a unique identifier for each flood event record. Records marked with 'E0' (e.g. U16E0) only answered the demographic survey questions and did not enter any data regarding specific flood events.
Unique_Demo_Filter	A variable that can be used as a filter to view a unique set of demographic data (as each record in the final data is a flood event, demographic data about respondents appear against each of these records and will appear multiple times if multiple events are recorded). To apply this filter, select all cases marked with a '*1*' in the SPSS file or '*Unique demo data'* in the Excel file.
Total_Events	Identifies the number of flood events entered by the respondent.
floodEvent	A derived variable that identifies whether each record is a major (i.e. August 1986, April 1988, etc.) or other flood event: Value / Label 1 August 1986 2 April 1988 3 July 1988 4 February 1990 5 June 1991 6 April 2015 7 June 2016 8 Other flood event
day_final	Day of month flood event occurred
month_year_final	Month and year flood event occurred