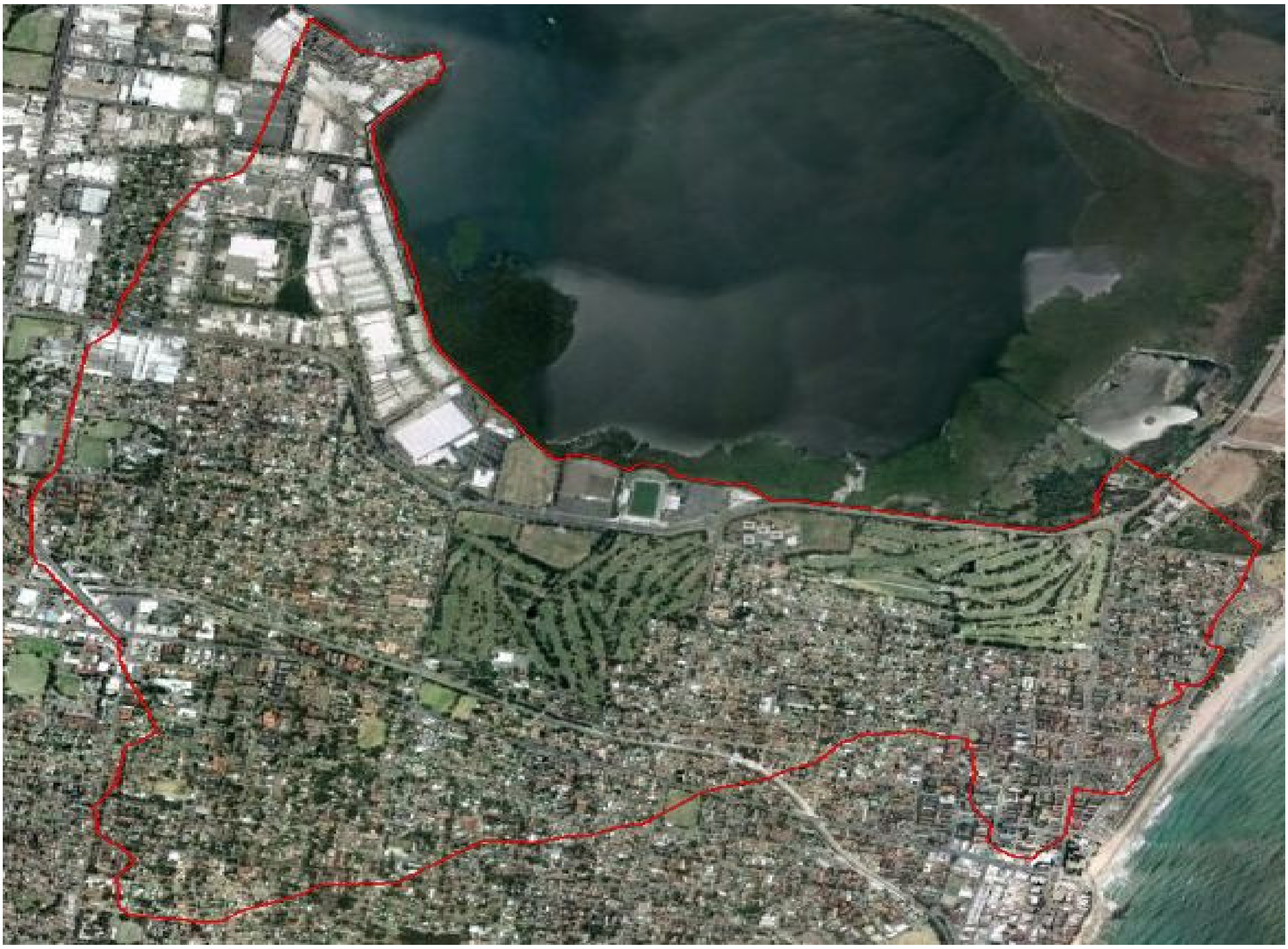
SUTHERLAND SHIRE COUNCIL

WOOLOOWARE BAY CATCHMENT FLOOD STUDY

FINAL REPORT



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Project Woolooware Bay Catchment Flood Study	**Project Number** 111069
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FOREWORD

The NSW State Government's Flood Policy provides a framework to ensure the sustainable use of floodplain environments. The Policy is specifically structured to provide solutions to existing flooding problems in rural and urban areas. In addition, the Policy provides a means of ensuring that any new development is compatible with the flood hazard and does not create additional flooding problems in other areas.

Under the Policy, the management of flood liable land remains the responsibility of local government. The State Government subsidises flood mitigation works to alleviate existing problems and provides specialist technical advice to assist Councils in the discharge of their floodplain management responsibilities.

The Policy provides for technical and financial support by the Government through four sequential stages:

1. Flood Study
- Determine the nature and extent of the flood problem.

2. Floodplain Risk Management
- Evaluates management options for the floodplain in respect of both existing and proposed development.

3. Floodplain Risk Management Plan
- Involves formal adoption by Council of a plan of management for the floodplain.

4. Implementation of the Plan
- Construction of flood mitigation works to protect existing development, use of Local Environmental Plans to ensure new development is compatible with the flood hazard.

The Woolooware Bay Catchment Flood Study constitutes the first stage of the management process for the Woolooware Bay catchment area. WMAwater (formerly Webb, McKeown & Associates) were commissioned by Sutherland Shire Council to prepare this study on behalf of Council's Floodplain Management Committee. This report documents the work undertaken and presents outcomes that define flood behaviour for existing catchment conditions. This study provides the basis for the future management of flood liable lands within the study area.

EXECUTIVE SUMMARY

The NSW Government's Flood Policy provides for:

- *a framework to ensure the sustainable use of floodplain environments,*
- *solutions to flooding problems,*
- *a means of ensuring new development is compatible with the flood hazard.*

Implementation of the Policy requires a four stage approach, the first of which is preparation of a Flood Study to determine the nature and extent of the flood problem.

The Woolooware Bay Flood Study was initiated as a result of substantial flooding of roads and residential areas, most recently in May 2003. This report has been prepared by WMAwater on behalf of the Sutherland Shire Council and the Office of Environment and Heritage (OEH) under the guidance of Council's floodplain management committee.

The specific aims of the Woolooware Bay Flood Study are to:

- *define flood behaviour in terms of flood levels, depths, velocities, flows and extents within the Woolooware Bay catchment study area;*
- *prepare flood hazard and flood extent mapping;*
- *prepare suitable models of the catchment and floodplain for use in a subsequent Floodplain Risk Management Study; and*
- *to consider the potential effects of a climate change induced increase in design rainfall intensities and sea level rise.*

Description of Study Area and Flood Mechanism (Sections 2.1 and 2.2 of report): The Woolooware Bay catchment has an area of approximately 6 km^2 and is located within the Sutherland Shire Local Government Area (LGA) and forms part of the lower Georges River floodplain. It is bound by Botany Bay to the north, Bate Bay sub-catchment to the east, Gwawley Bay sub-catchment to the west and Port Hacking sub-catchment to the south.

Land use in the catchment is predominately residential with industrial and recreation lining the foreshore of Woolooware Bay. Mangrove swamps are found around the Bay area. Some were later reclaimed to create parks and playing fields including Endeavour Field (Toyota Park), Woolooware Golf Course and Cronulla Golf Course. The catchment slopes from south to north towards the Bay with the lower reaches typically flat and low lying. The catchment is drained primarily by a Council owned sub-surface pipe system, with natural earth drainage channels located downstream in the golf courses.

A combination of flat topography and proximity to Woolooware Bay makes a large portion of the downstream areas susceptible to flooding. The governing flood mechanisms for this part of the catchment where the two golf courses are located at include local runoff and tidal inundation. Captain Cook Drive, which is situated along the downstream end of the catchment boundary, acts as a significant barrier to runoff from entering Woolooware Bay. Large quantities of floodwaters would flow from the Woolooware Golf Course onto Captain Cook Drive and subsequently onto the Endeavour Field area.

Past Floods (Section 2.3 of report): One of the most recent significant flooding that occurred within the catchment is the May 2003 event. This event has been well-documented with newspaper reports and correspondence received by Council record heavy damages to factories, houses and motor vehicles. Many of the community complaints were recorded on Council's Customer Response Management System (CRMS). Another known event occurred in March 1975 which caused widespread flooding throughout Sydney including parts of the Sutherland Shire though at this locality the magnitude of the event cannot be accurately determined. Flooding of Captain Cook Drive and the golf courses has also been reported for frequent events.

Available Data (Section 3 of report): A study (Initial Subjective Assessment of Major Flooding) was carried out by Bewsher Consulting in 2004 to assist Council in identifying land likely to be at risk of major flooding. The focus of the investigation was to expeditiously identify the scale and extent of potential flooding and to set priorities for development of Floodplain Risk Management Studies and Plans. In this study, the Woolooware Bay catchment ranked third in terms of exposure to flooding in Sutherland Shire. For the modelled 100 year ARI and extreme flood events, 632 and 740 properties were estimated to be flooded in the Woolooware Bay catchment respectively.

Airborne Laser Scanning (ALS) survey (provides a very accurate and detailed definition of the ground surface) was available for the entire study area and was used to determine catchment areas as well as to define the topography for the hydraulic models. Council also provided details on the pit and pipe network within the catchment which were verified by survey carried out in early 2012.

A community questionnaire survey was undertaken early 2012 with a return rate of 9% (404 responses) which aided in identification of problem flood regions within the catchment.

Approach (Sections 4 to 6 of report): In the absence of an extensive historical flood record, a flood frequency approach cannot be undertaken for the Woolooware Bay catchment. Therefore, design rainfalls have been used in conjunction with the establishment of a hydrologic/hydraulic modelling system. A DRAINS hydrologic model was established which provides inflow hydrographs into the TUFLOW hydrodynamic model. The TUFLOW model incorporated both major subsurface drainage features and overland flow paths within the model extent. The two components were dynamically linked such that the model accounted for the interactions between the drainage system and overland flow behaviour.

Model Verification (Section 8.2 of report): Due to the lack of available data a rigorous calibration (matching of actual flood height data to that produced from the models and so verifying the accuracy of the models) of the TUFLOW model could not be undertaken. This situation is typical of all urban catchments where there are limited flood records available (no instruments measuring water level installed and residents may not actually see the floodwaters since the flood happens very quickly – thus has to rely on debris marks or such. Questionnaires were sent out as part of this study to allow residents to advise of past flood events and data). Instead, a qualitative verification of the model was carried out by comparing the distribution of reported above floor flooding from Council's CRMS database and survey questionnaire with the extent of flooding predicted by the TUFLOW hydraulic model for the May 2003 flood event. This exercise indicates that the results from TUFLOW are generally similar to historical data. However, both rainfall and flood level data should be collected immediately following the next major flood and used to further verify the results as per the 2005 NSW Floodplain Development Manual.

Determination of Design Flood Flows and Levels (Section 8.4 of report): Design rainfall data from the Bureau of Meteorology and design rainfall patterns from Australian Rainfall and Runoff (1987) were obtained and input to the modelling procedure to obtain the design flood data. Detailed mapping was undertaken for a range of design events (5 year, 10 year, 20 year, 50 year, 100 year, 200 year ARI events and the Probable Maximum Flood) with the results provided as maps showing:

- Peak flood depths for all design flood events, Figure 15 - Figure 21;
- Peak flood levels for the 100 year ARI and PMF events, Figure 22 - Figure 23;
- Peak flood velocity for the 100 year ARI and PMF events, Figure 24 - Figure 25;
- Provisional flood hazard categorisation for the 100 year ARI and PMF events, Figure 26 - Figure 27;
- Preliminary flood hydraulic categorisation for the 100 year ARI and PMF events, Figure 28 - Figure 29;
- Change in peak flood extents for climate change scenarios (rainfall increases and sea level rise) for the 100 year ARI and PMF events, Figure 30 - Figure 33;
- Peak flood profiles along key parts of the catchment for all design flood events and climate change scenarios, Figure 34 - Figure 35, with the profile locations indicated on Figure 14;
- Preliminary flood planning area, Figure 36; and
- Preliminary flood emergency response classification for communities, Figure 37.

A 'peak envelope' approach that adopts the highest of the predicted levels from the two flooding mechanisms, i.e. catchment runoff and tidal inundation, has been used to estimate the design flood levels.

Accuracy of Design Flood Levels and Extents (Sections 8.5 and 8.6): Sensitivity analyses (to assess the effects of changing various model parameters) were undertaken on model results. Part of this analysis was to assess the effects of possible increases in design rainfall (10%, 20% and 30%) and sea level rise (increase of 0.4 m and 0.9 m for the 2050 and 2100 scenarios respectively) due to climate change. The results indicate that the average increase (based on a comparison of the peak flood level at selected review points) in the 100 year ARI flood event is:

- low level rainfall increase of 10% = +0.03 m;
- medium level rainfall increase of 20% = +0.06 m;
- high level rainfall increase of 30% = +0.10 m.

However the results do show some variation between locations. On the other hand, the impacts of sea level rise are largely confined to the low lying areas adjacent to Woolooware Bay.

The model results are much less sensitive to changes of the model parameter values. The most sensitive parameter was the pipe/culvert blockage factor which resulted in a maximum change in peak flood level of ±0.2 m.

Due to the limited quantity and quality of the calibration data available and in view of the sensitivity analyses, it is estimated that the order of accuracy of the design flood levels is up to ±0.2 m, however in many places the order of accuracy will be ±0.1 m. These orders of accuracy are typical of such studies and can only be improved upon with additional observed flood data to refine the model calibration and more detailed and accurate definition of the terrain.

Outcomes: The main outcomes of this study are:

- full documentation of the methodology and results;
- preparation of depth, velocity, hazard and extent maps for the study area;
- an assessment of the potential impacts of climate change on flooding; and
- a modelling platform that will form the basis for a subsequent Floodplain Risk Management Study and Plan.

Recommendations: This Flood Study should be adopted by Council before proceeding with the subsequent Floodplain Risk Management Study and Plan. As part of these subsequent studies a risk analysis of the implications of climate change on flooding should be undertaken.

The key recommendation from this study is to highlight the importance of collecting and maintaining a database of historical rainfall and flood height data. It is vital that information from future flood events is collected within 24 hours and the magnitude and direction of flow paths through private property recorded. This information will significantly improve the accuracy of the design flood levels and extents and ensure that known flood areas are identified and assessed. Data collection can be undertaken by Council Officers digitally photographing flood marks etc (they can be levelled later based on the photograph) and possibly mailing out a resident questionnaire requesting information and photographs. Unfortunately if this process is not done quickly, information is lost forever.

1. INTRODUCTION

This Flood Study has been prepared by WMAwater (formally Webb, McKeown & Associates) on behalf of Sutherland Shire Council (Council). The main objective of this study is to define the flood behaviour in the Woolooware Bay catchment (the catchment) under existing conditions. This study has examined past flood events in addition to undertaking a flood assessment for a range of design storms. The findings in this report provide information to inform Council with regards to managing existing and future flood risk within the catchment.

1.1. Objectives

The information and results obtained from this Flood Study will define existing flood behaviour and provide a firm basis for the development of a subsequent Floodplain Risk Management Study and Plan. A variety of flood mechanisms including mainstream flooding, local overland flow flooding and tidal inundation were considered.

In addition to defining the flood behaviour (5 year, 10 year, 20 year, 50 year, 100 year, 200 year ARI events and the Probable Maximum Flood (PMF)) in the Woolooware Bay catchment, the study was developed to:

- Define flood behaviour in terms of flood levels, depths, velocities, flows and flood extents within the study area;
- Provide provisional flood hazard and flood extent mapping (for all design events modelled); and
- Consider the potential effects of a climate change induced increase in design rainfall intensities and sea level rise in accordance with the NSW Government guidelines[1] (Reference 1).

The study has established suitable hydrologic and hydraulic modelling tools, demonstrated their capacity to emulate local flood behaviour via verification (as data allows) and then applied these tools to establish the existing flood risk for a range of design flood event probabilities in conjunction with a range of event durations. The modelling system is suitable for assessing flood mitigation works in the Floodplain Risk Management Study and Plan.

[1] It should be noted, however, that in September 2012 the NSW Government repealed mandatory compliance with the 0.4 m sea level rise by the year 2050 and 0.9 m sea level rise by the year 2100. Councils in NSW must now make their own decisions regarding the assessment of sea level rise.

2. BACKGROUND

2.1. Study Area

The Woolooware Bay catchment is located approximately 20 km south of the Sydney CBD within the Sutherland Shire Local Government Area (LGA) and forms part of the lower Georges River floodplain. It is bound by Botany Bay to the north, Bate Bay sub-catchment to the east, Gwawley Bay sub-catchment to the west and Port Hacking sub-catchment to the south. The catchment includes the suburbs of Taren Point, Caringbah, Woolooware and Cronulla. A location map of the study area is shown as
Figure 1.

The Woolooware Bay catchment has an area of approximately 6 km^2. Figure 2 shows the existing land use of the study area. Land use in the catchment is predominately residential with industrial and recreation lining the foreshore of Woolooware Bay. Mangrove swamps are found around the Bay area. Some were later reclaimed to create parks and playing fields including Endeavour Field (Toyota Park), Woolooware Golf Course and Cronulla Golf Course. The catchment slopes from south to north towards the Bay with the lower reaches typically flat and low lying (refer Figure 3). The two golf courses located in this part of the catchment are both subjected to tidal inundation.

2.2. Drainage System and Flood Mechanism

The catchment is drained primarily by a Council owned sub-surface pipe system, with natural earth drainage channels located downstream in the golf courses. There are approximately 1,800 drainage pits and 1,750 stormwater pipes and culverts within the study area. Floodwater discharges into Woolooware Bay either in the form of diffuse outflows or through the tidal channels and pipes found along the downstream boundary of the catchment.

As the catchment is subdivided by the Sutherland – Cronulla railway line (refer
Figure 1), limited overland flow paths exist for the upstream catchments, i.e. Gannons Rd. Typically, during major flood events, the pipe culverts underneath the railway line only have sufficient capacity to convey a proportion of the peak flood discharges from the upper parts of the catchment. As a result, excess floodwaters tend to “build up” behind the railway embankments, forming temporary flood storage areas.

A combination of flat topography and proximity to Woolooware Bay makes a large portion of the downstream areas susceptible to flooding. The governing flood mechanisms for this part of the catchment where the two golf courses are located at include local runoff and tidal inundation. Captain Cook Drive, which is situated along the downstream end of the catchment boundary, acts as a significant barrier to runoff from entering Woolooware Bay. Large quantities of floodwaters would flow from the Woolooware Golf Course onto Captain Cook Drive and subsequently onto the Endeavour Field area. Several gross pollutant traps (GPTs) are also installed in the catchment, mostly in the golf courses as well as at the outlets going into the Bay.

2.3. Flood History

One of the most recent significant flooding that occurred within the Woolooware Bay catchment is the 13th to 16th May 2003 event. This event has been well-documented with newspaper reports and correspondence received by Council record heavy damages to factories, houses and motor vehicles. Many of the community complaints were recorded on Council's Customer Response Management System (CRMS), of which a total of 68 complaints were in the vicinity of the study area. These complaints can be further sub-divided into the following categories:

- Reference to flooding above floor level - 5 complaints
- Reference to flooding on property - 21 complaints
- Reference to flooding on roadways - 2 complaints
- Reference to drainage maintenance issues - 25 complaints
- Issues unrelated to flooding - 15 complaints

These complaints were fairly evenly distributed across the catchment with the exception of the eastern section, as shown on Figure 4. Most complaints referred to flooding on residential properties and only 3 provided estimates of inundation depths. The other issues raised by these complaints were insufficient drainage and blocked drains.

Several historic photos have been obtained that highlight the potential magnitude of flooding in the region. Photo 1 shows flooding of Captain Cook Drive at the intersection with Gannons Road for the March 1975 event. This event was known to have caused widespread flooding throughout Sydney and the rainfall was documented in Reference 3. It was estimated that based on rainfall and flood records at Miranda this event may have approached a 1 in 1000 ARI for a 12 hour duration and a 1 in 400 ARI for a 2 hour duration. This event caused widespread flooding in Sans Souci, Kogarah and in other parts of the Sutherland Shire. It is likely that the rainfall intensities would have varied greatly across the area and at this locality the magnitude of the event cannot be accurately determined.

It should be noted that Captain Cook Drive has been raised since 1975 and other works for the adjacent sporting fields will have changed the topography and thus the resulting flood levels. It is likely that filling to create the sporting fields on the north (downstream) side of Captain Cook Drive will have increased flood levels upstream.

Since 2003 there have been several events that have caused flooding of Captain Cook Drive causing traffic disruption (there is video on YouTube of the 12th March 2012 event). These events are likely to have a magnitude of less than 5 year ARI and possibly even more frequent.

Flooding of the golf courses has also been frequently reported by the local media, residents (evident from the community consultation findings presented in Section 3.9) and Council (Reference 2). During a flood event, the golf courses serve as a temporary storage area for floodwaters which usually require a few days to be discharged into the Bay using pumps operated by the Golf Clubs. Photo 2 to Photo 4 show what typically occurs at the golf courses after a major rainfall event.

Photo 1: Flooding at the corner of Gannons Rd and Captain Cook Dr, dated March 1975 (courtesy of Ross Myers)

Photo 2: Flooding in the Cronulla Golf Course, dated July 2011 (courtesy of the Leader)

Photo 3: Flooding in the Woolooware Golf Course, date unknown (courtesy of the Woolooware Golf Club)

Photo 4: Flooding in the Woolooware Golf Course, date unknown (courtesy of the Woolooware Golf Club)

3. AVAILABLE DATA

3.1. Background

Various items of data as well as reports salient to the study have been collected and reviewed. Most reports and datasets were sourced from Council and supplemented by additional survey where required. Reports were reviewed particularly for topographic/hydrologic parameters as well as observations of historical flood events. The key focus of the exercise was to collect data suitable for the model verification process.

This section provides a summary of the reports as well as a description of the various forms of data utilised in the study.

3.2. Previous Studies

In preparing this report, a number of previous studies were made available for review by Council ranging from detailed drainage studies of individual development lot through to investigations of broader areas covering the lower Georges River floodplain. Key studies reviewed as part of the present assessment included:

- Initial Subjective Assessment of Major Flooding, 2004 (Reference 2);
- Lower Georges River Floodplain Risk Management Study and Plan, 2011 (Reference 4);
- Lower Georges River Stormwater Management Plan, 1999 (Reference 6); and
- Sea Level Rise Risk Assessment for Sutherland Shire Council, 2011 (Reference 7).

The minor studies reviewed were:

- Stormwater drainage and water quality strategy for proposed re-zoning of the Sharks eastern site, 2002;
- Hydraulic engineers report and detailed flood study, 2A Captain Cook Drive, Caringbah, 2004;
- Flood Study for proposed upgrading of Toyota Park for Cronulla Sutherland Leagues Club Ltd, 2007; and
- Flood study & drainage analysis report for 32-40 Cawarra Rd, Caringbah, 2011.

Further descriptions of the above studies are provided in later sections where relevant to the current investigation.

3.2.1. Initial Subjective Assessment of Major Flooding, 2004 (Reference 2)

This study was commissioned by Council to identify land likely to be at risk of major flooding. The focus of the investigation was to expeditiously identify the scale and extent of potential flooding and to set priorities for development of Floodplain Risk Management Studies and Plans. The approaches undertaken include:

- Interrogated Council's Customer Response Management System (CRMS) database to assess the distribution of flood complaints, primarily the 13th May 2003 storm event;
- Carried out preliminary hydrologic and hydraulic modelling using the Urban Rational Method and the principles of open channel flow to estimate flood flows and inundation extents; and
- Sought expert knowledge of flood risk in the area.

In this study, the Woolooware Bay catchment was referred to as the Botany Bay catchments and ranked third in terms of exposure to flooding in Sutherland Shire. For the modelled 100 year ARI and extreme flood events, 632 and 740 properties were estimated to be flooded in the Woolooware Bay catchment respectively. Other comments related to the Woolooware Bay catchment include reference to historical flooding in Meta St, the golf courses and the intersection outside of Toyota.

3.2.2. Lower Georges River Floodplain Risk Management Study and Plan, 2011 (Reference 4)

This study was initiated to assess and manage flood risks along the Georges River floodplain downstream of its junction with the Woronora River, within the Sutherland Shire LGA. It was an extension of the *2004 Georges River Floodplain Risk Management Study and Plan* (Reference 5). The study area includes the foreshores of Oyster Bay, Gwawley Bay and Woolooware Bay, but only flooding originating from the Georges River was considered.

This study has identified that historical flooding has been experienced by the community in Sturt Road, Cronulla and that road inundation occurs at Captain Cook Drive, Woolooware during a 100 year ARI flood event. Other flood-liable roads identified (for events rarer than the 100 year ARI) include:

- Parraweena Road, Caringbah;
- Northumberland Drive, Caringbah;
- Adventure Place, Caringbah;
- Resolution Drive, Caringbah;
- Endeavour Road, Caringbah;
- Woolooware Road, Woolooware; and
- Restormel Street, Woolooware.

3.2.3. Lower Georges River Stormwater Management Plan, 1999 (Reference 6)

This stormwater management plan was prepared to comply with a directive issued to all NSW Councils by the NSW Environment Protection Authority. The primary goal of the stormwater management plan was to facilitate the coordinated management of stormwater within the Lower Georges River catchment, to improve the health and quality of the catchment waterways. It will assist Councils in minimising the future impacts of urban stormwater on the environment and will address existing stormwater impacts. The plan was prepared in close coordination with the Councils of the Lower Georges River catchment, RTA, RailCorp, Sydney Water representatives as well as the EPA. A number of stormwater management options, both structural and non-structural, were identified to address the stormwater management issues and to meet the stormwater management objectives for areas including the Woolooware Bay catchment.

3.2.4. Sea Level Rise Risk Assessment, 2011 (Reference 7)

This study was commissioned by Sutherland Shire Council to investigate the potential impacts of a changing climate on coastal and catchment flooding as part of its Climate Change Adaptation Plan development. The primary aim of the study was to develop a more complete understanding and to quantify the possible extents to which projected sea level rise and changes in storm event patterns may impact on the Sutherland Shire LGA.

As part of this study, models were developed that enabled an examination of the extent of tidal inundation that may occur under future climate scenarios due to sea level rise and extreme storm surge and wave events. Models were also developed to examine the magnitude and frequency of rainfall-induced flooding events under present and future climate scenarios accommodating the combined effects of sea level rise with predicted changes to rainfall and runoff patterns to indicate future scenario flooding risks.

3.3. Historical Rainfall

3.3.1. Overview

Rainfall data is recorded either daily (24hr rainfall totals to 9:00am) or continuously (pluviometers measuring rainfall in typically 0.1 to 1 mm rainfall increments). Daily rainfall data has been recorded for over 100 years at many locations within the Sydney basin, including at Observatory Hill since 1858. In general, pluviometers have only been installed since the 1970's. These records provide an indication of when and how often large rainfall events have occurred in the past.

However, care must be taken when interpreting historical rainfall measurements. Rainfall records may not provide an accurate representation of past events due to a combination of factors including local site conditions, human error, or limitations inherent to the type of recording instrument used. Examples of limitations that may impact on the quality of data used for the present study are highlighted in the following:

- Rainfall gauges frequently fail to accurately record the total amount of rainfall. This can occur for a range of reasons including operator error, instrument failure, overtopping and vandalism. In particular, many gauges fail during periods of heavy rainfall, and records of large events are often lost or misrepresented;
- Daily read information is usually obtained at 9:00am in the morning. Thus if the storm encompasses this period it becomes “split” between two days of record and a large single day total cannot be identified;

- In the past, rainfall over weekends was often erroneously accumulated and recorded as a combined Monday 9:00am reading;
- Where the time taken for the whole catchment to contribute to runoff is less than 24 hours, daily rainfall records may not provide a sufficient reflection of rainfall intensity to indicate subsequent flooding. For example, high intensity, short duration storms may produce a relatively low total daily rainfall, and hence may not provide a reflection of any associated flooding. Alternatively, the rainfall may be relatively consistent throughout the day, producing a large maximum rainfall depth but only minor flooding;
- Pluviometer (continuous) records provide a much greater insight into the intensity (depth vs time) of rainfall events and have the advantage that the data can generally be analysed electronically. This data has fewer limitations than daily read data. However, pluviometers can also fail during storm events due to the extreme weather conditions;
- Rainfall records can frequently have “gaps” ranging from a few days to several weeks or even years; and
- Rainfall events which cause flooding in the study catchment can be localised and as such are only accurately “registered” by a nearby gauge. Gauges sited only a few kilometres away can show very different intensities and total rainfall depths.

3.3.2. Available Historical Rainfall Data

Table 1 presents a summary of both operational and non-operational rainfall gauges located within or close to the study catchment. The locations of the gauges are shown on Figure 5. These gauges are operated by either Sydney Water (SW) or the Bureau of Meteorology (BoM). Of the 22 gauges listed in Table 1, ten have now closed. There are other private gauges in the area such as those located within the two golf courses but the rainfall records obtained were found to be incomplete or their reliability could not be ascertained. Nevertheless, they were used as alternative cross-check sources.

There is one operational gauge situated on the western boundary of the study catchment, which is a Sydney Water pluviometer at the Caringbah Bowling Club (operational since 1991). In addition to that, within 8 km of Woolooware there are four daily read gauges and three pluviometers in operation.

Table 1: Selected Rainfall Stations in Close Proximity to Woolooware Bay Catchment

Station No.	Owner[1]	Station Name	Elevation (mAHD)	Distance from *Woolooware* (km)[2]	Date Opened	Date Closed	Type[3]
066104	BoM	Lilli Pilli	N/A	0.9	29/04/1902	29/12/1941	Daily
566098	SW	Caringbah Bowling Club	27	2.3	23/12/1991		Continuous
066014	BoM	Cronulla South Bowling Club	30	2.6	19/06/1997		Operational
066014	BoM	Cronulla South Bowling Club	30	2.6	1/01/1934		Daily
066086	BoM	Cronulla WWTP	10	2.8	30/07/1958		Daily
566018	SW	Cronulla STP	10	2.8	1/08/1958		Continuous
566018	SW	Cronulla STP	10	2.8	1/08/1958		Daily
066136	BoM	Lilli Pilli	59.4	3.1	30/01/1968	29/12/1973	Daily
066116	BoM	Bundeena Composite	45	4.0	29/04/1964	29/12/1978	Daily
066040	BoM	Miranda (Blackwood St)	40	4.0	1/01/1906	15/01/2006	Daily
066058	BoM	Sans Souci (The Boulevarde)	9	5.8	22/04/1997		Operational
066058	BoM	Sans Souci (Public School)	9	6.1	30/10/1899	29/12/2001	Daily
566092	SW	Sutherland Bowling Club	115	6.8	6/07/1991		Continuous
066060	BoM	Sutherland MWSDB	121	7.0	30/03/1907	29/12/1972	Daily
066072	BoM	Kurnell (Caltex Oil Refinery)	3	7.5	28/02/1956		Daily
066176	BoM	Audley (Royal National Park)	120	8.0	8/09/1997		Operational
066176	BoM	Audley (Royal National Park)	120	8.0	1/01/1979	30/05/1997	Daily
566061	SW	Caringbah (Davies Kent P/L)	25	8.7	5/04/1966	19/12/1973	Continuous
566048	SW	Oyster Bay	8	9.1	23/12/1976	19/07/1983	Continuous
066037	BoM	Sydney Airport AMO	6	12.2	1/01/1960		Continuous
066037	BoM	Sydney Airport AMO	6	12.2	29/06/1994		Synoptic
066192	BoM	Sydney Airport TBRG	3	12.2	1/01/1993	1/01/1997	Continuous

[1] BoM: Bureau of Meteorology; SW: Sydney Water

[2] Distances are approximations only

[3] Operational refers to flood alert gauges; Continuous refers to pluviometers; Synoptic refers to stations which provide discrete observations of total rainfall at some synoptic hours (eg. 6am, 12am and 3pm) in addition to 9am

3.3.3. Analysis of Historical Rainfall Data

Recorded rainfall data was analysed to identify significant rainfall events in the past and the rainfall behaviour during these events. Analysis was undertaken using the following rainfall gauge data:

- 566098 Caringbah Bowling Club – pluviometer;
- 066014 Cronulla South Bowling Club – daily;
- 066086 Cronulla WWTP – daily;
- 566018 Cronulla STP – pluviometer;
- 066058 Sans Souci (Public School) – daily;
- 066072 Kurnell (Caltex Oil Refinery) – daily; and
- 066037 Sydney Airport AMO – daily.

The Cronulla South Bowling Club and Cronulla STP data were the primary focus of this analysis, as they are the closest daily and continuous gauges respectively to the study area with more than two decades of rainfall data[2]. The additional gauges were used as a comparison, and to provide supplementary data where it is missing for the former two gauges. The Cronulla South Bowling Club gauge has data missing from 1956 to 1957 as well as several months in 1995, while data from the Cronulla STP continuous gauge is only available from 1980 onwards.

Table 2 shows rainfall events with a daily reading of greater than 150 mm at the Cronulla South Bowling Club gauge. These are compared with corresponding readings at Cronulla WWTP, San Souci (Public School), Kurnell (Caltex Oil Refinery) and Sydney Airport AMO daily gauges, and accumulated 24 hour totals to 9am for the Cronulla STP pluviometer. Note that the daily gauges are (typically) read at 9am each day. Therefore, accumulated 24 hour totals to 9am from the pluviometer provide a comparison with the daily read gauges. The comparison highlights the variability in rainfall over the area. Interestingly, for the February 1954, April 1998 and March 2011 events, significantly more rain was registered at the Cronulla South Bowling Club gauge than at the other stations. Upon further investigation, it was found that the 1954 and 2011 events occurred over the weekend and the rainfall was suspected to be erroneously accumulated and recorded as a combined total on Monday morning. This is confirmed by the Cronulla Golf Club rainfall records which noted that the 2011 event has a 1-day rainfall total of 60 mm and a 2-day rainfall total of 138 mm. For the 1998 event, a rainfall total of 172 mm was registered according to the Woolooware Golf Club rainfall records compared to 157.4 mm recorded at the Cronulla South Bowling Club, thus suggesting that this was indeed a highly localised event.

Another point to note is the variability in recorded rain between the pluviometer operated by Sydney Water and the daily read gauge operated by BoM at the Cronulla STP/WWTP. As noted previously, pluviometers can be susceptible to failure during intense rainfall. This may possibly explain the discrepancy in readings between the daily and pluviograph records for Cronulla STP/WWTP.

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[2] Even though the Caringbah Bowling Club pluviometer is the closest to the Woolooware Bay catchment, it has only been in operation since late 1991.

Table 2: Daily Rainfall Exceeding 150 mm at Cronulla South Bowling Club

Rank	Year	Day and Month	Daily total (mm)					
			066014	066086	566018	066058	066072	066037
			Cronulla South BC	Cronulla WWTP	Cronulla STP[1]	Sans Souci	Kurnell	Sydney Airport
1	1954	21 Feb	335.3	N/A	N/A	22.1	N/A	17.8
2	1990	3 Feb	240	226.6	219	196	225.8	216.2
3	1990	4 Feb	205	169.6	155.5	165	234.6	177.8
4	1969	14 Nov	199.4	149.4	N/A	161	213.4	143.3
5	2002	5 Feb	190	223	200	128	190	116.8
6	1988	30 Apr	186	200.1	204.5	191.4	200	174
7	1975	11 Mar	176.4	150.4	N/A	168	242	202
8	1955	27 Nov	176.3	N/A	N/A	191.8	N/A	138.4
9	1958	11 Mar	176	N/A	N/A	164.1	149.1	134.4
10	1986	6 Aug	175	214	117	173.6	140.9	207
11	1959	19 Feb	162.6	115.6	N/A	151.9	130.8	130
12	1961	18 Nov	157.7	132.6	N/A	153.2	133.6	108.5
13	1998	11 Apr	157.4	68.4	37	68	60.6	70.6
14	2011	21 Mar	153	N/A	24.5	19	N/A	18.6

[1] Daily totals for pluviometers based on accumulated 24 hour totals to 9am

The records from the daily rainfall gauges are generally not suitable for calibration/validation of the modelling process as they are only 24-hour totals and thus do not define the short duration intensities that produce flooding in the region. A summary of peak rainfalls from numerous significant storm events identified from the two pluviometer rainfall gauges (Cronulla STP and Caringbah Bowling Club) is presented in Table 3 and Table 4. Only events that are larger than the 10 year ARI and with critical burst duration of more than 1 hour are displayed. Note that the available gauge data may not cover the entire period of record and the pluviometer rainfall records are comparably shorter than those of the daily read.

Table 3: Events Identified from Cronulla STP Gauge (566018)

Start Date/Time	End Date/Time	Average Rainfall (mm/hr)	Duration (hours)	Approximate ARI for Maximum Burst
1/2/1990 13:40	3/2/1990 17:25	5.88	51.8	79
3/2/2002 23:45	4/2/2002 21:50	9.59	22.2	60
12/5/2003 20:55	13/5/2003 16:00	9.73	19.2	50
28/4/1988 22:30	30/4/1988 12:15	6.66	37.8	30
7/3/1994 01:00	7/3/1994 05:10	19.18	4.3	21
4/8/1986 05:35	7/8/1986 05:30	4.10	72.0	20
24/9/1995 19:55	26/9/1995 08:20	5.64	36.5	11
7/3/2012 18:25	8/3/2012 11:30	6.20	17.2	2*

* Included for comparison purposes only

Table 4: Events Identified from Caringbah Bowling Club Gauge (566098)

Start Date/Time	End Date/Time	Average Rainfall (mm/hr)	Duration (hours)	Approximate ARI for Maximum Burst
13/5/2003 03:20	13/5/2003 15:40	15.38	12.4	120
4/2/2002 01:55	5/2/2002 13:05	6.30	35.3	13
7/3/2012 18:00	8/3/2012 11:30	6.40	17.6	2*

* Included for comparison purposes only

Figure 6 shows the rainfall burst intensity and frequency of various historical events at the Cronulla STP gauge, as tabulated in Table 3. With the exception of the 1994 event, majority of the storm events lasted more than 12 hours and this would have generated large flood volumes and resulted in higher flood levels in the temporary storage areas within the catchment, i.e. the golf courses. The same analysis has been performed for the Caringbah Bowling Club gauge rainfall records and the results are shown in Figure 7 and tabulated in Table 4. It is interesting to note that the 2003 event had rainfall intensities that exceeded 100 year ARI levels at this gauge whereas for the Cronulla STP gauge the rainfall intensities only approximated the 50 year ARI event. The characteristics of the 2012 event were found to be similar for both gauges though the 2002 event lasted longer at the Caringbah Bowling Club gauge. Nevertheless, both gauges should provide a reasonable spatial representation of historical rainfall within the study catchment which is useful for the model verification process.

3.4. Design Rainfall

Design rainfalls were obtained from the Bureau of Meteorology (BoM) and temporal patterns were obtained from Australian Rainfall and Runoff (Reference 8). The Intensity-Frequency-Duration (IFD) data for the catchment is provided in Table 5.

Table 5: IFD Data for Woolooware Bay Catchment

Intensity-Frequency-Duration Table

Location: 34.050S 151.150E NEAR.. Woolooware Issued: 22/11/2011

Rainfall intensity in mm/h for various durations and Average Recurrence Interval

	Average Recurrence Interval						
Duration	1 YEAR	2 YEARS	5 YEARS	10 YEARS	20 YEARS	50 YEARS	100 YEARS
5Mins	97.8	126	160	180	206	240	266
6Mins	91.6	118	150	168	193	225	250
10Mins	75.0	96.5	124	140	161	188	209
20Mins	54.9	71.1	92.7	105	122	144	160
30Mins	44.7	58.0	76.2	87.0	101	120	134
1Hr	30.3	39.4	52.1	59.8	69.6	82.7	92.7
2Hrs	19.7	25.7	33.9	38.9	45.3	53.7	60.3
3Hrs	15.2	19.7	26.0	29.7	34.6	41.0	45.9
6Hrs	9.69	12.5	16.4	18.6	21.6	25.5	28.5
12Hrs	6.22	8.03	10.4	11.8	13.7	16.1	17.9
24Hrs	4.03	5.20	6.75	7.65	8.85	10.4	11.6
48Hrs	2.57	3.32	4.32	4.90	5.68	6.68	7.46
72Hrs	1.91	2.47	3.21	3.63	4.20	4.95	5.52

(Raw data: 39.7, 8.02, 2.47, 84.21, 16.05, 4.96, skew=0.00, F2=4.29, F50=15.85)

Probable Maximum Precipitation (PMP) rainfall depths used to determine the Probable Maximum Flood (PMF) were obtained from Reference 9 using the generalised short-duration method. The maximum duration for which the method is applicable in the region is 6 hours. The parameters used for estimating the PMP are:

- Terrain classification: smooth;
- Adjustment for catchment elevation (EAF): 1;
- Moisture Adjustment Factor (MAF): 0.7; and
- Ellipses enclosing the catchment: A and B (refer to Reference 9 for further explanation of ellipsoid selection).

Final rainfall depths used in the hydrological model are shown on Table 6.

Table 6: Probable Maximum Precipitation Depths (rounded to the nearest 10 mm)

Storm Duration (hours)	Ellipse A (mm)	Ellipse B (mm)
0.25	160	150
0.5	240	220
0.75	300	280
1	350	320
1.5	400	370
2	440	420
2.5	470	440
3	500	460
4	540	510
5	580	550
6	620	580

3.5. Tidal Data

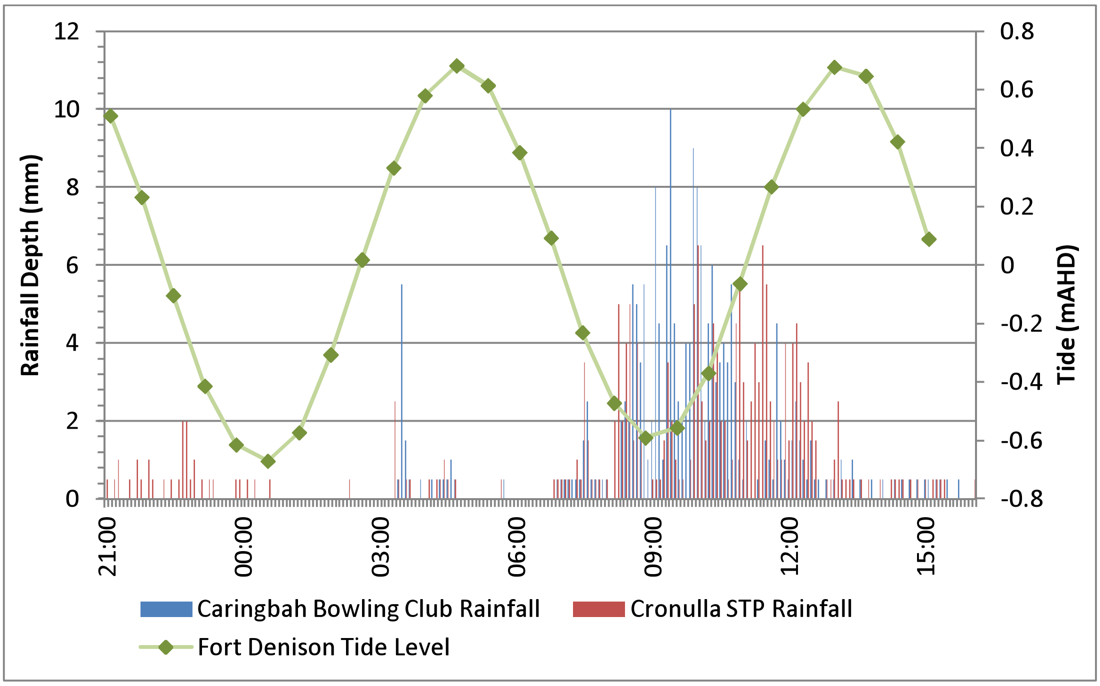
The proximity of the study area to Woolooware Bay means that flood behaviour is influenced by ocean storm and tidal effects. As a result flooding on site can be caused by intense rainfall over the catchment, elevated tidal levels (astronomic tide plus storm surge), or a combination of both.

3.5.1. Historical Tidal Levels

Hourly tidal data was obtained from the Fort Denison records (Reference 10). Records were available from 1965 until 2013. As with rainfall data, tidal data is susceptible to errors and gaps in the record set, and hence may not always provide a completely accurate record. The data sets used for this study contained no missing values though inaccuracies may still be present.

Diagram 1 shows the tidal levels for the May 2003 event plotted against the rainfall depths from the Cronulla STP and Caringbah Bowling Club pluviometer rainfall gauges. It can be noted that the peak rainfall burst of this storm did not coincide with the timing of the high tide. This event was simulated as part of the model verification exercise herein.

Diagram 1: Tidal Levels Compared to Rainfall Hyetographs for the 12-13 May 2003 Event



3.5.2. Design Tidal Levels

While the *2004 Georges River Floodplain Risk Management Study and Plan* (Reference 5) notes that no formal investigations on tidal levels have been carried out in Botany Bay, a number of studies have been carried out in Sydney Harbour. Design tidal levels adopted for this study are listed in Table 7, based on analyses of the comprehensive tidal records from Fort Denison in Sydney Harbour. It was deemed that the results for Woolooware Bay would be similar.

Table 7: Design Tidal Levels

ARI (years)	Peak Level (mAHD)
5	1.3*
10	1.34*
20	1.38
50	1.42
100	1.45
200	1.48*
Extreme or PMF	Not known but assumed as 1.50

* Estimated as part of this study

3.6. Survey Data

Airborne Laser Scanning (ALS) data of the study area was obtained from Council to define the ground surface elevations. The ALS data was collected in October 2005 by AAMHATCH. The ALS provides ground level spot heights from which a Digital Terrain Model (DTM) can be constructed (refer to Figure 3). For well defined points mapped in areas of clear ground, the expected nominal point accuracies (based on a 68% confidence level) are ±0.15 m (vertical accuracy). When interpreting the above, it should be noted that the accuracy of the ground definition can be adversely affected by the nature and density of vegetation and/or the presence of steeply varying terrain. This data formed the foundation of the hydraulic model build process.

3.7. Other Spatial Information

A number of spatial datasets were also obtained from Council including:

- Property cadastre layer;
- Geo-referenced aerial photography of Woolooware Bay catchment; and
- Various GIS layers relating to current land use, building outlines, water quality devices, major hydraulic structures and drainage infrastructure.

All GIS data have been provided in a MapInfo/ArcGIS compatible format. These layers were used to aid model schematisation for the hydrologic and hydraulic models.

3.8. Pit and Pipe Data

Council provided a database of the pit and pipe network within the catchment dated 7th December 2011 with physical details included:

- Coordinates of each pit;
- Linkage between pits;
- Pipe type and dimensions; and
- Pit details (type of pit, inlet type and dimensions, and depth to invert).

Drawings of the drainage works carried out in the Cronulla Golf Course in the 1990s were also provided by Council detailing the drainage pipes, GPTs and various detention basins constructed within the Cronulla Golf Course. In addition, stormwater drainage data were obtained from RailCorp for the Sutherland – Cronulla railway line.

Nevertheless, Council requested that the pit and pipe network data be verified hence the entire drainage network consisting of approximately 1,830 existing pits was re-surveyed by a registered surveyor during the period of February to August 2012 and any new information included.

A plan view of the surveyed pit and pipe network is shown in Figure 8 and a summary of the data used during modelling is provided as Table 8.

Table 8: Modelled Pit and Pipe Network

Pit Type	Number
Outlet or Headwalls	94
Kerb or Grate Inlets	1,388
Junctions	380

Pipe Diameter /Culvert Width (mm)	Number
< 450	917
450 – 750	586
750 – 1000	161
1000 – 2400	106
2400 – 3800	28

3.9. Community Consultation

A community consultation programme was implemented with Council's assistance in early 2012. Approximately 4,600 questionnaires were issued to residences within the study area and an online survey form was also made available on Council's website. This was followed by phone calls and e-mail correspondence with selected respondents. The returned questionnaires and online survey results were compiled into a database so that the information contained within can be better utilised in reporting as well as model verification exercise. A copy of the questionnaire is provided in Appendix B.

Figure 9 shows the location of residents who responded to the mail out. It can be seen that there is a good spread across the residential parts of the study area while comparatively poor across the commercial and industrial areas. Also, charts summarising various features of the responses received from the community are shown in Figure 10. A total of 404 residents responded to the questionnaire out of a total number issued of around 4,600. This gives a return rate of 9% which is fairly reasonable and typical of the response rates experienced elsewhere in NSW. Of the 404 responses, 21 (5%) were received electronically via the online survey.

The awareness of historical flooding events amongst respondents was decent with 15 respondents recalling the May 2003 event of which Council recorded more than 500 reported incidents in Sutherland Shire for this major flood event. 334 of the 404 respondents claimed to have never been impacted by any flooding issues or were unaware of any. 41 respondents recalled storm events other than the cited events.

Other major findings from the community consultation programme are as follows:

- The May 2003 event is a well remembered event during which a number of residents (a total of 15 respondents out of a total possible number of 404 respondents) experienced flooding in one form or another. The other known historic events (1975, 1986, 1990) also resonated with a small number of residents;
- Inundation of properties (not necessarily above floor level) and roads in the Woolooware Bay catchment is a major issue for approximately 103 and 96 respondents respectively;
- 5 of the 103 respondents (who have experienced property flooding) and only 0.1% of the total group surveyed have actually had flood waters enter their home (water through the house etc);
- Rainfall events which cause drainage issues (i.e. inundation of private property) occur relatively often (with 27 respondents being affected by flooding issues 3 or more times each year);
- Flooding in the Woolooware and Cronulla Golf Courses as well as several recreational parks/fields have been noted by 97 of the respondents; and
- Instances of drainage blockage which resulted in localised flooding have been noted by 57 of the respondents.

The full set of results from the community consultation questionnaire are summarised in Figure 10A-D. Other issues were raised by the respondents including concerns on how the Toyota Park East redevelopment may impact on local drainage/flooding issues.

A small number of photographs of historic flood event were provided by the respondents though limited information could be gained in regards to the observed flood behaviour. No specific flood levels or depths were provided but numerous flood locations throughout the catchment were indicated by the respondents, which is valuable for the model verification process (refer to Section 8.2).

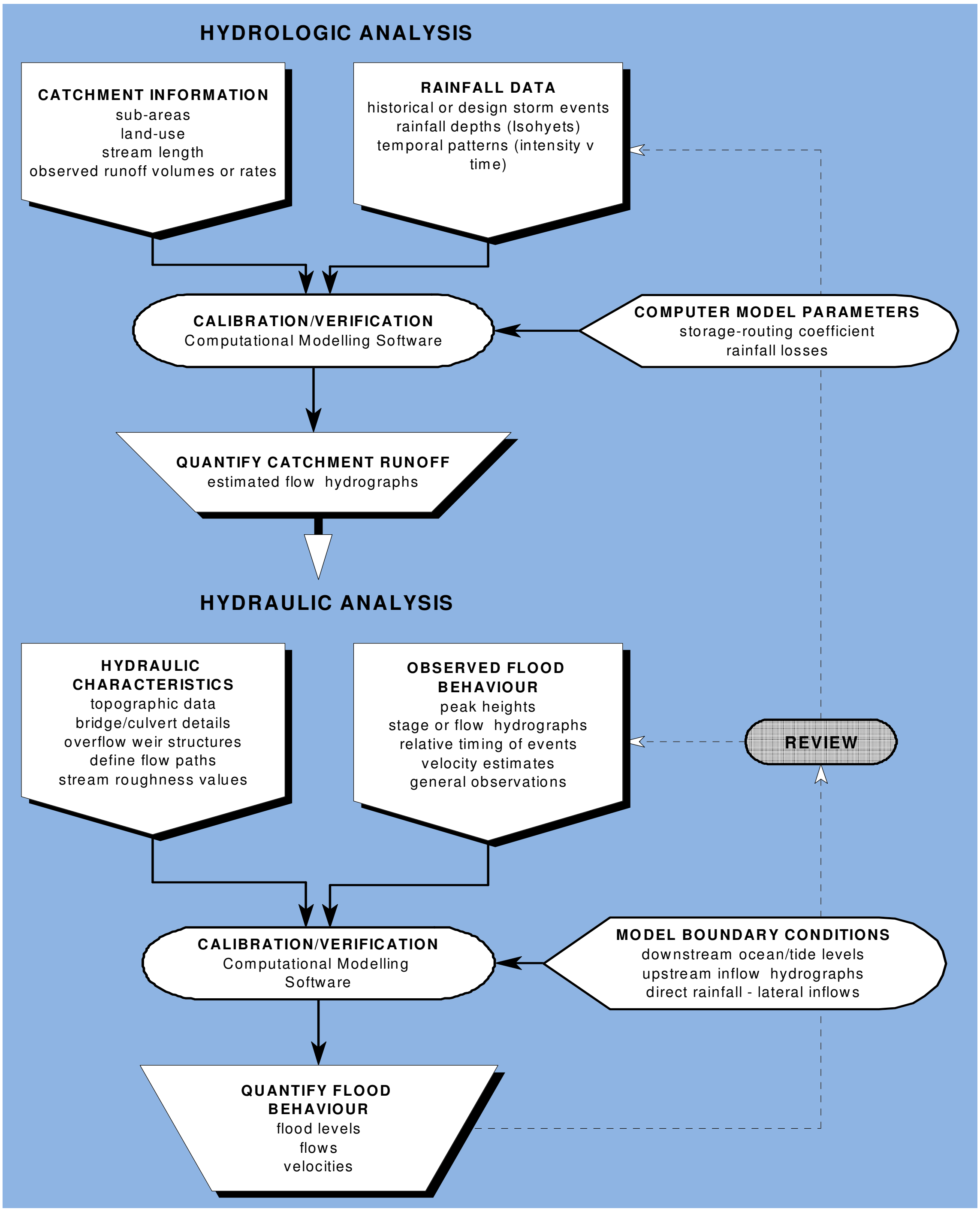
3.9.1. Public Exhibition

This report was made available for the community during a 31 day public exhibition period (early October to November 2013). The community were invited to examine the report and make any comments or suggestions. More than 30 formal submissions from the community were received and a detailed response has been made addressing all submissions (included in Appendix D).

4. APPROACH

The approach adopted in flood studies to determine design flood levels largely depends upon the objectives of the study and the quantity and quality of the data (survey, flood, rainfall, flow etc.). In the absence of an extensive historical flood record a flood frequency approach cannot be undertaken for the Woolooware Bay catchment and must rely on the use of design rainfalls and establishment of a hydrologic/hydraulic modelling system. A diagrammatic representation of the flood study process is shown below.

Diagram 2: Approach Adopted in a Flood Study



5. HYDROLOGIC MODELLING

5.1. Overview

Hydrologic models suitable for design flood estimation are described in AR&R 1987 (Reference 8). These models or techniques range from simple procedures to estimate peak flows (such as Probabilistic Rational Method) to more complex rainfall-runoff routing models that provide estimates of complete flow hydrographs. In current Australian engineering practice, examples of the more commonly used runoff routing models for rural catchments include RORB, RAFTS and WBNM (Watershed Bounded Network Model). For urban catchments with a significant pit and pipe network DRAINS is the most commonly used hydrologic model in NSW. DRAINS is specifically designed to simulate flow into kerb inlet pits in roads and through an underground pipe network. All these models allow the rainfall depth to vary both spatially and temporally over the catchment, and have parameters governing runoff volume/shape that can be calibrated against recorded data.

For the above reason hydrologic modelling of the Woolooware Bay catchment was carried out using DRAINS. The total catchment represented by the DRAINS model is approximately 600 ha. Catchment areas for the hydrologic models were delineated using the available topographic information obtained from Council (i.e. DEM generated from the ALS data), aerial photos, drainage network data and field inspection. A total of 257 sub-catchments were defined for the study area. The sub-catchments are shown in Figure 11. The sub-catchment layout ensures that where hydraulic controls exist, these are accounted for and able to be appropriately incorporated into hydraulic routing.

5.2. DRAINS

5.2.1. Introduction

DRAINS (Reference 11) is a hydrologic/hydraulic model that can simulate the full storm hydrograph and is capable of describing the flow behaviour of a catchment and pipe system for real storm events, as well as statistically based design storms. It is designed for analysing urban or partly urban catchments where artificial drainage elements have been installed. The DRAINS model is broadly characterised by the following features:

- the hydrologic component is based on the theory applied in the ILSAX model which has seen wide usage and acceptance in Australia;
- its application of the hydraulic grade line method for hydraulic analysis throughout the drainage system; and
- the graphical display of network connections and results.

DRAINS generates a full hydrograph of surface flows arriving at each pit and routes these through the pipe network or overland, combining them where appropriate. Used in conjunction with a 2D (two-dimensional) hydraulic model, the benefit of DRAINS is that it produces a flow hydrograph at all modelled pits (in this instance for each modelled sub-catchment) that can then be input into the 2D model.[3]

5.2.2. Input Data

For the hydrologic modelling, the sub-catchment details were defined and collated into a spreadsheet for input to DRAINS. Sub-catchment areas were obtained based on the ALS survey and assuming that properties drain to the street and flow in the street is along the gutters and in one direction only (i.e. does not sub-divide at an intersection). The delineation of these sub catchment areas is shown on Figure 11. For each sub-catchment area the proportion of pervious (grassed), impervious (paved), supplementary area (paved area not directly connected to pipe system) was determined from field and aerial photographic inspections. The study area wide split between different land use types identified is presented in Table 9 below. For residential areas (include roads) a relatively high value of % imperviousness was adopted to reflect the likely low infiltration capacity of suburban yards and open space areas.

Table 9: Summary of DRAINS Catchment Details

Surface Type	Area (ha)	%
Paved Area	409.4	68.5
Grassed Area	158.1	26.5
Supplementary	29.9	5
TOTAL	**597.4**	**100**

5.2.3. Adopted Model Parameters

Losses from a paved or impervious area are considered to comprise only an initial loss (an amount sufficient to wet the pavement and fill minor surface depressions). Losses from grassed areas are comprised of an initial loss and a continuing loss. The continuing loss was calculated from an infiltration equation curve incorporated into DRAINS and is based on the estimated representative soil type and antecedent moisture condition. It was assumed that the soil in the catchment has a slow infiltration rate potential and the antecedent moisture condition was assumed saturated. The latter was justified by the fact that the peak rainfall burst can typically occur within a longer event that has a duration lasting days. The adopted parameters for the design runs are summarised in Table 10.

[3] The DRAINS model developed for this study does not account for surface controls or storages (e.g. embankments, local depressions) hence direct comparison of flows with those predicted by the hydraulic model is not possible, with the exception of smaller events whereby overland flow is not dominant.

Table 10: Adopted DRAINS Model Parameters

RAINFALL LOSSES	
Paved (Impervious) Area Depression Storage (Initial Loss)	1.0 mm
Supplementary Area Depression Storage (Initial Loss)	1.0 mm
Grassed (Pervious) Area Depression Storage (Initial Loss)	5.0 mm
SOIL TYPE	3
Slow infiltration rates. This parameter, in conjunction with the AMC, determines the continuing loss	
ANTECEDENT MOISTURE CONDITIONS	3
Description	Rather wet
Total Rainfall in 5 Days Preceding the Storm	12.5 to 25 mm

For the model verification exercise as discussed in Section 8.2, the same parameter values were adopted after evaluating the antecedent rainfall conditions for the period preceding the May 2003 event.

6. HYDRAULIC MODELLING

6.1. Overview

A key objective of this study is to define the flood behaviour within the existing study area in terms of flood levels, flows and velocities. An integrated one-dimensional/two-dimensional (1D/2D) hydraulic model was used to achieve this using the TUFLOW (Reference 12) hydrodynamic modelling package.

TUFLOW software is widely used for pipe and overland flow hydraulic simulation of unsteady flow systems throughout Australia and the UK. TUFLOW is a finite difference numerical model for the solution of the depth averaged shallow water flow equations (Reference 12). The model is capable of dynamically simulating complex overland flow regimes and interactions with sub-surface drainage systems. It is especially applicable to the hydraulic analysis of flooding in urban areas which is typically characterised by short-duration events and a combination of overland and pipe flow.

For the hydraulic analysis of complex overland flow paths, a combined 1D/2D model such as TUFLOW provides several key advantages when compared to a 1D only model. For example, in comparison to a purely 1D approach, a combined 1D/2D approach can:

- provide localised detail of any topographic and/or structural features that may influence flood behaviour;
- better facilitate the identification of potential overland flow paths and flood problem areas;
- dynamically model the interaction between the drainage system and the complex overland flow paths, including surcharging effects; and
- inherently represent the available flood storage within the 2D model geometry, which is particularly important for assessment of the detention basin performance.

In comparison to previous studies, a 2D model can better define the spatial variations in flood behaviour across the study area. Information such as flow velocity, flood levels and hydraulic hazard can be readily mapped across the model extent. This information can be easily integrated into a GIS-based environment enabling the outcomes to be incorporated into Council’s planning activities.

6.2. Model Extents

The TUFLOW hydraulic model established in this study extends to the whole of the Woolooware Bay catchment. The TUFLOW model incorporated both major subsurface drainage features and overland flow paths within the model extent. The two components were dynamically linked such that the model accounted for the interactions between the drainage system and overland flow behaviour. The TUFLOW model layouts are shown in Figure 8.

6.3. Digital Terrain Model

Overland flow paths in the hydraulic model were defined using a Digital Terrain Model (DTM). The DTM was compiled largely from the ALS datasets. The DTM was sampled on a regular grid of 3 m square cells for use in the model. This level of detail was deemed to allow sufficient resolution of drainage features while still retaining practical computational run-times for an area of this scale (model runs take approximately 5 hours for a 1 hour rainfall event).

6.4. Breaklines

A number of significant hydraulic features which are likely to impact on the flow behaviour exist within the Woolooware Bay catchment. These hydraulic features are particularly important due to the flat nature of the topography at the downstream parts of the catchment. Breaklines were used throughout the study area in order to define hydraulic controls not well represented in the 3 m DTM used to inform the model grid.

The key benefit of using breaklines is that high resolution height data for significant hydraulic features (such as road kerbs) can be utilised in conjunction with the coarser 3 m DTM for modelling purposes.

Significant hydraulic features found in the study area include:

- Road kerbs and gutters;
- Major road embankments; and
- Sutherland - Cronulla railway line.

6.5. Key Model Parameters

The hydraulic efficiency of the flow paths within the TUFLOW hydraulic model was represented in part by the hydraulic roughness or friction factor formulated as Manning's 'n'. This factor describes the net influence of surface roughness and incorporates the effects of vegetation and other features which may affect the hydraulic performance of the flow path.

The majority of the catchment consists of urban dwellings with industrial and commercial lots found at the north-western parts of the study area. Recreational parks and golf courses are located at the downstream parts of the study area (refer to Figure 2). The corresponding Manning's 'n' roughness values adopted for modelling purposes are shown in Table 11. These values have been adopted based on site inspections, established references (e.g. Reference 13) and also from neighbouring flood studies (i.e. Reference 14). It is important to note that all buildings have been "nulled" or removed from the model grid, hence there is no need to use higher Manning's n for those areas since the "blockage" effect presented by those buildings has already been accounted for. It was assumed that the flood storage presented by the buildings is insignificant.

Table 11: Summary of Manning's 'n' Values

Surface	Adopted Manning's 'n'
Default	0.03
Regular Channel	0.03
Channel with Deep Pool and Weed	0.05
Channel Bank with Heavy Growth/Mangrove	0.1
Roads	0.015
Urban/Dwellings	0.03*
Commercial/Industrial	0.03*
Railway	0.05
Light Vegetation/Golf Course	0.035
Medium Vegetation	0.06

* Buildings have been removed from model grid, hence lower Manning's n can be adopted

The sensitivity of the model results to these assumed values was examined as part of the overall sensitivity analysis.

The 2D numerical scheme for the TUFLOW model includes an allowance for sub-grid scale turbulence and eddies, features that are too small to be modelled directly. These physical processes result in energy loss and can affect the flow behaviour. Within the TUFLOW model the effects of these sub-grid processes are modelled by the introduction of an eddy viscosity formulation, where energy losses are applied either as a constant term or according to the Smagorinsky formulation, in proportion to the flow velocity and the 2D cell edge length. For this assessment, a combination of the constant and Smagorinsky eddy viscosity formulations were used, with coefficients of 0.1 and 0.2 respectively as recommended in the TUFLOW manual (Reference 12).

6.6. Pits and Pipes Network

Pit and pipe information as described in Section 3.8 was used to create a 1D drainage network in TUFLOW. Pipes of all sizes were included in the TUFLOW model though smaller pipes are generally prone to blockages during storms due to leaves and debris. Temporary blockage may also occur during a storm as the pit entry may be restricted by a vehicle parking over the grate or leaves/silt/branches filling the inlet.

The effect of blockage in urban drainage systems (pipes and open channels) has become a significant factor in design flood estimation following the post flood observations from the North Wollongong August 1998 and Newcastle June 2007 events. However, recent reviews of how blockage should be included in design flood analysis are inconclusive, as it appears that the incidence of blockage is not consistent across all catchments or even within the same catchment. Thus there is no consensus regarding the design approach that should be adopted.

The approach adopted for this study has been to assume 50% blockage at all culverts and pipes, which was consistent with the blockage factor adopted for a neighbouring flood study (Reference 14). This approach has been adopted to take into account blockage caused by debris (cars, fencing, vegetation) being swept into drainage structures. In this study blockage has been assumed to occur at the culvert/pipe level instead of at pit inlets that was suggested in

Reference 8. The sensitivity of the model results to blockages is examined in the ensuing section.

6.7. Boundary Conditions

Local catchment inflows within the TUFLOW hydraulic model extent were derived from the DRAINS hydrologic model. Runoff hydrographs from the hydrologic model (a hydrograph for each of the 257 sub-catchments) are applied at pit locations or low-lying areas within each sub-catchment and used as inflows into the 2D model. The distribution of these inflow locations is shown in Figure 11.

The downstream boundary of the study area is Woolooware Bay and natural variability of water level is expected in the downstream catchment areas from both tidal and catchment flows. For design flood estimation a level in Woolooware Bay is required for calculation of water levels and pipe discharges in the lower parts of the catchment. This tailwater boundary is shown in Figure 8.

Stage-discharge boundaries were used where overland flows exit the boundary of the study area. The rating tables for these boundaries were based on an assumption of uniform flow. Their locations are also indicated in Figure 8.

6.7.1. Adopted Tailwater Levels

As noted previously, in addition to runoff from the catchment, the downstream areas of the catchment and the tidal channel west of Toyota Park are influenced by backwater effects from high water levels in Woolooware Bay. These two distinct mechanisms produce flooding in the study area but may not result from the same storm. It is acknowledged however that this may not necessarily be the case and that ocean influences may occur in conjunction with rainfall events. Consideration must therefore be given to account for the joint probability of coincident flooding from both catchment runoff and backwater effects from Woolooware Bay.

A full joint probability analysis is beyond the scope of the present study. Recommended in Reference 15 is the ‘peak envelope’ approach that adopts the highest of the predicted levels from the two mechanisms to estimate design flood levels. The same document also advised that a 100 year ARI ocean event in conjunction with a 100 year ARI rainfall event would likely produce flood levels greater than the 100 year ARI.

Table 12 sets out the joint probabilities of the adopted ocean and rainfall design events. Thus a 100 year ARI event is an envelope of the 100 year ARI ocean event (1.45 mAHD peak ocean level combined with a 20 year ARI rainfall event) and a 100 year ARI rainfall event (20 year ARI 1.38 mAHD peak ocean level combined with a 100 year ARI rainfall event). For the 20 year ARI event the same ocean and rainfall conditions are used for the ocean and rainfall event scenarios.

Table 12: Adopted Co-incidence of Ocean and Rainfall Events

OCEAN Envelope		**DESIGN FLOOD EVENT (ARI)**	**RAINFALL Envelope**	
Peak Design Ocean Event (ARI) and level (mAHD)	Co incident Design Rainfall Event (ARI)		Design Rainfall Event (ARI)	Co incident Design Ocean Event (ARI) and level (mAHD)
PMF (1.5)	100 year	**Extreme/PMF**	PMF	100 year (1.45)
200 year (1.48)	20 year	**200 year**	200 year	20 year (1.38)
100 year (1.45)	20 year	**100 year**	100 year	20 year (1.38)
50 year (1.42)	20 year	**50 year**	50 year	20 year (1.38)
20 year (1.38)	20 year	**20 year**	20 year	20 year (1.38)
10 year (1.34)	10 year	**10 year**	10 year	10 year (1.34)
5 year (1.3)	5 year	**5 year**	5 year	5 year (1.3)

The above approach was adopted for this study as recommended in Reference 15 but it is acknowledged that a multitude of combinations of conditions can be used to create a given design flood event and there is no technical basis for stating that one scenario is necessarily more correct that any other. As more information becomes available in this regard the approach should be modified.

Though the approach undertaken was different to that of neighbouring flood studies (i.e. Reference 14), sensitivity analysis carried out (results reported in Section 8.6.2) on varying tailwater levels found that the impacts on downstream water levels are largely minimal and confined to the low lying areas adjacent to Woolooware Bay.

7. CLIMATE CHANGE

The 2005 Floodplain Development Manual (Reference 16) requires that Flood Studies and Floodplain Risk Management Studies consider the impacts of climate change on flood behaviour.

The current best practice for considering the impacts of climate change (sea level rise and rainfall increase) has been evolving rapidly. Key developments in the last few years have included:

- release of the Fourth Assessment Report by the Inter-governmental Panel on Climate Change (IPCC) in February 2007 (Reference 17), which updated the Third IPCC Assessment Report of 2001 (Reference 18);
- preparation of Climate Change Adaptation Actions for Local Government by SMEC Australia for the Australian Greenhouse Office in mid 2007 (Reference 19);
- preparation of Climate Change in Australia by CSIRO in late 2007 (Reference 20), which provides an Australian focus on Reference 19; and
- release of the Floodplain Risk Management Guideline Practical Consideration of Climate Change by the NSW Department of Environment and Climate Change in October 2007 (Reference 21 - referred to as the DECC Guideline 2007).

In August 2010, the former NSW Department of Environment, Climate Change and Water (DECCW) issued the Flood Risk Management Guide (Reference 15) which required incorporation of sea level rise benchmarks in flood risk assessments.

In October 2012 the NSW Government repealed mandatory compliance with its 2009 Sea Level Rise Policy (Reference 1) which states that:

"*Over the period 1870-2001, global sea levels rose by 20 cm, with a current global average rate of increase approximately twice the historical average. Sea levels are expected to continue rising throughout the twenty-first century and there is no scientific evidence to suggest that sea levels will stop rising beyond 2100 or that the current trends will be reversed.*

Sea level rise is an incremental process and will have medium to long-term impacts. The best national and international projections of sea level rise along the NSW coast are for a rise relative to 1990 mean sea levels of 40 cm by 2050 and 90 cm by 2100. However, the 4th Intergovernmental Panel on Climate Change in 2007 also acknowledged that higher rates of sea level rise are possible";

Hence, Councils must now make their own decisions regarding the assessment of sea level rise. Sutherland Shire Council has made no formal statement that it is adopting a sea level rise assessment different to the Policy Statement (Reference 1) previously issued by the NSW Government.

As a result of the information provided in the documents mention previously, and to keep up-to-date with current best practice, this study incorporates an assessment of climate change. Although there are some minor variations in the sea levels predicted in these studies, policies, and guides, they all agree on an ocean level rise on the NSW coast of around 0.9 metre by the year 2100 relative to 1990 levels.

The most recent guideline (Reference 15) indicates a 0.9 metre sea level rise by the year 2100 and a 0.4 metre rise by the year 2050. These changes in sea level have been modelled as part of the sensitivity analysis for this study. It should be noted that climate change and the associated rise in sea levels will continue beyond 2100.

The climate change scenarios in the earlier DECC Guideline 2007 (Reference 21) suggested for undertaking rainfall sensitivity analysis in flood studies are indicated below.

Increase in peak rainfall and storm volume:

low level rainfall increase	=	10%,
medium level rainfall increase	=	20%,
high level rainfall increase	=	30%.

A high level rainfall increase of up to 30% is recommended for consideration due to the uncertainties associated with this aspect of climate change and to apply the "precautionary principle". A 30% rainfall increase is probably overly conservative. However, as part of the rainfall sensitivity analysis used in this study all changes to rainfall intensities mention above have been modelled. The DECC Guideline 2007 (Reference 21) is currently the only NSW reference providing guidelines for rainfall increases for design flood analysis due to climate change.

Results for the climate change analysis are contained in Section 8.6.

8. RESULTS

8.1. Overview

Model verification was undertaken initially to ensure that the model established could replicate historical events and the model was subsequently used to determine design flood flows, levels, velocities and extents. Sensitivity analysis was then undertaken to assess the effect of changing various model parameters.

8.2. Model Verification – May 2003 Event

Calibration/validation is a key element of the modelling process whereby historical events are used to test a model's ability to accurately replicate observed behaviour (i.e. match historical flood levels). During the model calibration/validation process, key model parameters such as roughness and losses are adjusted until there is reasonable agreement between the observations and model performance. This process requires rainfall data (pluviometer and daily read) as input and then observations such as:

- Streamflow velocities;
- Gauged water levels;
- Peak flood level at specific locations; and
- Peak flood level extent at a specific location at a specific time.

No stream gauges exist within the Woolooware Bay catchment and as such no gauged water levels or flows are available for historical events. A review of historical rainfall records (refer Section 3.3) and reports of previous studies (refer Section 3.2) was carried out to identify dates of historical events in the hope of obtaining other calibration/validation data.

As discussed before, community complaints in relation to the May 2003 flood event were recorded on Council's Customer Response Management System (CRMS) with a total of 21 references to flooding within property and 5 references of above floor flooding reported in the study area. Additional historical data obtained from the community consultation process (refer Section 3.9) yielded 2 more instances of above floor flooding relating to the same event. However, no flood levels were made available from either of these sources.

In view of this, only a qualitative verification of the model was carried out by comparing the distribution of reported above floor flooding from the database and survey questionnaire with the extent of flooding predicted by the TUFLOW hydraulic model for the May 2003 flood event. This comparison is presented as Figure 12. Rainfall data from the Caringbah Bowling Club and Cronulla STP gauges were used in conjunction with tidal data from Fort Denison. An inverse-distance-weighting method was adopted in defining the spatial distribution of rainfall across the study catchment. Referring to Figure 12, there is reasonable agreement between those areas where above floor flooding was reported and the model predicted results. Discrepancies may occur for any number of reasons such as the blockage of a pit/culvert by debris or diversion of flow by an upstream obstacle such as a parked car or newly built fence. None of the model parameters were altered in the verification process from values originally established.

8.3. Critical Duration

Critical storm duration analysis was undertaken to determine the storm duration that produces the greatest flood levels for the given design event. Initially, several standard peak burst storm durations (ranging from 5 minutes through to 72 hours) were modelled in accordance with Australian Rainfall and Runoff (Reference 8) for the 100 year ARI event and it was found that the critical duration varied spatially (see Figure 13). The storm durations that produced the highest flood levels were predominantly the 1, 12 and 48 hour events. The variance in peak flood levels for the 12 and 48 hour events was not considered to be markedly different and as such the 12 was taken to be a reasonable approximation of the 48. The 1 hour event is critical for large parts of the catchment except for the eastern section (i.e. Cronulla Golf Course) where the storm volume was found to be a significant factor governing the extent and duration of flooding rather than the peak intensity of the storm. Here, the degree of flooding is largely driven by the available flood storage, rather than the capacity of the flow paths which is the case for the rest of the catchment.

Therefore, an embedded design storm approach was adopted whereby a storm burst corresponding to the critical duration of the catchment is embedded within a longer rainfall event. This approach simulates the ability of antecedent rainfall to reduce the flood storage volume available prior to the most intense part of the storm occurring. The approach adopted is as per that documented in References 22 and 23 and has been used in similar situations where the impact of storm volume of flood behaviour is of importance. For this study, all design events up to the 200 year ARI event were based on a 1 hour peak storm burst embedded within a longer 12 hour duration storm.

A similar analysis was undertaken for the PMF with various PMP durations (15 minutes to 6 hours) modelled so that peak flood levels and associated rainfall durations could be identified. Likewise, it was found that the critical duration varied spatially. However, it was decided that the 60-minute duration event be used to determine peak flood levels considering the variance in peak flood levels for the various critical duration events was not markedly different and priority was given to the flood event which results in higher flood volume at the downstream flooding hot spots.

8.4. Design Modelling Results

A number of maps have been produced to display the flood affected regions for the various design events. It should be noted that inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the catchment. Inundation from local overland flow may vary depending on the actual rainfall event and local influences (parked cars, change in topography, road works etc.). Tabulated results (Table 13 - Table 16) are also provided in the following sections for ease of comparison between flood events. Further, peak flood levels have been recorded at regions of interest throughout the catchment and the locations of these readings are displayed in Figure 14.

A summary of the results is provided as follows:

- Peak flood depths for all design flood events, Figure 15 - Figure 21;
- Peak flood levels for the 100 year ARI and PMF events, Figure 22 - Figure 23;
- Peak flood velocity for the 100 year ARI and PMF events, Figure 24 - Figure 25;
- Provisional flood hazard categorisation for the 100 year ARI and PMF events, Figure 26 - Figure 27;
- Preliminary flood hydraulic categorisation for the 100 year ARI and PMF events, Figure 28 - Figure 29;
- Change in peak flood extents for climate change scenarios (rainfall increases and sea level rise) for the 100 year ARI and PMF events, Figure 30 - Figure 33;
- Peak flood profiles along key parts of the catchment for all design flood events and climate change scenarios, Figure 34 - Figure 35, with the profile locations indicated on Figure 14;
- Preliminary flood planning area, Figure 36; and
- Preliminary flood emergency response classification for communities as per the DECC guidelines (Reference 25), Figure 37.

As discussed in Section 6.7.1, a 'peak envelope' approach that adopts the highest of the predicted levels from the two flooding mechanisms, i.e. catchment runoff and tidal inundation, has been used to estimate the design flood levels.

8.4.1. Results at Key Locations

The results for peak flood depths and velocities at key locations are provided in Table 13 while the peak flood levels are provided in Table 14 (refer to Figure 14 for locations). The performance of the stormwater drainage system within the study area is governed by the complex interaction between:

- Conveyance within the formal drainage system (pipes and box culverts); and
- Ponding and overland flow along streets and through private land.

A large range of depths (see Figure 15 - Figure 21) and velocities (see Figure 24 - Figure 25) can be observed throughout the catchment for the design flood events. One feature of flooding within the study area is that the sub-surface drainage system generally flows at capacity (refer to Table 15) even for smaller events (i.e. 5 year ARI) and the majority of the flows traverse through the catchment via overland flow paths. Among the regions of interest considered in Table 13 and Table 14, the area upstream of the railway embankment at Jenola Park (point 9) experiences the greatest flood depths with approximately 1.5 m during the 5 year ARI event up to 2.0 m in the 100 year ARI event and 3.6 m in the PMF. Flow velocities are high along the major flow paths like along Gannons Rd and Caringbah Rd but decrease when floodwaters approach the downstream flatter regions (see Figure 24).

Slight distinct flow characteristics are exhibited in the two golf courses located downstream of the catchment. For Woolooware Golf Course, it can be seen that the area facilitates flow conveyance rather than storage, and vice versa for Cronulla Golf Course (see Figure 28). Hence, for the latter the peak flood levels tend to be dominated by high volume events or events with longer rainfall durations.

The peak water level profiles for the catchment for all design flood events are shown in Figure 34. As can be seen from the profiles, the overland flows are predominantly shallow at the upstream sections of the catchment. In the presence of a flow path restriction (i.e. buildings, railway embankments), the flows experience ponding upstream of the obstructions and these areas which retard flows perform as an informal detention basin. Flood storage areas are found downstream of the catchment, i.e. at the golf courses and their surrounds, where lower flow velocity and higher flood depths can be expected.

Table 13: Peak Flood Depths (m) and Velocities (m/s) at Key Locations (refer to Figure 14)

ID	Location	5 Yr ARI		10 Yr ARI		20 Yr ARI		50 Yr ARI		100 Yr ARI		200 Yr ARI		PMF	
		D	V	D	V	D	V	D	V	D	V	D	V	D	V
1	Gannons Rd Rwy Bridge	0.8	3.0	0.9	3.0	1.0	3.1	1.1	3.2	1.2	3.3	1.2	3.4	2.4	4.1
2	Captain Cook Dr/Gannons Rd	0.1	0.6	0.2	0.6	0.2	0.7	0.3	1.0	0.3	1.0	0.4	1.0	0.9	1.3
3	Captain Cook Dr @ Toyota Park	0.4	0.8	0.4	1.1	0.5	1.1	0.6	1.2	0.6	1.2	0.7	1.2	1.2	1.4
4	Woolooware Rd Intersect.	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.3	0.4	0.9
5	Sturt Rd	0.2	0.3	0.3	0.6	0.3	0.5	0.3	0.7	0.3	0.8	0.3	0.7	0.4	1.9
6	Hume Rd	0.2	1.2	0.2	1.2	0.2	1.2	0.3	1.2	0.3	1.3	0.4	1.3	0.6	1.8
7	CCD near Endeavour Rd	0.5	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.7	0.5	0.7	0.5	1.0	0.8
8	Resolution Dr	0.2	0.2	0.3	0.3	0.3	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.8	1.4
9	Jenola Park	1.5	0.2	1.6	0.1	1.7	0.1	1.9	0.1	2.0	0.2	2.1	0.2	3.6	0.8
10	Kingsway	0.5	0.9	0.5	0.9	0.6	1.0	0.6	1.1	0.6	1.1	0.6	1.2	0.8	1.5
11	Woolooware Rd	0.0	0.7	0.1	0.9	0.1	1.0	0.2	1.2	0.2	1.2	0.2	1.4	0.5	1.4
12	Edinburgh Cl	0.1	0.8	0.2	0.9	0.2	0.9	0.2	0.9	0.2	1.0	0.3	1.5	0.5	1.8
13	Bando Rd	0.5	0.1	0.5	0.1	0.6	0.2	0.7	0.2	0.7	0.2	0.8	0.2	1.1	0.3
14	Woolooware High School	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.3	0.6	0.5
15	Solander Playing Fields	0.3	1.5	0.4	1.5	0.4	1.6	0.5	1.6	0.6	1.6	0.6	1.7	1.0	2.0
16	Denman Ave	0.3	0.1	0.4	0.2	0.4	0.2	0.4	0.3	0.4	0.3	0.5	0.4	0.7	0.8
17	Caringbah Rd	0.0	2.6	0.1	2.6	0.1	2.1	0.2	2.6	0.2	3.0	0.3	3.1	0.5	3.6
18	Gannons Rd	0.3	0.9	0.3	0.9	0.3	0.9	0.4	1.0	0.4	1.1	0.4	1.2	0.7	1.6
19	Fenton Ave	0.4	0.9	0.5	1.1	0.5	1.3	0.6	1.3	0.6	1.3	0.6	1.4	0.9	3.4
20	Yathong Rd/Carabella Rd	0.1	2.2	0.1	2.3	0.2	2.3	0.2	2.3	0.2	2.3	0.2	2.3	0.5	2.4
21	Woodfield Blvd	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.4	0.3
22	Meta St	0.1	1.4	0.2	1.6	0.2	1.7	0.2	1.9	0.2	2.0	0.2	2.1	0.6	2.8
23	Parraweena Rd	0.1	0.8	0.1	0.9	0.1	1.0	0.1	1.1	0.2	1.2	0.2	1.3	0.6	1.9
24	Burke Rd	0.7	0.6	0.8	0.6	0.8	0.7	0.9	0.7	0.9	0.7	1.0	0.7	1.4	3.2

Note: "D" and "V" in the second row represent the peak flood depth (measured in m) and velocity (measured in m/s) respectively.

Table 14: Peak Flood Levels (mAHD) at Key Locations (refer to Figure 14)

ID	Location	5 Yr ARI	10 Yr ARI	20 Yr ARI	50 Yr ARI	100 Yr ARI	200 Yr ARI	PMF
1	Gannons Rd Rwy Bridge	11.6	11.6	11.7	11.8	11.9	12.0	13.1
2	Captain Cook Dr/Gannons Rd	2.4	2.5	2.5	2.6	2.6	2.7	3.2
3	Captain Cook Dr @ Toyota Park	2.3	2.3	2.4	2.5	2.5	2.6	3.1
4	Woolooware Rd Intersect.	2.3	2.3	2.3	2.3	2.3	2.3	2.6
5	Sturt Rd	3.9	3.9	3.9	3.9	3.9	3.9	4.1
6	Hume Rd	3.2	3.2	3.2	3.3	3.3	3.4	3.6
7	CCD near Endeavour Rd	2.8	2.9	2.9	3.0	3.0	3.1	3.4
8	Resolution Dr	2.3	2.4	2.4	2.5	2.5	2.6	2.9
9	Jenola Park	12.0	12.1	12.2	12.4	12.5	12.7	14.1
10	Kingsway	14.3	14.3	14.4	14.4	14.4	14.4	14.6
11	Woolooware Rd	4.3	4.3	4.3	4.4	4.4	4.5	4.7
12	Edinburgh Cl	6.8	6.8	6.8	6.8	6.9	6.9	7.1
13	Bando Rd	5.1	5.1	5.1	5.2	5.3	5.3	5.7
14	Woolooware High School	1.9	1.9	1.9	2.0	2.0	2.0	2.3
15	Solander Playing Fields	2.3	2.4	2.5	2.5	2.6	2.6	3.1
16	Denman Ave	10.0	10.0	10.1	10.1	10.1	10.1	10.3
17	Caringbah Rd	22.5	22.6	22.6	22.6	22.7	22.7	22.9
18	Gannons Rd	6.5	6.5	6.5	6.5	6.6	6.6	6.9
19	Fenton Ave	3.3	3.3	3.4	3.4	3.4	3.5	3.8
20	Yathong Rd/Carabella Rd	5.2	5.2	5.3	5.3	5.3	5.4	5.6
21	Woodfield Blvd	13.3	13.3	13.3	13.3	13.3	13.3	13.4
22	Meta St	2.7	2.7	2.7	2.7	2.7	2.8	3.2
23	Parraweena Rd	2.1	2.1	2.1	2.1	2.2	2.2	2.6
24	Burke Rd	5.1	5.1	5.1	5.2	5.3	5.3	5.7

Table 15: Peak Flow Distribution (m^3/s) across Key Locations

ID	Location	5 Yr ARI	10 Yr ARI	20 Yr ARI	50 Yr ARI	100 Yr ARI	200 Yr ARI	PMF
				Overland Flows				
OF1	Gannons Rd Railway Bridge	22.8	26.4	32.2	39.2	44.2	49.8	118.4
OF2	Yathong Rd	10.8	12.5	15.5	19.0	21.8	26.1	72.2
OF3	Caringbah Rd/Oleander Pde	7.8	9.8	11.9	14.7	16.7	19.7	51.9
OF4	Jenola Park	20.3	23.8	28.9	34.8	40.6	45.1	104.5
OF5	Gannons Rd	1.4	1.8	2.3	3.6	4.8	6.2	24.3
OF6	Captain Cook Dr Overtopping	15.3	24.6	36.6	53.3	64.8	79.9	230.7
OF7	Woolooware Rd to WGC	3.8	5.0	6.4	8.5	10.1	12.2	34.7
OF8	WGC to Woolooware Rd	0.1	0.2	0.3	0.7	1.0	1.4	21.7
OF9	Girralang Rd	1.0	1.2	1.5	2.5	3.2	4.2	18.6
OF10	Sturt Rd	2.3	2.9	4.0	5.0	5.7	6.7	16.8
				Pipe/Culvert/Channel Flows				
PC1	Endeavour Channel Outlet	16.4	15.8	16.5	17.4	18.0	18.7	24.3
PC2	Solander Pipe Outlet	0.4	0.5	0.5	0.5	0.6	0.6	0.7
PC3	Sharks CCD Culvert	6.9	6.9	6.8	6.8	6.8	6.8	6.5
PC4	Sharks Channel Outlet	14.4	18.1	21.1	26.0	29.4	32.6	53.6
PC5	CGC CCD Outlet	1.8	2.0	2.9	3.7	3.9	4.1	4.6
PC6	CGC Outflows	0.7	0.7	0.7	0.7	0.7	0.7	0.5
PC7	Sturt Rd GPT Inflows	1.1	1.1	1.1	1.2	1.1	1.2	1.1
PC8	Hume Rd GPT Inflows	1.1	1.1	1.2	1.3	1.4	1.4	1.8
PC9	WGC Woolooware Rd Inflow	2.8	2.9	2.9	3.0	3.0	3.1	3.4
PC10	WGC Gannons Rd Inflows	0.8	0.8	0.8	0.9	0.9	0.9	1.0
PC11	WGC Dolans Rd Inflow	0.7	0.7	0.7	0.7	0.7	0.7	0.7
PC12	WGC Denman Ave Inflow	0.6	0.6	0.7	0.9	0.9	0.9	0.9
PC13	WGC Kingsway Inflow	3.4	3.7	3.8	4.0	4.3	4.4	5.2
PC14	Northumberland Dr Outlet	2.0	2.0	2.0	2.1	2.1	2.1	2.4

Due to the combination of high flood depths and velocities, many regions of the catchment are affected by high hazard flows. Figure 26 and Figure 27 show the flow hazard classification throughout the catchment for the 100 year ARI and PMF events. It can be seen that during the 100 year ARI flood event many roads form significant flow paths with high hazard flows, with the situation worsening for the PMF.

The NSW Floodplain Development Manual (Reference 16) provides guidelines on determining hydraulic categories and allows flexibility in the interpretation of the definition of each category. Consultants and authorities use different approaches for this. For the purpose of this study the preliminary hydraulic categories have been adopted based on previous experience and review of literature (e.g. Reference 24):

- *<u>Floodway</u> = Velocity * Depth > 0.25 m²/s AND Velocity > 0.25m/s OR Velocity > 1m/s*
- *<u>Flood Storage</u> = Depth > 0.2m (provided that NOT categorised as Floodway)*
- *<u>Flood Fringe</u> = Depth < 0.2m (provided that NOT categorised as Floodway or Storage)*

The approach undertaken considers each hydraulic category as a function of the velocity depth product, velocity or depth. It should be noted that the same criteria may not be applicable for a different floodplain and the reliability and effectiveness of the approach remain to be ascertained (Reference 24). Figure 28 and Figure 29 display the preliminary hydraulic categorisation for the 100 year ARI and PMF events.

8.4.2. Major Access Road Flooding

Several major arterial roads in the catchment are subject to flooding from events as small as the 5 year ARI event. Captain Cook Drive and Kingsway link the suburbs of Cronulla and Kurnell with the rest of Sydney. Excessive flooding of these roads could potentially inhibit traffic and result in significant impacts on traffic flows throughout the region. During a significant flood event it is likely that emergency service vehicles would be required in the affected area, though access may be severely hindered by the possibility of major road closures. A summary of flood depths on these two as well as other major access roads in this region is provided in Table 16.

Table 16: Major Road Peak Flood Depths (m) for Various Events

ID	Location	5 Yr ARI	10 Yr ARI	20 Yr ARI	50 Yr ARI	100 Yr ARI	200 Yr ARI	PMF
1	Gannons Rd Rwy Bridge	0.8	0.9	1.0	1.1	1.2	1.2	2.4
3	Captain Cook Dr @ Toyota Park	0.4	0.4	0.5	0.6	0.6	0.7	1.2
7	CCD near Endeavour Rd	0.5	0.5	0.6	0.6	0.7	0.7	1.0
10	Kingsway	0.5	0.5	0.6	0.6	0.6	0.6	0.8
11	Woolooware Rd	0.0	0.1	0.1	0.2	0.2	0.2	0.5

8.5. Sensitivity Analysis

Sensitivity analysis was carried out in order to assess the affect that adjusting model parameters had on model results. A comparison was carried out using peak flood levels and flows for the 100 year ARI design event. The following scenarios were modelled:

- An increase in rainfall losses (soil type 2 adopted in DRAINS);
- A decrease in rainfall losses (soil type 4 adopted in DRAINS);
- An increase in routing lag of 20% for DRAINS;
- A decrease in routing lag of 20% for DRAINS;
- An increase in bed resistance (Manning's 'n') of 20%;
- A decrease in bed resistance (Manning's 'n') of 20%;
- Pipe/culvert blockage at 0%; and
- Pipe/culvert blockage at 100%.

A summary of the results obtained are shown in Table 17 and Table 18. The tables show the differences between the results for each tested run and the 100 year ARI design flood event (base case).

Table 17: Sensitivity Analysis of 100 year ARI Peak Flood Flows

ID	Location	Base Case (m^3/s)	Impact (%)							
			Losses Increase	Losses Decrease	Routing Lag Increase	Routing Lag Decrease	Manning's '*n*' +20%	Manning's '*n*' -20%	Pipe/Culvert Blockage at 0%	Pipe/Culvert Blockage at 100%
Overland Flows										
OF1	Gannons Rd Railway Bridge	44.2	-1.0%	-0.1%	0.0%	-0.1%	-1.0%	0.8%	-2.0%	5.2%
OF2	Yathong Rd	21.8	-0.4%	-0.3%	1.3%	0.5%	1.2%	4.9%	0.4%	1.4%
OF6	Captain Cook Dr Overtopping	64.8	-5.6%	3.5%	3.3%	4.4%	-1.8%	3.8%	-11.8%	22.5%
OF9	Girralang Rd	3.2	-5.7%	4.2%	3.2%	3.9%	2.1%	9.7%	-0.6%	-14.3%
Pipe/Culvert/Channel Flows										
PC1	Endeavour Channel Outlet	18.0	-0.4%	0.1%	0.1%	0.2%	5.3%	-1.0%	147.6%	-82.3%
PC3	Sharks CCD Culvert	6.8	1.6%	-0.5%	-0.8%	-1.2%	-6.0%	5.3%	69.1%	-99.1%
PC5	CGC CCD Outlet	3.9	-4.6%	3.1%	3.1%	3.1%	-1.9%	2.1%	40.3%	-98.8%

Table 18: Sensitivity Analysis of 100 year ARI Peak Flood Levels

			Impact (m)							
ID	**Location**	**Base Case (mAHD)**	**Losses Increase**	**Losses Decrease**	**Routing Lag Increase**	**Routing Lag Decrease**	**Manning's '*n*' +20%**	**Manning's '*n*' -20%**	**Pipe/Culvert Blockage at 0%**	**Pipe/Culvert Blockage at 100%**
1	Gannons Rd Railway Bridge	11.91	-0.01	0.00	0.00	0.00	+0.03	+0.01	-0.01	+0.03
2	Captain Cook Dr/Gannons Rd	2.63	-0.01	0.00	0.00	0.00	+0.02	-0.02	-0.08	+0.04
3	Captain Cook Dr @ Toyota Park	2.54	-0.02	+0.01	+0.01	+0.01	+0.05	-0.04	-0.01	+0.04
4	Woolooware Rd Intersection	2.33	-0.01	0.00	0.00	0.00	+0.01	-0.01	-0.01	+0.01
5	Sturt Rd	3.94	0.00	0.00	+0.01	0.00	-0.01	+0.05	-0.01	-0.01
6	Hume Rd	3.34	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	+0.01
7	CCD near Endeavour Rd	3.04	0.00	0.00	0.00	0.00	+0.01	-0.01	-0.09	+0.05
8	Resolution Dr	2.52	0.00	0.00	0.00	0.00	0.00	0.00	-0.07	+0.09
9	Jenola Park	12.52	-0.01	0.00	0.00	+0.01	+0.02	-0.01	-0.02	+0.06
10	Kingsway	14.40	0.00	0.00	0.00	0.00	-0.02	+0.04	0.00	0.00
11	Woolooware Rd	4.42	0.00	+0.01	+0.01	+0.01	+0.01	0.00	-0.06	+0.05
12	Edinburgh Cl	6.85	0.00	+0.01	+0.01	+0.01	-0.01	+0.01	-0.03	+0.02
13	Bando Rd	5.26	0.00	+0.01	+0.01	0.00	+0.02	+0.02	-0.03	+0.05
14	Woolooware High School	2.00	-0.01	0.00	0.00	0.00	0.00	-0.01	-0.07	+0.18
15	Solander Playing Fields	2.59	-0.02	+0.01	+0.01	+0.01	+0.01	-0.01	-0.03	+0.06
16	Denman Ave	10.11	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	+0.02
17	Caringbah Rd	22.66	0.00	0.00	0.00	0.00	-0.01	+0.04	-0.04	+0.03
18	Gannons Rd	6.57	0.00	0.00	0.00	+0.01	0.00	+0.02	-0.01	+0.03
19	Fenton Ave	3.45	0.00	0.00	0.00	0.00	-0.01	+0.01	-0.01	+0.01
20	Yathong Rd/Carabella Rd	5.33	0.00	0.00	0.00	0.00	-0.02	+0.02	0.00	+0.01
21	Woodfield Blvd	13.34	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	+0.01
22	Meta St	2.73	0.00	0.00	0.00	0.00	+0.03	0.00	0.00	+0.01
23	Parraweena Rd	2.16	0.00	0.00	0.00	0.00	+0.02	-0.02	-0.01	+0.01
24	Burke Rd	5.25	-0.01	+0.01	+0.01	+0.01	+0.01	-0.01	-0.02	+0.04
		Mean:	0.00	0.00	0.00	0.00	+0.01	0.00	-0.03	+0.04

Overall, results were shown to be insensitive to the tested variables with a maximum of ±0.2 m variation to peak flood levels at the tested locations. This can generally be accommodated within the 0.5 m freeboard (if adopted) applied to the 100 year ARI results to determine the Flood Planning Levels (FPLs).

In general flood levels and flows were most sensitive to adjusting the pipe/culvert blockage factor. An increase in pipe/culvert blockage from 50% (as per the base case) to 100% blockage caused an increase in overland flow of up to 22.5% at Captain Cook Dr (indicated as OF6 in Figure 14), with decrease flows in the pipes/culverts and minor increases in flood levels in the lower catchment with the exception of Woolooware High School (approximately 0.2 m as indicated in Table 18).

8.6. Climate Change Analysis

Climate change modelling has also been carried out as per the NSW Government guidelines (as discussed in Section 7). The following scenarios were modelled for the 100 year ARI flood and PMF events:

- 10% increase in design rainfall intensity;
- 20% increase in design rainfall intensity;
- 30% increase in design rainfall intensity;
- 0.4 m rise in Woolooware Bay tailwater level (sea level rise scenario by year 2050); and
- 0.9 m rise in Woolooware Bay tailwater level (sea level rise scenario by year 2100).

8.6.1. Rainfall Increase

The results for the rainfall increase scenarios are tabulated in Table 19 and Table 20 for the 100 year ARI and PMF events respectively. Overall, an increase in the design rainfalls result in generally an increase in flood levels across the study catchment predominately in the main flow paths and lower regions of the catchment. For the 100 year ARI flood event, a 10% increase in design rainfall intensity results in approximately 0.1 m maximum increase in peak flood levels, a 20% rainfall increase results in approximately 0.2 m maximum increase in peak flood levels and a 30% rainfall increase results in approximately 0.3m maximum increase in peak flood levels (around the Jenola Park area). For the PMF event, a 10% increase in design rainfall intensity results in approximately 0.2 m maximum increase in peak flood levels, a 20% rainfall increase results in approximately 0.4 m maximum increase in peak flood levels and a 30% rainfall increase results in approximately 0.5m maximum increase in peak flood levels. Regions located in the steeper areas are not affected as much by these increases in flood levels as the flatter regions in the catchment downstream.

Table 19: Results for Rainfall Increase Scenarios (100 year ARI Flood Event)

ID	Location	Base Case (mAHD)	Impact (m)		
			10% Increase in Rainfall	20% Increase in Rainfall	30% Increase in Rainfall
1	Gannons Rd Railway Bridge	11.91	+0.07	+0.14	+0.22
2	Captain Cook Dr/Gannons Rd	2.63	+0.03	+0.05	+0.09
3	Captain Cook Dr @ Toyota Park	2.54	+0.07	+0.13	+0.18
4	Woolooware Rd Intersection	2.33	+0.01	+0.03	+0.04
5	Sturt Rd	3.94	-0.01	0.00	0.00
6	Hume Rd	3.34	+0.04	+0.06	+0.09
7	CCD near Endeavour Rd	3.04	+0.04	+0.07	+0.1
8	Resolution Dr	2.52	+0.03	+0.05	+0.08
9	Jenola Park	12.52	+0.11	+0.21	+0.31
10	Kingsway	14.40	+0.01	+0.03	+0.06
11	Woolooware Rd	4.42	+0.02	+0.05	+0.07
12	Edinburgh Cl	6.85	+0.03	+0.05	+0.06
13	Bando Rd	5.26	+0.04	+0.09	+0.23
14	Woolooware High School	2.00	+0.04	+0.07	+0.1
15	Solander Playing Fields	2.59	+0.05	+0.09	+0.13
16	Denman Ave	10.11	+0.02	+0.06	+0.07
17	Caringbah Rd	22.66	+0.02	+0.05	+0.07
18	Gannons Rd	6.57	+0.03	+0.05	+0.07
19	Fenton Ave	3.45	+0.03	+0.05	+0.06
20	Yathong Rd/Carabella Rd	5.33	+0.02	+0.03	+0.05
21	Woodfield Blvd	13.34	0.00	+0.01	+0.01
22	Meta St	2.73	+0.02	+0.05	+0.07
23	Parraweena Rd	2.16	+0.02	+0.03	+0.05
24	Burke Rd	5.25	+0.05	+0.1	+0.15
		Mean:	+0.03	+0.06	+0.10

Table 20: Results for Rainfall Increase Scenarios (PMF Event)

ID	Location	Base Case (mAHD)	Impact (m)		
			10% Increase in Rainfall	20% Increase in Rainfall	30% Increase in Rainfall
1	Gannons Rd Railway Bridge	13.12	+0.17	+0.22	+0.31
2	Captain Cook Dr/Gannons Rd	3.17	+0.04	+0.07	+0.1
3	Captain Cook Dr @ Toyota Park	3.07	+0.04	+0.09	+0.14
4	Woolooware Rd Intersection	2.61	+0.03	+0.07	+0.1
5	Sturt Rd	4.06	+0.03	+0.03	+0.06
6	Hume Rd	3.64	+0.04	+0.07	+0.12
7	CCD near Endeavour Rd	3.40	+0.03	+0.06	+0.09
8	Resolution Dr	2.90	+0.04	+0.07	+0.11
9	Jenola Park	14.12	+0.19	+0.35	+0.45
10	Kingsway	14.58	+0.02	+0.05	+0.05
11	Woolooware Rd	4.67	+0.02	+0.04	+0.07
12	Edinburgh Cl	7.13	+0.04	+0.07	+0.1
13	Bando Rd	5.70	+0.06	+0.11	+0.17
14	Woolooware High School	2.32	+0.05	+0.1	+0.14
15	Solander Playing Fields	3.06	+0.04	+0.09	+0.13
16	Denman Ave	10.35	0.00	+0.07	+0.13
17	Caringbah Rd	22.91	0.00	+0.12	+0.17
18	Gannons Rd	6.88	+0.04	+0.06	+0.08
19	Fenton Ave	3.76	+0.04	+0.08	+0.1
20	Yathong Rd/Carabella Rd	5.55	+0.02	+0.05	+0.1
21	Woodfield Blvd	13.43	+0.01	+0.03	+0.04
22	Meta St	3.16	+0.05	+0.11	+0.16
23	Parraweena Rd	2.56	+0.06	+0.11	+0.16
24	Burke Rd	5.70	+0.06	+0.12	+0.18
		Mean:	+0.05	+0.09	+0.14

8.6.2. Sea Level Rise

The results for the sea level rise scenarios are tabulated in Table 21 and Table 22 for the 100 year ARI and PMF events respectively. The impacts of increasing downstream water levels are largely confined to the low lying areas adjacent to Woolooware Bay, as illustrated in Figure 32 and Figure 33. From the figures, it can be seen that regions that are particularly vulnerable to impacts of sea level rise are Woolooware High School, Captain Cook Drive, Cronulla Golf Course and Endeavour Field (Toyota Park).

Table 21: Results for Sea Level Rise Scenario (100 year ARI Flood Event)

ID	Location	Base Case (mAHD)	Impact (m)	
			Sea Level Rise of 0.4m	Sea Level Rise of 0.9m
1	Gannons Rd Railway Bridge	11.91	0.00	0.00
2	Captain Cook Dr/Gannons Rd	2.63	0.00	+0.01
3	Captain Cook Dr @ Toyota Park	2.54	+0.03	+0.11
4	Woolooware Rd Intersection	2.33	0.00	+0.01
5	Sturt Rd	3.94	0.00	0.00
6	Hume Rd	3.34	0.00	0.00
7	CCD near Endeavour Rd	3.04	0.00	+0.01
8	Resolution Dr	2.52	+0.02	+0.06
9	Jenola Park	12.52	0.00	0.00
10	Kingsway	14.40	0.00	0.00
11	Woolooware Rd	4.42	0.00	+0.01
12	Edinburgh Cl	6.85	+0.01	0.00
13	Bando Rd	5.26	+0.01	0.00
14	Woolooware High School	2.00	+0.09	+0.29
15	Solander Playing Fields	2.59	+0.02	+0.04
16	Denman Ave	10.11	-0.01	0.00
17	Caringbah Rd	22.66	-0.01	-0.01
18	Gannons Rd	6.57	0.00	0.00
19	Fenton Ave	3.45	0.00	0.00
20	Yathong Rd/Carabella Rd	5.33	0.00	0.00
21	Woodfield Blvd	13.34	0.00	0.00
22	Meta St	2.73	0.00	+0.01
23	Parraweena Rd	2.16	0.00	+0.13
24	Burke Rd	5.25	0.00	0.00
		Mean:	+0.01	+0.03

Table 22: Results for Sea Level Rise Scenario (PMF Event)

ID	Location	Base Case (mAHD)	Impact (m)	
			Sea Level Rise of 0.4m	Sea Level Rise of 0.9m
1	Gannons Rd Railway Bridge	13.12	0.00	0.00
2	Captain Cook Dr/Gannons Rd	3.17	0.00	0.00
3	Captain Cook Dr @ Toyota Park	3.07	0.00	+0.01
4	Woolooware Rd Intersection	2.61	0.00	0.00
5	Sturt Rd	4.06	-0.01	-0.01
6	Hume Rd	3.64	0.00	0.00
7	CCD near Endeavour Rd	3.40	0.00	0.00
8	Resolution Dr	2.90	0.00	+0.02
9	Jenola Park	14.12	-0.01	0.00
10	Kingsway	14.58	0.00	0.00
11	Woolooware Rd	4.67	0.00	0.00
12	Edinburgh Cl	7.13	0.00	-0.01
13	Bando Rd	5.70	0.00	0.00
14	Woolooware High School	2.32	0.00	+0.1
15	Solander Playing Fields	3.06	0.00	+0.01
16	Denman Ave	10.35	0.00	0.00
17	Caringbah Rd	22.91	0.00	+0.01
18	Gannons Rd	6.88	0.00	+0.01
19	Fenton Ave	3.76	0.00	0.00
20	Yathong Rd/Carabella Rd	5.55	0.00	0.00
21	Woodfield Blvd	13.43	0.00	0.00
22	Meta St	3.16	0.00	+0.02
23	Parraweena Rd	2.56	+0.01	+0.03
24	Burke Rd	5.70	0.00	0.00
		Mean:	0.00	+0.01

9. CONCLUSIONS

A flood study, reported upon herein, has been undertaken for the Woolooware Bay catchment. Mechanisms of flooding addressed include local overland flow (runoff in excess of pit/pipe drainage systems) as well as tidal inundation from Woolooware Bay. The flood study has defined flood behaviour for a range of floods from the 5 year ARI up to the PMF event and the results are presented herein.

The models established for this study have been verified qualitatively using historical data from Council's CRMS records and survey questionnaire results for the May 2003 event. The work carried out was based on best practice and produced results for inundation and flows which are in line with (and will supersede the results from) the 2004 Initial Subjective Assessment of Major Flooding as well as the information provided from resident surveys.

Key findings of this study are as follows:

- Generally the minor drainage system, which consists of the pit/pipe network and trunk drainage elements, does not have the capacity to cope with the influx of floodwaters even for small events such as the 5 year ARI event. Runoff from the catchment is predominantly conveyed through overland flow paths such as roads and empty spaces between private properties;
- The railway embankment (Sutherland – Cronulla railway line) proved to be a major obstruction to overland flows originating from the catchments upstream, consequently resulting in severe flood problems upstream of the embankments and inundation depths in excess of 1 m for the 100 year ARI flood event at the bridge crossing at Gannons Road. This problem is compounded by the limited capacity of the sub-surface drainage system to convey the ponded water;
- Emergency egress during flood events is a major issue for this catchment as excessive flooding of major access roads including Captain Cook Dr, Kingsway and Gannons Rd was found to occur which will result in significant impacts on traffic flows throughout the region;
- A number of flooding hot spots were identified in the catchment including:
    - Depression upstream of Hume Rd in the Bando Rd area;
    - Areas adjacent to the open channels at Edinburgh Cl, Fenton Ave and Yathong Close;
    - Overland flow paths such as Gannons Rd, Kingsway, Caringbah Rd and Captain Cook Dr;
    - Woolooware and Cronulla Golf Courses, as well as majority of the playing fields; and
    - Generally the low lying areas adjacent to Woolooware Bay including Captain Cook Dr, Endeavour Field (Toyota Park), the industrial area at Resolution Dr, Endeavour Rd, Northumberland Dr and Parraweena Rd.
- The low lying areas adjacent to Woolooware Bay including Woolooware High School, Captain Cook Drive, Cronulla Golf Course and Endeavour Field (Toyota Park) are particularly vulnerable to impacts of sea level rise.

10. ACKNOWLEDGEMENTS

WMAwater wish to acknowledge the assistance of the Sutherland Shire Council staff and Floodplain Management Committee in carrying out this study as well as the NSW Government (Office of Environment and Heritage) and the residents of the Woolooware Bay catchment. This study was jointly funded by the Sutherland Shire Council and the NSW Government.

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Figures

FIGURE 1
LOCALITY MAP

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FIGURE 2
LAND USE MAP

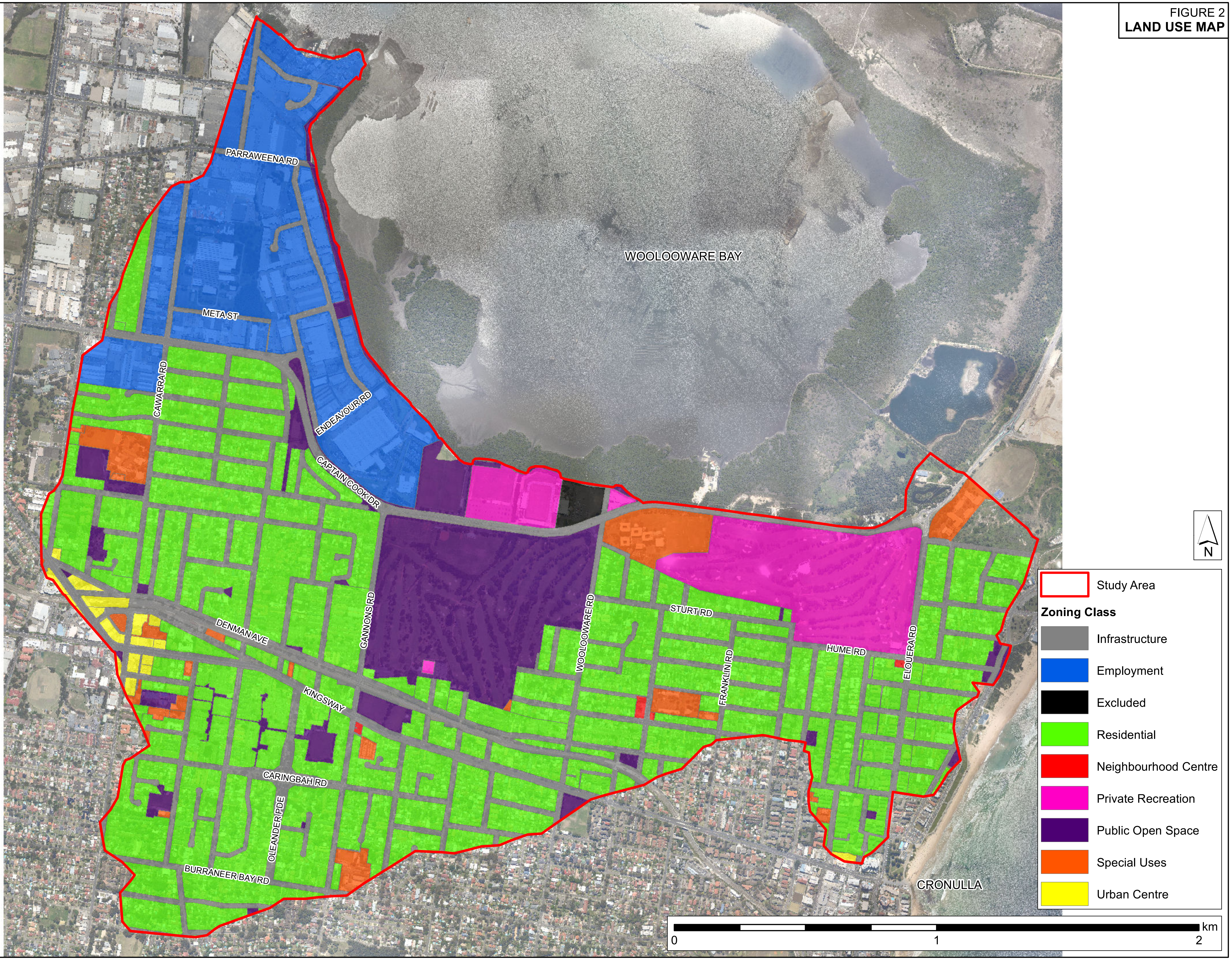

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FIGURE 3
EXISTING TOPOGRAPHY

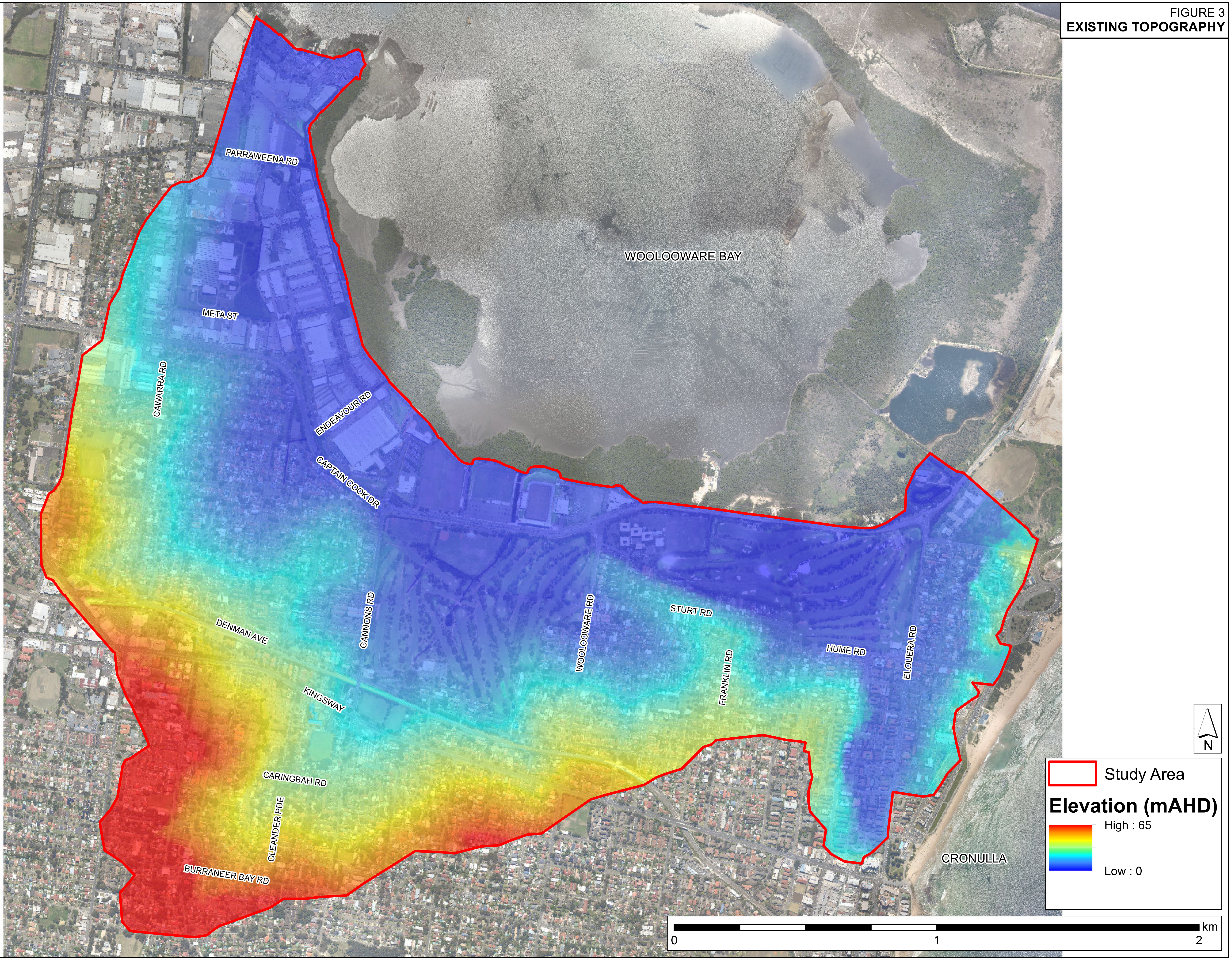

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FIGURE 4
COMPLAINTS BASED ON CRMS
MAY 2003 EVENT

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FIGURE 5
RAINFALL AND PLUVIOMETER GAUGE LOCATIONS

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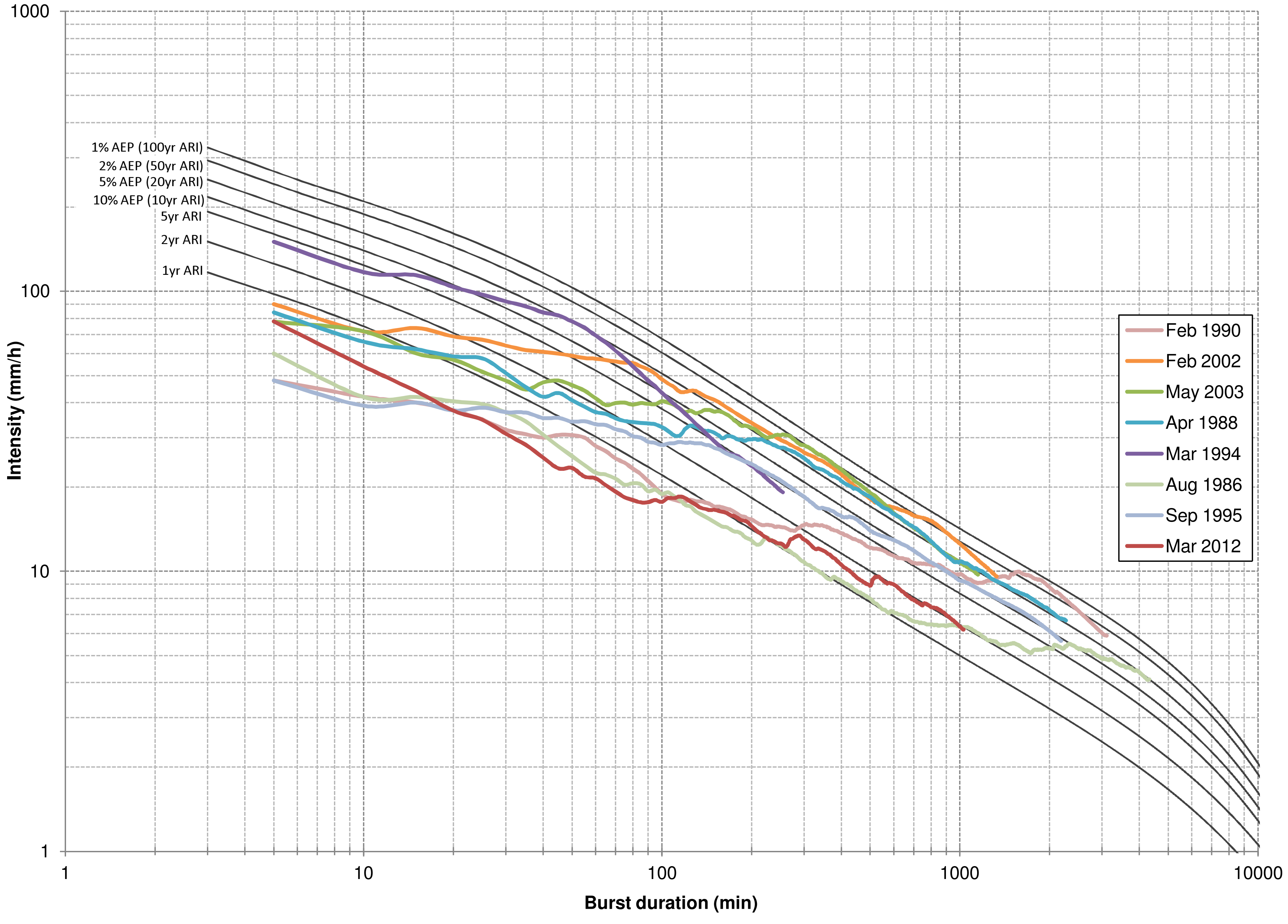

FIGURE 6
INTENSITY-FREQUENCY-DURATION PLOTS OF RECENT EVENTS
CRONULLA STP GAUGE (566018)

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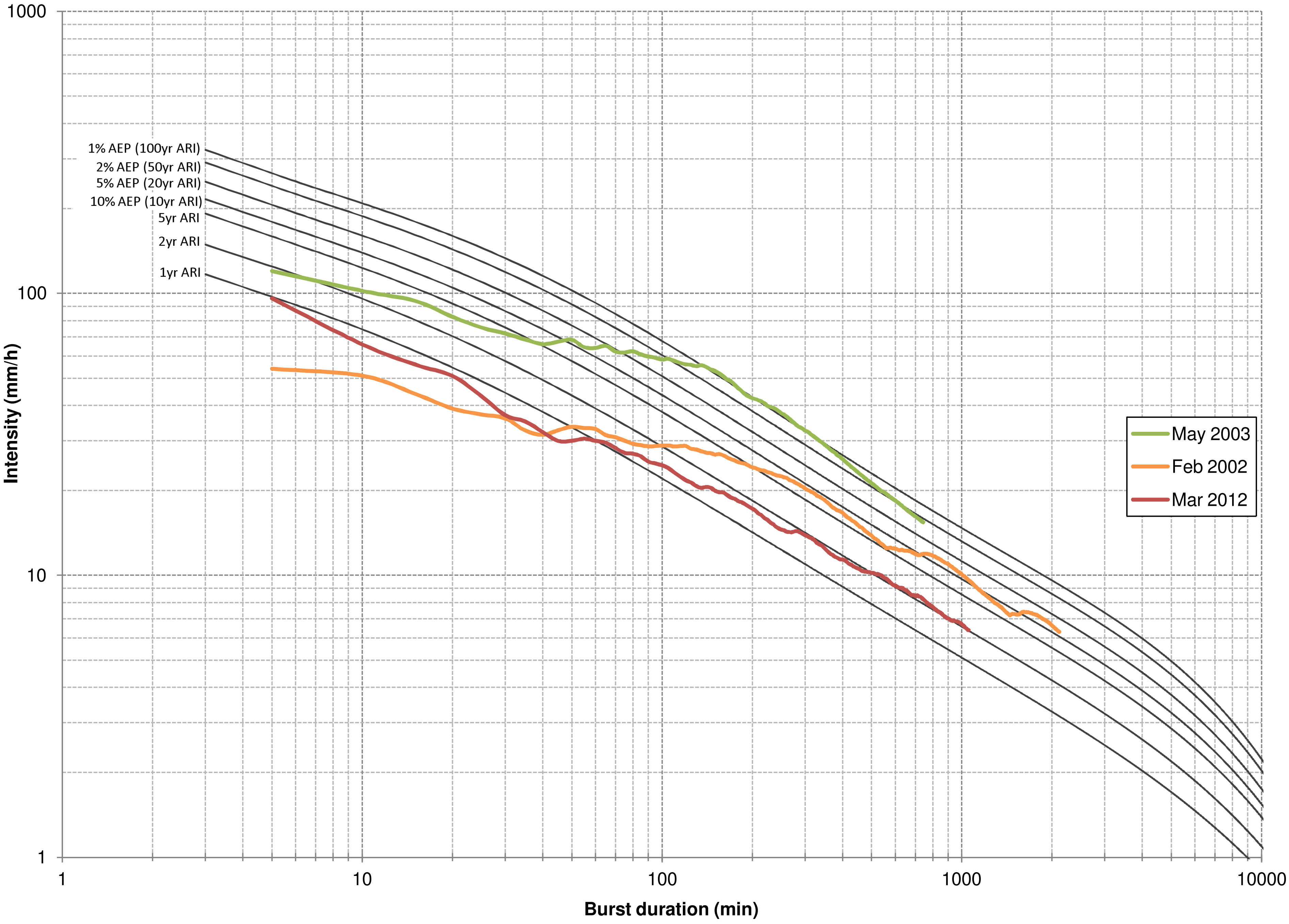

FIGURE 7
INTENSITY-FREQUENCY-DURATION PLOTS OF RECENT EVENTS
CARINGBAH BOWLING CLUB GAUGE (566098)

FIGURE 8
DRAINAGE SYSTEM AND HYDRAULIC MODEL LAYOUT

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FIGURE 9
COMMUNITY CONSULTATION RESPONDENTS: WOOLOOWARE BAY

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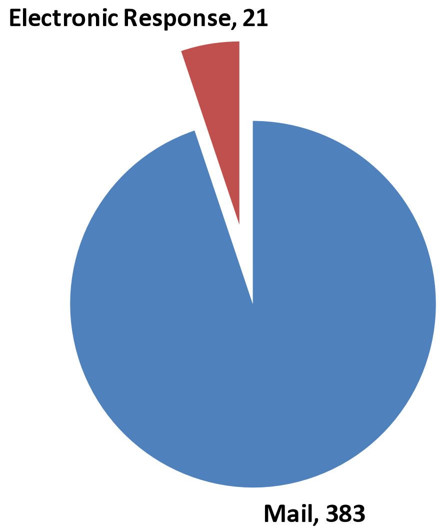
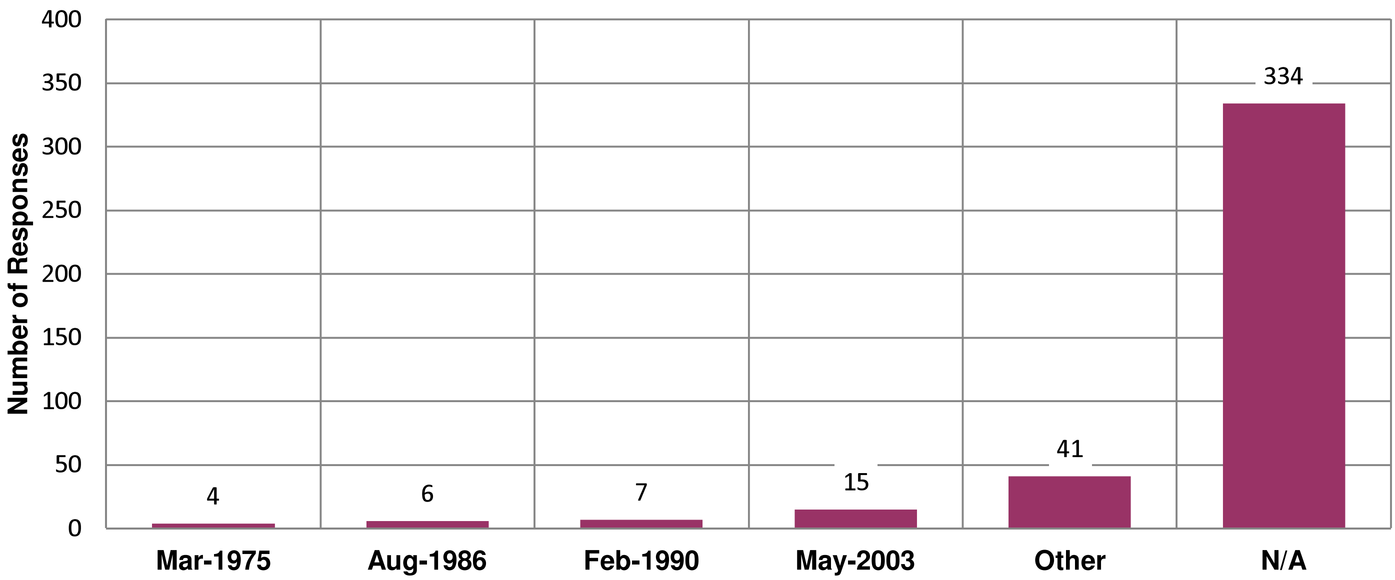
FIGURE 10A

COMMUNITY CONSULTATION RESULTS
WOOLOOWARE CATCHMENT

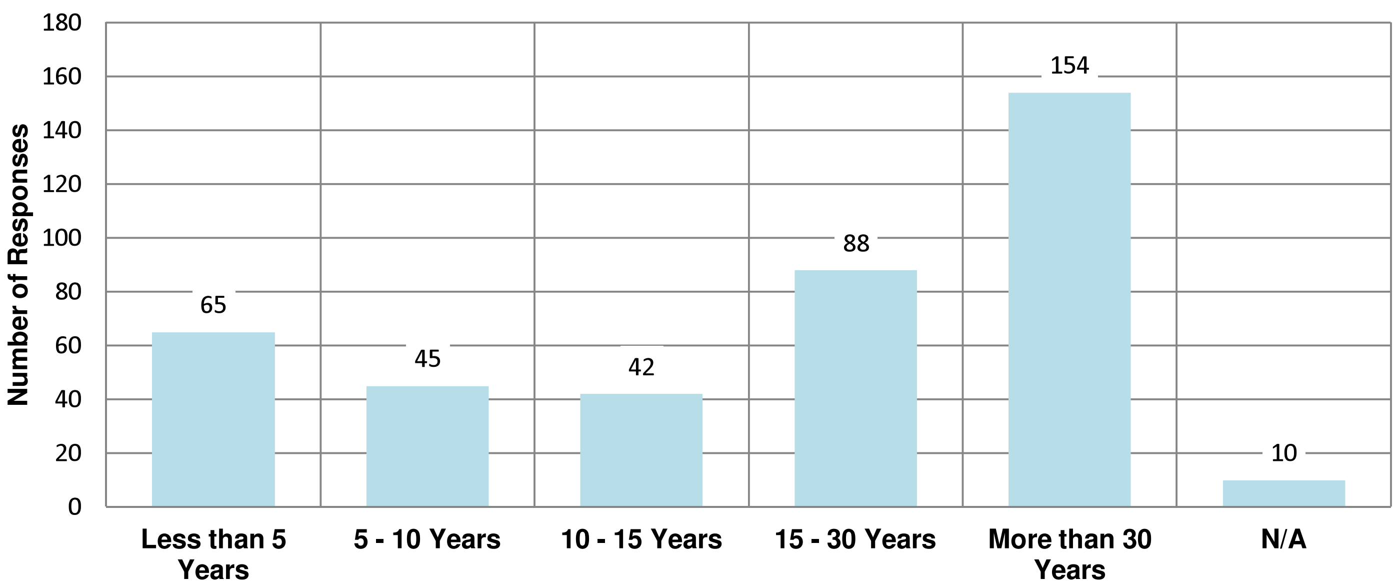
A: Mode of Response

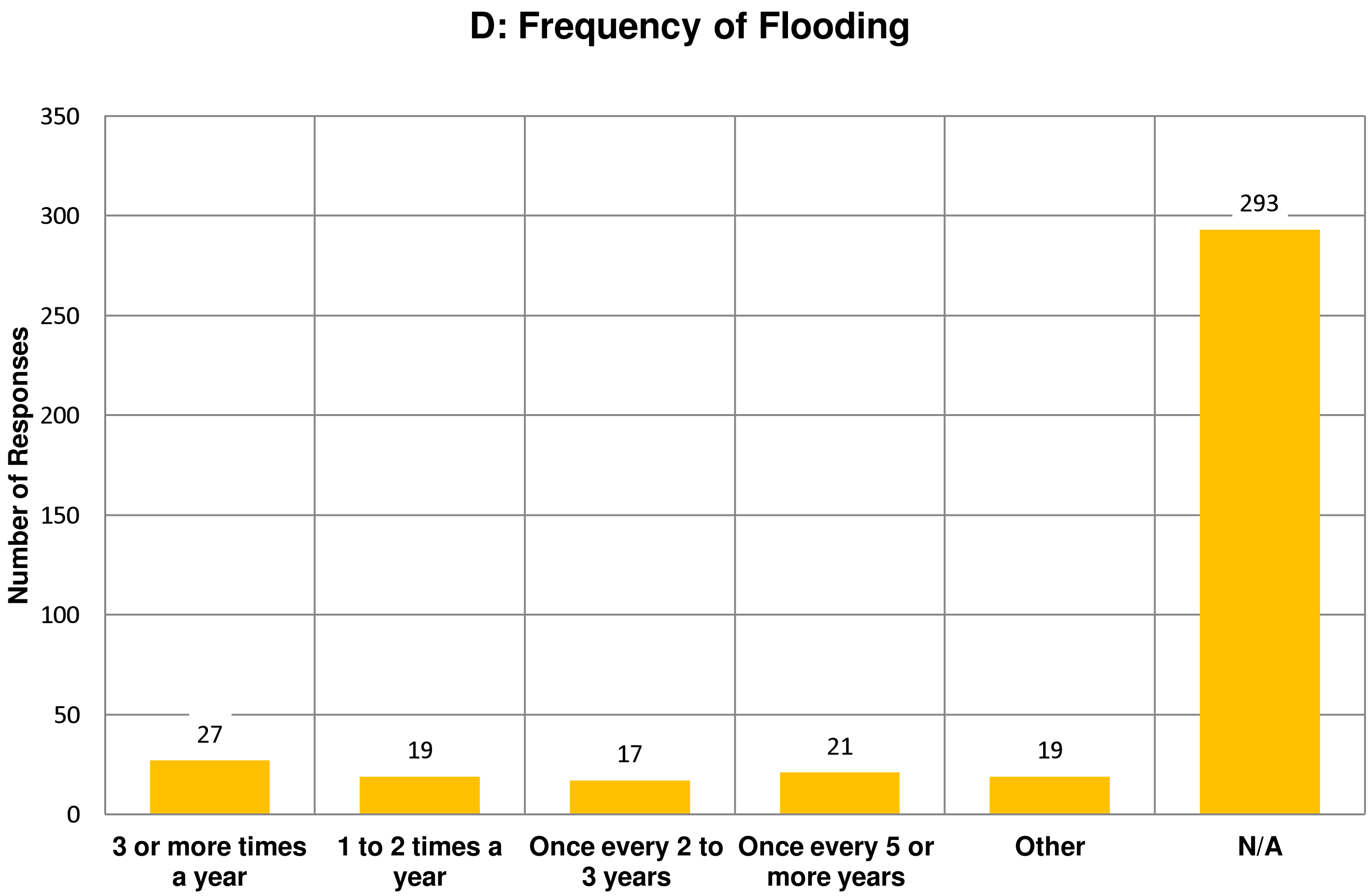


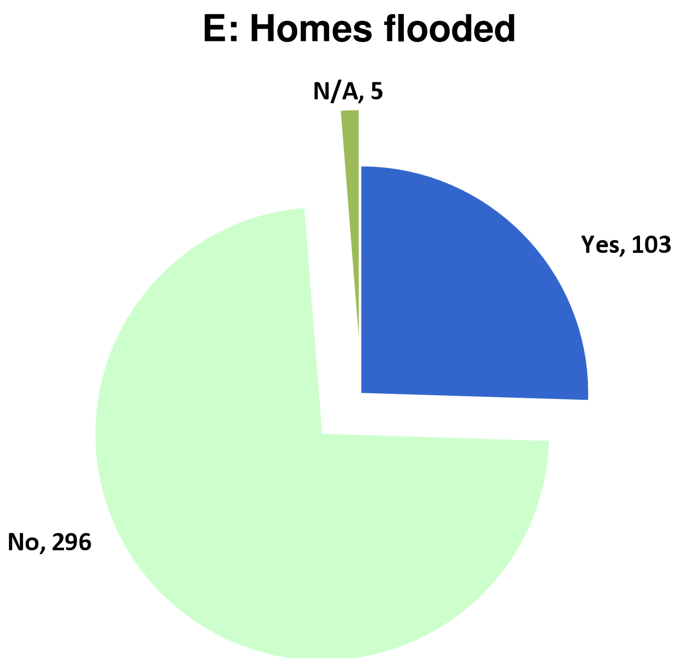
B: Experience with Previous Floods

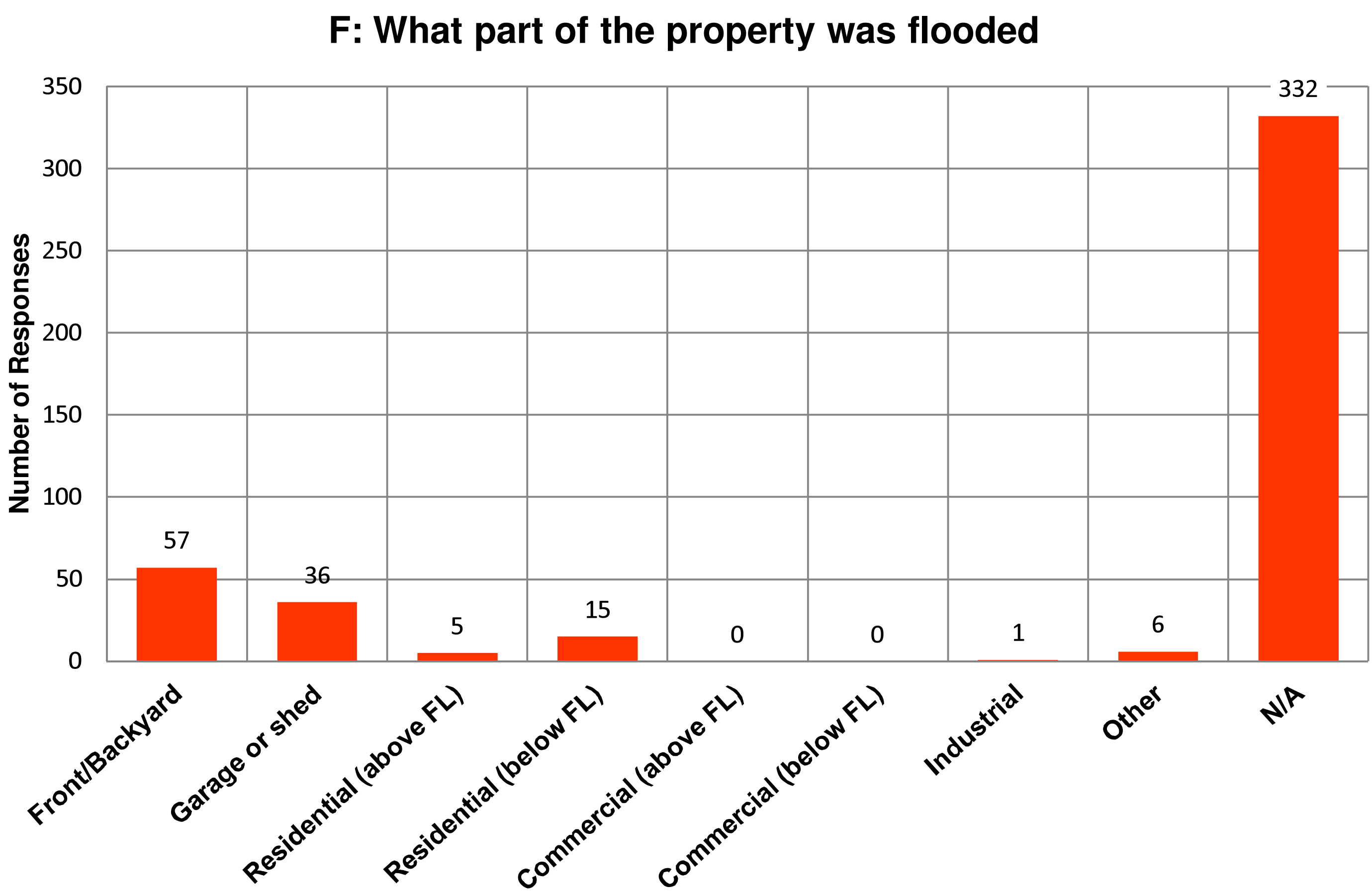


C: Period of Residency




D: Frequency of Flooding
Number of Responses
350
300
250
200
150
100
50
0
27
19
17
21
19
293
3 or more times a year
1 to 2 times a year
Once every 2 to 3 years
Once every 5 or more years
Other
N/A


E: Homes flooded
N/A, 5
Yes, 103
No, 296



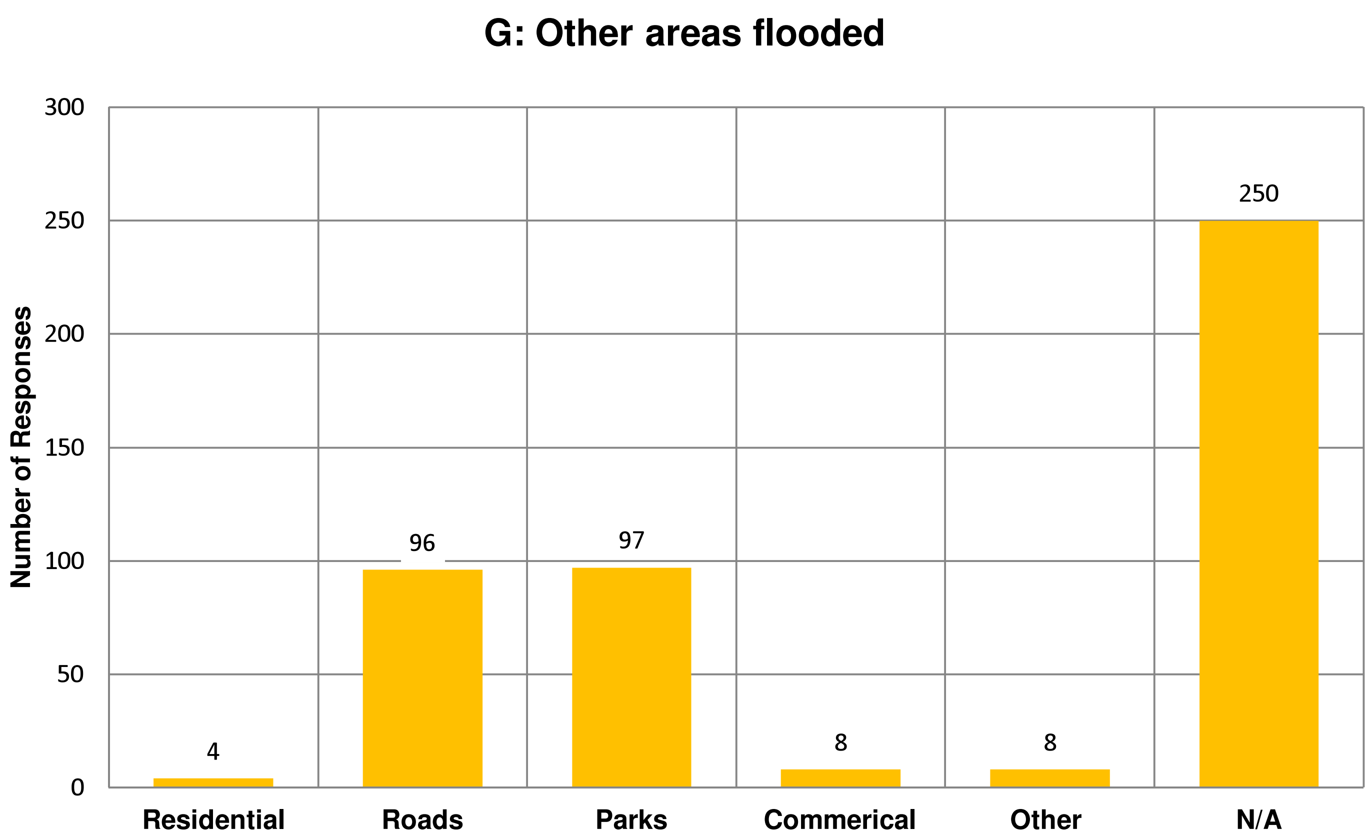


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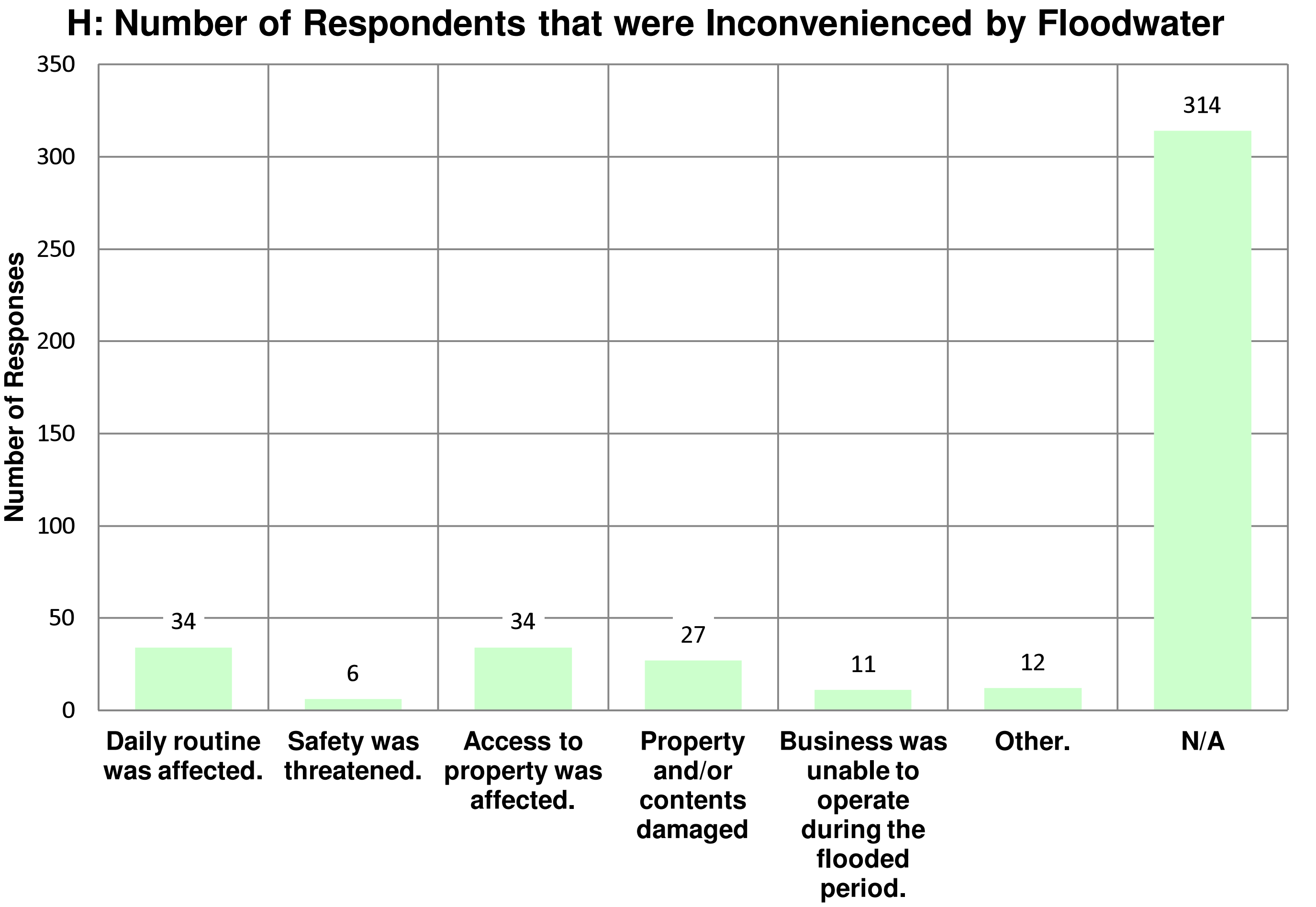
FIGURE 10D
COMMUNITY CONSULTATION RESULTS
WOOLOOWARE CATCHMENT



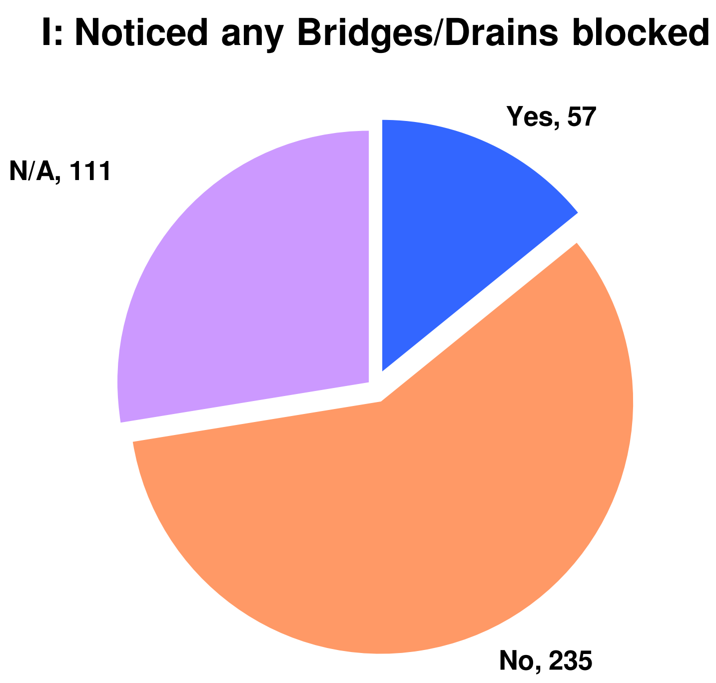


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FIGURE 12
MODEL VERIFICATION
MAY 2003 EVENT

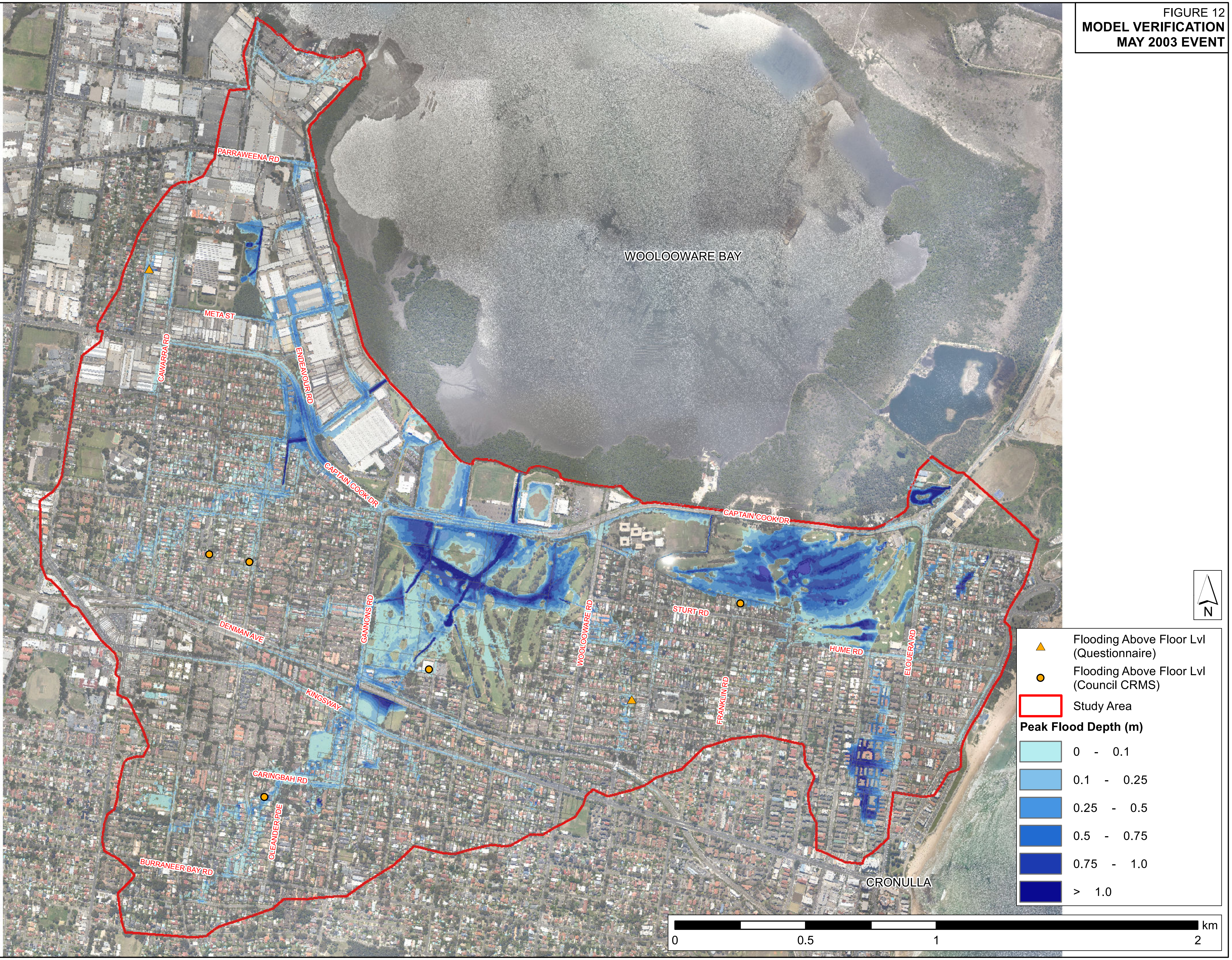

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FIGURE 13
CRITICAL DURATION MAP
100 YR ARI DESIGN FLOOD EVENT

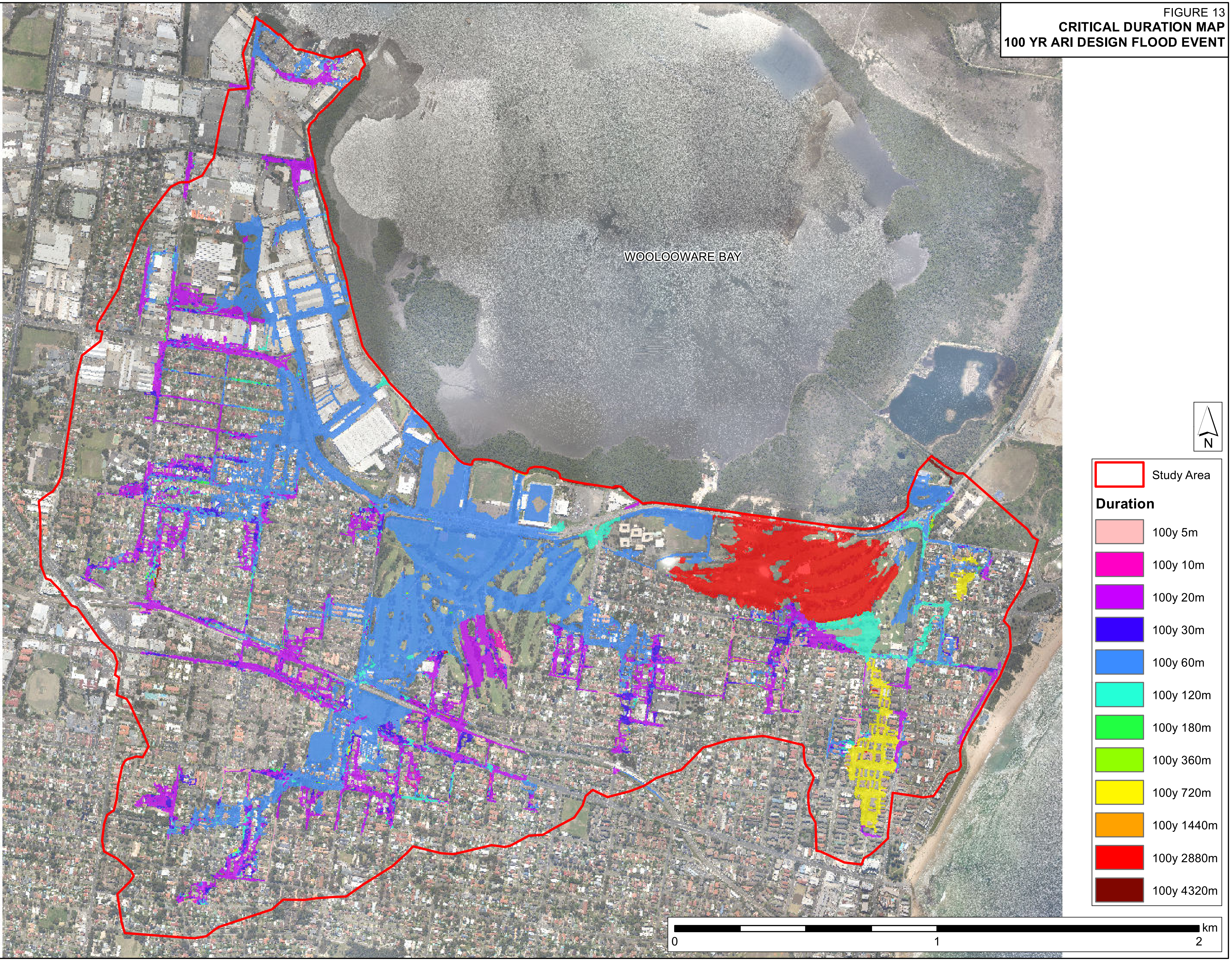

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FIGURE 14
TABULATED FLOODING LOCATIONS WOOLOOWARE BAY

J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure14_Tabulated_Locations.mxd

FIGURE 15
PEAK FLOOD DEPTH
5 YR ARI DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown

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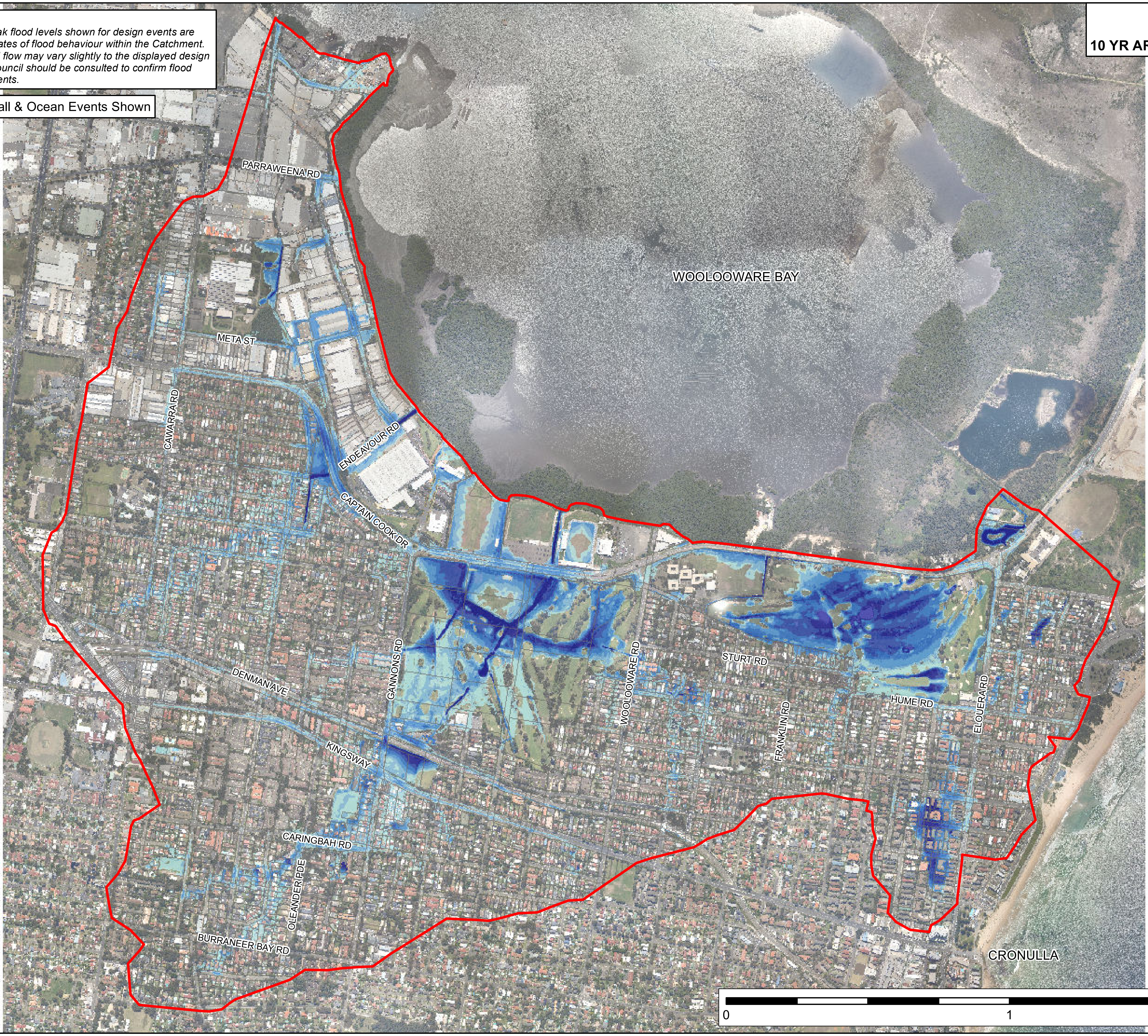
FIGURE 16

PEAK FLOOD DEPTH
10 YR ARI DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



N

Study Area

Depth (m)

- 0 to 0.1
- 0.1 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- > 1

km
0 1 2

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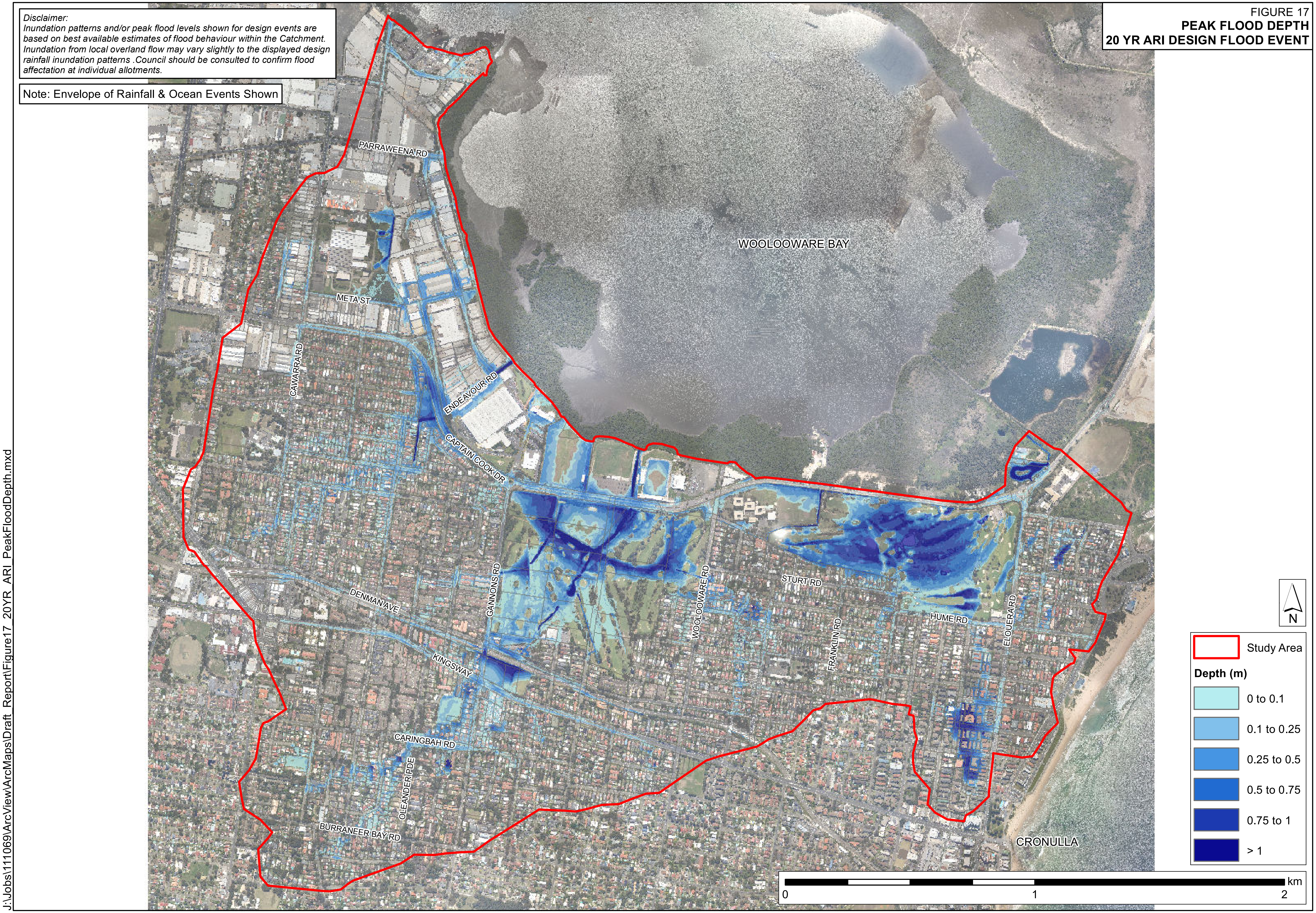

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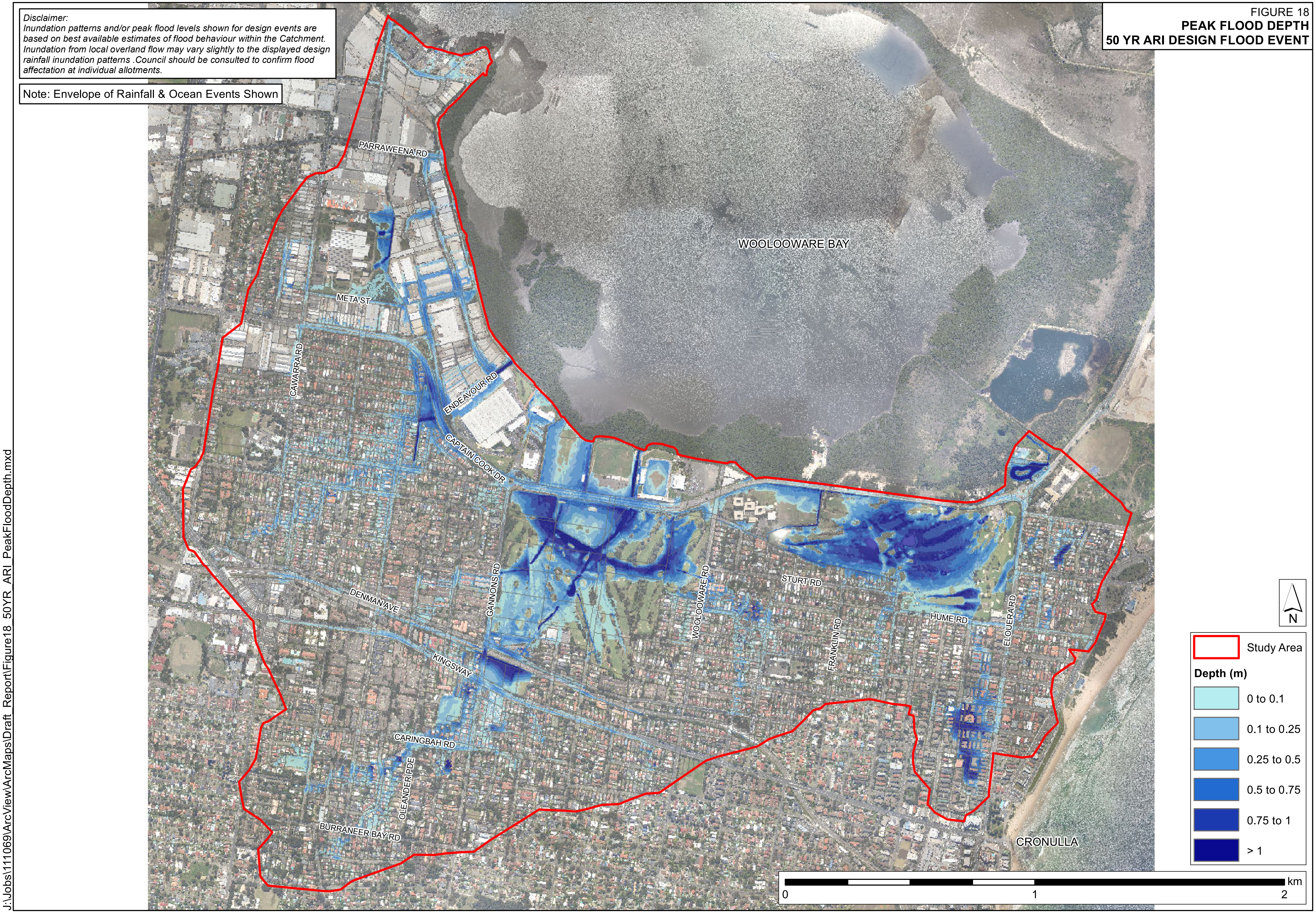
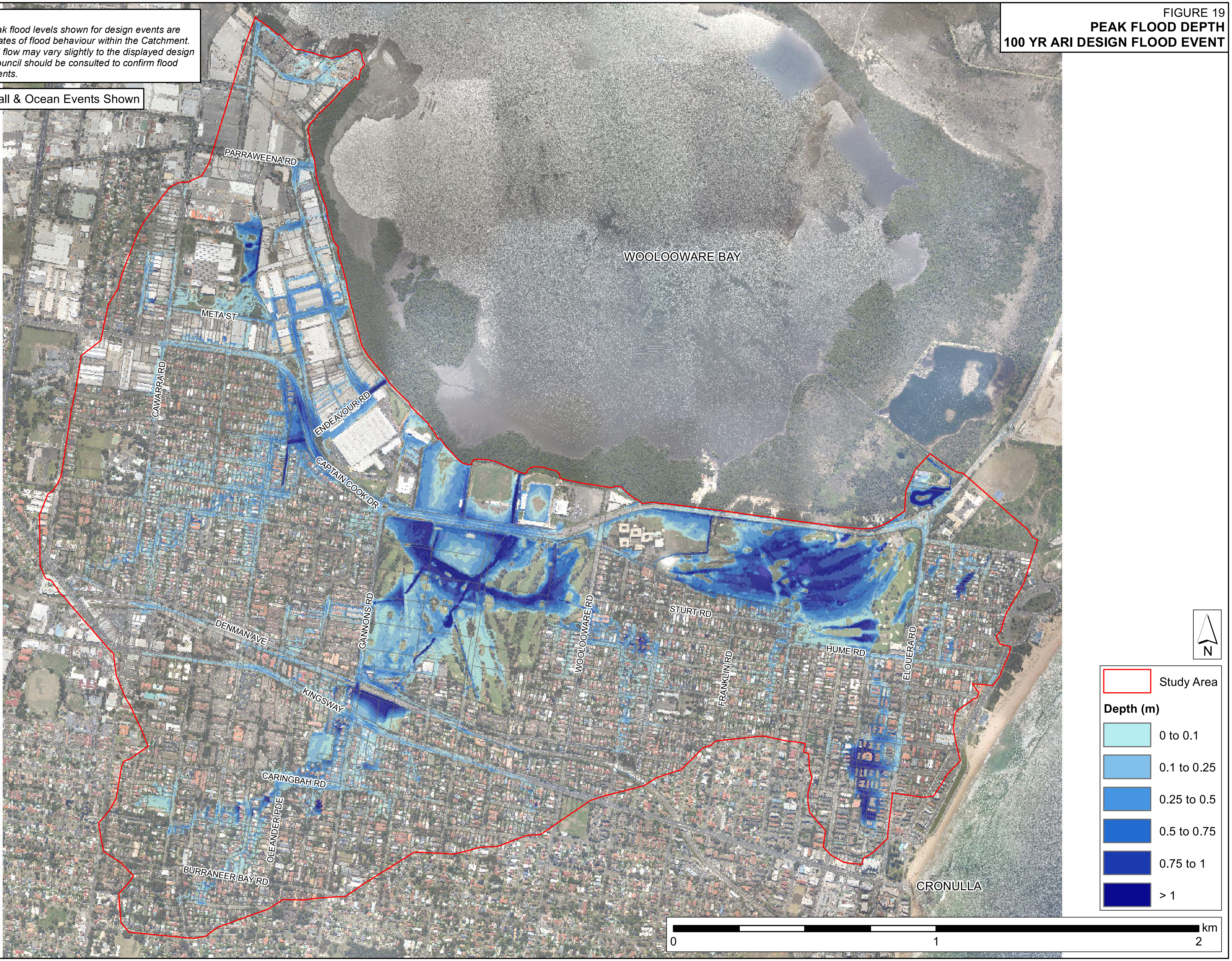


J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure18_50YR_ARI_PeakFloodDepth.mxd

FIGURE 19
PEAK FLOOD DEPTH
100 YR ARI DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



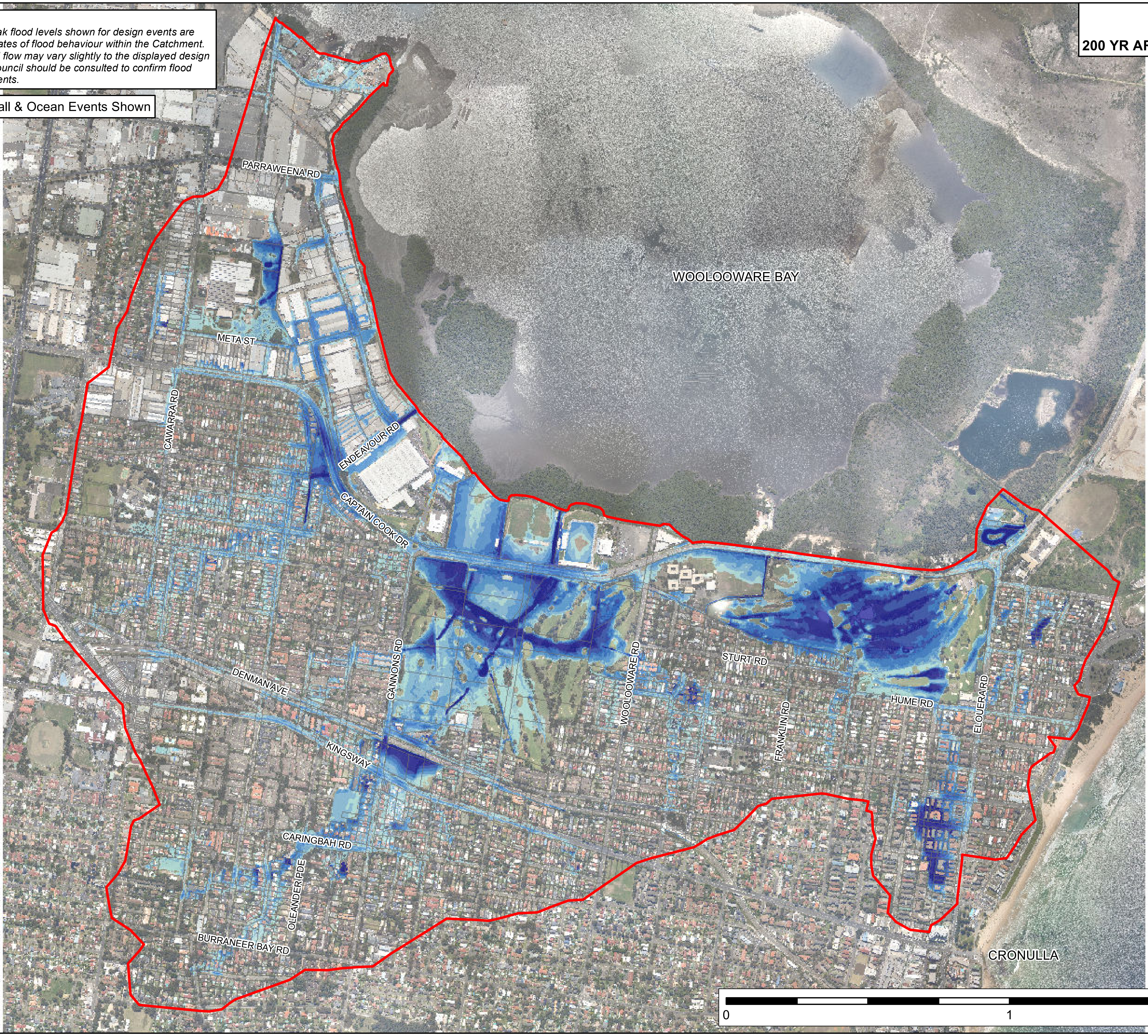
J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure19_100YR_ARI_PeakFloodDepth.mxd

FIGURE 20

PEAK FLOOD DEPTH
200 YR ARI DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



N

Study Area

Depth (m)

- 0 to 0.1
- 0.1 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- > 1

0 1 2 km

J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure20_200YR_ARI_PeakFloodDepth.mxd

FIGURE 21
PEAK FLOOD DEPTH
PMF EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown

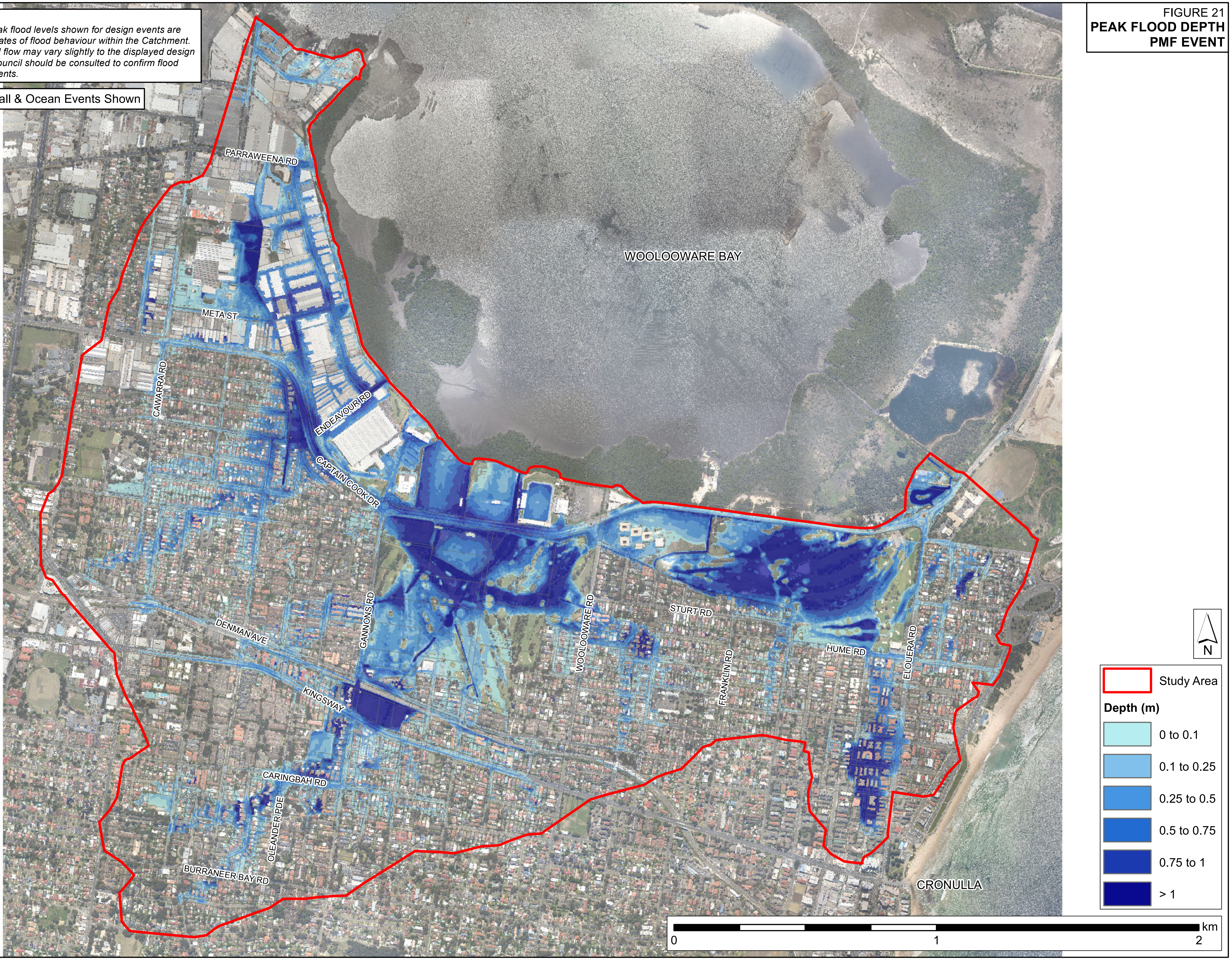


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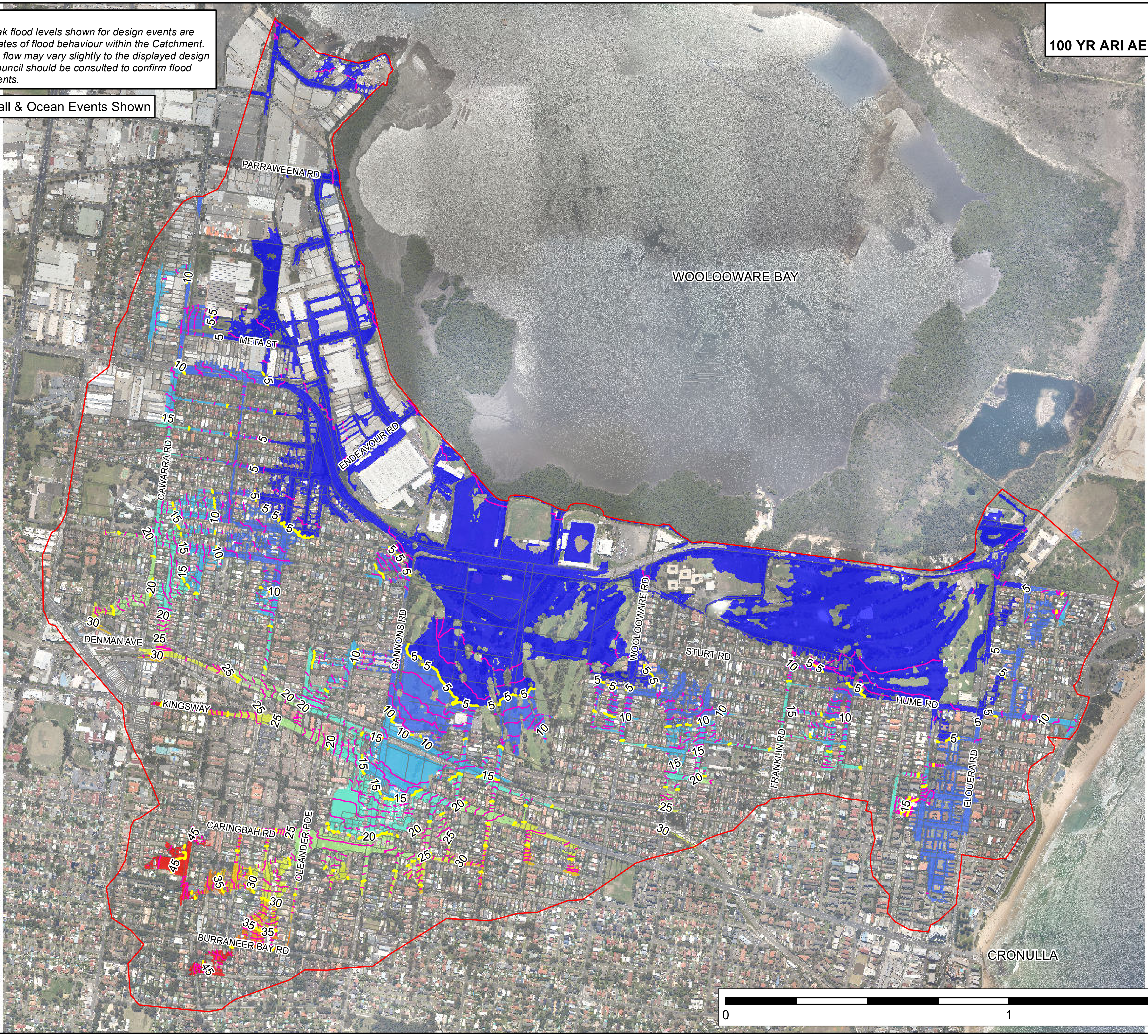
FIGURE 22
PEAK FLOOD LEVELS
100 YR ARI AEP DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



Major Contour (5m Interval)
Minor Contour (1m Interval)
Study Area

Height (mAHD)
- < 5
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 30
- 30 to 35
- 35 to 40
- > 40

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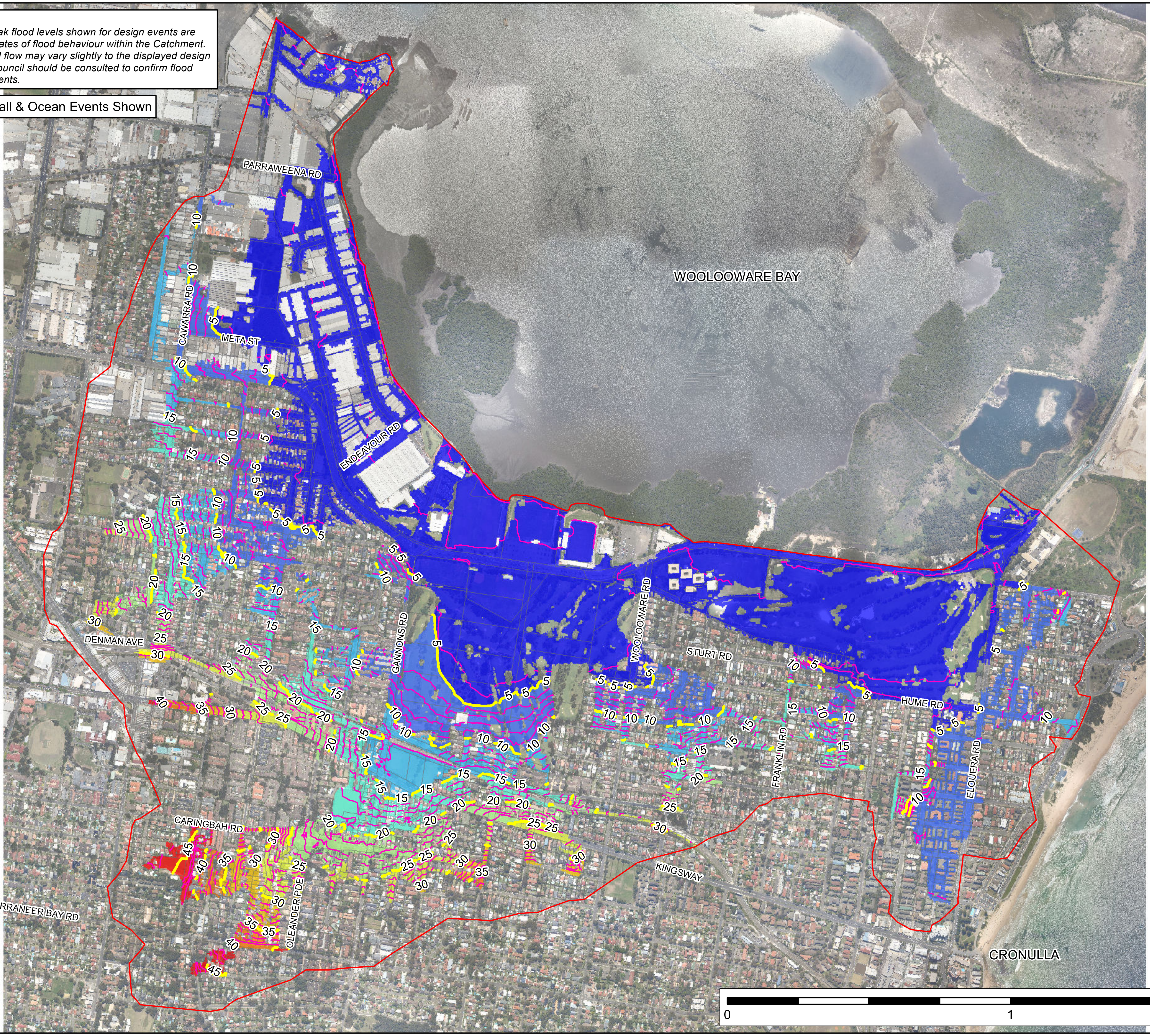
FIGURE 23
PEAK FLOOD LEVELS
PMF EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



Legend	
Major Contour (5m Interval)	
Minor Contour (1m Interval)	
Study	
Height (mAHD)	
	< 5
	5 to 10
	10 to 15
	15 to 20
	20 to 25
	25 to 30
	30 to 35
	35 to 40
	> 40

0 1 2 km

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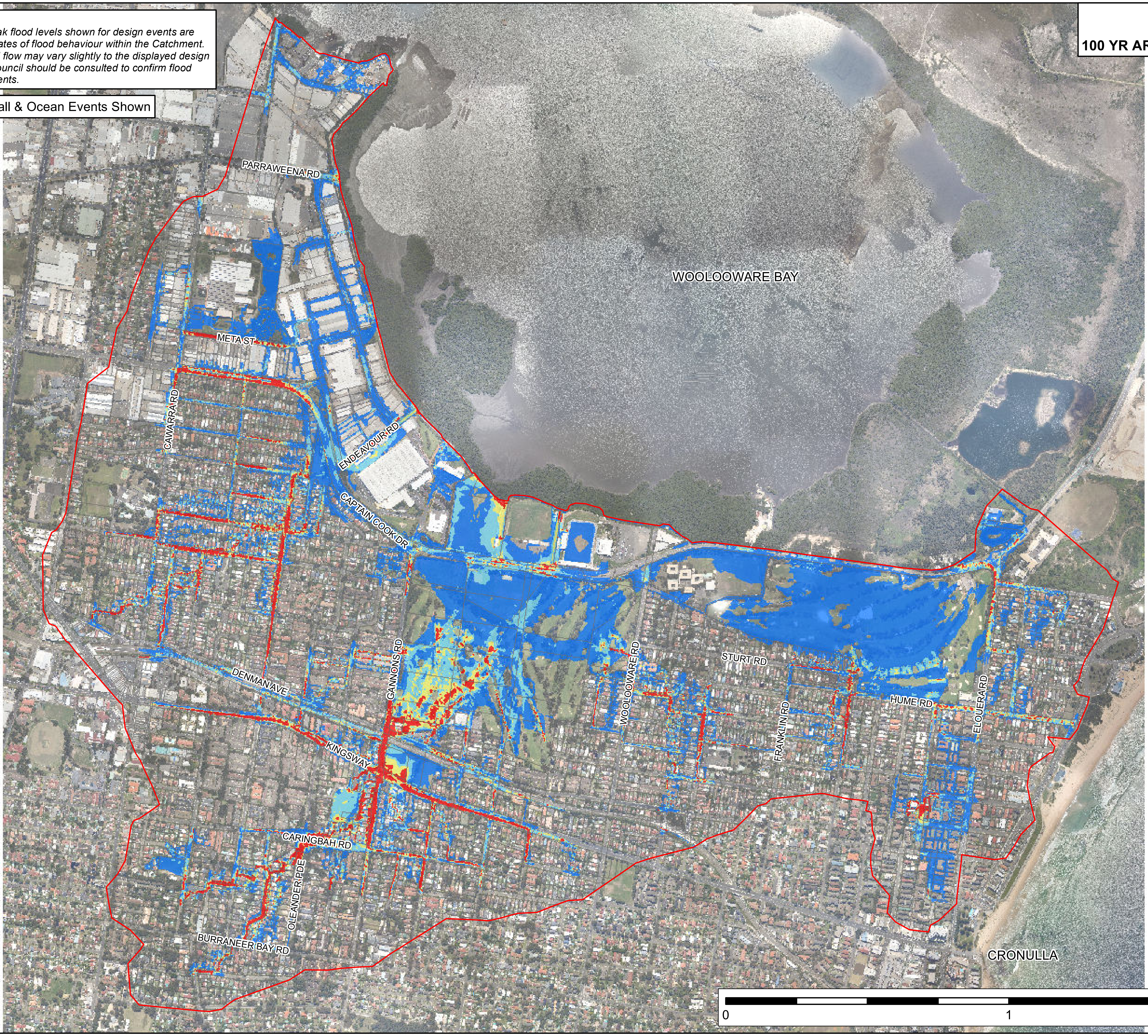
FIGURE 24
PEAK FLOOD VELOCITY
100 YR ARI DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



N

Study Area

Velocity (m/s)

< 0.5

0.5 to 1

1 to 1.5

> 1.5

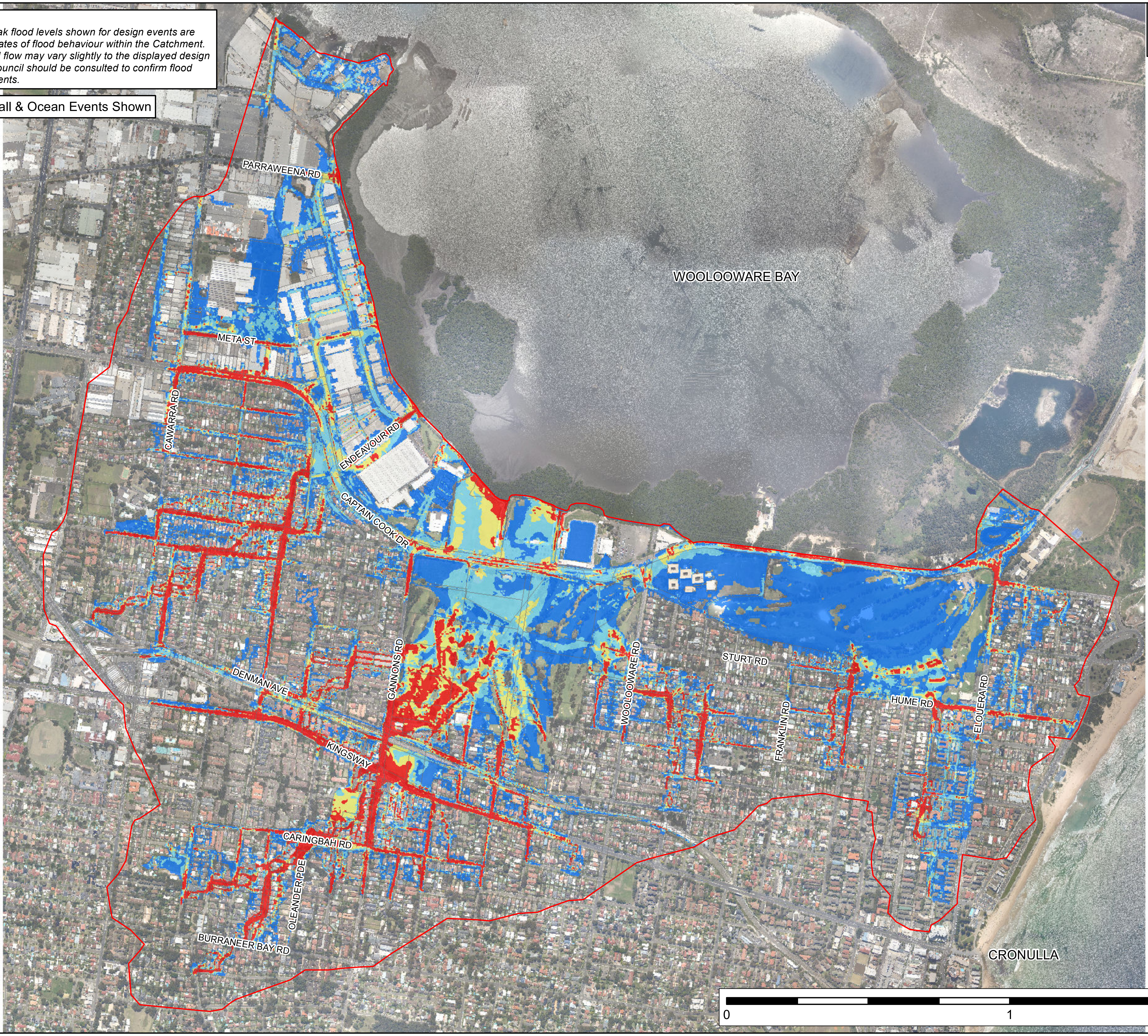
0 1 2 km

J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure24_100YR_ARI_PeakFloodVelocity.mxd

FIGURE 25
PEAK FLOOD VELOCITY
PMF EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



N

Study Area

Velocity (m/s)

< 0.5

0.5 to 1

1 to 1.5

> 1.5

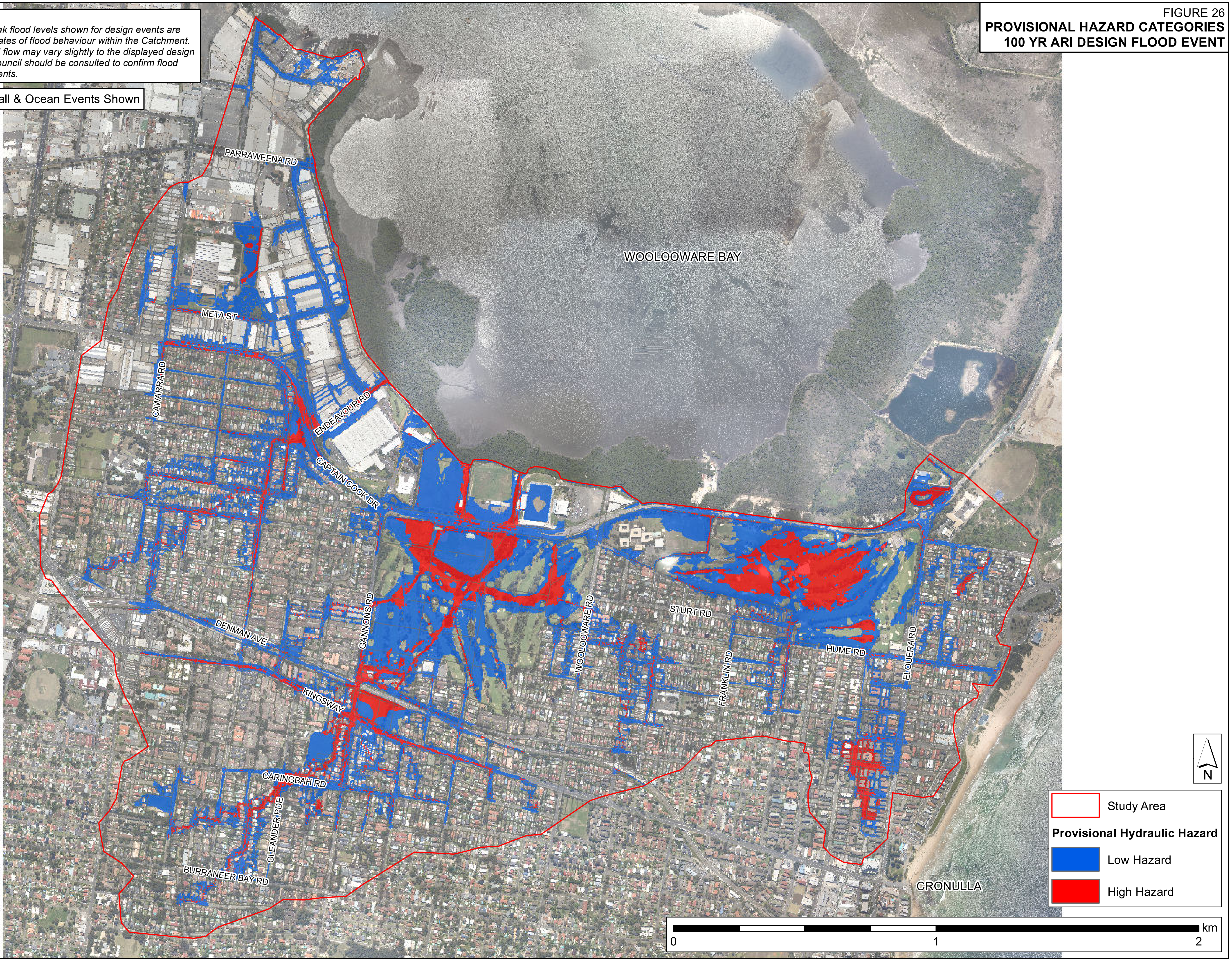
0 1 2 km

J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure25_PMF_PeakFloodVelocity.mxd

FIGURE 26
PROVISIONAL HAZARD CATEGORIES
100 YR ARI DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown

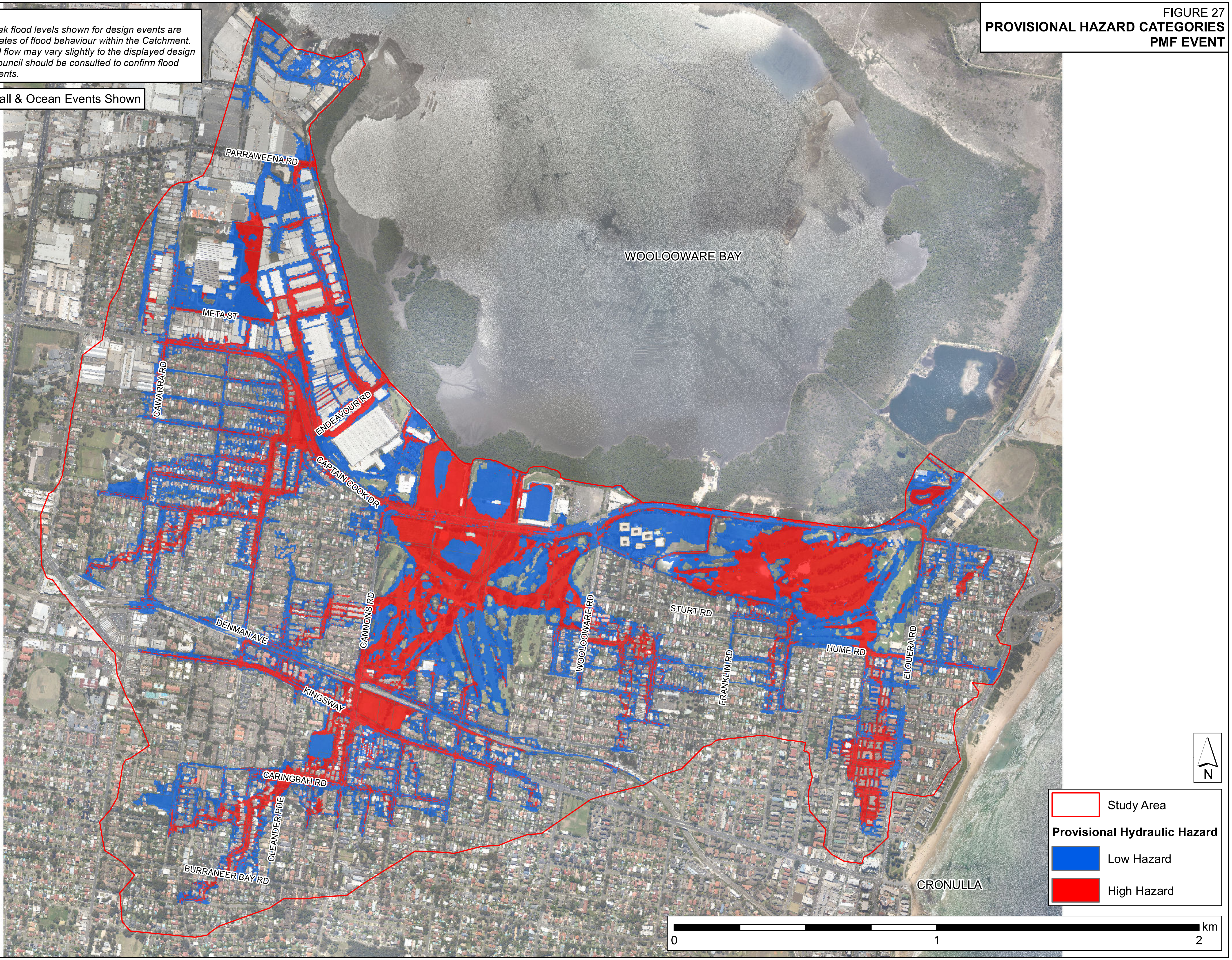


J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure26_100YR_ARI_ProvisionalFloodHazard.mxd

FIGURE 27
PROVISIONAL HAZARD CATEGORIES
PMF EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown

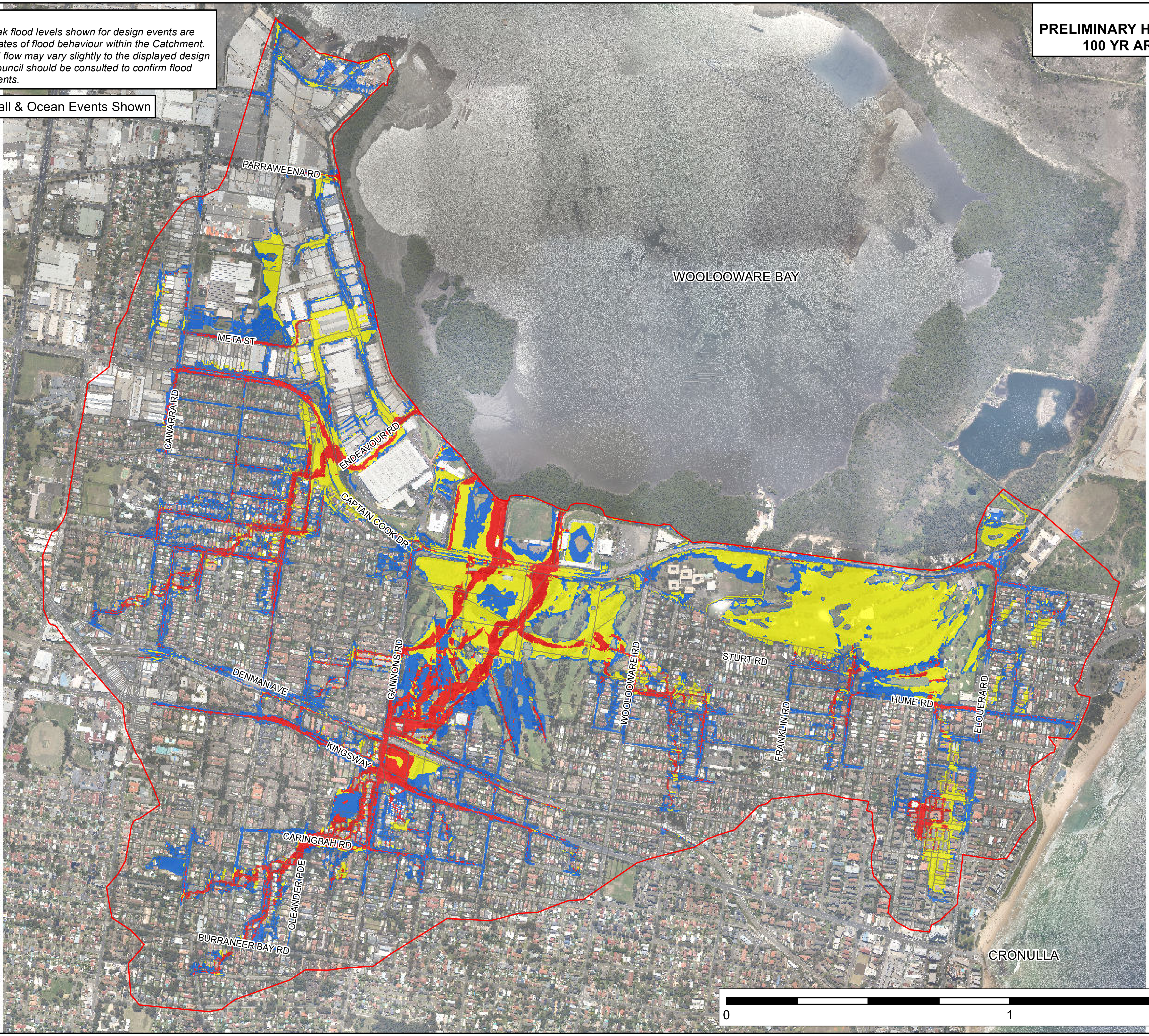


J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure27_PMF_ProvisionalFloodHazard.mxd

FIGURE 28
PRELIMINARY HYDRAULIC CATEGORIES
100 YR ARI DESIGN FLOOD EVENT

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown



N

Study Area

Hydraulic Categorisation

Floodway

Flood Storage

Flood Fringe

0 1 2 km

J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure28_100YR_ARI_PreliminaryHydraulicCategories.mxd

Disclaimer:
Inundation patterns and/or peak flood levels shown for design events are based on best available estimates of flood behaviour within the Catchment. Inundation from local overland flow may vary slightly to the displayed design rainfall inundation patterns .Council should be consulted to confirm flood affectation at individual allotments.

Note: Envelope of Rainfall & Ocean Events Shown

FIGURE 29
PRELIMINARY HYDRAULIC CATEGORIES
PMF EVENT

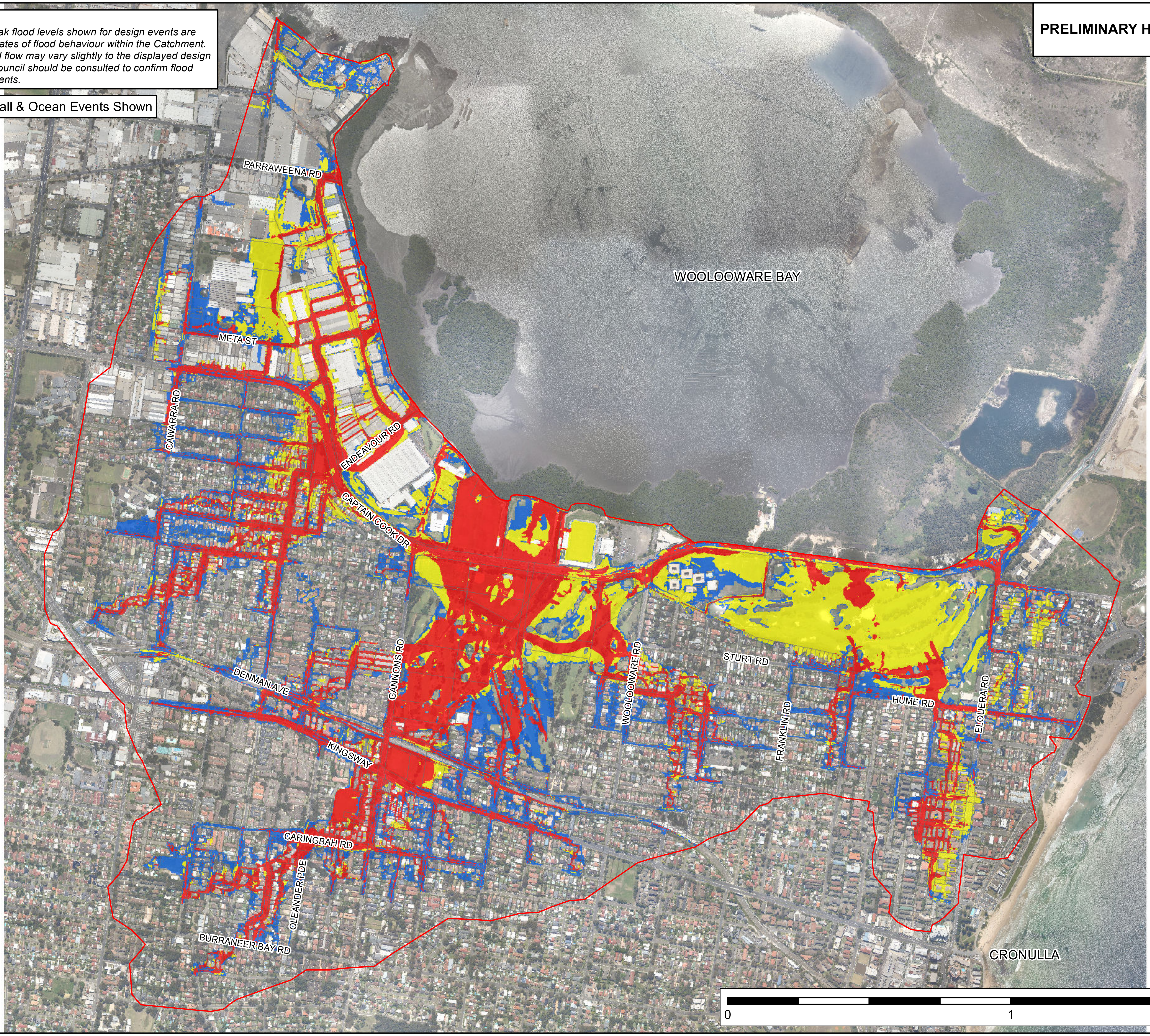


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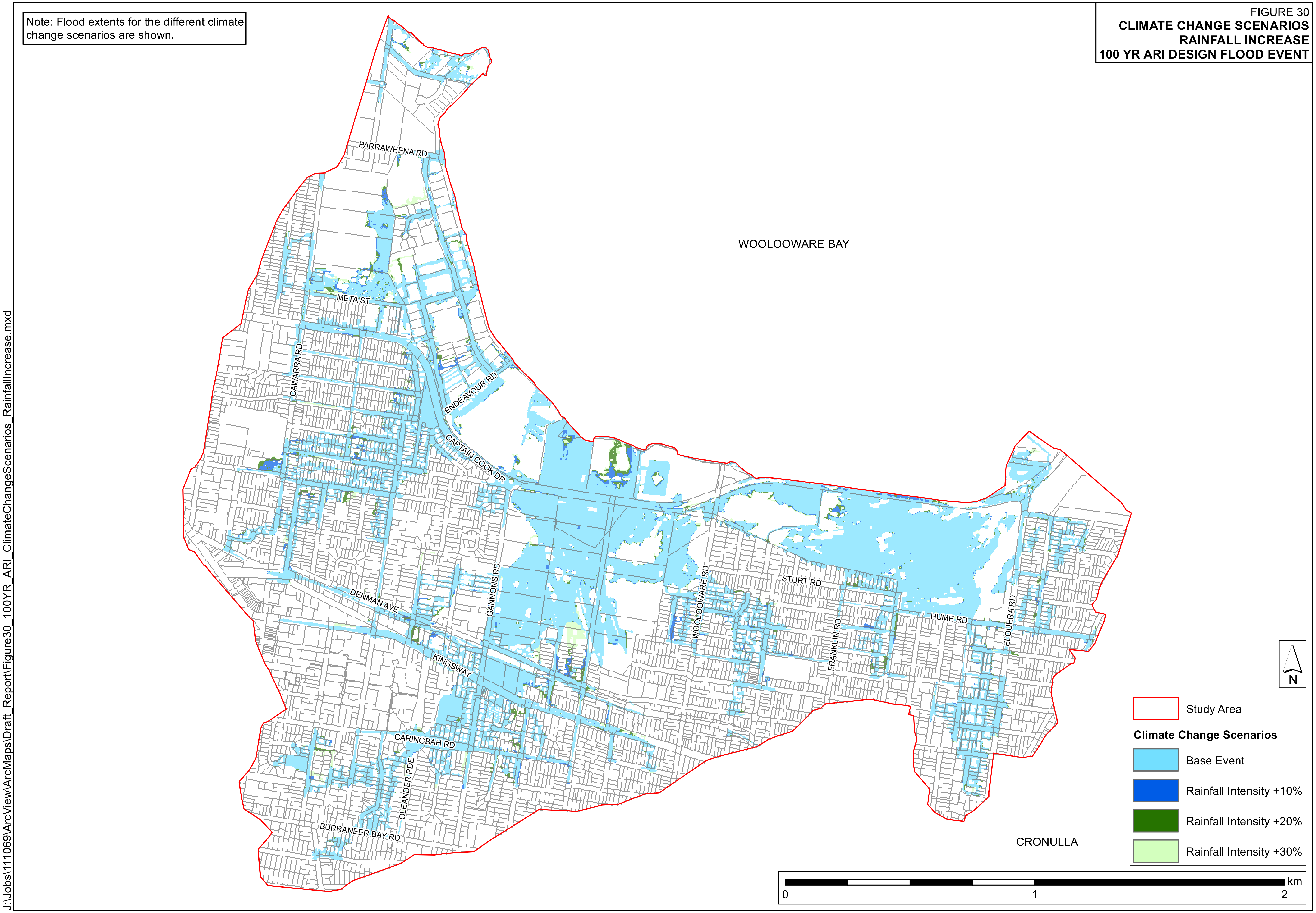
FIGURE 30
CLIMATE CHANGE SCENARIOS
RAINFALL INCREASE
100 YR ARI DESIGN FLOOD EVENT

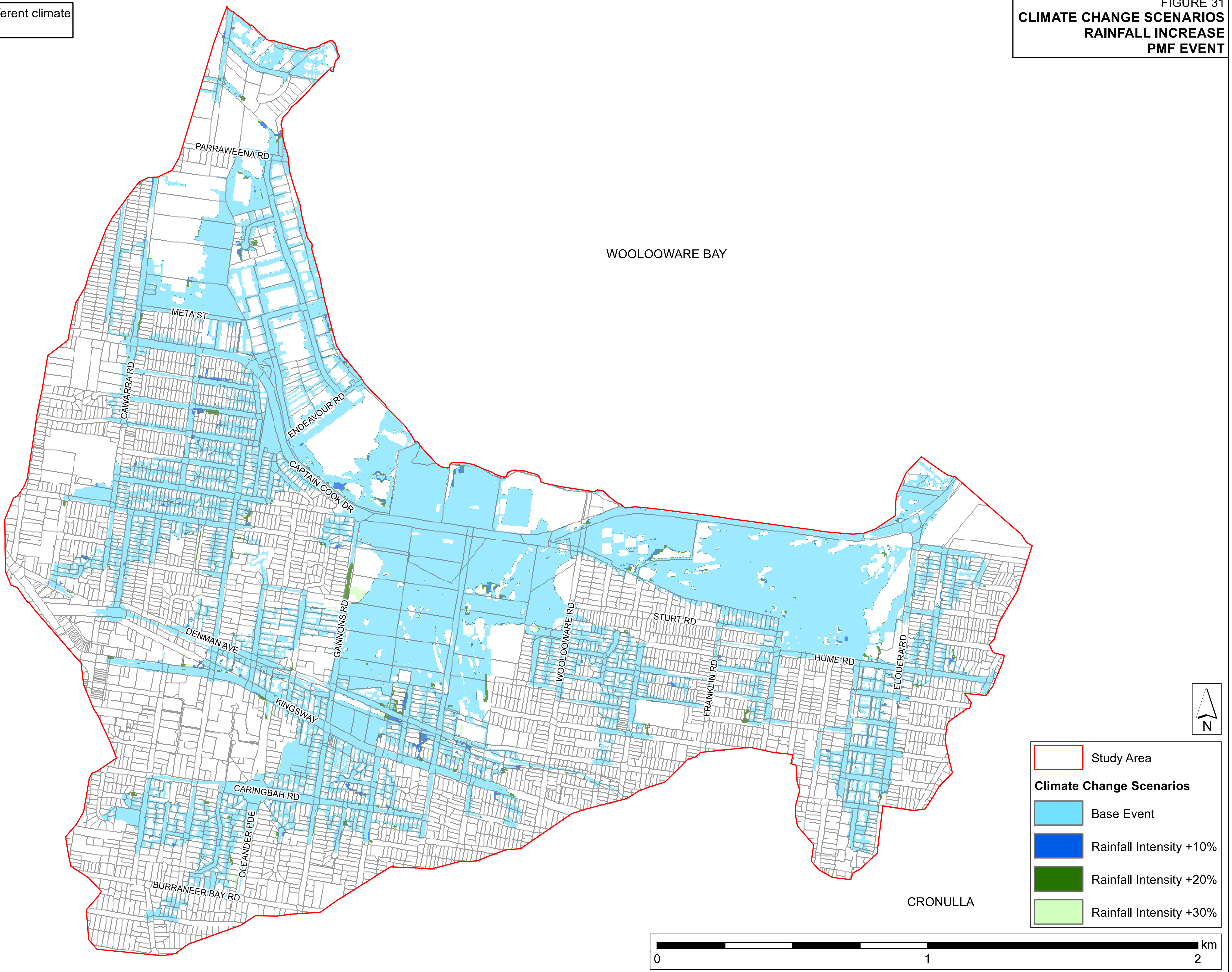
Note: Flood extents for the different climate change scenarios are shown.



J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure30_100YR_ARI_ClimateChangeScenarios_RainfallIncrease.mxd

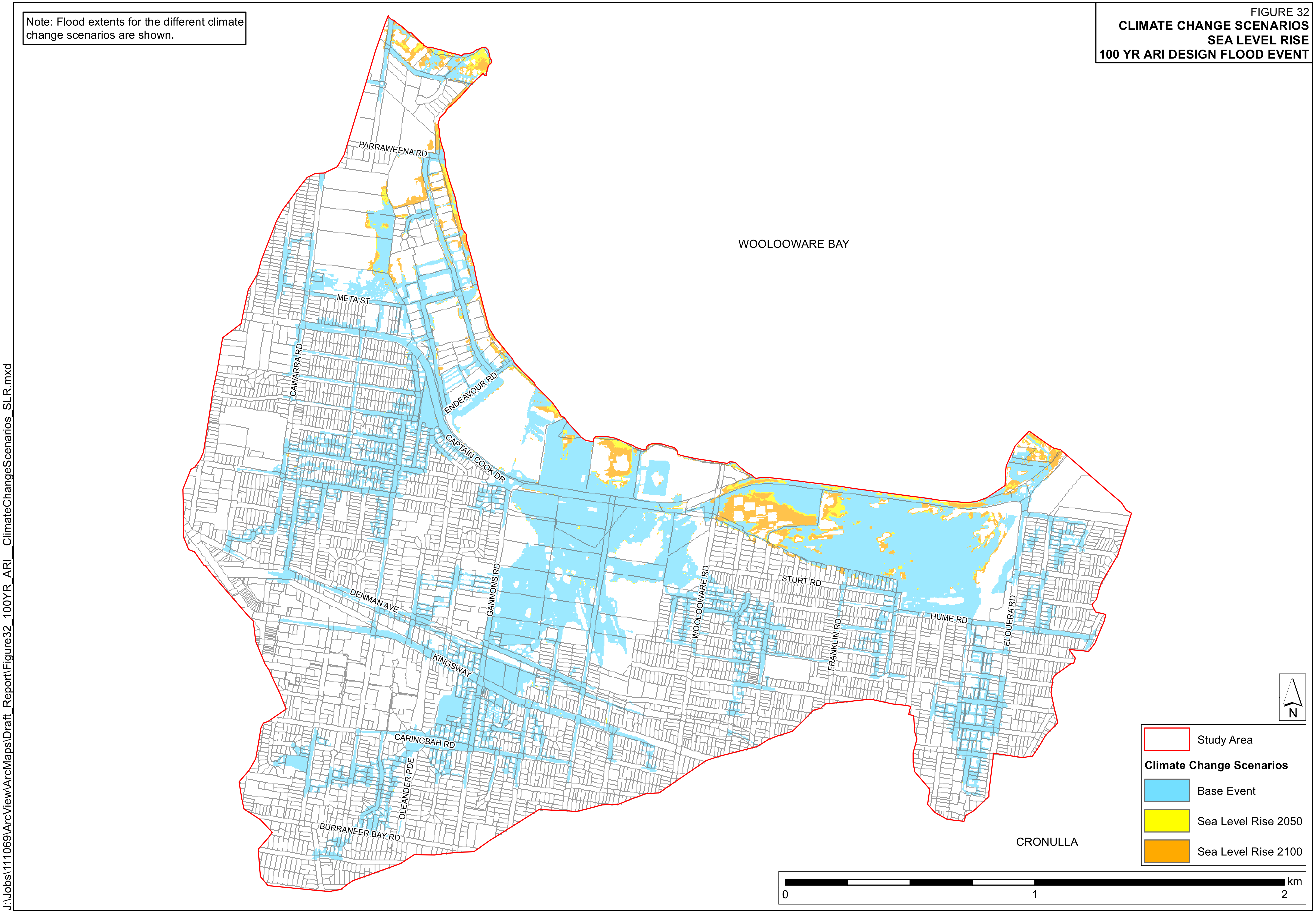
FIGURE 31
CLIMATE CHANGE SCENARIOS
RAINFALL INCREASE
PMF EVENT

Note: Flood extents for the different climate change scenarios are shown.



J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure31_PMF_ClimateChangeScenarios_RainfallIncrease.mxd

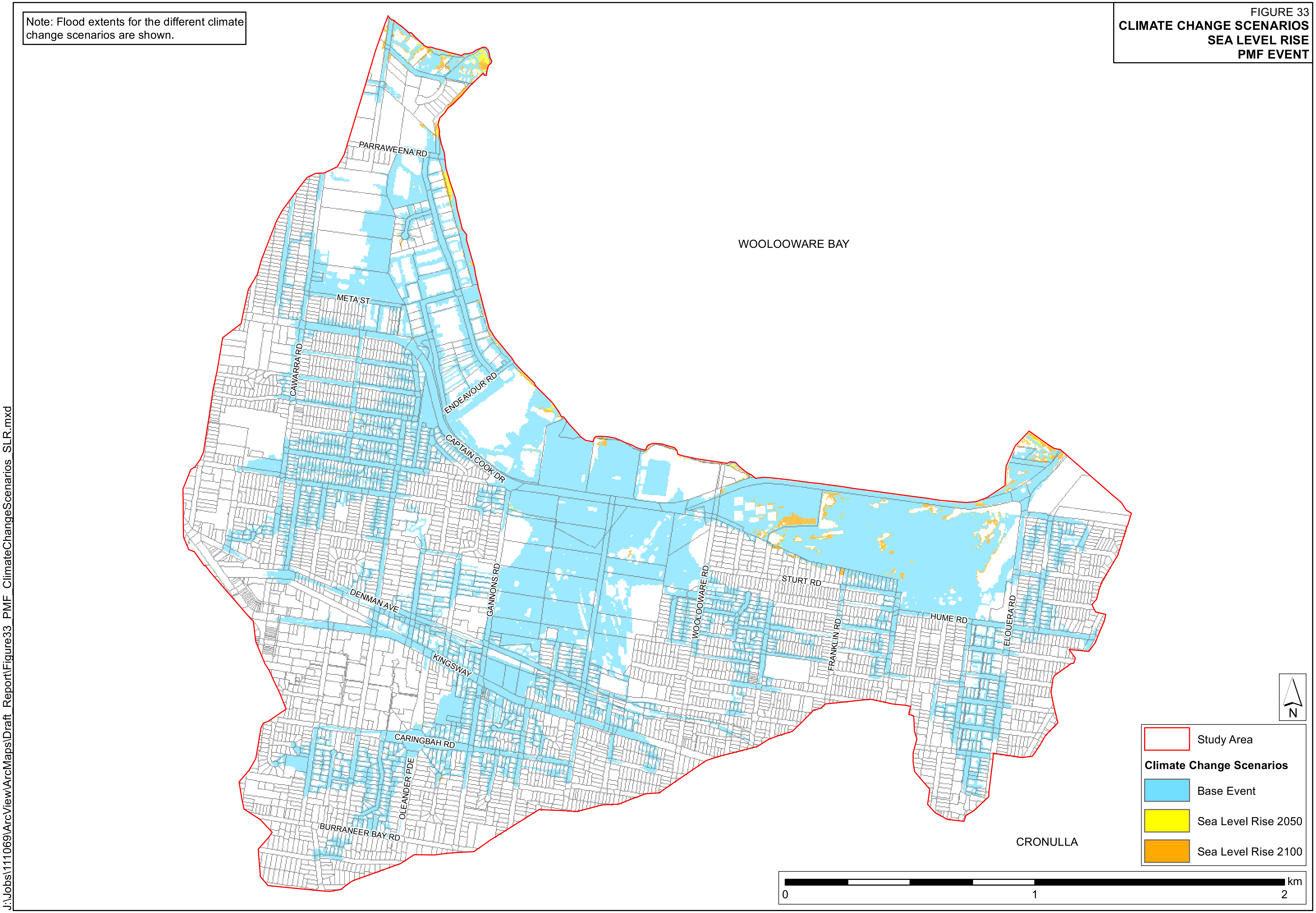
FIGURE 32
CLIMATE CHANGE SCENARIOS
SEA LEVEL RISE
100 YR ARI DESIGN FLOOD EVENT



J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure32_100YR_ARI__ClimateChangeScenarios_SLR.mxd

FIGURE 33
CLIMATE CHANGE SCENARIOS
SEA LEVEL RISE
PMF EVENT

Note: Flood extents for the different climate change scenarios are shown.



J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure33_PMF_ClimateChangeScenarios_SLR.mxd

FIGURE 34A

WOOLOOWARE BAY CATCHMENT FLOOD PROFILES
BANKSIA ROAD TO WOOLOOWARE BAY
ALL DESIGN FLOOD EVENTS

J:\Jobs\111069\MapInfo\FloodProfiles\Figure34A_FloodProfiles_West_DesignFloodEvents.xlsx

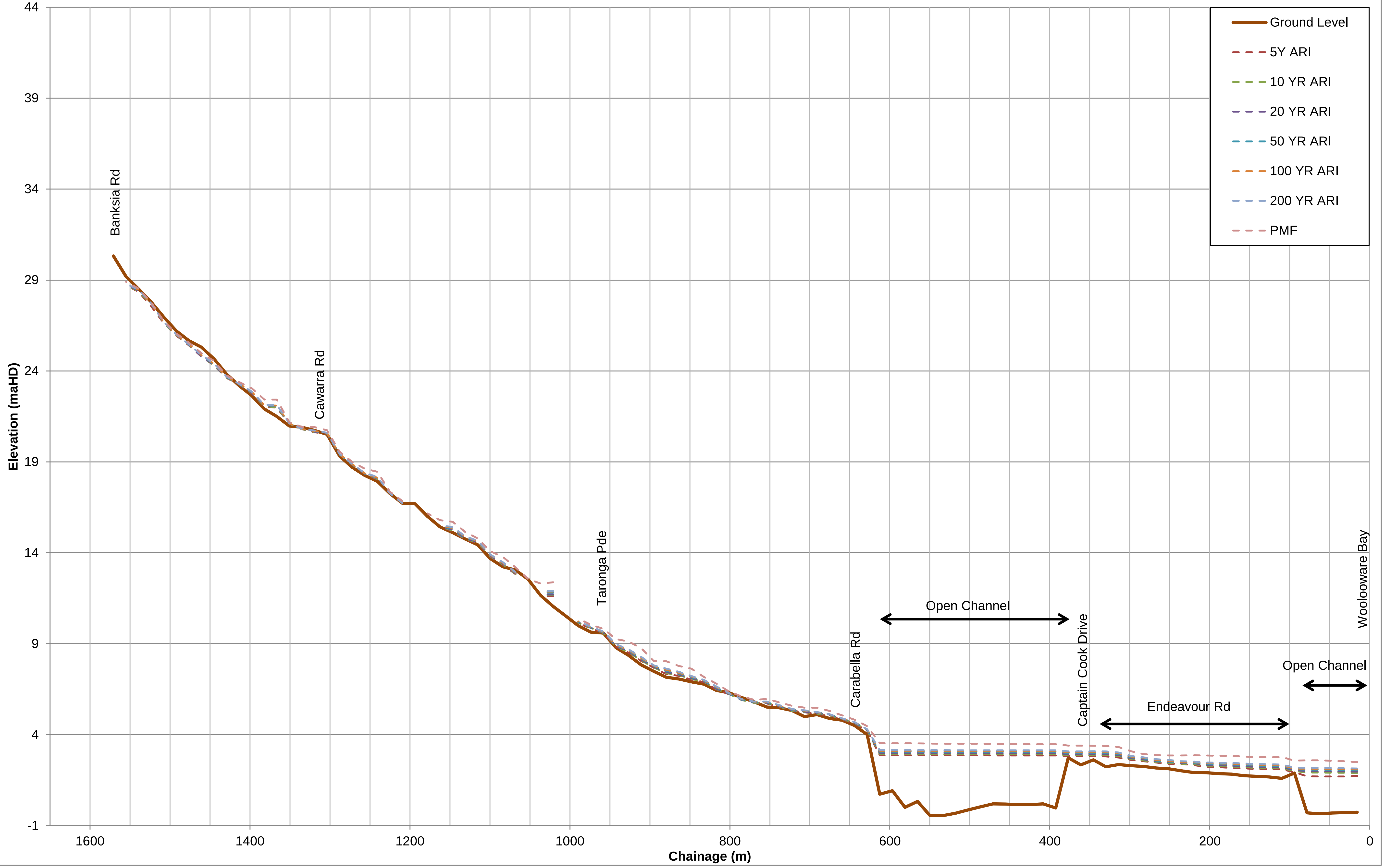


FIGURE 34B
WOOLOOWARE BAY CATCHMENT FLOOD PROFILES
JACARANDA ROAD TO WOOLOOWARE BAY
ALL DESIGN FLOOD EVENTS

J:\Jobs\111069\MapInfo\FloodProfiles\Figure34B_FloodProfiles_Centre_DesignFloodEvents.xlsx

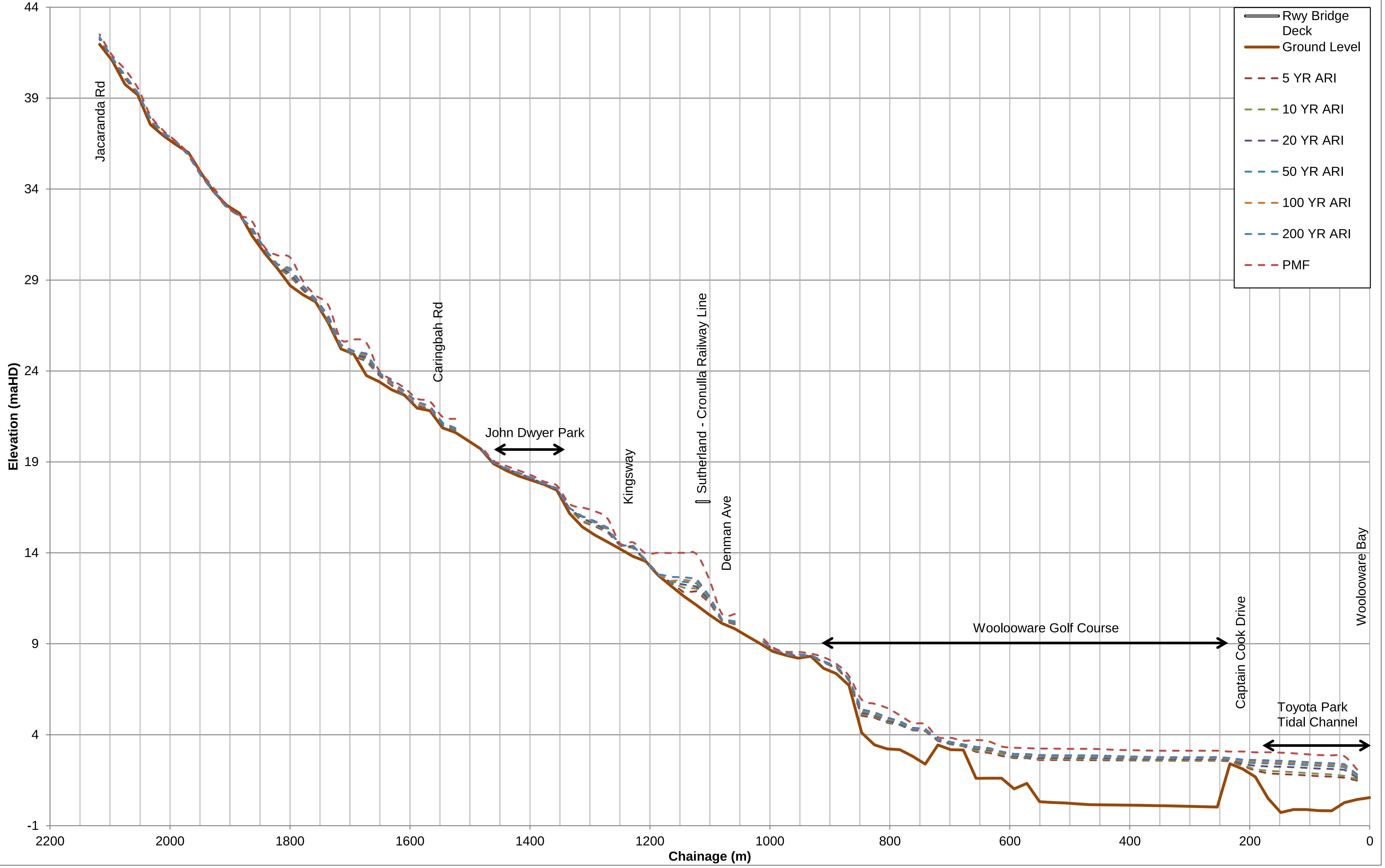


FIGURE 34C

WOOLOOWARE BAY CATCHMENT FLOOD PROFILES
NERANG ROAD TO WOOLOOWARE BAY
ALL DESIGN FLOOD EVENTS

J:\Jobs\111069\MapInfo\FloodProfiles\Figure34C_FloodProfiles_East_DesignFloodEvents.xlsx

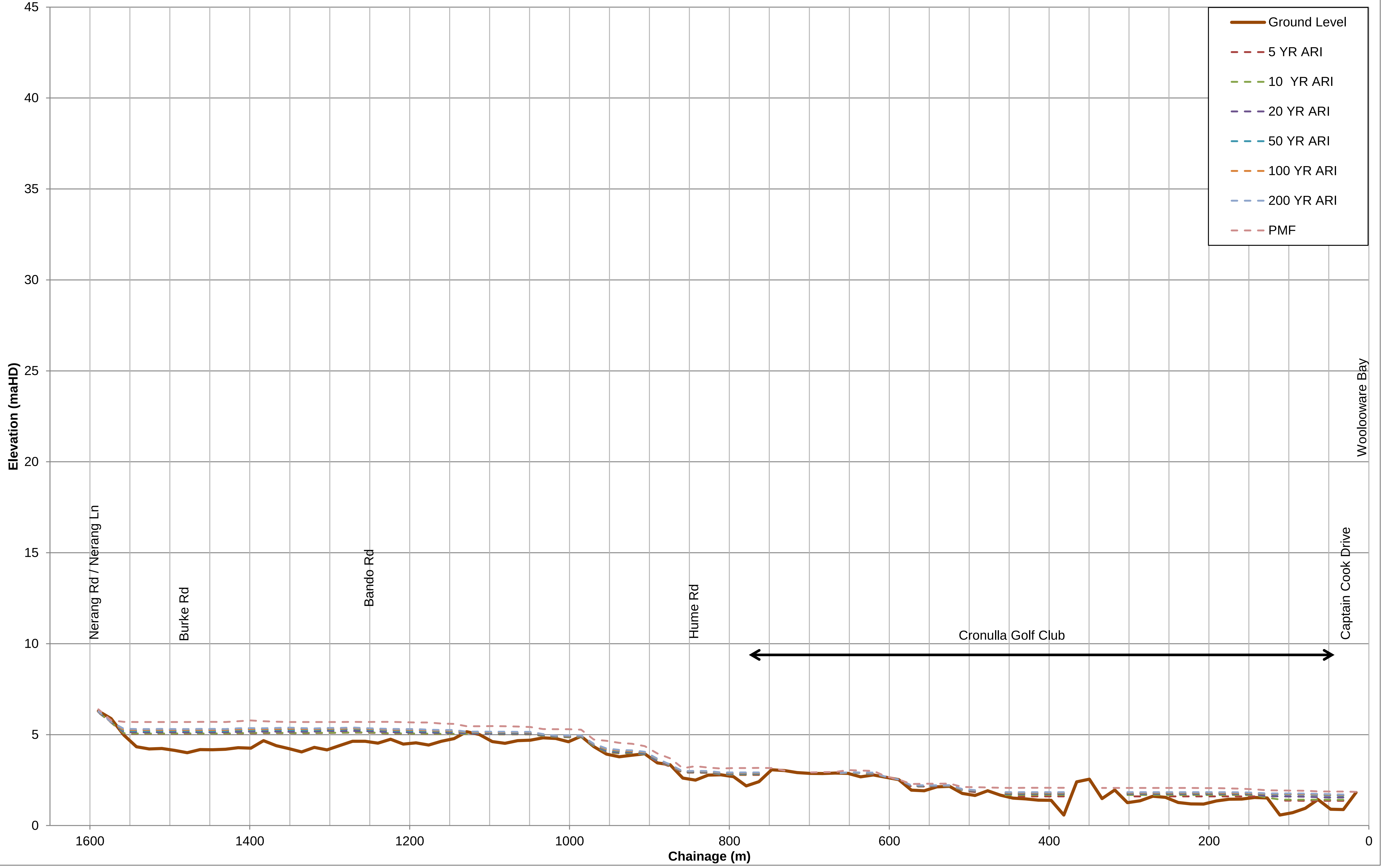


FIGURE 35A

WOOLOOWARE BAY CATCHMENT FLOOD PROFILES
BANKSIA ROAD TO WOOLOOWARE BAY
CLIMATE CHANGE SCENARIOS

J:\Jobs\111069\MapInfo\FloodProfiles\Figure35A_FloodProfiles_West_ClimateChangeScenarios.xlsx

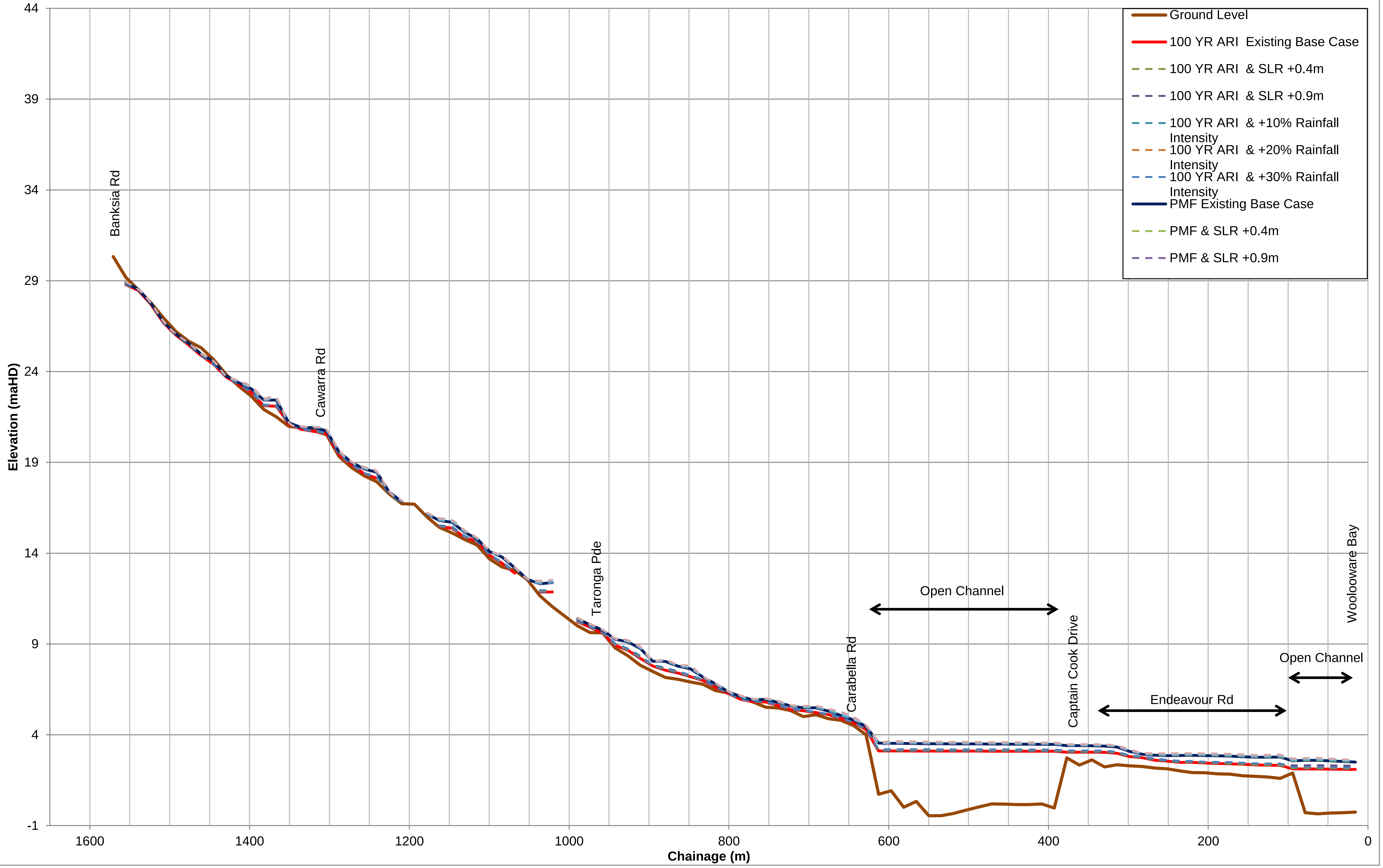


FIGURE 35B

WOOLOOWARE BAY CATCHMENT FLOOD PROFILES
JACARANDA ROAD TO WOOLOOWARE BAY
CLIMATE CHANGE SCENARIOS

J:\Jobs\111069\MapInfo\FloodProfilesFigure35B_FloodProfiles_Centre_ClimateChangeScenariostre.xlsx

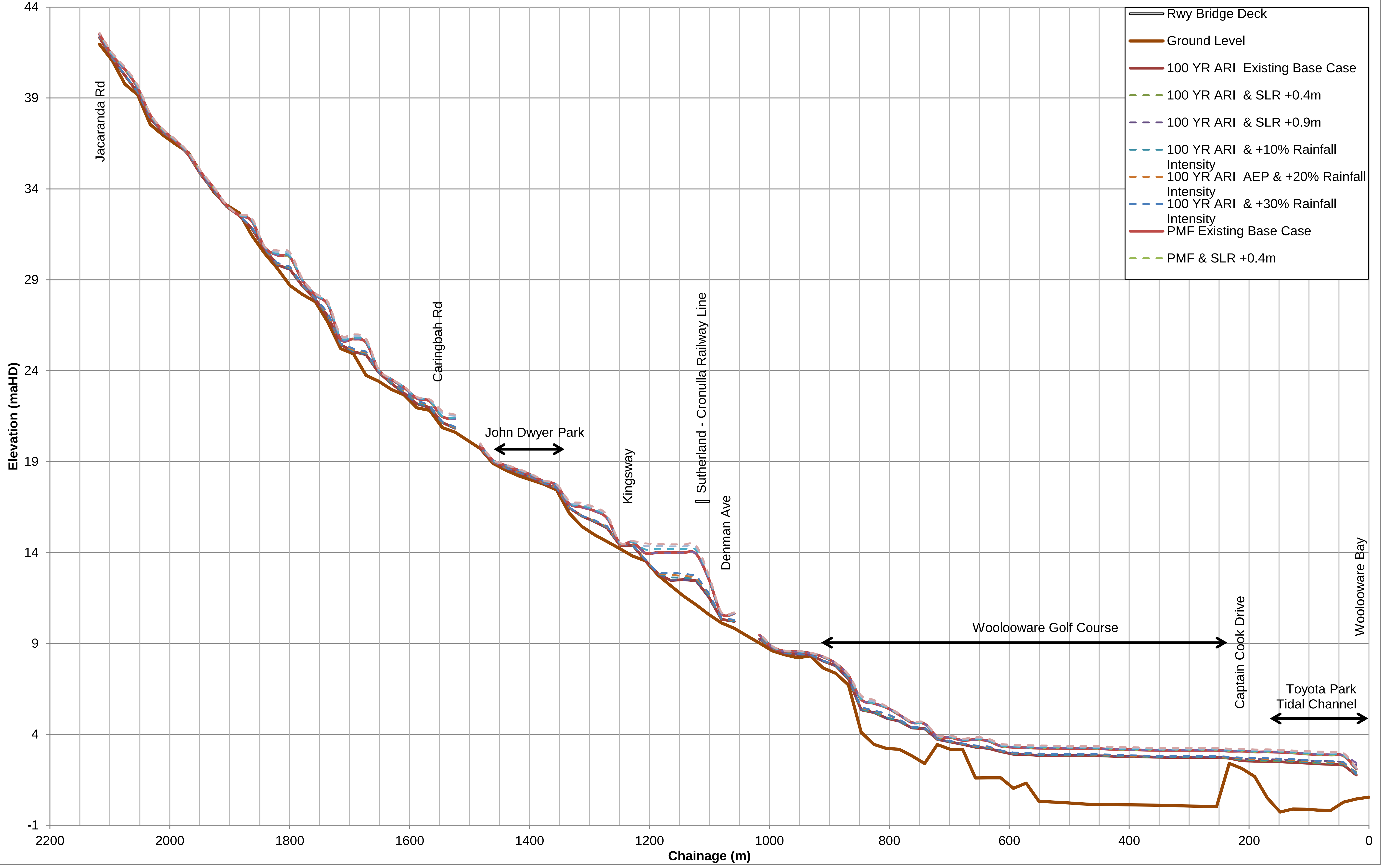


FIGURE 35C

WOOLOOWARE BAY CATCHMENT FLOOD PROFILES
NERANG ROAD TO WOOLOOWARE BAY
CLIMATE CHANGE SCENARIOS

J:\Jobs\111069\MapInfo\FloodProfiles\Figure35C_FloodProfiles_East_ClimateChangeScenariosxlsx

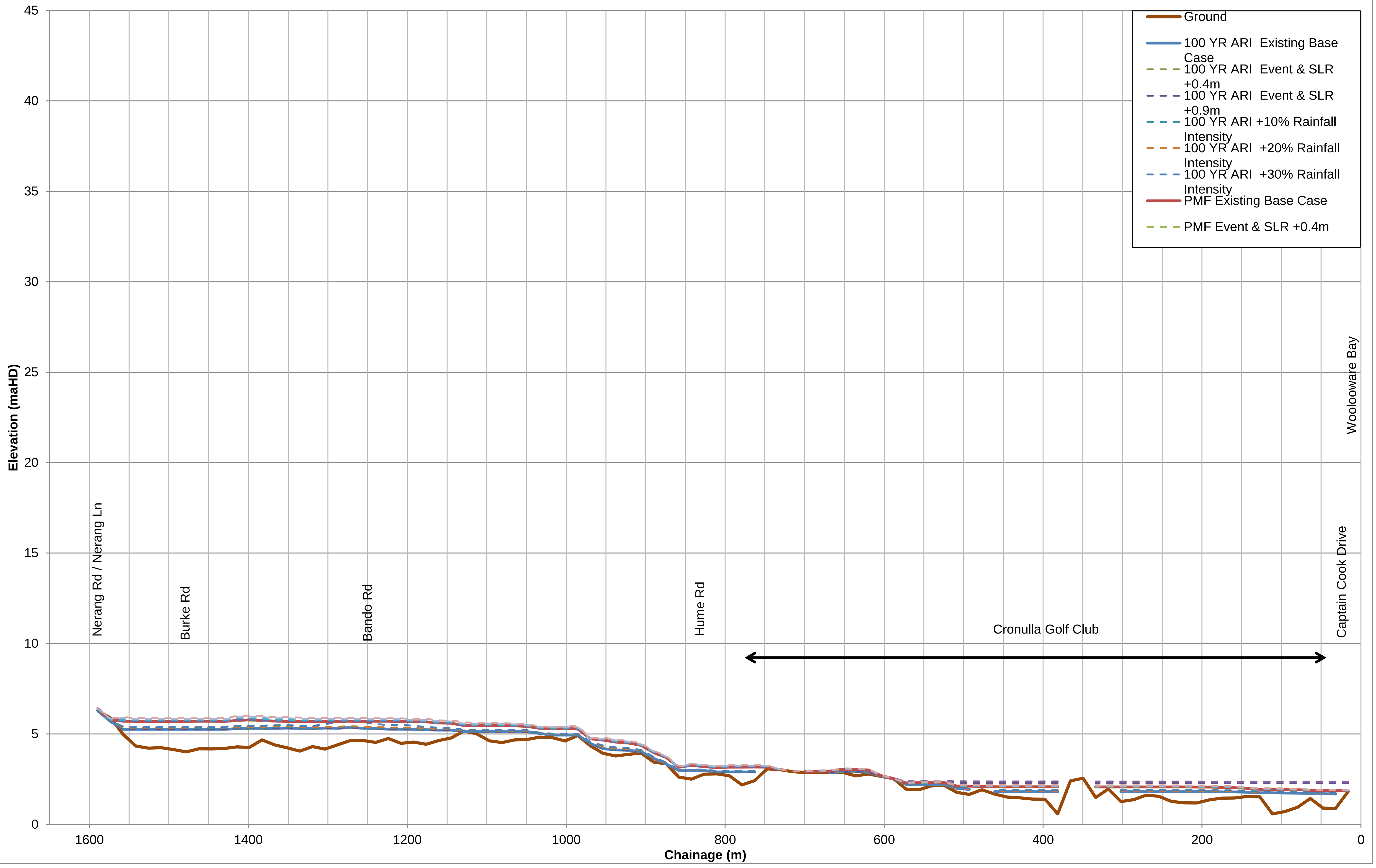


FIGURE 36
PRELIMINARY FLOOD PLANNING AREA

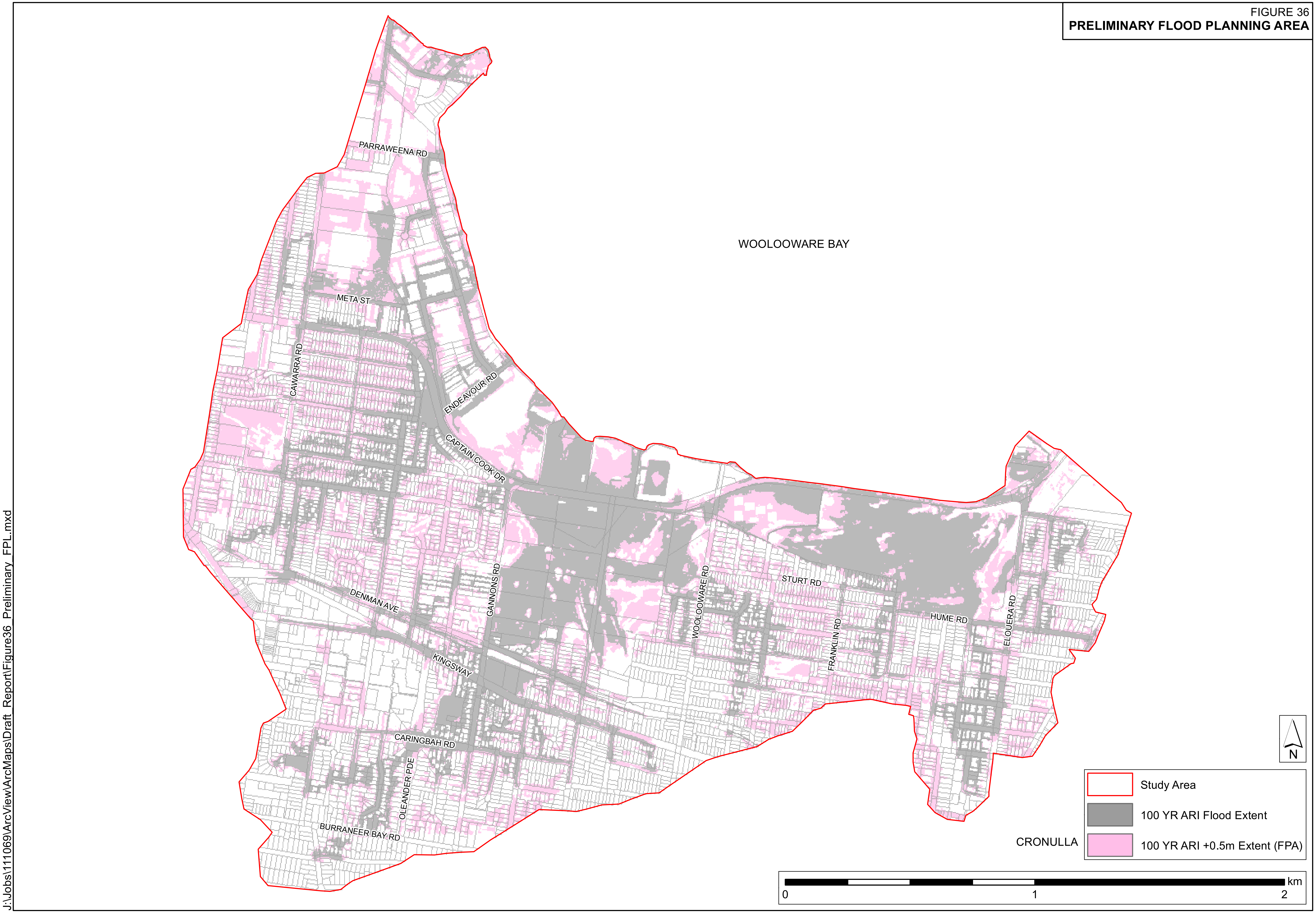


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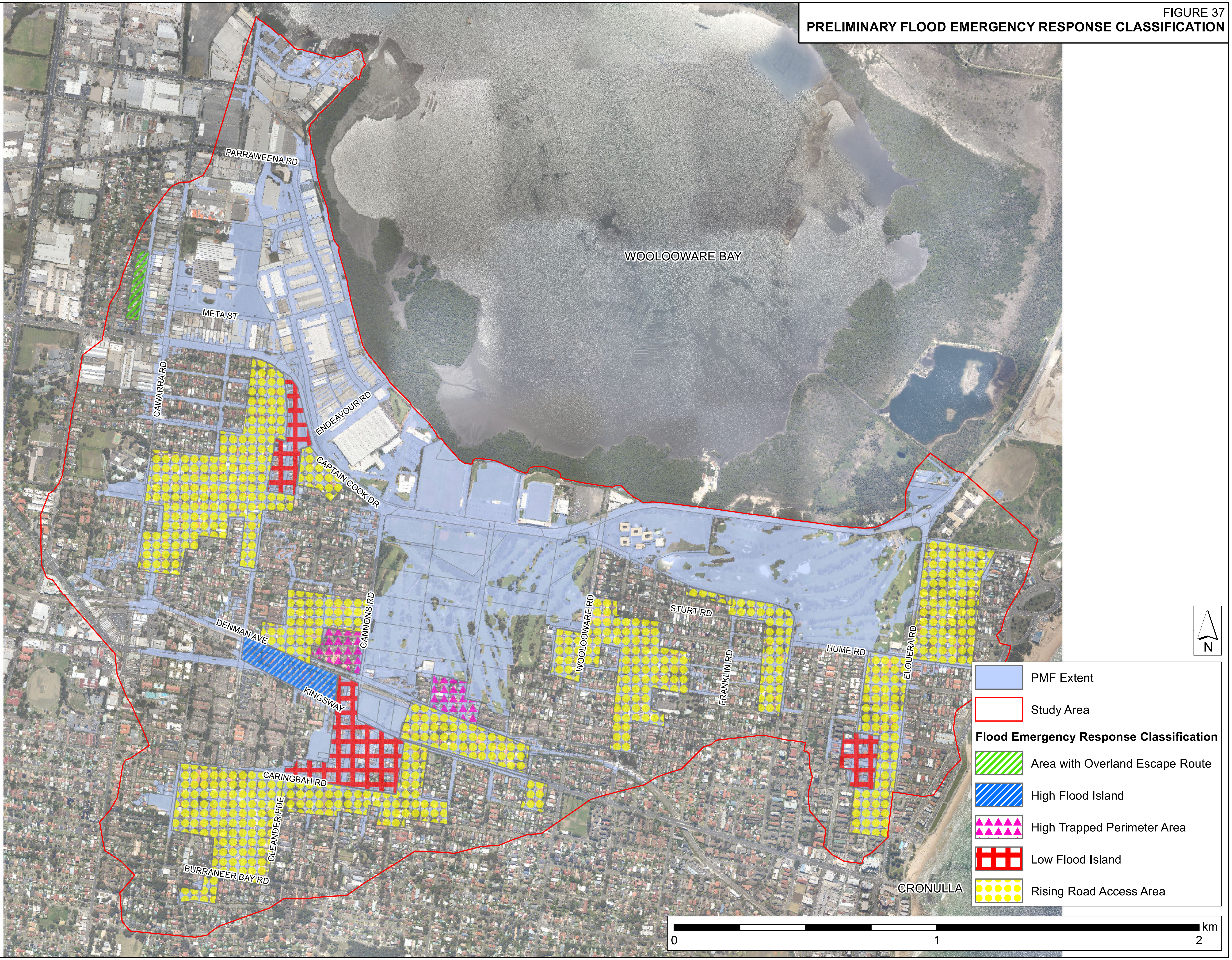
FIGURE 37
PRELIMINARY FLOOD EMERGENCY RESPONSE CLASSIFICATION



J:\Jobs\111069\ArcView\ArcMaps\Draft_Report\Figure37_PMF_FERP_Classification.mxd

Glossary of Terms

Appendix A

APPENDIX A: GLOSSARY

Taken from the Floodplain Development Manual (April 2005 edition)

acid sulfate soils	Are sediments which contain sulfidic mineral pyrite which may become extremely acid following disturbance or drainage as sulfur compounds react when exposed to oxygen to form sulfuric acid. More detailed explanation and definition can be found in the NSW Government Acid Sulfate Soil Manual published by Acid Sulfate Soil Management Advisory Committee.
Annual Exceedance Probability (AEP)	The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood discharge of 500 m^3/s has an AEP of 5%, it means that there is a 5% chance (that is one-in-20 chance) of a 500 m^3/s or larger event occurring in any one year (see ARI).
Australian Height Datum (AHD)	A common national surface level datum approximately corresponding to mean sea level.
Average Annual Damage (AAD)	Depending on its size (or severity), each flood will cause a different amount of flood damage to a flood prone area. AAD is the average damage per year that would occur in a nominated development situation from flooding over a very long period of time.
Average Recurrence Interval (ARI)	The long term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods with a discharge as great as, or greater than, the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.
caravan and moveable home parks	Caravans and moveable dwellings are being increasingly used for long-term and permanent accommodation purposes. Standards relating to their siting, design, construction and management can be found in the Regulations under the LG Act.
catchment	The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.
consent authority	The Council, government agency or person having the function to determine a development application for land use under the EP&A Act. The consent authority is most often the Council, however legislation or an EPI may specify a Minister or public authority (other than a Council), or the Director General of DIPNR, as having the function to determine an application.
development	Is defined in Part 4 of the Environmental Planning and Assessment Act (EP&A Act). **infill development:** refers to the development of vacant blocks of land that are generally surrounded by developed properties and is permissible under the current zoning of the land. Conditions such as minimum floor levels may be imposed on infill development. **new development:** refers to development of a completely different nature to that associated with the former land use. For example, the urban subdivision of an area previously used for rural purposes. New developments involve rezoning and typically require major extensions of existing urban services, such as roads, water supply, sewerage and electric power.

redevelopment: refers to rebuilding in an area. For example, as urban areas age, it may become necessary to demolish and reconstruct buildings on a relatively large scale. Redevelopment generally does not require either rezoning or major extensions to urban services.

disaster plan (DISPLAN) A step by step sequence of previously agreed roles, responsibilities, functions, actions and management arrangements for the conduct of a single or series of connected emergency operations, with the object of ensuring the coordinated response by all agencies having responsibilities and functions in emergencies.

discharge The rate of flow of water measured in terms of volume per unit time, for example, cubic metres per second (m^3/s). Discharge is different from the speed or velocity of flow, which is a measure of how fast the water is moving for example, metres per second (m/s).

ecologically sustainable development (ESD) Using, conserving and enhancing natural resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be maintained or increased. A more detailed definition is included in the Local Government Act 1993. The use of sustainability and sustainable in this manual relate to ESD.

effective warning time The time available after receiving advice of an impending flood and before the floodwaters prevent appropriate flood response actions being undertaken. The effective warning time is typically used to move farm equipment, move stock, raise furniture, evacuate people and transport their possessions.

emergency management A range of measures to manage risks to communities and the environment. In the flood context it may include measures to prevent, prepare for, respond to and recover from flooding.

flash flooding Flooding which is sudden and unexpected. It is often caused by sudden local or nearby heavy rainfall. Often defined as flooding which peaks within six hours of the causative rain.

flood Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.

flood awareness Flood awareness is an appreciation of the likely effects of flooding and a knowledge of the relevant flood warning, response and evacuation procedures.

flood education Flood education seeks to provide information to raise awareness of the flood problem so as to enable individuals to understand how to manage themselves an their property in response to flood warnings and in a flood event. It invokes a state of flood readiness.

flood fringe areas The remaining area of flood prone land after floodway and flood storage areas have been defined.

flood liable land Is synonymous with flood prone land (i.e. land susceptible to flooding by the probable maximum flood (PMF) event). Note that the term flood liable land covers the whole of the floodplain, not just that part below the flood planning level (see flood planning area).

flood mitigation standard	The average recurrence interval of the flood, selected as part of the floodplain risk management process that forms the basis for physical works to modify the impacts of flooding.
floodplain	Area of land which is subject to inundation by floods up to and including the probable maximum flood event, that is, flood prone land.
floodplain risk management options	The measures that might be feasible for the management of a particular area of the floodplain. Preparation of a floodplain risk management plan requires a detailed evaluation of floodplain risk management options.
floodplain risk management plan	A management plan developed in accordance with the principles and guidelines in this manual. Usually includes both written and diagrammetic information describing how particular areas of flood prone land are to be used and managed to achieve defined objectives.
flood plan (local)	A sub-plan of a disaster plan that deals specifically with flooding. They can exist at State, Division and local levels. Local flood plans are prepared under the leadership of the State Emergency Service.
flood planning area	The area of land below the flood planning level and thus subject to flood related development controls. The concept of flood planning area generally supersedes the “flood liable land” concept in the 1986 Manual.
Flood Planning Levels (FPLs)	FPLs are the combinations of flood levels (derived from significant historical flood events or floods of specific AEPs) and freeboards selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans. FPLs supersede the “standard flood event” in the 1986 manual.
flood proofing	A combination of measures incorporated in the design, construction and alteration of individual buildings or structures subject to flooding, to reduce or eliminate flood damages.
flood prone land	Is land susceptible to flooding by the Probable Maximum Flood (PMF) event. Flood prone land is synonymous with flood liable land.
flood readiness	Flood readiness is an ability to react within the effective warning time.
flood risk	Potential danger to personal safety and potential damage to property resulting from flooding. The degree of risk varies with circumstances across the full range of floods. Flood risk in this manual is divided into 3 types, existing, future and continuing risks. They are described below. **existing flood risk:** the risk a community is exposed to as a result of its location on the floodplain. **future flood risk:** the risk a community may be exposed to as a result of new development on the floodplain. **continuing flood risk:** the risk a community is exposed to after floodplain risk management measures have been implemented. For a town protected by levees, the continuing flood risk is the consequences of the levees being overtopped. For an area without any floodplain risk management measures, the continuing flood risk is simply the existence of its flood exposure.
flood storage areas	Those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood

	storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation. Hence, it is necessary to investigate a range of flood sizes before defining flood storage areas.
floodway areas	Those areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with naturally defined channels. Floodways are areas that, even if only partially blocked, would cause a significant redistribution of flood flows, or a significant increase in flood levels.
freeboard	Freeboard provides reasonable certainty that the risk exposure selected in deciding on a particular flood chosen as the basis for the FPL is actually provided. It is a factor of safety typically used in relation to the setting of floor levels, levee crest levels, etc. Freeboard is included in the flood planning level.
habitable room	**in a residential situation:** a living or working area, such as a lounge room, dining room, rumpus room, kitchen, bedroom or workroom. **in an industrial or commercial situation:** an area used for offices or to store valuable possessions susceptible to flood damage in the event of a flood.
hazard	A source of potential harm or a situation with a potential to cause loss. In relation to this manual the hazard is flooding which has the potential to cause damage to the community. Definitions of high and low hazard categories are provided in the Manual.
hydraulics	Term given to the study of water flow in waterways; in particular, the evaluation of flow parameters such as water level and velocity.
hydrograph	A graph which shows how the discharge or stage/flood level at any particular location varies with time during a flood.
hydrology	Term given to the study of the rainfall and runoff process; in particular, the evaluation of peak flows, flow volumes and the derivation of hydrographs for a range of floods.
local overland flooding	Inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.
local drainage	Are smaller scale problems in urban areas. They are outside the definition of major drainage in this glossary.
mainstream flooding	Inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estuary, lake or dam.
major drainage	Councils have discretion in determining whether urban drainage problems are associated with major or local drainage. For the purpose of this manual major drainage involves: ▪ the floodplains of original watercourses (which may now be piped, channelised or diverted), or sloping areas where overland flows develop along alternative paths once system capacity is exceeded; and/or ▪ water depths generally in excess of 0.3 m (in the major system design storm as defined in the current version of Australian Rainfall and Runoff). These conditions may result in danger to personal safety and property damage to both premises and vehicles; and/or

- major overland flow paths through developed areas outside of defined drainage reserves; and/or
- the potential to affect a number of buildings along the major flow path.

mathematical/computer models The mathematical representation of the physical processes involved in runoff generation and stream flow. These models are often run on computers due to the complexity of the mathematical relationships between runoff, stream flow and the distribution of flows across the floodplain.

merit approach The merit approach weighs social, economic, ecological and cultural impacts of land use options for different flood prone areas together with flood damage, hazard and behaviour implications, and environmental protection and well being of the State's rivers and floodplains.

The merit approach operates at two levels. At the strategic level it allows for the consideration of social, economic, ecological, cultural and flooding issues to determine strategies for the management of future flood risk which are formulated into Council plans, policy and EPIs. At a site specific level, it involves consideration of the best way of conditioning development allowable under the floodplain risk management plan, local floodplain risk management policy and EPIs.

minor, moderate and major flooding Both the State Emergency Service and the Bureau of Meteorology use the following definitions in flood warnings to give a general indication of the types of problems expected with a flood:

minor flooding: causes inconvenience such as closing of minor roads and the submergence of low level bridges. The lower limit of this class of flooding on the reference gauge is the initial flood level at which landholders and townspeople begin to be flooded.

moderate flooding: low-lying areas are inundated requiring removal of stock and/or evacuation of some houses. Main traffic routes may be covered.

major flooding: appreciable urban areas are flooded and/or extensive rural areas are flooded. Properties, villages and towns can be isolated.

modification measures Measures that modify either the flood, the property or the response to flooding. Examples are indicated in Table 2.1 with further discussion in the Manual.

peak discharge The maximum discharge occurring during a flood event.

Probable Maximum Flood (PMF) The PMF is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation, and where applicable, snow melt, coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The PMF defines the extent of flood prone land, that is, the floodplain. The extent, nature and potential consequences of flooding associated with a range of events rarer than the flood used for designing mitigation works and controlling development, up to and including the PMF event should be addressed in a floodplain risk management study.

Probable Maximum Precipitation (PMP) The PMP is the greatest depth of precipitation for a given duration meteorologically possible over a given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends

	(World Meteorological Organisation, 1986). It is the primary input to PMF estimation.
probability	A statistical measure of the expected chance of flooding (see AEP).
risk	Chance of something happening that will have an impact. It is measured in terms of consequences and likelihood. In the context of the manual it is the likelihood of consequences arising from the interaction of floods, communities and the environment.
runoff	The amount of rainfall which actually ends up as streamflow, also known as rainfall excess.
stage	Equivalent to water level. Both are measured with reference to a specified datum.
stage hydrograph	A graph that shows how the water level at a particular location changes with time during a flood. It must be referenced to a particular datum.
survey plan	A plan prepared by a registered surveyor.
water surface profile	A graph showing the flood stage at any given location along a watercourse at a particular time.
wind fetch	The horizontal distance in the direction of wind over which wind waves are generated.

Community Survey Questionnaire

Appendix B

Sutherland Shire
COUNCIL

WOOLOOWARE BAY CATCHMENT FLOOD STUDY QUESTIONNAIRE

Introduction

Sutherland Shire Council has engaged stormwater and flood consultants WMAwater to undertake a flood study for the Woolooware Bay Catchment. The study will identify existing flood behaviour within the catchment and the possible effects of climate change, providing a basis for completing a management plan for the Catchment.

This survey will enable us to collect information about flooding you may have experienced or witnessed. Your local knowledge of the catchment and personal experiences of flooding are an important source of information. This information will help us better understand where stormwater flooding occurs in the catchment and lead to better management of existing and potential future flood hazards.

Woolooware Bay Catchment Area

* If you have any questions about the flood study please contact Council's consultant at WMAwater, Stephen Gray, on 9299 2855 or e-mail wfs@wmawater.com.au

* If you have any questions about this survey please contact Council's Stormwater Engineer, Shelley Reed, on 9710 0392 or e-mail sreed@ssc.nsw.gov.au

General Information

1. Which of the following describes your connection with the Woolooware Bay Catchment area? (Tick all that apply)

- ☐ Live in the area
- ☐ Work in the area
- ☐ Visit the area
- ☐ Operate a business in the area
- ☐ Other (please specify) ______________________

2. How long have you been in the Woolooware Bay Catchment area?

Years ______________________

3. Have you ever been inconvenienced by uncontrolled floodwater/stormwater from streets or drains in the Woolooware Bay Catchment area?

- ☐ Yes
- ☐ No

General Impacts from Flooding

4. How often does this happen?

- ☐ 3 or more times a year
- ☐ 1 to 2 times a year
- ☐ Once every 2 to 3 years
- ☐ Once every 5 or more years
- ☐ Other (please specify) ______________________

5. What sort of impacts and inconvenience did you experience?
Please complete the table below and provide as much detail as possible eg. dates/times/description.

Daily routine was affected (eg. it was difficult to get to work)	
Safety was threatened	
Access to property was affected (eg. driveways or roads flooded)	
Property and/or its contents were damaged	
Business was able to operate during the flooded period	
Other (please specify)	

Personal Impacts from Flooding

6. Has your home, business or place of work been flooded because of uncontrolled floodwater/stormwater from streets or drains in the Woolooware Bay Catchment area?

☐ Yes

☐ No

Details of Personal Impacts

7. When did this occur? (tick all that apply)

☐ March 1975

☐ August 1986

☐ February 1990

☐ May 2003

☐ Other (please specify) ____________________

8. Which part of your property flooded and when did it happen?

Frontyard ____________________

Backyard ____________________

Garage or Shed ____________________

Residential (below floor level) ____________________

Residential (above floor level) ____________________

Commercial (eg. shops) (above floor level) ____________________

Commercial (below floor level) ____________________

Industrial (eg. factories) ____________________

Other (please specify) ____________________

Other Location Impacts

9. Please provide location and description details of any other places you have seen flooded within the Woolooware Bay Catchment area?

Residential or Commmercial ____________________

Roads or Footpaths ____________________

Parks ____________________

Other (please specify) ____________________

10. Did you notice any drains or inlet pits that were blocked during the flooding?

☐ Yes

☐ No

If yes, please provide details including location, what was blocking it and how blocked would you say it was (i.e. 50% blocked, 80% blocked).

____

11. Would you be willing to share any evidence that you have of past floods (eg. photos, video footage, watermarks on walls or posts)?

☐ Yes, I will email them to you (wfs@wmawater.com.au)

☐ Yes, I will post them to you (WMAwater, Level 2, 160 Clarence St, Sydney 2000)

☐ Yes, please contact me so I can show you (please provide your contact details below)

☐ No

☐ Other (please specify) ____________________

Contact & Involvement

12. The purpose of this study is to enable Council to better understand, plan and manage the potential flood risk. You may be contacted to discuss some of the information you provided.

Name ______________________________

Address ______________________________

City/Town ______________________________

Email Address ______________________________

13. Do you have any more information you think might help the Woolooware Bay Catchment Flood Study? Please provide details.

____

____

____

____

14. Are you interested in taking part in the Floodplain Risk Management Committee? The Committee will oversee the Floodplain Risk Management Process.

☐ Yes

☐ No

Meetings will occur quarterly and will take 1-2 hours at a time. If you would like to be considered to take part, please provide your details above so that our staff can contact you.

Thank you for taking the time to participate in the survey. Please remember to place all pages in the reply paid envelope and post it to WMAwater by the 1st March 2012. A representative from WMAwater may contact you in the near future to discuss your response.

Pits and Pipes Database

Appendix C

Pit_ID	Pit_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pit/Headwall_Type	Condition	Length of Grate/Inlet	Width of Grate/Inlet	Height of Headwall	Width of Headwall	Depth from Kerb/[Surface] to Invert	Depth from Kerb to Grate/Inlet	Lintel	Grate	X Coordinate	Y Coordinate	Surface RL on Kerb/Surface	Indicative Invert (mAHD)	Estimated or Surveyed
10116		Franklin Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.16	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329094.477	6231491.592	16.093	15.133	surveyed
10117		Franklin Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.45			0.91	0.18	3.0M LINTEL	GALVANISED GRATE	329090.896	6231466.5	16.116	15.386	surveyed
10118		Franklin Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			0.82	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329086.715	6231436.064	16.163	15.513	surveyed
10119		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.27	0.2	2.4M LINTEL	GALVANISED GRATE	329194.96	6231410.789	11.498	10.428	surveyed
10120		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.01	0.43			1.8	0.19	1.0M LINTEL	GALVANISED GRATE	329243.455	6231410.962	9.202	7.592	surveyed
10121		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.43			1.2	0.2	2.4M LINTEL	GALVANISED GRATE	329255.986	6231402.116	9.380	8.380	surveyed
10124		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1.46	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329302.45	6231385.962	10.555	9.295	surveyed
10125		Kurnell Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.5+	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329312.589	6231379.526	10.499	10.109	surveyed
10126		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1.12	0.2	3.6M LINTEL	DOUBLE IRON GRATE	329408.658	6231465.458	4.467	3.547	surveyed
10127		Judd Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	329412.965	6231442.172	5.829	4.929	surveyed
10128		Judd Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.01	0.2	2.4M LINTEL	DOUBLE IRON GRATE	329423.21	6231449.762	5.225	4.415	surveyed
10129		Hume Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329424	6231464	N/A	3.537	estimated
10130		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.13	0.2	>=4.2M LINTEL	GALVANISED GRATE	329505.419	6231453.059	4.076	3.146	surveyed
10131		Seaview Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.11	0.19	>=4.2M LINTEL	DOUBLE IRON GRATE	329512.886	6231437.056	4.825	3.905	surveyed
10133		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.53			1.22	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329534.208	6231449.315	3.947	2.937	surveyed
10134		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.26	0.21	3.6M LINTEL	DOUBLE IRON GRATE	329602.883	6231440.408	2.849	1.799	surveyed
10135		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.08	0.17	1.0M LINTEL	DOUBLE IRON GRATE	329611.358	6231438.251	2.746	1.836	surveyed
10136		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.9	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329623.375	6231428.147	3.034	2.344	surveyed
10137		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.67	0.21	3.6M LINTEL	DOUBLE IRON GRATE	329650.039	6231434.277	3.337	1.857	surveyed
10138		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.08	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329608.348	6231394.834	3.757	2.867	surveyed
10139		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.1	1.1			N/A	N/A	No Lintel	CONCRETE LID	329618.368	6231401.823	3.441	1.941	estimated
10140		Wyanbah Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329614	6231357	N/A	3.128	estimated
10141		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.3	0.18	3.0M LINTEL	DOUBLE IRON GRATE	329602.871	6231352.615	5.119	3.999	surveyed
10142		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.15	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329608.488	6231325.336	6.934	5.984	surveyed
10143		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.09	0.18	3.0M LINTEL	DOUBLE IRON GRATE	329598.706	6231303.304	7.703	6.793	surveyed
10145		Hume Road - Cronulla	Stormwater Pit	Stormwater Pit	Very Good	0.96	0.56			1.4	0.19	3.6M LINTEL	DOUBLE IRON GRATE	329611.006	6231450.544	2.791	1.581	surveyed
10146		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.67	0.21	3.6M LINTEL	DOUBLE IRON GRATE	329702.184	6231427.675	3.804	2.344	surveyed
10147		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.41	0.2	3.6M LINTEL	DOUBLE IRON GRATE	329759.854	6231420.245	4.269	2.799	surveyed
10148		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.96	0.17	1.0M LINTEL	DOUBLE IRON GRATE	329787.746	6231430.932	4.498	3.708	surveyed
10149		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.08	0.2	3.6M LINTEL	DOUBLE IRON GRATE	329785.191	6231412.073	4.384	3.454	surveyed
10150		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.57			1.44	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329099.892	6231577.886	10.791	9.521	surveyed
10152		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.98	0.55			Abt 1.3	0.18	2.4M LINTEL	DOUBLE IRON GRATE	329142.023	6231572.004	8.921	7.801	surveyed
10153		Sturt Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329106	6231577	N/A	9.511	estimated
10154		Croydon Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.56			Abt 0.55	0.18	2.4M LINTEL	DOUBLE IRON GRATE	329467.369	6230722.607	15.221	14.851	surveyed
10155		Croydon Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			0.53	0.2	2.4M LINTEL	DOUBLE IRON GRATE	329479.939	6230721.211	14.912	14.582	surveyed
10156		Nerang Road - Cronulla	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329572	6230715	N/A	11.103	estimated
10157		Nerang Road - Cronulla	Stormwater Pit	Grated Pit	Fair	1.1	0.8			1.08	N/A	No Lintel	GALVANISED GRATE	329590.961	6230769.468	6.342	5.262	Surveyed
10158		Nerang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			0.97	0.2	2.4M LINTEL	DOUBLE IRON GRATE	329601.33	6230759.208	6.285	5.515	surveyed
10160		Nerang Lane - Cronulla	Stormwater Pit	Grated Pit	Fair	0.9	0.46			0.74	0.15	3.0M LINTEL	DOUBLE IRON GRATE	329626.923	6230752.601	6.125	5.535	surveyed
10166	CGC-14	Cronulla Golf Course	Headwall	Concrete Headwall	Very Good	N/A	N/A	1	3.4	1	0.25	Not Applicable	GALVANISED GRATE	329617.817	6231491.246	2.528	1.778	surveyed
10167	CGC-18	Cronulla Golf Course	Headwall	Concrete Headwall	Very Good	N/A	N/A	1.2	2.1	1.2	0.53	Not Applicable	GRATE INSTALLED	329605.719	6231518.592	2.281	1.611	surveyed
10168	CGC-7	Cronulla Golf Course	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329509	6231527	N/A	1.900	estimated
10169	CGC-6	Cronulla Golf Course	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329409	6231529	N/A	1.609	estimated
10170	CGC-5	Cronulla Golf Course	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	No Lintel	NO GRATE INSTALLED	329330.045	6231624.279	1.783	0.733	estimated
10171	CGC-13	Sturt Road Reserve	Stormwater Pit	Grated Pit	Very Good	4.64	4.06			2.21East/1.74W	0.77 to GL	No Lintel	GALVANISED GRATE	329294.052	6231616.577	3.184	1.744	surveyed
10172		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.03	0.44			2.12	0.2	3.0M LINTEL	GALVANISED GRATE	329278.84	6231563.83	3.646	1.726	surveyed
10173	CGC-2	Cronulla Golf Course	Stormwater Pit	Stormwater Pit	Good	1.04	0.74			0.72	N/A	No Lintel	GALVANISED GRATE	329279.332	6231715.054	0.499	-0.221	Surveyed
10174	CGC-1	Captain Cook Drive - Cronulla	Headwall	Concrete Headwall	Good	N/A	N/A	1.26	9.95	1.26	0.65	Not Applicable	NO GRATE INSTALLED	329155.994	6231948.614	1.305	0.695	surveyed
10175		Burke Road - Cronulla	Stormwater Pit	Letter Box - Conc Lid	Very Good	0	0			N/A	0.41	1.8M LINTEL	CONCRETE LID	329608.973	6230906.921	3.871	2.636	estimated
10176		Burke Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			0.84	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329591.761	6230913.555	4.217	3.547	surveyed
10177		Burke Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.22	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329572.582	6230916.007	4.780	3.730	surveyed
10180		Burke Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.13	0.15	3.0M LINTEL	DOUBLE IRON GRATE	329577.617	6230928.371	4.440	3.460	surveyed
10181		Burke Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			0.67	0.19	2.4M LINTEL	DOUBLE IRON GRATE	329594.176	6230926.242	3.918	3.438	surveyed
10182		Nerang Road - Cronulla	Stormwater Pit	Letter Box - Conc Lid	Poor	0	0			N/A	0.28	1.5M LINTEL	CONCRETE LID	329616.644	6230903.946	4.050	3.470	estimated
10183		Burke Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.64	0.14	3.0M LINTEL	DOUBLE IRON GRATE	329624.697	6230909.392	4.122	3.622	surveyed
10184		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.13	0.17	2.4M LINTEL	DOUBLE IRON GRATE	329552.413	6230960.698	5.454	4.494	surveyed
10185		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.04	0.44			0.69	0.2	2.4M LINTEL	GALVANISED GRATE	329556.994	6230996.366	4.304	3.814	surveyed
10186		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			0.84	0.17	2.4M LINTEL	DOUBLE IRON GRATE	329561.972	6231034.989	4.078	3.408	surveyed
10187		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.9	0.18	3.0M LINTEL	DOUBLE IRON GRATE	329591.528	6231030.207	3.683	2.963	surveyed
10188		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.75	0.21	3.6M LINTEL	DOUBLE IRON GRATE	329590.013	6231019.403	3.455	2.915	surveyed
10189		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.04	0.48			0.92	0.21	1.8M LINTEL	GALVANISED GRATE	329630.867	6231025.254	4.049	3.339	surveyed
10190		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.8	0.17	2.4M LINTEL	DOUBLE IRON GRATE	329638.428	6231013.185	3.980	3.350	surveyed
10191		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.27	0.21	1.8M LINTEL	GALVANISED GRATE	329739.595	6231012.211	5.186	4.126	surveyed
10192		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			0.97	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329747.723	6231011.975	5.703	4.933	surveyed
10193		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.04	0.19	1.0M LINTEL	DOUBLE IRON GRATE	329737.838	6231001.33	5.183	4.333	surveyed
10194		Marlo Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.93	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329745.857	6230999.32	5.685	4.945	surveyed
10196		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Good	0.96	0.55			0.8	0.16	2.4M LINTEL	DOUBLE IRON GRATE	329731.774	6230996.651	5.420	4.780	surveyed
10197		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329733	6231013	N/A	4.375	estimated
10198		Burke Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329618	6230911	N/A	3.372	estimated
10199		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.1	0.19	2.4M LINTEL	DOUBLE IRON GRATE	329568.701	6231087.298	4.496	3.586	surveyed
10200		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.94	0.55			1.27	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329578.305	6231081.083	4.430	3.330	surveyed
10201		Marlo Road Drainage Reserve	Headwall	Concrete Headwall	Good	N/A	N/A	PIPE ONLY	0	0.72	N/A	Not Applicable	NO GRATE INSTALLED	329597	6231077	N/A	2.889	estimated
10202		Seaview Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.54			1.18	0.16	2.4M LINTEL	DOUBLE IRON GRATE	329477.33	6231106.328	19.536	18.516	surveyed
10203		Seaview Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			0.91	0.2	2.4M LINTEL	DOUBLE IRON GRATE	329468.191	6231107.426	19.581	18.871	surveyed
10204		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.32	0.18	2.4M LINTEL	DOUBLE IRON GRATE	329575.275	6231138.757	8.408	7.268	surveyed
10205		Ocean Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			1.35	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329570.929	6231198.682	14.298	13.148	surveyed
10208		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.61	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329771.617	6231306.446	6.064	5.644	surveyed
10210		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	3.0M LINTEL	DOUBLE IRON GRATE	329673	6231324	N/A	3.675	estimated
10211		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.2	0.18	2.4M LINTEL	DOUBLE IRON GRATE	329761.226	6231225.419	5.725	4.705	surveyed
10212		Tullimbar Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.52			1.25	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329765.553	6231219.797	5.673	4.623	surveyed
10213		Tullimbar Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			2.5	0.2	2.4M LINTEL	DOUBLE IRON GRATE	329664.48	6231232.782	4.842	2.542	surveyed
10214		Tullimbar Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.55	0.95			2.28	0.22	2.4M LINTEL	DOUBLE IRON GRATE	329662.971	6231221.854	4.595	2.535	surveyed
10215		Tullimbar Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.56			1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329764.098	6231208.785	5.689	4.789	surveyed
10216		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.54			1.08	0.15	2.4M LINTEL	DOUBLE IRON GRATE	329758.642	6231204.594	5.436	4.506	surveyed
10217		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329747	6231117	N/A	4.011	estimated
10218		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.94	0.18	2.4M LINTEL	DOUBLE IRON GRATE	329745.289	6231100.66	4.893	4.133	surveyed
10219		Bando Road - Cronulla	Stormwater Pit	Grated Pit	Good	0.95	0.55			0.64	0.24	2.4M LINTEL	DOUBLE IRON GRATE	329750.83	6231104.152	4.915	4.515	surveyed
10220		Bando Road - Cronulla	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329653	6231110	N/A	3.962	estimated
10221		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329758	6231209	N/A	4.969	estimated
10222		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329760	6231220	N/A	4.816	estimated
10223		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329772	6231313	N/A	4.835	estimated
10224		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.4			1.22	0.2	3.6M LINTEL	GALVANISED GRATE	328793.007	6231273.834	15.125	14.105	surveyed
10226		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.85	0.48			1.4	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328789.148	6231337.903	12.178	10.978	surveyed
10227		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			1.3	0.15	3.6M LINTEL	DOUBLE IRON GRATE	328806.189	6231321.434	13.211	12.061	surveyed
10228		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Good	1	0.4			1.17	0.17	3.0M LINTEL	DOUBLE IRON GRATE	328810.001	6231314.047	13.359	12.359	surveyed
10229		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.45			1.2	0.18	3.0M LINTEL	DOUBLE IRON GRATE	328857.825	6231314.194	13.947	12.927	surveyed
10230		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.47			1.34	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328909.862	6231306.913	15.261	14.121	surveyed
10231		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			1.08	0.17	3.0M LINTEL	DOUBLE IRON GRATE	328861.478	6231307.045	14.027	13.117	surveyed
10232		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.48			1.23	0.15	3.0M LINTEL	DOUBLE IRON GRATE	328913.582	6231299.685	15.480	14.400	surveyed
10233		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.3	0.18	3.0M LINTEL	DOUBLE IRON GRATE	328954.509	6231300.617	17.147	16.027	surveyed
10234		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.19	0.2	1.8M LINTEL	DOUBLE IRON GRATE	328958.469	6231293.171	17.040	16.050	surveyed
10235		Wills Road - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328805	6231450	N/A	7.314	estimated
10236		High Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.93	0.54			1.19	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328818.552	6231419.281	8.781	7.791	surveyed
10237		Wills Road - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	328816	6231433	N/A	7.723	estimated
10241		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.45			1.58	0.22	Not Specified	DOUBLE IRON GRATE	328807.928	6231470.878	8.252	6.892	surveyed
10242		Wills Road - Woolooware	Stormwater Pit	Junction Pit	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328803.485	6231471.515	8.200	6.468	estimated
10243		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.4			1.16	0.19	1.0M LINTEL	GALVANISED GRATE	328811.051	6231492.886	8.499	7.529	surveyed
10244		Cook Street - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328834	6231511	N/A	8.603	estimated
10245		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			0.96	0.2	4.2M LINTEL	DOUBLE IRON GRATE	328826.499	6231537.813	9.739	8.979	surveyed
10246		Cook Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.56			1.26	0.2	4.2M LINTEL	DOUBLE IRON GRATE	328843.502	6231513.915	9.789	8.729	surveyed
10247		Cook Street - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328901	6231502	N/A	11.270	estimated
10248		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.1	0.18	1.0M LINTEL	GALVANISED GRATE	328911.968	6231507.263	12.448	11.528	surveyed
10249		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.5	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329790.98	6231415.276	4.445	3.145	surveyed
10250		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.98	0.24	3.0M LINTEL	DOUBLE IRON GRATE	329795.664	6231428.195	4.650	3.910	surveyed
10251		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.42	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329899.078	6231414.377	6.491	5.261	surveyed
10252		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.05	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329899.081	6231401.387	6.444	5.584	surveyed
10253		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.47	0.15	3.0M LINTEL	DOUBLE IRON GRATE	329946.135	6231408.287	7.159	5.859	surveyed
10254		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.04	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329952.437	6231374.609	7.513	6.673	surveyed
10255		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.32	0.2	3.0M LINTEL	GALVANISED GRATE	330017.647	6231399.094	10.206	9.086	surveyed
10256		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.97	0.14	3.0M LINTEL	DOUBLE IRON GRATE	330020.72	6231385.799	10.296	9.466	surveyed
10257		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.29	0.28	4.2M LINTEL	DOUBLE IRON GRATE	330091.59	6231389.613	11.402	10.392	surveyed
10258		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.28	0.18	2.4M LINTEL	DOUBLE IRON GRATE	330102.087	6231388.414	11.578	10.478	surveyed
10259		Mitchell Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	330114.703	6231400.176	11.760	10.830	surveyed
10260		Hume Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.13	0.17	2.4M LINTEL	DOUBLE IRON GRATE	330094.697	6231376.289	11.491	10.531	surveyed
10261		Mitchell Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.04	0.18	3.0M LINTEL	DOUBLE IRON GRATE	330097.673	6231363.125	11.648	10.748	surveyed
10262		Mitchell Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1	0.17	2.4M LINTEL	DOUBLE IRON GRATE	330095.062	6231358.286	11.700	10.870	surveyed
10263		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329785	6231417	N/A	3.593	estimated
10265		Bate Bay Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329856	6231485	N/A	2.484	estimated
10266		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.07	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329846.998	6231890.593	2.707	1.827	surveyed
10267		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329828.889	6231891.55	2.755	1.755	surveyed
10268		Captain Cook Drive - Kurnell	Stormwater Pit	Stormwater Pit	Very Good	1.08	0.83			1.68	N/A	No Lintel	CONCRETE LID	329963.024	6232093.296	1.886	0.206	Surveyed
10269		Cronulla High School Playing Field	Stormwater Pit	Letterbox - Gal Grate	Very Good	1.16	1.06			2.35	0.32	No Lintel	GALVANISED GRATE	329976.646	6232062.069	2.209	0.179	surveyed
10270		Captain Cook Drive - Kurnell	Headwall	Concrete Headwall	Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	Not Applicable	NO GRATE INSTALLED	329924	6232050	N/A	0.211	estimated
10271		Captain Cook Drive - Kurnell	Stormwater Pit	Letterbox - Gal Grate	Very Good	1.14	0.83			Abt 1.4	0.23	No Lintel	GALVANISED GRATE	329940.924	6232049.842	2.106	0.936	surveyed
10272		Captain Cook Drive - Kurnell	Stormwater Pit	Bandage Joint	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329882	6232012	N/A	0.504	estimated
10273		Cronulla High School Playing Field	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	330019	6232067	N/A	4.149	estimated
10274		Captain Cook Drive - Kurnell	Headwall	Concrete Headwall	Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	Not Applicable	NO GRATE INSTALLED	329957	6232077	N/A	0.150	estimated
10285		Castlewood Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			0.88	0.2	1.0M LINTEL	GALVANISED GRATE	328110.735	6230770.403	42.657	41.977	surveyed
10286		Castlewood Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	1			0.98	0.23	No Lintel	DOUBLE IRON GRATE	328104.338	6230780.353	42.416	41.766	surveyed
10287		Castlewood Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.16	0.21	4.2M LINTEL	GALVANISED GRATE	328027.774	6230762.919	38.733	37.393	surveyed
10288		Castlewood Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.27	0.21	3.0M LINTEL	DOUBLE IRON GRATE	328025.696	6230792.281	38.435	37.375	surveyed
10289		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.6			0.96	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327014.834	6232611.367	8.899	8.139	surveyed
10290		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327024	6232614	N/A	8.297	estimated
10291		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327077	6232615	N/A	7.521	estimated
10292		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1	0.26	3.0M LINTEL	DOUBLE IRON GRATE	327123.362	6232595.215	7.393	6.653	surveyed
10293		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327127	6232607	N/A	6.568	estimated
10294		Grenville Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.05	0.55			1.05	0.2	4.2M LINTEL	DOUBLE IRON GRATE	327180.037	6232575.759	6.648	5.798	surveyed
10295		Grenville Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.56			1.1	0.19	3.6M LINTEL	DOUBLE IRON GRATE	327189.744	6232578.96	6.434	5.484	surveyed
10297		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.97	0.55			1.55	0.18	3.0M LINTEL	DOUBLE IRON GRATE	327198.746	6232583.957	6.109	4.739	surveyed
10298		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327208	6232595	N/A	5.099	estimated
10299		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE				Inaccessible	N/A	Not Specified	MEDIAN PIT	327322.869	6232576.687	3.860	2.810	estimated
10300		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			0.9	0.2	3.0M LINTEL	GALVANISED GRATE	327301.121	6232568.326	3.890	3.190	surveyed
10301		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.92	0.57			0.88	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327340.926	6232555.131	3.309	2.629	surveyed
10302		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			0.75	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327376.724	6232553.783	2.958	2.408	surveyed
10303		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			0.9	0.19	3.0M LINTEL	DOUBLE IRON GRATE	327386.93	6232535.861	2.460	1.760	surveyed
10306		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	2	0.46			1.2	0.2	3.0M LINTEL	2X DOUBLE IRON GRATE	327426.035	6232477.305	2.395	1.395	surveyed
10307		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE				Inaccessible	N/A	Not Specified	MEDIAN PIT	327438.225	6232481.597	2.706	1.881	estimated
10308		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.7	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327447.354	6232485.64	2.929	1.429	surveyed
10309		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.54			0.9	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327397.433	6232362.871	2.479	1.649	surveyed
10310		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.7	0.22	3.1M LINTEL	DOUBLE IRON GRATE	327450.116	6232466.376	2.114	1.634	surveyed
10311		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE				Inaccessible	N/A	Not Specified	MEDIAN PIT	327462.544	6232409.093	2.194	1.669	estimated
10312		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1	0.27	3.0M LINTEL	DOUBLE IRON GRATE	327474.218	6232403.964	2.554	1.124	surveyed
10313		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.84	0.19	3.0M LINTEL	DOUBLE IRON GRATE	327403.969	6232364.873	2.438	1.398	surveyed
10314		Fenton Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.97	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327418.683	6232344.841	2.201	1.431	surveyed
10315		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1.27	0.23	3.0M LINTEL	DOUBLE IRON GRATE	327466.535	6232374.24	2.390	1.350	surveyed
10316		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.06	0.56			0.67	0.24	3.6M LINTEL	DOUBLE IRON GRATE	327488.021	6232342.653	2.132	0.942	surveyed
10317		Fenton Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.75	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327348.996	6232249.971	3.052	2.502	surveyed
10318		Drake Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327357.911	6232248.669	2.947	2.167	surveyed
10319		Drake Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327372	6232255	N/A	1.870	estimated
10320		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.37			1.03	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327384.627	6232262.768	2.760	1.600	surveyed
10321		Captain Cook Dr N/S -Fenton to Carabella	Headwall	Concrete Headwall	Very Good	N/A	N/A	2.7	6.3	2.653	N/A	Not Applicable	NO GRATE INSTALLED	327479.988	6232259.063	2.953	0.300	Surveyed
10322		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Fair	1.1	0.58			1.7	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327501.059	6232284.739	2.264	0.764	surveyed
10323		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	MEDIAN PIT	327504	6232228	N/A	1.588	estimated
10324		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	Unknown	327495	6232230	N/A	2.190	estimated
10325		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.1	0.2	3.6M LINTEL	GALVANISED GRATE	327140.057	6232399.757	9.820	8.820	surveyed
10326		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.18	0.19	2.4M LINTEL	DOUBLE IRON GRATE	327149.287	6232399.644	9.387	8.487	surveyed
10327		Drake Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327150	6232226	N/A	3.667	estimated
10328		Drake Avenue - Caringbah	Stormwater Pit	Grated Pit	Good	1	0.52			1.03	0.19	2.4M LINTEL	DOUBLE IRON GRATE	327136.007	6232290.185	8.207	7.367	surveyed
10330		Drake Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.88	0.19	3.0M LINTEL	DOUBLE IRON GRATE	327143.824	6232260.87	7.953	7.013	surveyed
10331		Grenville Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.52			1.4	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327149.109	6232419.494	7.109	6.249	surveyed
10332		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327128.569	6232187.358	7.699	6.669	surveyed
10333		Drake Avenue - Caringbah	Stormwater Pit	Grated Pit	Good	1	0.56			1.11	0.24	3.6M LINTEL	DOUBLE IRON GRATE	[illegible]	[illegible]	[illegible]	[illegible]	surveyed
10336		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327337	6232163	N/A	2.851	estimated
10337		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.9	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327332.83	6232156.718	3.687	2.787	surveyed
10338		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			0.98	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327385.406	6232262.337	2.556	1.576	surveyed
10339		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.1	0.2	1.6M LINTEL	DOUBLE IRON GRATE	327356.776	6232098.733	2.437	1.337	surveyed
1034		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.96	0.56			0.86	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327391.274	6230990.745	22.137	21.337	surveyed
10340		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Kerb Inlet	Very Good	1	0.4			1.6	0.2	2.4M LINTEL	GALVANISED GRATE	327510.417	6232020.604	2.741	1.151	surveyed
10341		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE				Inaccessible	N/A	Not Specified	MEDIAN PIT	327519.16	6232023.067	2.444	1.694	estimated
10342		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.56			1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	[illegible]	[illegible]	[illegible]	[illegible]	surveyed
10343		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good					0.7	0.26	3.0M LINTEL	DOUBLE IRON GRATE	327541.801	6232160.833	2.660	2.220	surveyed
10344		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE				Inaccessible	N/A	Not Specified	MEDIAN PIT	327549.172	6232167.56	2.327	1.652	estimated
10345		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE				Inaccessible	N/A	Not Specified	MEDIAN PIT	327554.89	6232173.86	2.166	1.491	estimated
10346		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE				Inaccessible	N/A	Not Specified	MEDIAN PIT	327573.021	6232176.78	2.355	1.680	estimated
10349		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.93	0.55			0.85	0.18	2.4M LINTEL	GALVANISED GRATE	327625.493	6232092.512	2.993	2.353	surveyed

Pit_ID	Pit_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pit/Headwall_Type	Condition	Length of Grate/Inlet	Width of Grate/Inlet	Height of Headwall	Width of Headwall	Depth from Kerb/[Surface] to Invert	Depth from Kerb to Grate/Inlet	Lintel	Grate	X Coordinate	Y Coordinate	Surface RL on Kerb/Surface	Indicative Invert (mAHD)	Estimated or Surveyed
10353		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	DOUBLE IRON GRATE	326882	6232182	N/A	16.920	estimated
10354		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.06	0.2	3.6M LINTEL	DOUBLE IRON GRATE	326875.828	6232134.295	17.257	16.397	surveyed
10355		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.93	0.21	3.0M LINTEL	DOUBLE IRON GRATE	326873.875	6232119.239	17.434	16.714	surveyed
10356		Carabella Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326899	6232131	N/A	15.464	estimated
10357		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1	0.18	2.4M LINTEL	DOUBLE IRON GRATE	326920.446	6232118.837	15.290	14.470	surveyed
10358		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			1.24	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327136.085	6232094.27	7.485	6.455	surveyed
10359		Carabella Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327220	6232081	N/A	5.320	estimated
10360		Carabella Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327350	6232061	N/A	3.999	estimated
10362		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Fair	0.94	0.55			2.16	0.17	2.4M LINTEL	DOUBLE IRON GRATE	327327.867	6232047.734	4.882	2.892	surveyed
10363		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.27	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327318.18	6232049.462	5.035	3.965	surveyed
10364		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327316	6231966	N/A	5.450	estimated
10368		Kitchener Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.54			2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327033.167	6231931.582	12.360	10.560	surveyed
10369		Kitchener Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			2.1	0.18	3.0M LINTEL	DOUBLE IRON GRATE	327021.022	6231916.864	11.515	9.595	surveyed
10370		Glassop Street - Caringbah	Stormwater Pit	Bandage Joint	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326912	6231827	N/A	16.516	estimated
10371		Glassop Street - Caringbah	Stormwater Pit	Bandage Joint	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326902	6231829	N/A	16.809	estimated
10373		Cawarra Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326836	6231829	N/A	18.837	estimated
10374		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.62	0.23	3.6M LINTEL	DOUBLE IRON GRATE	327289.737	6231785.163	11.896	10.506	surveyed
10375		Bellevue Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.42			0.97	0.2	3.1M LINTEL	DOUBLE IRON GRATE	327268.444	6231772.104	12.910	12.140	surveyed
10376		Bellevue Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.7	0.19	2.4M LINTEL	GALVANISED GRATE	327269.025	6231765.493	12.939	11.429	surveyed
10377		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327253	6231531	N/A	20.315	estimated
10378		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.98	0.56			0.9	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327245.447	6231479.689	23.204	22.504	surveyed
10379		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.2	0.25	2.4M LINTEL	DOUBLE IRON GRATE	327238.078	6231431.766	24.940	23.990	surveyed
10381		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.54			1.04	0.2	3.0M LINTEL	GALVANISED GRATE	327215.209	6231416.618	26.278	25.438	surveyed
10382		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.95	0.55			0.68	0.25	3.0M LINTEL	DOUBLE IRON GRATE	327221.842	6231385.613	25.904	25.474	surveyed
10383		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327218	6231364	N/A	26.164	estimated
10384		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.97	0.55			0.86	0.24	>=4.2M LINTEL	DOUBLE IRON GRATE	327231.954	6231378	26.031	25.411	surveyed
10385		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	2.4M LINTEL	DOUBLE IRON GRATE	327352	6232160	N/A	2.873	estimated
10392		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.4			1.2	0.2	3.1M LINTEL	GALVANISED GRATE	327312.303	6232057.339	5.023	4.023	surveyed
10393		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			0.74	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327325.962	6231953.819	6.732	6.192	surveyed
10394		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.9	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327324.631	6231944.795	6.762	6.062	surveyed
10395		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.43			1.48	0.2	2.4M LINTEL	GALVANISED GRATE	327295.988	6231956.246	6.811	5.531	surveyed
10396		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.46			1.65	0.19	1.8M LINTEL	GALVANISED GRATE	327295.43	6231947.021	6.939	5.479	surveyed
10399		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.3	0.22	3.6M LINTEL	DOUBLE IRON GRATE	327288.186	6231838.795	9.939	8.859	surveyed
10400		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.13	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327304.521	6231888.831	8.480	7.550	surveyed
10401		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			2	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327299.054	6231850.328	9.609	7.809	surveyed
10402		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.7	0.21	3.6M LINTEL	DOUBLE IRON GRATE	327294.729	6231820.116	10.580	9.090	surveyed
10403		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327321	6231998	N/A	4.768	estimated
10404		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			2.5	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327311.555	6231938.305	7.096	4.796	surveyed
10405		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327286	6231758	N/A	12.247	estimated
10406		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327280	6231781	N/A	11.367	estimated
10407		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.13	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327274.845	6231745.05	13.852	12.922	surveyed
10408		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.1	0.21	3.6M LINTEL	DOUBLE IRON GRATE	327266.095	6231683.457	16.412	15.522	surveyed
10409		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.46			0.9	0.14	No Lintel	GALVANISED GRATE	327277.544	6231699.686	15.630	14.870	surveyed
10410		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.45			0.68	0.03	No Lintel	GALVANISED GRATE	327266.152	6231619.833	18.218	17.568	surveyed
10411		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.7	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327255.845	6231611.57	18.718	18.218	surveyed
10412		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327257	6231557	N/A	19.508	estimated
10413		Banksia Road Car Park	Stormwater Pit	Grated Pit	Very Good	1.02	0.46			0.7	0.03	No Lintel	GALVANISED GRATE	326849.584	6231510.677	38.049	37.379	surveyed
10414		Banksia Road Car Park	Stormwater Pit	Grated Pit	Good	1	0.49			1.4	0.14	No Lintel	DOUBLE IRON GRATE	326851.57	6231504.87	38.163	36.903	surveyed
10415		Banksia Road Car Park	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			1.5	0.22	1.0M LINTEL	GALVANISED GRATE	326875.56	6231551.94	34.349	33.069	surveyed
10416		Banksia Road Car Park	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326879	6231551	N/A	33.570	estimated
10417		Banksia Road Car Park	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326857	6231513	N/A	36.893	estimated
10418		Banksia Road Car Park	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326881	6231594	N/A	29.798	estimated
10419		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.48	0.19	3.6M LINTEL	GALVANISED GRATE	326871.976	6231598.901	30.960	29.670	surveyed
10420		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.74	0.2	3.6M LINTEL	DOUBLE IRON GRATE	326859.09	6231599.765	30.867	29.327	surveyed
10421		Denman Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326863	6231656	N/A	25.382	estimated
10422		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	1			0.9	N/A	No Lintel	GALVANISED GRATE	327215.96	6231325.855	28.674	27.774	Surveyed
10424		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	1			0.8	N/A	No Lintel	GALVANISED GRATE	327189.464	6231148.172	38.218	37.418	Surveyed
10425		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			2.1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327167.83	6231016.375	40.150	38.250	surveyed
10426		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.38	0.2	4.2M LINTEL	DOUBLE IRON GRATE	327159.568	6231010.129	40.245	39.065	surveyed
10428		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327167	6231009	N/A	39.343	estimated
10429		Yathong Road - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327166	6231000	40.040	39.365	estimated
10430		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.98	0.19	3.6M LINTEL	DOUBLE IRON GRATE	327254.409	6230994.954	33.204	32.414	surveyed
10431		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.4	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327274.989	6231001.912	31.593	30.393	surveyed
10432		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			0.92	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327306.349	6230997.383	28.344	27.624	surveyed
10433		Caringbah Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327384	6230990	N/A	22.089	estimated
10436		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	3.0M LINTEL	DOUBLE IRON GRATE	327431	6230987	N/A	19.963	estimated
10437		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.4	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327379.889	6230976.804	22.647	21.447	surveyed
10438		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.06	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327378.731	6230967.796	22.633	21.773	surveyed
10439		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.7	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327386.013	6230955.386	22.257	21.757	surveyed
10440		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			2.67	0.23	>=4.2M LINTEL	DOUBLE IRON GRATE	327382.843	6230934.093	22.664	20.224	surveyed
10441		Dwyer Reserve	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327500	6231059	N/A	17.718	estimated
10442		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	3.6M LINTEL	DOUBLE IRON GRATE	327396	6231023	N/A	22.041	estimated
10443		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.04	0.46			1	0.15	No Lintel	GALVANISED GRATE	327400.266	6231051.338	23.174	22.324	surveyed
10447		Robin Place Reserve	Stormwater Pit	Bandage Joint	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326934	6230905	N/A	44.548	estimated
10448		Robin Place Reserve	Stormwater Pit	Stormwater Pit	Very Good	1.6	1.3			Inaccessible	N/A	No Lintel	CONCRETE LID	326972.408	6230900.238	44.740	43.990	estimated
10449		Robin Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.1	0.2	2.1M LINTEL	DOUBLE IRON GRATE	326909.925	6230944.424	45.880	44.980	surveyed
10450		Robin Place - Caringbah South	Stormwater Pit	Grated Pit	Good	0.9	0.52			1.23	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	326901.146	6230958.732	46.577	45.547	surveyed
10451		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326975.56	6230893.332	44.450	43.550	surveyed
10452		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.04	0.18	3.6M LINTEL	DOUBLE IRON GRATE	326987.925	6230976.354	44.933	44.073	surveyed
10453		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.54			1.07	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326993.77	6231015.418	46.033	45.163	surveyed
10454		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.17	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326987.156	6231025.12	46.872	45.902	surveyed
10455		Jacaranda Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			0.84	0.17	3.1M LINTEL	DOUBLE IRON GRATE	326996.945	6231043.455	46.610	45.940	surveyed
10456		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.18	0.18	3.0M LINTEL	DOUBLE IRON GRATE	326965.925	6230828.697	43.638	42.638	surveyed
10457		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.44	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326962.485	6230805.981	42.354	41.114	surveyed
10458		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			0.75	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326974.751	6230812.744	42.936	42.386	surveyed
10459		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.54			1.28	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326957.25	6230770.776	41.733	40.653	surveyed
10460		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.67	0.18	3.0M LINTEL	DOUBLE IRON GRATE	326968.256	6230769.015	41.651	40.161	surveyed
10461		Whitewood Place - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327048	6230792	N/A	36.054	estimated
10462		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.16	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326952.595	6230739.382	43.074	42.114	surveyed
10463		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.2	0.18	3.0M LINTEL	DOUBLE IRON GRATE	326963.206	6230735.396	43.127	42.107	surveyed
10464		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.05	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326939.421	6230651.702	52.237	51.387	surveyed
10468		Whitewood Place - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327126	6230811	N/A	32.327	estimated
10469		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.6	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327125.167	6230803.018	33.242	31.842	surveyed
10471		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.4	0.17	2.4M LINTEL	DOUBLE IRON GRATE	327057.758	6230796.215	36.804	35.574	surveyed
10472		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.37	0.16	3.6M LINTEL	DOUBLE IRON GRATE	327050.941	6230751.263	38.791	37.581	surveyed
10474		Yathong Road - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327138	6230816	N/A	31.285	estimated
10475		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.76	0.18	3.0M LINTEL	DOUBLE IRON GRATE	327134.252	6230790.98	33.098	32.518	surveyed
10476		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.03	0.45			0.8	0.2	3.0M LINTEL	GALVANISED GRATE	327123.041	6230715.63	36.778	36.178	surveyed
10478		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.1	0.19	3.6M LINTEL	DOUBLE IRON GRATE	327151.775	6230908.061	33.628	32.718	surveyed
10480		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.03	0.44			1.22	0.16	3.0M LINTEL	GALVANISED GRATE	327142.973	6230848.924	32.381	31.321	surveyed
10482		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.91	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327151.966	6230847.673	32.377	30.677	surveyed
10483		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			2.2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327149.875	6230833.89	32.438	30.438	surveyed
10484		Yathong Road - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327157	6230832	32.378	30.878	estimated
10485		Yathong Road - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327161	6230846	N/A	29.776	estimated
10486		Yathong Road - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327189	6230842	N/A	28.453	estimated
10487		Holly Street - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327211	6230851	N/A	27.542	estimated
10488		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			2.9	0.17	3.6M LINTEL	DOUBLE IRON GRATE	327252.508	6230877.092	27.635	24.905	surveyed
10489		Holly Street - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327259	6230887	N/A	25.858	estimated
10490		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.34	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327259.09	6230839.357	27.208	26.068	surveyed
10491		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.77	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327267.663	6230840.095	27.180	26.610	surveyed
10492		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.98	0.54			1.38	0.22	3.6M LINTEL	DOUBLE IRON GRATE	327259.209	6230825.762	27.466	26.306	surveyed
10493		Oleander Parade - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327293	6230893	N/A	24.033	estimated
10496		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.51			1.77	0.17	No Lintel	DOUBLE IRON GRATE	327014.896	6230507.898	47.540	45.940	surveyed
10497		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1	0.43			0.9	0.2	1.0M LINTEL	GALVANISED GRATE	327011.627	6230490.995	48.157	47.457	surveyed
10498		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.03	0.43			1.1	0.19	1.0M LINTEL	GALVANISED GRATE	327009.271	6230515.137	47.670	46.760	surveyed
10499		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.52			1.2	0.19	1.0M LINTEL	DOUBLE IRON GRATE	327085.05	6230501.239	44.274	43.264	surveyed
10500		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.52			0.81	0.15	1.0M LINTEL	DOUBLE IRON GRATE	327084.446	6230492.591	44.269	43.609	surveyed
10501		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Fair	0.97	0.52			0.72	0.21	2.0M LINTEL	DOUBLE IRON GRATE	327074.367	6230494.199	44.381	43.871	surveyed
10502		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.52			0.9	0.19	2.4M LINTEL	DOUBLE IRON GRATE	327105.799	6230487.955	44.789	44.079	surveyed
10503		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			1.34	0.23	3.0M LINTEL	DOUBLE IRON GRATE	327120.648	6230601.911	40.080	38.970	surveyed
10504		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327134	6230611	N/A	38.299	estimated
10505		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			1.55	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327175.068	6230604.532	38.714	37.364	surveyed
10506		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.9	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327172.615	6230593.698	38.779	38.079	surveyed
10507		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.08	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327219.383	6230597.406	39.001	38.121	surveyed
10508		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.08	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327228.379	6230584.778	39.030	38.160	surveyed
10509		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.93	0.55			0.86	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327268.709	6230589.482	39.707	39.047	surveyed
10510		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.94	0.5			0.86	0.22	3.0M LINTEL	DOUBLE IRON GRATE	327268.903	6230578.322	39.813	39.173	surveyed
10511		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.93	0.5			1.24	0.18	1.0M LINTEL	DOUBLE IRON GRATE	327256.341	6230485.676	44.879	43.819	surveyed
10512		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.52			0.84	0.18	1.0M LINTEL	DOUBLE IRON GRATE	327256.222	6230477.197	44.922	44.262	surveyed
10513		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.51			0.88	0.18	1.0M LINTEL	DOUBLE IRON GRATE	327250.813	6230477.139	44.951	44.251	surveyed
10514		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.24	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327320.672	6230581.737	40.369	39.329	surveyed
10515		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			1.14	0.22	3.0M LINTEL	DOUBLE IRON GRATE	327330.599	6230568.466	40.779	39.859	surveyed
10516		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			1.47	0.23	3.0M LINTEL	DOUBLE IRON GRATE	327346.249	6230578.018	40.976	39.736	surveyed
10517		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.94	0.55			1.14	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327355.877	6230564.405	41.080	40.140	surveyed
10518		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.58			1.45	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327193.083	6230670.75	34.647	33.397	surveyed
10519		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.99	0.58			1.5	0.24	>=4.2M LINTEL	DOUBLE IRON GRATE	327197.596	6230682.199	34.309	33.049	surveyed
10520		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.52			1.37	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327235.23	6230698.977	32.505	31.335	surveyed
10521		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.52			1.6	0.22	1.0M LINTEL	DOUBLE IRON GRATE	327241.278	6230706.737	31.993	30.613	surveyed
10523		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.21	0.22	3.6M LINTEL	DOUBLE IRON GRATE	327250.861	6230769.253	29.289	28.299	surveyed
10524		Holly Street - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			0.8	0.29	3.6M LINTEL	DOUBLE IRON GRATE	327259.369	6230767.708	29.359	28.849	surveyed
10528		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.03	0.16	3.0M LINTEL	DOUBLE IRON GRATE	327059.683	6230869.933	37.006	36.136	surveyed
10529		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.4	0.17	3.6M LINTEL	DOUBLE IRON GRATE	327053.042	6230825.98	36.379	35.149	surveyed
10532		Sturt Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			1.1	0.18	3.0M LINTEL	DOUBLE IRON GRATE	328693.469	6231646.454	8.653	7.733	surveyed
10533		Sturt Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.57			1.03	0.19	3.0M LINTEL	DOUBLE IRON GRATE	328629.872	6231655.355	6.547	5.707	surveyed
10534		Sturt Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.16	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328616.938	6231646.019	6.094	5.134	surveyed
10536		Sturt Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.56			0.74	0.17	3.0M LINTEL	DOUBLE IRON GRATE	328577.863	6231662.678	4.688	4.118	surveyed
10538		Woolooware Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.94	0.55			1.06	0.18	3.0M LINTEL	DOUBLE IRON GRATE	328567.57	6231644.408	4.208	3.328	surveyed
10539		Woolooware Road - Woolooware	Headwall	Concrete Headwall	Fair	N/A	N/A	1.07	2.3	N/A	N/A	Not Applicable	NO GRATE INSTALLED	328567.173	6231613.96	4.062	2.702	estimated
10540		Edinburgh Close - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			0.9	0.03	No Lintel	DOUBLE IRON GRATE	328706.909	6231486.91	6.447	5.577	surveyed
10542		Woolooware Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.92	0.55			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328555.281	6231565.438	3.785	2.985	surveyed
10543		Woolooware Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.99	0.55			1.2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328546.422	6231508.704	4.616	3.616	surveyed
10544		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.58			1.03	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328554.293	6231494.322	4.787	3.957	surveyed
10545		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.57			1.12	0.19	3.6M LINTEL	DOUBLE IRON GRATE	328557.237	6231487.832	4.836	3.906	surveyed
10546		Woolooware Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.4			1.44	0.2	3.0M LINTEL	GALVANISED GRATE	328542.109	6231481.241	5.352	4.112	surveyed
10547		Woolooware Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.44	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328530.146	6231476.331	5.520	4.280	surveyed
10548		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.28	0.22	2.4M LINTEL	DOUBLE IRON GRATE	328537.591	6231401.281	9.727	8.667	surveyed
10549		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.4			1.13	0.17	3.6M LINTEL	GALVANISED GRATE	328536.734	6231395.199	9.797	8.837	surveyed
10554		Denman Avenue - Woolooware	Stormwater Pit	Letter Box - Conc Lid	Very Good	0.9	0.9			N/A	0.19	No Lintel	CONCRETE LID	328671.99	6231081.517	24.661	23.721	estimated
10555		Denman Avenue - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328680	6231071	N/A	24.202	estimated
10556		Flinders Road - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328762	6231178	N/A	18.753	estimated
10557		Wills Road - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328780	6231176	N/A	19.328	estimated
10558		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.42			0.69	0.2	3.0M LINTEL	GALVANISED GRATE	328765.578	6231170.188	20.137	19.647	surveyed
10559		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Good	1	0.42			1.42	0.2	2.4M LINTEL	GALVANISED GRATE	328779.053	6231170.164	20.130	18.910	surveyed
10560		Denman Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.53			0.7	0.14	3.0M LINTEL	DOUBLE IRON GRATE	328654.792	6231073.581	24.989	24.429	surveyed
10562		Woolooware Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.67	0.16	1.0M LINTEL	DOUBLE IRON GRATE	328531.886	6231415.516	8.783	7.273	surveyed
10563		Woolooware Road - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328570	6231664	8.783	7.958	estimated
10566		Woolooware Golf Course	Headwall	Stone Headwall	Good	N/A	N/A	PIPE ONLY	0	0.8	N/A	Not Applicable	NO GRATE INSTALLED	328542.813	6231617.39	2.878	2.078	Surveyed
10567		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.03	0.44			Inaccessible	0.2	2.4M LINTEL	GALVANISED GRATE	327647.439	6231089.563	16.341	15.066	estimated
10568		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			2.2	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327639.282	6231034.981	18.160	16.160	surveyed
10569		Pandala Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.54			1.09	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327704.223	6231020.648	17.895	17.005	surveyed
10570		Gannons Road - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327626	6230947	N/A	19.565	estimated
10571		Caringbah Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.43			0.7	0.22	>=4.2M LINTEL	GALVANISED GRATE	327633.378	6230938.294	21.141	20.661	surveyed
10572		Caringbah Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.83	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327644.999	6230928.381	21.287	20.657	surveyed
10575		Caringbah Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.42			0.97	0.18	2.4M LINTEL	GALVANISED GRATE	327733.698	6230915.212	22.774	21.984	surveyed
10576		Caringbah Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			0.8+	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327719.127	6230916.781	22.543	21.943	surveyed
10577		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.35	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327820.626	6230891.007	25.852	24.702	Surveyed
10578		Caringbah Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.93	0.17	3.6M LINTEL	DOUBLE IRON GRATE	327835.324	6230900.903	25.575	24.815	surveyed
10579		Caringbah Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.72	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327841.702	6230907.748	25.630	25.110	surveyed
10580		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.92	0.21	3.6M LINTEL	DOUBLE IRON GRATE	327622.099	6230921.065	21.560	20.850	surveyed
10581		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.6	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327609.958	6230914.629	21.654	20.254	surveyed
10582		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			0.82	0.18	2.4M LINTEL	DOUBLE IRON GRATE	327660.71	6231177.799	14.075	13.435	surveyed
10583		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.94	0.54			0.7	0.17	3.3M LINTEL	GALVANISED GRATE	327649.159	6231186.844	13.942	13.412	surveyed
10584		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.25	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327611.429	6230849.646	23.731	22.681	surveyed
10585		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327599.203	6230843.269	23.972	23.172	surveyed
10586		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.12	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327599.838	6230773.274	26.996	26.076	surveyed
10587		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.08	0.21	2.4M LINTEL	DOUBLE IRON GRATE	327587.775	6230767.316	27.212	26.342	surveyed
10588		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.05	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327595.314	6230743.04	28.298	27.448	surveyed
10589		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.88	0.21	3.6M LINTEL	DOUBLE IRON GRATE	327583.071	6230735.948	28.675	28.005	surveyed
10593		Sindone Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.87	0.22	2.8M LINTEL	DOUBLE IRON GRATE	326899.951	6232433.71	15.508	14.858	surveyed
10594		Sindone Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.45	0.22	3.1M LINTEL	DOUBLE IRON GRATE	326899.217	6232426.381	15.526	14.296	surveyed
10595		Sindone Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.18	0.55			1.25	0.18	2.4M LINTEL	CONCRETE GRATE	326874.222	6232430.127	15.822	14.752	surveyed
10596		Sindone Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			1.16	0.2	2.1M LINTEL	DOUBLE IRON GRATE	326830.805	6232436.566	16.451	15.491	surveyed
10597		Sindone Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.2	0.22	1.8M LINTEL	DOUBLE IRON GRATE	326810.38	6232444.844	16.665	15.685	surveyed

Pit_ID	Pit_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pit/Headwall_Type	Condition	Length of Grate/Inlet	Width of Grate/Inlet	Height of Headwall	Width of Headwall	Depth from Kerb/[Surface] to Invert	Depth from Kerb to Grate/Inlet	Lintel	Grate	X Coordinate	Y Coordinate	Surface RL on Kerb/Surface	Indicative Invert (mAHD)	Estimated or Surveyed
10621		Begonia Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.58			1.27	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327903.06	6230966.564	24.779	23.709	surveyed
10623		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.9	0.22	2.4M LINTEL	DOUBLE IRON GRATE	327416.113	6231619.696	15.390	14.710	surveyed
10624		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1	0.18	2.4M LINTEL	DOUBLE IRON GRATE	327414.546	6231608.752	15.438	14.618	surveyed
10625		Nullaburra Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327417	6231615	N/A	14.449	estimated
10626		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.56			0.9	0.17	2.4M LINTEL	DOUBLE IRON GRATE	327406.564	6231616.137	15.629	14.899	surveyed
10628		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.05	0.17	3.0M LINTEL	DOUBLE IRON GRATE	327396.868	6231549.666	16.014	15.134	surveyed
10629		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1	0.17	2.4M LINTEL	DOUBLE IRON GRATE	327404.995	6231542.223	16.117	15.287	surveyed
10630		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.28	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327398.805	6231497.759	17.150	16.070	surveyed
10631		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.6	0.22	3.0M LINTEL	DOUBLE IRON GRATE	327387.422	6231482.633	17.760	16.380	surveyed
10632		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.17	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327377.592	6231475.278	18.670	17.700	surveyed
10633		Denman Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327381	6231465	N/A	17.627	estimated
10634		Nullaburra Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327378	6231438	N/A	18.942	estimated
10635		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.94	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327425.174	6231456.467	18.194	17.454	surveyed
10636		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.03	0.21	3.6M LINTEL	DOUBLE IRON GRATE	327422.931	6231447.75	18.378	17.558	surveyed
10637		Nullaburra Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327431	6231613	N/A	13.715	estimated
10638		Denman Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327386	6231472	N/A	17.424	estimated
10639		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.16	0.19	3.0M LINTEL	DOUBLE IRON GRATE	327798.435	6230797.876	30.410	29.440	surveyed
10640		Coral Road - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327800	6230808	N/A	28.995	estimated
10641		English Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			0.98	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327814.052	6230789.133	31.570	30.800	surveyed
10642		English Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.85	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327812.494	6230781.323	31.637	30.987	surveyed
10644		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.34	0.25	>=4.2M LINTEL	DOUBLE IRON GRATE	327449.303	6231294.165	20.797	19.707	surveyed
10645		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.9	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327437.796	6231304.174	20.860	20.160	surveyed
10646		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.1	0.24	>=4.2M LINTEL	DOUBLE IRON GRATE	327434.874	6231284.746	21.045	20.185	surveyed
10647		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.54	0.22	1.8M LINTEL	GALVANISED GRATE	327441.555	6231252.437	22.231	20.911	surveyed
10648		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.39	0.18	2.4M LINTEL	DOUBLE IRON GRATE	327428.684	6231243.161	22.452	21.242	surveyed
10649		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.16	N/A	No Lintel	DOUBLE IRON GRATE	327418.723	6231244.825	22.868	22.679	Surveyed
10653		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.98	0.58			1.22	0.22	2.4M LINTEL	DOUBLE IRON GRATE	327419.345	6231180.071	23.611	22.611	surveyed
10654		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.09	0.23	2.0M LINTEL	DOUBLE IRON GRATE	327414.756	6231149.291	24.079	23.219	surveyed
10656		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.54			1.25	0.17	2.4M LINTEL	DOUBLE IRON GRATE	326612.193	6231754.494	30.375	29.295	surveyed
10657		Banksia Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326626	6231747	N/A	29.427	estimated
10658		Sunnyside Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	DOUBLE IRON GRATE	326635	6231750	N/A	28.747	estimated
10659		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.97	0.17	2.4M LINTEL	DOUBLE IRON GRATE	326639.016	6231724.801	30.310	29.510	surveyed
10660		Sunnyside Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.93	0.53			1.3	0.18	3.0M LINTEL	DOUBLE IRON GRATE	326643.749	6231768.092	28.090	26.970	surveyed
10661		Duraba Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.55			1.78	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326662.585	6231772.022	27.025	25.445	surveyed
10662		Sunnyside Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.45	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326656.405	6231787.329	28.048	26.798	surveyed
10663		Sunnyside Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.37	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326659.921	6231814.466	28.487	27.317	surveyed
10664		Sunnyside Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			Inaccessible	0.21	3.0M LINTEL	DOUBLE IRON GRATE	326652.826	6231824.557	28.280	28.223	estimated
10665		Sunnyside Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326667.676	6231866.426	30.175	29.375	surveyed
10666		Sunnyside Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			0.8	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326660.956	6231876.077	30.450	29.850	surveyed
10669		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.9	0.18	2.4M LINTEL	DOUBLE IRON GRATE	326570.091	6231776.211	32.291	31.571	surveyed
10670		Irrubel Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.45			1	0.2	1.8M LINTEL	GALVANISED GRATE	327498.601	6231728.788	13.914	13.114	surveyed
10672		Burrawalla Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.45			1.2	0.2	1.8M LINTEL	GALVANISED GRATE	327512.866	6231718.428	13.359	12.359	surveyed
10673		Burrawalla Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			1	0.2	3.0M LINTEL	GALVANISED GRATE	327487.863	6231722.001	13.935	13.135	surveyed
10674		Burrawalla Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.04	0.45			1	0.15	3.0M LINTEL	GALVANISED GRATE	327481.07	6231713.877	14.112	13.262	surveyed
10676		Burrawalla Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.53			1.03	0.15	2.4M LINTEL	DOUBLE IRON GRATE	327562.302	6231702.024	11.624	10.744	surveyed
10677		Wallumatta Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327567	6231687	N/A	10.607	estimated
10680		Wallumatta Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327574	6231613	N/A	8.851	estimated
10681		Wallumatta Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327548	6231596	N/A	9.438	estimated
10682		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.05	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327215.19	6231438.154	25.163	24.313	surveyed
10685		Duraba Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.47	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326721.04	6231763.076	24.760	23.490	surveyed
10686		Duraba Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.4	0.19	2.4M LINTEL	DOUBLE IRON GRATE	326733.686	6231771.778	24.213	23.003	surveyed
10687		Duraba Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.68	0.16	2.4M LINTEL	DOUBLE IRON GRATE	326756.871	6231790.759	23.070	21.550	surveyed
10688		Duraba Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			0.8	0.19	2.4M LINTEL	DOUBLE IRON GRATE	326750.621	6231802.34	22.741	22.131	surveyed
10689		Duraba Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	DOUBLE IRON GRATE	326762	6231793	N/A	22.097	estimated
10690		Atkinson Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.94	0.55			1.1	0.22	3.1M LINTEL	DOUBLE IRON GRATE	327251.752	6233554.145	2.819	1.939	surveyed
10691		Atkinson Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.9	0.55			1.16	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327266.353	6233564.622	2.792	1.842	surveyed
10699		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327100	6230617	N/A	39.914	estimated
10700		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.04	0.22	2.4M LINTEL	DOUBLE IRON GRATE	326986.026	6230625.283	51.696	50.876	surveyed
10703		Booyong Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.08	0.22	3.1M LINTEL	DOUBLE IRON GRATE	326894.496	6232336.046	18.001	17.141	surveyed
10704		Booyong Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.59			1.1	0.2	1.0M LINTEL	DOUBLE IRON GRATE	326895.389	6232343.536	17.927	17.027	surveyed
10705		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.07	0.44			1.74	0.2	2.4M LINTEL	GALVANISED GRATE	326911.615	6232415.916	16.193	14.653	surveyed
10706		Cawarra Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326915	6232438	N/A	14.021	estimated
10710		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.44			1.33	0.2	2.4M LINTEL	GALVANISED GRATE	326937.903	6232617.089	10.327	9.197	surveyed
10712		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326937	6232622	N/A	9.147	estimated
10713		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.45			0.9	N/A	No Lintel	GALVANISED GRATE	326905.089	6232627.83	11.144	10.244	Surveyed
10714		Cawarra Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326956	6232658	N/A	8.103	estimated
10715		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.1	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329196.617	6231564.23	6.097	5.167	surveyed
10716		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.99	0.56			1.72	0.16	3.0M LINTEL	DOUBLE IRON GRATE	329279.979	6231552.476	3.902	2.342	surveyed
10717		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.1	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329318.076	6231546.906	3.390	2.480	surveyed
10718		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.05	0.18	3.0M LINTEL	DOUBLE IRON GRATE	329319.567	6231558.049	3.362	2.492	surveyed
10722		Yathong Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327365	6231848	N/A	9.607	estimated
10723		Nullaburra Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327484	6231605	N/A	11.080	estimated
10724		Wallumatta Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.6	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327556.081	6231611.701	10.089	8.689	surveyed
10725		Wallumatta Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			0.92	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327553.622	6231594.832	10.227	9.507	surveyed
10726		Wallumatta Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.2	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327551.242	6231577.928	10.415	9.415	surveyed
10731		Wallumatta Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			1.18	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327633.58	6231604.244	7.951	6.971	surveyed
10732		Gannons Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327700	6231597	N/A	5.242	estimated
10733		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.36	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327710.727	6231601.781	6.162	5.002	surveyed
10734		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.85	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327706.198	6231570.945	6.370	5.720	surveyed
10735		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.03	0.19	2.4M LINTEL	DOUBLE IRON GRATE	327700.378	6231531.116	7.446	6.606	surveyed
10736		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.1	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327692.346	6231476.726	8.742	7.842	surveyed
10737		Wallumatta Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Unknown	DOUBLE IRON GRATE	327683	6231473	N/A	8.593	estimated
10738		Gannons Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327715	6231631	N/A	4.992	estimated
10739		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.58			1.2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327729.071	6231639.341	5.979	4.979	surveyed
10740		Woolooware Golf Course	Headwall	Concrete Headwall	Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	Not Applicable	NO GRATE INSTALLED	327737	6231640	N/A	4.521	estimated
10741		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			0.84	0.17	3.0M LINTEL	DOUBLE IRON GRATE	327717.084	6231645.117	5.985	5.315	surveyed
10742		Yathong Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327334	6231607	N/A	16.400	estimated
10743		Nullaburra Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327401	6231598	N/A	14.768	estimated
10744		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.43			0.7	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327400.894	6231577.61	15.651	15.151	surveyed
10745		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.99	0.56			0.7	0.18	2.4M LINTEL	DOUBLE IRON GRATE	327405.004	6231606.161	15.470	14.950	surveyed
10746		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.47			1.53	0.2	2.4M LINTEL	GALVANISED GRATE	327377.799	6231429.462	20.307	18.977	surveyed
10747		Belair Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.6+	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327440.259	6230767.916	29.842	29.442	surveyed
10748		Belair Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.03	0.42			0.8	0.2	2.4M LINTEL	GALVANISED GRATE	327468.471	6230763.656	29.610	29.010	surveyed
10749		Belair Avenue - Caringbah South	Stormwater Pit	Grated Pit	Good	0.97	0.58			1.04	0.19	>=4.2M LINTEL	DOUBLE IRON GRATE	327475.402	6230755.45	30.139	29.289	surveyed
10750		Belair Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.5	0.2	1.8M LINTEL	GALVANISED GRATE	327478.796	6230778.019	28.992	27.692	surveyed
10751		Belair Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1	0.42			0.9	0.16	1.8M LINTEL	GALVANISED GRATE	327469.29	6230772.395	29.402	28.662	surveyed
10752		Belair Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.2	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327481.569	6230796.627	27.939	26.939	surveyed
10753		Belair Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.2	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327492.183	6230834.576	26.040	25.040	surveyed
10754		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.88	0.56			1.09	N/A	No Lintel	DOUBLE IRON GRATE	327453.023	6230954.277	21.230	20.140	Surveyed
10755		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.88	0.56			1.31	N/A	No Lintel	DOUBLE IRON GRATE	327482.629	6230950.102	21.148	19.838	Surveyed
10756		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.72	0.64			1.52	N/A	No Lintel	GALVANISED GRATE	327500.141	6230944.394	21.244	19.724	Surveyed
10762		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.89	0.56			1.65	0.18	3.6M LINTEL	DOUBLE IRON GRATE	327509.286	6230948.246	21.204	19.734	surveyed
10763		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.56			0.94	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327548.067	6230942.464	21.104	20.364	surveyed
10764		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.42			1.56	0.19	>=4.2M LINTEL	GALVANISED GRATE	327603.911	6230934.201	20.967	19.597	surveyed
10765		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.89	0.56			1.7	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327603.53	6230943.211	20.994	19.494	surveyed
10767		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.56			1.93	0.19	3.6M LINTEL	DOUBLE IRON GRATE	327510.712	6230957.127	21.226	19.486	surveyed
10768		Short Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.4			1.2	0.22	3.6M LINTEL	GALVANISED GRATE	328449.406	6231354.46	13.023	12.043	surveyed
10769		Short Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.2	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328426.673	6231357.935	13.022	12.022	surveyed
10772		Arcadia Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			1.12	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328440.985	6231532.907	4.763	3.843	surveyed
10774		Woolooware Golf Course	Stormwater Pit	Grated Pit	Very Good	0.86	0.45			0.99	0.19	1.8M LINTEL	GALVANISED GRATE	327977.398	6231412.142	6.667	5.867	surveyed
10775		Woolooware Golf Course	Stormwater Pit	Grated Pit	Very Good	0.92	0.58			0.95	N/A	No Lintel	DOUBLE IRON GRATE	327926.673	6231419.947	5.714	4.764	Surveyed
10776		Woolooware Golf Course	Headwall	Non Physical Wall	Good	N/A	N/A	PIPE ONLY	0	0.41	N/A	Not Applicable	NO GRATE INSTALLED	327906.323	6231429.389	4.655	4.245	Surveyed
10777		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.9	0.9			0.65	N/A	No Lintel	DOUBLE IRON GRATE	326718.948	6232516.176	18.280	17.630	Surveyed
10778		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.97	0.97			0.91	N/A	No Lintel	DOUBLE IRON GRATE	326745.058	6232512.634	18.209	17.299	Surveyed
10779		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.97	0.97			1.1	N/A	No Lintel	DOUBLE IRON GRATE	326771.878	6232508.346	18.069	16.969	Surveyed
10780		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.65	0.65			1.2	N/A	No Lintel	DOUBLE IRON GRATE	326778.658	6232552.253	17.747	16.547	Surveyed
10781		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.65	0.65			1.2	N/A	No Lintel	DOUBLE IRON GRATE	326781.759	6232573.726	17.429	16.229	Surveyed
10782		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.65	0.65			1.56	N/A	No Lintel	GALVANISED GRATE	326784.82	6232594.718	17.011	15.451	Surveyed
10783		Captain Cook Drive - Caringbah	Stormwater Pit	Stormwater Pit	Good	0.95	0.67			1.46	N/A	No Lintel	GALVANISED GRATE	326788.692	6232641.164	15.844	14.384	Surveyed
10784		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326789	6232645	N/A	14.966	estimated
10785		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326834	6232646	N/A	13.466	estimated
10786		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326846	6232650	N/A	12.890	estimated
10787		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1.17	0.18	3.0M LINTEL	DOUBLE IRON GRATE	326823.593	6232663.058	14.483	13.493	surveyed
10788		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327164.475	6232612.319	6.268	5.468	surveyed
10789		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.95	0.57			1.24	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327249.52	6232576.499	5.306	4.266	surveyed
10790		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.6			1.14	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327268.19	6232596.799	4.832	3.892	surveyed
10791		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327173	6232600	N/A	5.691	estimated
10792		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327260	6232587	N/A	4.240	estimated
10793		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327276	6232585	N/A	3.825	estimated
10794		Pandala Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.15	0.24	2.4M LINTEL	DOUBLE IRON GRATE	327735.705	6231014.4	18.308	17.398	surveyed
10795		Pandala Place - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327746	6231020	N/A	17.475	estimated
10796		Pandala Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.95	0.21	2.2M LINTEL	DOUBLE IRON GRATE	327737.535	6231005.429	18.302	17.562	surveyed
10797		Dolans Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			0.91	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328040.269	6231015.61	25.685	24.975	surveyed
10798		Kingsway - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.54			0.9	0.24	>=4.2M LINTEL	GALVANISED GRATE IN DOUBLE IRON GRATE	328001.637	6231058.636	21.985	21.325	surveyed
10799		Kingsway - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.55			0.68	0.24	>=4.2M LINTEL	GALVANISED GRATE IN DOUBLE IRON GRATE	327967.919	6231069.062	20.964	20.524	surveyed
10800		Kingsway - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			0.82	0.22	2.1M LINTEL	GALVANISED GRATE IN DOUBLE IRON GRATE	327932.869	6231079.862	19.765	19.165	surveyed
10801		Kingsway - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.57			1.17	0.23	>=4.2M LINTEL	GALVANISED GRATE IN DOUBLE IRON GRATE	327903.887	6231088.831	18.754	17.814	surveyed
10802		Kingsway - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.21	0.23	>=4.2M LINTEL	GALVANISED GRATE IN DOUBLE IRON GRATE	327865.361	6231100.718	17.561	16.581	surveyed
10803		Kingsway - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.94	0.54			1.2	0.23	1.2M LINTEL	GALVANISED GRATE IN DOUBLE IRON GRATE	327838.558	6231108.879	16.855	15.885	surveyed
10804		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			Inaccessible	0.22	>=4.2M LINTEL	DOUBLE IRON GRATE	327842.454	6231100.515	17.115	16.464	estimated
10805		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.82	0.24	1.3M LINTEL	DOUBLE IRON GRATE	327856.341	6231098.724	17.373	16.793	surveyed
10806		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			Abt 1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327851.569	6231083.663	17.924	17.024	surveyed
10807		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.89	0.56			0.84	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327844.983	6231054.122	18.984	18.344	surveyed
10828		Captain Cook Oval	Headwall	Concrete Headwall	Good	N/A	N/A	1.78	0.59	1.78	N/A	Not Applicable	NO GRATE INSTALLED	328264.288	6231894.542	1.774	-0.006	Surveyed
10829		Captain Cook Drive - Woolooware	Headwall	Concrete Headwall	Very Good	N/A	N/A	11	1.1	1.1	N/A	Not Applicable	NO GRATE INSTALLED	328269.923	6231941.864	1.734	0.634	Surveyed
10830		Captain Cook Drive - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.3	0.2	3.6M LINTEL	GALVANISED GRATE	328271.327	6231908.277	1.925	0.825	surveyed
10832		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.14	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327122.293	6232191.201	8.057	7.117	surveyed
10834		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.43			0.88	0.18	>=4.2M LINTEL	GALVANISED GRATE	327014.653	6232215.152	11.905	11.205	surveyed
10835		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.03	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327041.426	6232203.513	10.912	10.082	surveyed
10837		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327228.916	6232174.01	4.672	3.872	surveyed
10838		Fenton Avenue Reserve	Headwall	Non Physical Wall	Good	N/A	N/A	PIPE ONLY	0	1.6	N/A	Not Applicable	NO GRATE INSTALLED	327404.111	6232152.628	0.986	-0.614	Surveyed
10839		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.55			0.96	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327322.269	6232159.43	3.758	2.998	surveyed
10840		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.9	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327329.654	6232165.894	3.733	3.033	surveyed
10841		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.04	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327236.471	6232180.383	4.442	3.602	surveyed
10937		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327075.642	6232511.026	10.991	10.091	surveyed
10938		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1.13	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327086.278	6232501.784	10.773	9.843	surveyed
10939		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.84	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327162.146	6232490.363	9.020	8.380	surveyed
10940		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.58			0.94	0.21	2.4M LINTEL	DOUBLE IRON GRATE	327155.899	6232499.001	9.254	8.524	surveyed
10941		Raleigh Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327183	6232487	N/A	7.817	estimated
10942		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.68	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327178.12	6232484.886	8.638	8.158	surveyed
10943		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.48	0.21	2.4M LINTEL	DOUBLE IRON GRATE	327232.456	6232479.919	6.899	5.629	surveyed
10944		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.15	0.21	2.4M LINTEL	DOUBLE IRON GRATE	327226.638	6232488.477	7.168	6.228	surveyed
10945		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.08	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327301.247	6232469.525	4.530	3.650	surveyed
10946		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.2	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327317.875	6232474.824	4.172	3.172	surveyed
10947		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327362.2	6232468.576	2.935	1.935	surveyed
10948		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.85	0.18	3.0M LINTEL	DOUBLE IRON GRATE	326967.925	6232747.712	8.758	7.088	surveyed
10950		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			1.8	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326985.698	6232761.667	7.956	6.356	surveyed
10951		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.43			1.15	0.23	3.0M LINTEL	GALVANISED GRATE	326917.799	6232625.875	10.985	10.065	surveyed
10952		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.45			1	0.2	1.8M LINTEL	GALVANISED GRATE	327398.232	6232352.753	2.381	1.581	surveyed
10953		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			0.9	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327385.271	6232363.875	2.552	1.852	surveyed
10954		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327113.162	6232403.731	10.924	10.124	surveyed
10955		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.17	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327118.94	6232395.195	10.643	9.673	surveyed
10956		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.1	0.2	3.6M LINTEL	GALVANISED GRATE	327265.563	6232373.321	4.157	3.257	surveyed
10957		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.92	0.56			1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327312.451	6232366.302	3.217	2.417	surveyed
10958		Burleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.57			1.1	0.18	3.6M LINTEL	DOUBLE IRON GRATE	327306.217	6232375.05	3.330	2.410	surveyed
10959		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327706.797	6231997.66	4.445	3.645	surveyed
10960		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.2	0.26	3.0M LINTEL	DOUBLE IRON GRATE	327759.98	6231985.628	2.539	1.599	surveyed
10961		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327767	6231987	N/A	1.527	estimated
10962		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.1	0.25	3.0M LINTEL	DOUBLE IRON GRATE	327763.2	6231959.901	3.022	2.172	surveyed
10963		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.9	0.25	3.0M LINTEL	DOUBLE IRON GRATE	327760.966	6231944.46	3.140	2.490	surveyed
10964		Gannons Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.66	0.25	3.0M LINTEL	DOUBLE IRON GRATE	327774.648	6231949.699	3.078	2.668	surveyed

Pit_ID	Pit_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pit/Headwall_Type	Condition	Length of Grate/Inlet	Width of Grate/Inlet	Height of Headwall	Width of Headwall	Depth from Kerb/[Surface] to Invert	Depth from Kerb to Grate/Inlet	Lintel	Grate	X Coordinate	Y Coordinate	Surface RL on Kerb/Surface	Indicative Invert (mAHD)	Estimated or Surveyed
16205		Captain Cook Drive - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327867	6231979	N/A	1.108	estimated
16208		Drake Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.58			1.2	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327102.152	6232304.422	9.789	8.789	surveyed
16209		Drake Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.99	0.52			1.08	0.16	2.4M LINTEL	DOUBLE IRON GRATE	327167.239	6232284.895	7.586	6.666	surveyed
16210		Drake Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			0.94	0.18	1.8M LINTEL	DOUBLE IRON GRATE	327160.917	6232295.884	7.330	6.570	surveyed
16211		Church Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			0.9	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328174.389	6230875.276	35.402	34.702	surveyed
16212		Fairs Avenue - Woolooware	Stormwater Pit	Grated Pit	Good	0.96	0.57			1.1	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328183.589	6230882.132	34.520	33.620	surveyed
16213		Church Street - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328176	6230889	N/A	33.610	estimated
16214		Fairs Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328287.188	6230858.13	34.615	33.815	surveyed
16215		Fairs Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.57			1.8	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328318.959	6230850.761	34.329	32.729	surveyed
16216		Fairs Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1.16	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328353.188	6230842.788	34.281	33.321	surveyed
16217		Fairs Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.03	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328345.255	6230852.435	34.099	33.269	surveyed
16218		Fairs Avenue - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	328356	6230853	N/A	33.225	estimated
16219		Fairs Avenue - Woolooware	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	328360	6230864	N/A	32.046	estimated
16220		Fairs Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.16	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328343.145	6230845.1	34.141	33.181	surveyed
16221		Fairs Avenue - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	328349	6230851	N/A	33.298	estimated
16231		Grenville Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.7	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327160.916	6232422.723	8.973	8.473	surveyed
16232		Grenville Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327164	6232388	N/A	8.077	estimated
16233		Fenton Avenue - Caringbah (Ashleigh)	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.05	0.2	3.2M LINTEL	DOUBLE IRON GRATE	327388.567	6232465.042	2.525	1.675	surveyed
16234		Fenton Avenue - Caringbah	Stormwater Pit	Grated Pit	Fair	NOT FOUND	0			N/A	N/A	Not Specified	DOUBLE IRON GRATE	327407	6232470	N/A	1.640	estimated
16235		Fenton Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.43			0.73	0.22	3.6M LINTEL	GALVANISED GRATE	327395.331	6232447.757	2.186	1.676	surveyed
16236		Raleigh Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.74	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327167.38	6232487.332	8.714	8.174	surveyed
16237		Raleigh Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327171	6232490	N/A	8.051	estimated
16239		Wallumatta Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327559	6231631	N/A	9.282	estimated
16264		Nullaburra Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327410	6231580	N/A	14.772	estimated
16265		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.45			1.35	0.16	1.8M LINTEL	GALVANISED GRATE	327429.842	6231714.413	14.870	13.680	surveyed
16266		Nullaburra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.47			1.05+	0.15	1.8M LINTEL	GALVANISED GRATE	327418.029	6231695.901	15.082	14.082	surveyed
16269		Burrawalla Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.47			1.28	0.16	2.4M LINTEL	GALVANISED GRATE	327440.817	6231728.659	14.588	13.468	surveyed
16270		Irrubel Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.25	0.2	1.8M LINTEL	GALVANISED GRATE	327506.13	6231727.726	13.926	12.876	surveyed
16271		Burrawalla Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.03	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327559.325	6231711.768	11.889	11.059	surveyed
16272		Frobisher Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327049	6232210	N/A	9.915	estimated
16273		Frobisher Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.22	0.21	>=4.2M LINTEL	DOUBLE IRON GRATE	327124.187	6232198.768	8.002	6.992	surveyed
16274		Grenville Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.15	0.19	3.0M LINTEL	DOUBLE IRON GRATE	327132.423	6232205.101	7.575	6.615	surveyed
16275		Grenville Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327139	6232196	N/A	6.605	estimated
16276		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327346.307	6232159.885	3.579	2.779	surveyed
16277		Meta Street - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327040	6232754	N/A	4.274	estimated
16278		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			2.02	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327074.084	6232749.765	5.257	3.447	surveyed
16279		Meta Street - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327129	6232742	N/A	2.752	estimated
16281		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.54			1.4	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327122.72	6232732.222	4.273	3.073	surveyed
16282		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.5			2.1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327174.347	6232736.759	3.707	1.807	surveyed
16283		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.87	0.75			0.92	N/A	No Lintel	GALVANISED GRATE	327243.117	6232716.257	3.290	2.174	Surveyed
16284		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.57			1.01	0.18	2.4M LINTEL	DOUBLE IRON GRATE	327220.365	6232719.254	3.390	2.560	surveyed
16285		Meta Street - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327232	6232729	N/A	1.727	estimated
16286		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Fair	0.9	0.55			1.1	0.18	3.0M LINTEL	DOUBLE IRON GRATE	327161.111	6232727.162	3.866	2.946	surveyed
16287		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Good	0.96	0.55			2.14	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327252.399	6232726.363	2.950	1.010	surveyed
16288		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.24	0.21	3.6M LINTEL	DOUBLE IRON GRATE	327317.828	6232706.406	2.566	1.536	surveyed
16289		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.1	0.52			2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327326.503	6232716.561	2.466	0.666	surveyed
16290		Caringbah Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327486	6230952	3.723	3.048	estimated
16291		Caringbah Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327454	6230957	N/A	20.747	estimated
16293		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	Unknown	327511	6230954	N/A	20.401	estimated
16294		Caringbah Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327502	6230950	N/A	20.319	estimated
16295		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.17	N/A	No Lintel	DOUBLE IRON GRATE	327523.5	6230943.811	20.891	19.721	Surveyed
16296		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			1.28	N/A	No Lintel	DOUBLE IRON GRATE	327538.963	6230941.268	20.960	19.680	Surveyed
16297		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.4	N/A	No Lintel	DOUBLE IRON GRATE	327562.019	6230938.783	20.960	19.560	Surveyed
16298		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.48	N/A	No Lintel	DOUBLE IRON GRATE	327577.168	6230935.408	20.953	19.473	Surveyed
16299		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.27	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327549.536	6230951.273	21.110	20.040	surveyed
16313		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327310	6231990	N/A	4.869	estimated
16314		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			1.36	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327302.264	6231937.592	7.203	6.043	surveyed
16315		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327301	6231926	N/A	6.649	estimated
16316		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327306	6231965	N/A	5.304	estimated
16318		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.3	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327294.513	6231880.902	8.780	7.680	surveyed
16319		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.57			0.7	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327321.166	6231945.292	6.781	6.281	surveyed
16320		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327317	6231975	N/A	5.177	estimated
16321		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.92	0.56			0.9	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328588.782	6231483.39	5.028	4.328	surveyed
16322		Edinburgh Close - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			0.94	0.16	1.8M LINTEL	DOUBLE IRON GRATE	328694.167	6231483.823	6.390	5.610	surveyed
16323		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			1.05	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328689.299	6231460.389	6.826	5.976	surveyed
16324		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.56			1.06	0.18	2.4M LINTEL	DOUBLE IRON GRATE	328685.352	6231434.927	7.489	6.609	surveyed
16325		Goodwin Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.56			1.03	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328691.626	6231420.604	7.910	7.080	surveyed
16326		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.98	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328682.178	6231414.547	8.055	7.275	surveyed
16327		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.07	0.2	3.0M LINTEL	GALVANISED GRATE	328679.086	6231394.881	8.571	7.701	surveyed
16328		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			0.96	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328672.647	6231392.953	8.750	7.990	surveyed
16329		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.57			1.1	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328659.225	6231384.061	9.324	8.424	surveyed
16330		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			1	0.2	1.8M LINTEL	DOUBLE IRON GRATE	328645.4	6231386.009	9.567	8.767	surveyed
16331		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.56			1.06	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328638.976	6231380.802	9.689	8.829	surveyed
16338		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1	0.46			1.14	0.2	3.6M LINTEL	GALVANISED GRATE	326999.808	6230516.107	47.915	46.975	surveyed
16339		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.43	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327000.652	6230508.581	47.875	46.645	surveyed
16340		Saunders Bay Road - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327004	6230508	N/A	46.635	estimated
16341		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.38	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327000.912	6230506.286	47.888	46.708	surveyed
16342		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			1.05	0.16	1.0M LINTEL	DOUBLE IRON GRATE	326997.291	6230489.046	48.208	47.318	surveyed
16343		Saunders Bay Road - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327003	6230495	47.888	47.308	estimated
16344		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.58			0.7+	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327003.645	6230479.965	48.807	48.207	surveyed
16345		Dudley Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.34	0.2	1.0M LINTEL	DOUBLE IRON GRATE	326991.119	6230497.857	48.110	46.970	surveyed
16346		Dudley Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.22	0.2	3.6M LINTEL	DOUBLE IRON GRATE	326985.742	6230491.056	48.539	47.519	surveyed
16347		Dudley Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1.03	0.44			1.43	0.2	3.6M LINTEL	GALVANISED GRATE	326974.793	6230492.723	49.101	47.871	surveyed
16348		Dudley Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.96			1.25	0.18	3.6M LINTEL	DOUBLE IRON GRATE	326982.329	6230499.253	48.640	47.570	surveyed
16349		Saunders Bay Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.52			1.12	0.18	1.0M LINTEL	DOUBLE IRON GRATE	326987.786	6230617.996	50.017	49.077	surveyed
16350		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.18	0.22	1.0M LINTEL	DOUBLE IRON GRATE	326993.494	6230633.371	49.771	48.811	surveyed
16400		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			0.74	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327220.818	6231377.401	26.176	25.636	surveyed
16401		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.55			1.3	0.22	>=4.2M LINTEL	GALVANISED GRATE	327208.641	6231394.293	26.436	25.356	surveyed
16402		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.87	0.2	2.4M LINTEL	GALVANISED GRATE	327276.043	6231384.62	24.929	24.259	surveyed
16403		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.54			0.97	0.2	2.4M LINTEL	GALVANISED GRATE	327344.036	6231361.163	24.365	23.595	surveyed
16435		Caringbah Road - Caringbah	Stormwater Pit	Letter Box - Conc Lid	Good	1.16	1.1			N/A	0.2	No Lintel	CONCRETE LID	327522.198	6231032.694	18.791	17.691	estimated
16436		Dwyer Reserve	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327565	6231141	N/A	16.072	estimated
16437		Gannons Road - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327598	6231137	N/A	14.515	estimated
16438		Gannons Road - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327591	6231167	N/A	14.445	estimated
16439		Dwyer Reserve	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327555	6231112	N/A	16.797	estimated
16958		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329787	6231431	N/A	3.694	estimated
16959		Links Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			2	0.21	3.2M LINTEL	DOUBLE IRON GRATE	329821.13	6231633.248	4.639	2.849	surveyed
16960		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.68	0.2	3.2M LINTEL	DOUBLE IRON GRATE	329813.094	6231628.737	4.502	3.022	surveyed
16961		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.85	0.2	3.2M LINTEL	DOUBLE IRON GRATE	329814.107	6231655.365	4.402	2.752	surveyed
16962		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329814	6231642	N/A	3.683	estimated
16963		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329811	6231662	N/A	3.579	estimated
16964		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329812	6231675	N/A	3.491	estimated
16965		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.12	0.21	3.2M LINTEL	DOUBLE IRON GRATE	329801.57	6231663.258	4.538	3.628	surveyed
16966		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329809	6231648	N/A	3.752	estimated
16967		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			2.08	0.2	3.2M LINTEL	DOUBLE IRON GRATE	329823.084	6231753.149	3.794	1.914	surveyed
16970		Elouera Road - Cronulla	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329822	6231754	N/A	2.403	estimated
16971		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			2.1	0.2	3.2M LINTEL	DOUBLE IRON GRATE	329828.881	6231806.334	3.533	1.633	surveyed
16972		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.76	0.2	3.2M LINTEL	DOUBLE IRON GRATE	329816.662	6231791.804	3.522	2.962	surveyed
16974		Elouera Road - Cronulla	Stormwater Pit	Stormwater Pit	Very Good	0.73 Diam				N/A	N/A	No Lintel	GATIC LID	329828.33	6231878.562	2.902	1.552	estimated
16976		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.2	0.2	2.6M LINTEL	DOUBLE IRON GRATE	329844.536	6231869.641	3.158	2.158	surveyed
16978		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329838	6231882	N/A	1.546	estimated
16979		Captain Cook Drive - Kurnell	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329844	6231987	N/A	0.760	estimated
17026		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.82	0.5			0.84	0.2	1.8M LINTEL	SINGLE IRON GRATE	327557.874	6232748.085	1.906	1.266	surveyed
17028		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.84	0.5			1.38	0.2	1.8M LINTEL	SINGLE IRON GRATE	327584.253	6232754.923	2.040	0.860	surveyed
17029		Endeavour Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327581	6232767	N/A	-0.125	estimated
17030		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.5			1.25	0.18	1.8M LINTEL	SINGLE IRON GRATE	327596.082	6232710.242	2.172	1.102	surveyed
17031		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.5			1.2	0.2	1.8M LINTEL	SINGLE IRON GRATE	327585.454	6232700.243	2.211	1.211	surveyed
17032		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.82	0.5			1.28	0.2	1.8M LINTEL	SINGLE IRON GRATE	327610.979	6232603.689	2.171	1.091	surveyed
17033		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.46			1.2	0.2	1.8M LINTEL	SINGLE IRON GRATE	327621.449	6232614.226	2.239	1.239	surveyed
17034		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.84	0.5			1.42	0.2	1.8M LINTEL	SINGLE IRON GRATE	327632.141	6232529.975	1.932	0.712	surveyed
17035		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96X0.55DIG	0.83X0.5SIG			1.5	N/A	No Lintel	2X DOUBLE IRON GRATE	327641.206	6232541.848	1.714	1.167	Surveyed
17036		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.5			1.83	0.22	1.8M LINTEL	SINGLE IRON GRATE	327669.902	6232471.354	1.778	0.168	surveyed
17037		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.84	0.5			1.3	0.2	1.8M LINTEL	SINGLE IRON GRATE	327671.846	6232488.593	1.731	0.631	surveyed
17038		Resolution Drive Reserve & Cycleway	Headwall	Concrete Headwall	Good	N/A	N/A	1.7	6.7	N/A	N/A	Not Applicable	NO GRATE INSTALLED	327722.389	6232436.068	1.440	1.140	estimated
17039		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.55			1.9	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327627.555	6232356.376	1.839	0.139	surveyed
17040		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.85	0.5			1.3	0.18	1.8M LINTEL	SINGLE IRON GRATE	327509.398	6232366.234	2.393	1.273	surveyed
17041		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.5			1.22	0.2	1.8M LINTEL	SINGLE IRON GRATE	327494.085	6232375.45	2.463	1.443	surveyed
17042		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.5			1.06	0.23	1.8M LINTEL	SINGLE IRON GRATE	327471.825	6232501.976	2.467	1.637	surveyed
17043		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.84	0.5			1.15	0.2	1.8M LINTEL	SINGLE IRON GRATE	327474.764	6232547.653	2.272	1.322	surveyed
17044		Endeavour Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.46			1.3	0.2	2.4M LINTEL	SINGLE IRON GRATE	327448.086	6232662.174	1.888	0.788	surveyed
17045		Endeavour Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327361	6232712	N/A	1.059	estimated
18576		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.1	0.21	1.0M LINTEL	DOUBLE IRON GRATE	327042.077	6230751.95	38.960	38.070	surveyed
24074		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	0.42			0.84	0.2	3.6M LINTEL	GALVANISED GRATE	327301.875	6233722.457	1.767	1.127	surveyed
25022		Crusade Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.5			0.97	0.18	3.6M LINTEL	DOUBLE IRON GRATE	327698.879	6230756.722	28.925	28.135	surveyed
25023		Crusade Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.04	0.2	1.0M LINTEL	DOUBLE IRON GRATE	327703.1	6230784.182	27.806	26.966	surveyed
25024		Crusade Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.53			1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327713.52	6230822.942	26.039	25.239	surveyed
25025		Crusade Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			0.93	0.17	1.0M LINTEL	DOUBLE IRON GRATE	327720.383	6230848.75	25.136	24.376	surveyed
25026		Crusade Place - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.07	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327726.797	6230891.097	23.588	22.718	surveyed
26443		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327453	6232475	N/A	1.455	estimated
26450		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327432.908	6232491.139	2.670	1.845	estimated
26453		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327414.032	6232517.588	2.880	2.055	estimated
26454		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327426.791	6232500.886	2.750	1.925	estimated
26455		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327432	6232501	2.750	1.925	estimated
26456		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327420.448	6232509.683	2.809	1.984	estimated
26457		Captain Cook Drive - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327423	6232509	2.809	1.984	estimated
26458		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	Unknown	327410	6232522	2.982	2.157	estimated
26459		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327407.17	6232525.168	2.982	2.157	estimated
26460		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	Unknown	327398	6232533	N/A	2.229	estimated
26462		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327391.506	6232539.56	3.096	2.271	estimated
26463		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	Unknown	327376	6232550	3.243	2.418	estimated
26464		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327373.431	6232549.663	3.243	2.418	estimated
26465		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327361.042	6232560.262	3.333	2.283	estimated
26466		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327352.198	6232564.928	3.433	2.383	estimated
26467		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327337.348	6232571.558	3.637	2.587	estimated
26471		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			0.7	N/A	No Lintel	DOUBLE IRON GRATE	327179.473	6232586.885	6.244	5.544	Surveyed
26472		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.1	0.2	No Lintel	DOUBLE IRON GRATE	326837.069	6232637.897	13.922	13.022	surveyed
27094		Oleander Parade - Caringbah South	Stormwater Pit	Grated Pit	Good	0.97	0.56			0.5+	0.16	3.6M LINTEL	DOUBLE IRON GRATE	327367.219	6230767.822	30.181	29.741	surveyed
27096		Oleander Parade - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327371	6230797	N/A	28.074	estimated
27124		Edinburgh Close - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.56			0.9	0.17	3.0M LINTEL	DOUBLE IRON GRATE	328729.483	6231515.666	6.539	5.809	surveyed
27125		Edinburgh Close - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			0.83	0.03	No Lintel	DOUBLE IRON GRATE	328721.964	6231516.549	6.474	5.674	surveyed
27126		Woolooware Road - Woolooware	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328639	6231527	N/A	5.005	estimated
27128		Edinburgh Close - Woolooware	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328676	6231489	N/A	5.706	estimated
27167		Seaview Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.08	0.18	2.4M LINTEL	DOUBLE IRON GRATE	329524.675	6231442.191	4.365	3.465	surveyed
27174		Croydon Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.01	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329492.644	6230919.208	15.914	15.094	surveyed
27175		Burke Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.92	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329513.54	6230923.662	13.385	12.635	surveyed
27176		Burke Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.96	0.16	3.0M LINTEL	DOUBLE IRON GRATE	329487.701	6230927.058	16.626	15.826	surveyed
27178		Burke Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329494	6230926	N/A	15.084	estimated
27193		Bando Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			0.9	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329664.471	6231116.178	4.378	3.688	surveyed
27194		Bando Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.38	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329648.993	6231118.189	4.420	3.250	surveyed
27195		Bando Road Drainage Reserve	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	No Lintel	CONCRETE LID	329651.11	6231130.465	4.497	3.597	estimated
27196		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.15	0.16	2.4M LINTEL	DOUBLE IRON GRATE	329653.139	6231340.548	4.397	3.407	surveyed
27197		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.19	0.2	2.4M LINTEL	DOUBLE IRON GRATE	329651.273	6231327.906	4.454	3.464	surveyed
27198		Girrilang Road - Cronulla	Stormwater Pit	Stormwater Pit	Very Good	0.92	0.92			2.78	N/A	No Lintel	GRATE INSTALLED	329674.055	6231317.388	4.819	2.039	Surveyed
27199		Girrilang Road - Cronulla	Stormwater Pit	Stormwater Pit	Very Good	1.1	1.1			N/A	N/A	No Lintel	CONCRETE LID	329635.462	6231340.789	4.719	3.969	estimated
27204		Kurnell Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.01	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329317.031	6231477.519	5.963	5.163	surveyed
27205		Pozieres Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.99	0.58			0.82	0.15	2.4M LINTEL	DOUBLE IRON GRATE	329309.577	6231488.301	5.564	4.894	surveyed
27206		Kurnell Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.99	0.56			1.05	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329325.223	6231468.708	6.117	5.277	surveyed
27209		Pozieres Street - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329271	6231494	N/A	4.843	estimated
27210		Pozieres Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.99	0.57			1.98	0.21	3.0M LINTEL	DOUBLE IRON GRATE	329272.883	6231502.778	5.812	4.042	surveyed
27212		Pozieres Street - Cronulla	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329276	6231527	N/A	3.442	estimated
27229		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Fair	0.96	0.56			0.58	0.19	3.0M LINTEL	DOUBLE IRON GRATE	329777.435	6231311.507	5.842	5.452	surveyed
27230		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Good	0.96	0.56			0.54	0.18	1.2M LINTEL	DOUBLE IRON GRATE	329782.755	6231323.855	5.910	5.550	surveyed
27231		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.66	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329812.096	6231307.056	6.298	5.808	surveyed
27232		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.43			0.86	0.22	3.0M LINTEL	GALVANISED GRATE	329828.228	6231318.041	6.416	5.776	surveyed
27233		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.93	0.18	3.0M LINTEL	DOUBLE IRON GRATE	329859.742	6231313.992	6.934	6.184	surveyed
27234		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.44			0.88	0.19	3.0M LINTEL	GALVANISED GRATE	329865.534	6231300.193	7.152	6.462	surveyed
27235		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.05	0.17	3.0M LINTEL	GALVANISED GRATE	329886.193	6231310.58	7.728	6.848	surveyed
27236		Girrilang Road - Cronulla	Stormwater Pit	Grated Pit	Good	0.96	0.56			0.96	0.16	3.0M LINTEL	DOUBLE IRON GRATE	329891.32	6231329.847	8.043	7.243	surveyed
27252		Burke Road Drainage Reserve	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329586	6230970	N/A	3.729	estimated
27968		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.5	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328805.496	6231382.268	10.051	8.751	surveyed
27969		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.52	0.18	1.0M LINTEL	DOUBLE IRON GRATE	328799.109	6231331.005	12.485	11.145	surveyed
27970		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.46			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	328798.248	6231310.959	13.468	12.668	surveyed
27971		High Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			1.12	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328830.001	6231417.631	9.004	8.084	surveyed

Pit_ID	Pit_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pit/Headwall_Type	Condition	Length of Grate/Inlet	Width of Grate/Inlet	Height of Headwall	Width of Headwall	Depth from Kerb/[Surface] to Invert	Depth from Kerb to Grate/Inlet	Lintel	Grate	X Coordinate	Y Coordinate	Surface RL on Kerb/Surface	Indicative Invert (mAHD)	Estimated or Surveyed
27972		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.94	0.55			2.29	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328796.763	6231392.152	9.649	7.559	surveyed
27973		High Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.2	0.23	2.4M LINTEL	DOUBLE IRON GRATE	328822.892	6231426.232	8.832	7.862	surveyed
27974		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.2	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328816.943	6231469.939	8.282	7.282	surveyed
27975		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.43			1.56	0.2	2.4M LINTEL	GALVANISED GRATE	328807.473	6231467.859	8.246	6.886	surveyed
27976		Cook Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			1.29	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328835.288	6231511.425	9.470	8.380	surveyed
27977		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.94	0.54			1.04	0.2	1.0M LINTEL	DOUBLE IRON GRATE	328827.815	6231521.257	9.288	8.448	surveyed
29573		Delagoa Reserve	Stormwater Pit	Letterbox - Gal Grate	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	GALVANISED GRATE	327196	6231697	N/A	15.945	estimated
29574		Delagoa Place - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327199	6231722	N/A	15.243	estimated
29575		Bellevue Parade - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327205	6231725	N/A	15.042	estimated
29576		Kingsway - Caringbah	Stormwater Pit	Stormwater Pit	Good	0.67	0.67			1.02	0	Not Specified	CONCRETE LID	327311.851	6231456.279	21.344	20.324	surveyed
30139		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.44			1.36	0.2	3.6M LINTEL	GALVANISED GRATE	326539.936	6231725.246	33.939	32.779	surveyed
30177		Arcadia Avenue - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	328432	6231523	N/A	4.408	estimated
30178		Arcadia Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.56			1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	328429.89	6231507.706	5.712	4.912	surveyed
30179		Arcadia Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1	0.2	1.0M LINTEL	DOUBLE IRON GRATE	328420.292	6231446.088	8.735	7.935	surveyed
30180		Arcadia Avenue - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.92	0.57			1	0.2	1.0M LINTEL	DOUBLE IRON GRATE	328410.456	6231382.718	11.876	11.076	surveyed
30181		Short Street - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328410	6231364	N/A	12.012	estimated
30182		Short Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.5	0.2	2.4M LINTEL	DOUBLE IRON GRATE	328285.187	6231388.281	11.209	10.909	surveyed
30184		Taywood Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	1.9	0.56			1.3	0.2	2.4M LINTEL	2x DOUBLE IRON GRATE	328716.133	6231286.301	12.885	11.785	surveyed
30185		Taywood Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	1.9	0.54			1.06	0.2	2.4M LINTEL	2x DOUBLE IRON GRATE	328714.882	6231278.963	12.902	12.042	surveyed
30186		Flinders Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.5			1.06	0.16	3.0M LINTEL	DOUBLE IRON GRATE	328668.13	6231203.233	17.608	16.708	surveyed
30187		Flinders Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.93	0.52			1.23	0.04	No Lintel	DOUBLE IRON GRATE	328697.693	6231199.026	17.216	16.026	surveyed
30188		Flinders Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.36	0.17	1.0M LINTEL	DOUBLE IRON GRATE	328699.566	6231198.799	17.325	16.135	surveyed
30189		Flinders Road - Woolooware	Stormwater Pit	Grated Pit	Good	0.68	0.68			1.06	N/A	No Lintel	GALVANISED GRATE	328699.824	6231201.75	17.039	15.979	Surveyed
30190		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			1.48	0.17	2.4M LINTEL	DOUBLE IRON GRATE	328781.986	6231286.874	14.564	13.254	surveyed
30191		Edinburgh Crescent - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.9	0.57			1.05	0.2	1.8M LINTEL	DOUBLE IRON GRATE	328680.156	6231440.882	7.230	6.380	surveyed
30192		Edinburgh Crescent - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328687	6231448	N/A	6.225	estimated
30193		Edinburgh Close - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.93	0.56			1	0.19	1.8M LINTEL	DOUBLE IRON GRATE	328703.009	6231482.385	6.571	5.761	surveyed
30194		Edinburgh Crescent - Woolooware	Stormwater Pit	Assumed Node	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328712	6231484	N/A	5.620	estimated
30195		Goodwin Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			0.98	0.2	1.8M LINTEL	DOUBLE IRON GRATE	328726.569	6231415.629	8.280	7.500	surveyed
30196		Goodwin Street - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.88	0.57			1.04	0.19	2.4M LINTEL	DOUBLE IRON GRATE	328727.543	6231421.678	8.142	7.292	surveyed
30197		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327782.39	6230637.438	37.409	36.609	surveyed
30198		Coral Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			1.1	0.21	3.0M LINTEL	DOUBLE IRON GRATE	327775.219	6230643.869	37.276	36.386	surveyed
30203		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.82	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327381.15	6231464.201	18.651	18.031	surveyed
30204		Nullaburra Road - Caringbah	Headwall	Stone Headwall	Very Good	N/A	N/A	1.55	0.54	1.25	N/A	Not Applicable	NO GRATE INSTALLED	327384.312	6231460.275	19.335	18.085	Surveyed
30205		Wallumatta Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	Unknown	327555	6231603	N/A	9.148	estimated
30206		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.67	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327728.27	6231633.982	6.042	4.572	surveyed
30207		Gannons Road - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327674	6231307	10.510	9.610	estimated
30208		Gannons Road - Caringbah South	Stormwater Pit	Grated Kerb Inlet	Very Good	0.94	0.54			0.68	0.16	2.4M LINTEL	DOUBLE IRON GRATE	327683.543	6231333.634	10.560	10.040	surveyed
30209		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	2.4M LINTEL	DOUBLE IRON GRATE	327679	6231300	N/A	10.429	estimated
30210		Mansfield Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327025.306	6231323.881	39.333	38.533	surveyed
30211		Mansfield Avenue - Caringbah	Stormwater Pit	Grated Pit	Good	0.96	0.54			1	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327032.283	6231332.847	38.966	38.166	surveyed
30212		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.73	0.21	>=4.2M LINTEL	GALVANISED GRATE	327125.067	6231405.775	29.910	28.390	surveyed
30213		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.95	0.26	2.4M LINTEL	GALVANISED GRATE	327119.626	6231429.678	30.261	29.571	surveyed
30214		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.04	0.5			1.66	0.18	1.8M LINTEL	GALVANISED GRATE	327141.953	6231403.407	29.121	27.641	surveyed
30215		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.56			1.44	0.22	>=4.2M LINTEL	GALVANISED GRATE	327170.97	6231399.42	27.924	26.704	surveyed
30216		Kingsway - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327221	6231393	N/A	24.842	estimated
30217		Kingsway - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327309	6231375	N/A	24.107	estimated
30218		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			0.9	0.21	1.0M LINTEL	GALVANISED GRATE	327337.337	6231389.488	24.838	24.148	surveyed
30219		Kingsway - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327289.53	6231394.695	24.922	24.322	estimated
30220		Kingsway - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327303.471	6231391.01	24.810	24.135	estimated
30221		Kingsway - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327318.833	6231386.001	24.665	24.065	estimated
30222		Kingsway - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327332.684	6231380.63	24.573	23.973	estimated
30223		Kingsway - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327345.361	6231374.92	24.574	23.974	estimated
30224		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1	N/A	No Lintel	DOUBLE IRON GRATE	327305.963	6231406.609	23.447	22.447	Surveyed
30225		Kingsway - Caringbah	Headwall	Concrete Headwall	Very Good	N/A	N/A	0.65	0.5	N/A	N/A	Not Applicable	NO GRATE INSTALLED	327293.756	6231413.034	23.719	23.119	estimated
30226		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327231	6231419	N/A	24.428	estimated
30227		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	DOUBLE IRON GRATE	327238	6231431	N/A	23.993	estimated
30228		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.43			1.15	0.18	2.4M LINTEL	GALVANISED GRATE	327153.863	6231468.506	26.484	25.514	surveyed
30229		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327243.571	6231518.648	22.175	21.375	surveyed
30230		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.7	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327267.72	6231630.436	17.986	16.486	surveyed
30231		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.16	0.17	No Lintel	GALVANISED GRATE	327271.512	6231655.561	17.220	16.230	surveyed
30232		Delagoa Place - Caringbah	Stormwater Pit	Letter Box - Conc Lid	Very Good	0	0			N/A	N/A	No Lintel	Not Applicable	327127.946	6231682.536	19.279	18.604	estimated
30233		Delagoa Place - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.42			0.87	0.19	3.0M LINTEL	GALVANISED GRATE	327160.275	6231681.627	18.391	17.711	surveyed
30235		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.5			0.9	0.24	3.1M LINTEL	DOUBLE IRON GRATE	326876.648	6231655.034	26.080	25.420	surveyed
30236		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			0.7	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326723.969	6231663.303	31.795	31.295	surveyed
30237		Denman Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			0.77	0.2	3.6M LINTEL	DOUBLE IRON GRATE	326727.09	6231667.931	31.650	31.080	surveyed
30238		Mackay Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.45			0.96	0.2	2.4M LINTEL	GALVANISED GRATE	326793.416	6231510.324	39.493	38.733	surveyed
30239		Hay Avenue Car Park	Stormwater Pit	Grated Pit	Very Good	1	0.56			1	0.14	1.8M LINTEL	SINGLE IRON GRATE	326795.735	6231528.467	38.062	37.202	surveyed
30240		Mackay Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.6			1.05	0.13	2.4M LINTEL	DOUBLE IRON GRATE	326813.534	6231565.064	35.124	34.204	surveyed
30241		Mackay Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			1.5	0.15	3.0M LINTEL	DOUBLE IRON GRATE	326802.201	6231577.425	34.309	32.959	surveyed
30242		Mackay Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.44			0.9	0.14	2.4M LINTEL	GALVANISED GRATE	326817.187	6231593.373	33.143	32.383	surveyed
30243		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	1.2M LINTEL	DOUBLE IRON GRATE	326765	6231599	N/A	33.575	estimated
30244		Hay Avenue Car Park	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326741	6231599	N/A	33.901	estimated
30245		Banksia Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326729	6231593	N/A	34.608	estimated
30246		Banksia Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326782	6231599	N/A	33.216	estimated
30247		Hay Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326719	6231586	N/A	35.370	estimated
30248		Hay Lane - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.42			1	0.2	3.0M LINTEL	GALVANISED GRATE	326728.493	6231585.954	35.858	35.058	surveyed
30249		Hay Lane - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			0.88	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326721.645	6231582.587	36.070	35.390	surveyed
30250		Hay Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.04	0.17	2.4M LINTEL	DOUBLE IRON GRATE	326714.916	6231583.378	36.198	35.328	surveyed
30251		Hay Avenue - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			2.35	0.2	No Lintel	DOUBLE IRON GRATE	326688.943	6231564.58	38.655	36.505	surveyed
30252		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.12	0.21	2.1M LINTEL	GALVANISED GRATE	326688.517	6231558.665	38.925	38.015	surveyed
30253		Kingsway - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326688	6231560	N/A	38.005	estimated
30254		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.42			0.87	0.15	2.4M LINTEL	GALVANISED GRATE	326730.236	6231501.372	40.671	39.951	surveyed
30255		Hay Lane - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.42			0.76	0.16	1.8M LINTEL	GALVANISED GRATE	326785.49	6231517.287	39.186	38.586	surveyed
30256		Hay Lane - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326768	6231522	N/A	38.384	estimated
30271		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.04	0.21	1.8M LINTEL	DOUBLE IRON GRATE	329577.162	6231032.268	3.895	3.065	surveyed
30272		Burke Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329589	6230927	N/A	3.304	estimated
30288		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.9	0.55			1.02	0.2	1.8M LINTEL	DOUBLE IRON GRATE	328982.304	6231289.984	18.190	17.370	surveyed
30290		Cook Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.28	0.18	1.8M LINTEL	GALVANISED GRATE	328902.942	6231502.446	12.110	11.010	surveyed
30291		Sturt Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.86	0.2	3.0M LINTEL	DOUBLE IRON GRATE	329249.774	6231567.937	4.038	3.378	surveyed
30306		Mackay Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.58			0.67	0.18	4.0M LINTEL	DOUBLE IRON GRATE	326798.278	6231591.481	33.307	32.817	surveyed
30307		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.6	0.16	1.8M LINTEL	DOUBLE IRON GRATE	326776.269	6231617.294	33.886	32.446	surveyed
30308		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.4	0.16	1.2M LINTEL	DOUBLE IRON GRATE	326809.802	6231615.226	32.732	31.492	surveyed
30309		Kingsway - Caringbah	Headwall	Concrete Headwall	Undetermined	N/A	N/A	INACCESSIE	0	N/A	N/A	Not Applicable	NO GRATE INSTALLED	326810.124	6231618.254	32.255	31.155	estimated
30310		Banksia Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326817	6231603	N/A	32.002	estimated
30336		Superba Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.05	0.17	3.2M LINTEL	GALVANISED GRATE	330075.827	6231724.092	13.653	12.773	surveyed
30337		Superba Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.38	0.16	3.2M LINTEL	GALVANISED GRATE	330070.006	6231724.854	13.546	12.326	surveyed
30338		Superba Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.42	0.18	2.0M LINTEL	GALVANISED GRATE	330072.626	6231731.582	13.399	12.159	surveyed
30339		Berry Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.39	0.18	3.2M LINTEL	GALVANISED GRATE	330068.631	6231748.386	13.219	12.009	surveyed
30340		Berry Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.31	0.22	3.2M LINTEL	GALVANISED GRATE	330063.359	6231756.058	13.050	11.960	surveyed
30343		Berry Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.7	0.18	3.2M LINTEL	GALVANISED GRATE	330086.864	6231802.21	13.023	11.503	surveyed
30344		Berry Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.68	0.17	3.2M LINTEL	GALVANISED GRATE	330092.342	6231795.534	13.192	11.682	surveyed
30345		Berry Street - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	330097	6231824	N/A	12.239	estimated
30346		Bate Bay Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.78	0.21	1.8M LINTEL	DOUBLE IRON GRATE	330093.9	6231834.461	12.539	10.969	surveyed
30347		Bate Bay Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.78	0.2	1.8M LINTEL	DOUBLE IRON GRATE	330083.761	6231846.981	10.861	9.281	surveyed
30348		Bate Bay Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.12	0.21	1.8M LINTEL	DOUBLE IRON GRATE	330012.428	6231856.561	5.681	4.771	surveyed
30349		Bate Bay Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			0.94	0.21	3.6M LINTEL	DOUBLE IRON GRATE	329962.799	6231852.02	5.055	4.325	surveyed
30350		Bate Bay Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.58	0.21	3.2M LINTEL	DOUBLE IRON GRATE	329948.482	6231851.875	4.773	3.403	surveyed
30351		Bate Bay Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	329956	6231864	N/A	4.009	estimated
30352		Bate Bay Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.15	0.2	1.8M LINTEL	DOUBLE IRON GRATE	329940.796	6231866.115	4.657	3.707	surveyed
30353		Captain Cook Drive - Kurnell	Stormwater Pit	Grated Pit	Good	1.03	0.45			0.76	0.19	2.4M LINTEL	GALVANISED GRATE	329726.865	6231936.235	1.671	1.101	surveyed
30354		Captain Cook Drive - Kurnell	Stormwater Pit	Grated Pit	Very Good	1.03	0.45			0.72	0.19	2.4M LINTEL	GALVANISED GRATE	329748.438	6231924.909	2.275	1.745	surveyed
30355		Captain Cook Drive - Kurnell	Stormwater Pit	Grated Pit	Fair	0.97	0.57			0.65+	0.17	3.0M LINTEL	DOUBLE IRON GRATE	329802.397	6231938.093	2.080	1.500	surveyed
30358		Captain Cook Drive - Kurnell	Stormwater Pit	Letterbox - Gal Grate	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	GALVANISED GRATE	329919	6232014	N/A	1.629	estimated
30359		Captain Cook Drive - Kurnell	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Not Specified	GALVANISED GRATE	329921	6232025	N/A	1.571	estimated
31175		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			0.72	0.23	3.0M LINTEL	DOUBLE IRON GRATE	327455.632	6232382.281	2.052	1.562	surveyed
31320		Atkinson Road - Taren Point	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327291	6233735	N/A	0.693	estimated
31325		Parraweena Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.76			1.5	0.2	1.8M LINTEL	DOUBLE IRON GRATE	327337.154	6233319.235	2.576	1.276	surveyed
31326		Parraweena Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.9	0.54			1.3	0.2	1.8M LINTEL	DOUBLE IRON GRATE	327328.778	6233317.302	2.587	1.487	surveyed
31327		Parraweena Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	1.0M LINTEL	DOUBLE IRON GRATE	327330	6233344	N/A	1.845	estimated
31328		Parraweena Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.08	0.8			1.1	N/A	No Lintel	GALVANISED GRATE	327321.052	6233343.905	2.385	1.285	Surveyed
31329		Parraweena Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.1	0.77			0.96	N/A	No Lintel	GALVANISED GRATE	327321.58	6233347.179	2.537	1.577	Surveyed
31330		Parraweena Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	1			1.8	N/A	No Lintel	GALVANISED GRATE	327284.536	6233352.997	4.863	3.063	Surveyed
31331		Parraweena Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.8	0.8			0.73	N/A	No Lintel	GALVANISED GRATE	327243.983	6233358.548	5.330	4.600	Surveyed
31441		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.43			2.1	0.2	>=4.2M LINTEL	GALVANISED GRATE	327158.125	6231000.692	40.048	38.148	surveyed
31523		Banksia Road - Caringbah	Stormwater Pit	Letter Box - Conc Lid	Good	0	0			N/A	0.26	No Lintel	NO GRATE INSTALLED	326714.657	6231686.036	30.431	29.520	estimated
31524		Ocean Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			0.62	0.19	1.0M LINTEL	DOUBLE IRON GRATE	329576.726	6231186.635	13.639	13.209	surveyed
31525		Wyanbah Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329581	6231182	N/A	11.855	estimated
31592		Duraba Place - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326781	6231799	N/A	20.898	estimated
31593		Dianella Street - Caringbah	Stormwater Pit	Stormwater Pit	Good	1	1			2	N/A	No Lintel	GALVANISED GRATE	326615.108	6232058.041	33.605	32.763	Surveyed
31594		Sunnyside Avenue - Caringbah	Stormwater Pit	Stormwater Pit	Good	1	1			1.4	N/A	No Lintel	GALVANISED GRATE	326675.388	6232047.06	29.166	28.259	Surveyed
31595		Sunnyside Avenue - Caringbah	Stormwater Pit	Stormwater Pit	Good	0.9	1			1.37	N/A	No Lintel	GALVANISED GRATE	326669.963	6232003.619	30.680	29.310	Surveyed
31596		Willarong Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326644	6231876	N/A	32.221	estimated
31597		Willarong Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326645	6231839	N/A	29.577	estimated
31598		Banksia Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	326567	6231785	N/A	32.748	estimated
31689		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327188	6230648	N/A	35.191	estimated
31692		Woodward Avenue - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327091	6230530	N/A	42.002	estimated
31693		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327111	6230546	N/A	40.708	estimated
31703		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327348	6230560	N/A	41.076	estimated
31704		Banksia Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327120	6231477	N/A	27.593	estimated
31706		Woolooware Golf Course	Stormwater Pit	Assumed Node	Undetermined	N/A	N/A			N/A	N/A	Not Specified	Not Specified	327741	6231638	N/A	4.472	surveyed
31707		Woolooware Golf Course	Stormwater Pit	Assumed Node	Undetermined	N/A	N/A			N/A	N/A	Not Specified	NO GRATE INSTALLED	327765	6231642	N/A	4.109	surveyed
31708		Woolooware Golf Course	Headwall	Concrete Headwall	Very Good	N/A	N/A	2.46	1.35	2.46	N/A	Not Applicable	NO GRATE INSTALLED	327851.98	6231661.073	4.358	1.898	Surveyed
31713	CGC-12	Cronulla Golf Course	Headwall	Concrete Headwall	Very Good	N/A	N/A	1.02	0.92	1.02	0.27	Not Applicable	GRATE INSTALLED	329596.977	6231511.16	2.286	1.536	surveyed
31714	CGC-11	Cronulla Golf Course	Headwall	Concrete Headwall	Very Good	N/A	N/A	1.13	0.93	1.13	0.42	Not Applicable	GRATE INSTALLED	329594.89	6231539.433	2.172	1.462	surveyed
31715		Captain Cook Drive - Cronulla	Headwall	Concrete Headwall	Good	N/A	N/A	INACCESSIE	0	N/A	N/A	Not Applicable	NO GRATE INSTALLED	329215.186	6231945.173	N/A	0.705	estimated
31716		Marsh Avenue - Cronulla	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329240	6231265	N/A	15.081	estimated
31718		Bando Road Drainage Reserve	Stormwater Pit	Stormwater Pit	Very Good	1	1			1.58	N/A	No Lintel	GRATE INSTALLED	329651.813	6231151.354	4.260	2.680	Surveyed
31719		Fenton Avenue Reserve	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327404	6232151	N/A	1.512	surveyed
31748		Dolans Road - Woolooware	Headwall	Concrete Headwall	Undetermined	N/A	N/A	INACCESSIE	0	N/A	N/A	Not Applicable	NO GRATE INSTALLED	328073	6231161	N/A	14.789	estimated
31749		Denman Avenue - Woolooware	Headwall	Concrete Headwall	Good	N/A	N/A	1.46	1.5	1.46	N/A	Not Applicable	NO GRATE INSTALLED	328076.949	6231184.263	14.952	13.492	Surveyed
31750		Dolans Road - Woolooware	Stormwater Pit	Stormwater Pit	Very Good	1.36	1.42			N/A	N/A	No Lintel	CONCRETE LID	328079.245	6231199.646	14.081	13.031	estimated
31751		Dolans Road - Woolooware	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328089	6231270	N/A	9.449	estimated
31752		Amber Lane - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.94	0.54			0.5	N/A	No Lintel	DOUBLE IRON GRATE	328475.843	6231536.563	3.873	3.485	Surveyed
31753		Amber Lane - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			0.38	0.04	No Lintel	DOUBLE IRON GRATE	328476.37	6231541.132	3.815	3.475	surveyed
31754		Woolooware Golf Course	Headwall	Non Physical Wall	Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	Not Applicable	NO GRATE INSTALLED	328482	6231555	N/A	3.416	estimated
31755		Kingsway - Woolooware	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	328172	6230965	N/A	28.647	estimated
31872		Fenton Avenue Reserve	Headwall	Brick Headwall	Poor	N/A	N/A	0.75	PIPE ONLY	1.58	N/A	Not Applicable	NO GRATE INSTALLED	327411.971	6232249.333	2.100	0.520	Surveyed
31877		Woolooware Golf Course	Stormwater Pit	Assumed Node	Good	N/A	N/A			0.56	N/A	No Lintel	Unknown	328547.385	6231618.928	3.069	2.988	Surveyed
32022		Parraweena Road - Caringbah	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327289	6233556	N/A	2.372	estimated
32140		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			Inaccessible	N/A	Not Specified	MEDIAN PIT	327458.432	6232427.062	2.346	1.596	estimated
32141		Endeavour Road Reserve	Stormwater Pit	Grated Pit	Very Good	0.95	0.57			1.44	0.24	3.0M LINTEL	DOUBLE IRON GRATE	327480.69	6232375.116	2.286	1.086	surveyed
32142		Endeavour Road Reserve	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327510	6232273	N/A	0.647	estimated
40218		Woodward Avenue - Caringbah South	Stormwater Pit	Grated Pit	Very Good	NOT FOUND	0			N/A	N/A	Unknown	DOUBLE IRON GRATE	327025	6230507	N/A	45.799	estimated
40230		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.4	0.21	3.6M LINTEL	GALVANISED GRATE	326556.53	6231739.119	34.024	32.834	surveyed
40232		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.66			1.8	0.18	3.1M LINTEL	DOUBLE IRON GRATE	326929.068	6232549.511	11.947	10.327	surveyed
40238		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.55			1.2	0.23	3.0M LINTEL	DOUBLE IRON GRATE	327058.048	6230611.913	44.102	43.132	surveyed
40239		Burraneer Bay Rd - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.95	0.45			1.25	0.16	3.0M LINTEL	DOUBLE IRON GRATE	327068.321	6230621.501	43.249	42.159	surveyed
40246		Jacaranda Road - Caringbah	Stormwater Pit	Stormwater Pit	Very Good	0.63	0.63			1.02	N/A	No Lintel	GALVANISED GRATE	326989.242	6231041.331	47.297	46.749	Surveyed
40247		Jacaranda Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326996	6231034	N/A	46.078	estimated
40248		Jacaranda Road - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326995	6231025	N/A	45.869	estimated
40249		Jacaranda Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Unknown	Unknown	327002	6231043	N/A	46.036	estimated
40250		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.93	0.55			0.96	0.2	3.6M LINTEL	DOUBLE IRON GRATE	326981.634	6230934.292	44.680	43.920	surveyed
40251		Jacaranda Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.96	0.2	3.6M LINTEL	DOUBLE IRON GRATE	326976.356	6230823.235	43.338	42.578	surveyed
40252		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			2.2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327071.292	6230819.289	35.994	33.994	surveyed
40253		Whitewood Place - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			1.3	0.2	3.0M LINTEL	DOUBLE IRON GRATE	327114.391	6230812.813	33.796	32.696	surveyed
40254		Whitewood Place - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327062	6230821	N/A	35.139	estimated
40255		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1	0.21	2.4M LINTEL	DOUBLE IRON GRATE	327149.263	6230891.339	32.978	32.188	surveyed
40256		Yathong Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.25	0.2	>=4.2M LINTEL	DOUBLE IRON GRATE	327154.068	6230923.662	34.629	33.579	surveyed
40257		Yathong Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327188	6231137	N/A	37.915	estimated
40258		Holly Street - Caringbah South	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327249	6230704	N/A	31.237	estimated
40260		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.02	0.15	No Lintel	GALVANISED GRATE	327267.096	6231690.814	16.111	15.241	surveyed
40261		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.08	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327268.67	6231700.548	15.900	15.020	surveyed
40262		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.57			1.3	0.2	3.6M LINTEL	DOUBLE IRON GRATE	327276.377	6231755.846	13.288	12.188	surveyed
40263		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			0.94	0.25	3.0M LINTEL	DOUBLE IRON GRATE	327205.687	6232083.342	6.395	5.705	surveyed
40264		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			Inaccessible	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327102.646	6232099.464	8.751	7.823	estimated
40265		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.56			0.86	0.17	2.4M LINTEL	DOUBLE IRON GRATE	327108.731	6232098.517	8.490	7.800	surveyed
40266		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.55			0.8	0.2	2.4M LINTEL	DOUBLE IRON GRATE	327097.557	6232091.129	8.871	8.271	surveyed
40267		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			1.04	0.19	2.4M LINTEL	DOUBLE IRON GRATE	327010.448	6232113.834	12.240	11.390	surveyed
40268		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.56			0.87	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326998.776	6232106.568	12.476	11.806	surveyed
40269		Carabella Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.97	0.56			0.7	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326931.924	6232126.282	14.984	14.484	surveyed
40270		Cawarra Road - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326862	6232028	N/A	18.487	estimated
40272		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.54			1	0.18	2.4M LINTEL	GALVANISED GRATE	326878.569	6232015.916	18.618	17.798	surveyed

Pit_ID	Pit_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pit/Headwall_Type	Condition	Length of Grate/Inlet	Width of Grate/Inlet	Height of Headwall	Width of Headwall	Depth from Kerb/[Surface] to Invert	Depth from Kerb to Grate/Inlet	Lintel	Grate	X Coordinate	Y Coordinate	Surface RL on Kerb/Surface	Indicative Invert (mAHD)	Estimated or Surveyed
40273		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.56			1	0.19	2.4M LINTEL	DOUBLE IRON GRATE	326914.758	6232001.418	17.037	16.227	surveyed
40274		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			0.76	0.2	1.8M LINTEL	GALVANISED GRATE	326939.831	6232006.962	16.077	15.517	surveyed
40275		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.03	0.46			0.97	0.22	1.8M LINTEL	GALVANISED GRATE	326956.227	6232004.644	15.292	14.542	surveyed
40276		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.07	0.2	1.8M LINTEL	GALVANISED GRATE	327002.719	6231997.782	13.304	12.434	surveyed
40277		Glassop Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.94	0.57			1.2	0.2	2.4M LINTEL	DOUBLE IRON GRATE	326926.892	6231993.985	16.509	15.509	surveyed
40278		Glassop Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.45			1.1	0.17	3.6M LINTEL	GALVANISED GRATE	326935.5	6231990.278	16.469	15.539	surveyed
40279		Glassop Street - Caringbah	Stormwater Pit	Bandage Joint	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326931	6231959	N/A	16.044	estimated
40280		Glassop Street - Caringbah	Stormwater Pit	Bandage Joint	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326927	6231926	N/A	16.261	estimated
40281		Glassop Street - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326924	6231906	N/A	16.195	estimated
40282		Glassop Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.02	0.43			1	0.18	>=4.2M LINTEL	GALVANISED GRATE	326913.651	6231898.127	17.106	16.286	surveyed
40283		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.54	0.22	2.4M LINTEL	GALVANISED GRATE	327084.316	6231986.364	9.997	8.677	surveyed
40284		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Good	1	0.42			1.6	0.2	2.4M LINTEL	GALVANISED GRATE	327090.611	6231976.399	9.699	8.299	surveyed
40285		Taronga Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.86	0.2	2.4M LINTEL	GALVANISED GRATE	327109.196	6231982.811	9.528	7.868	surveyed
40286		Dianella Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.89	0.44			1.65	0.14	1.8M LINTEL	DOUBLE IRON GRATE	326616.458	6232064.314	32.934	31.424	surveyed
40287		Sunnyside Avenue - Caringbah	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326679	6231998	N/A	29.358	estimated
40288		Dianella Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			1.2	0.2	3.0M LINTEL	DOUBLE IRON GRATE	326766.285	6232050.938	23.654	22.654	surveyed
40289		Dianella Street Reserve	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			0.7	0.2	3.6M LINTEL	GALVANISED GRATE	326726.621	6232115.81	25.233	24.733	surveyed

Pit_ID	Pit_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pit/Headwall_Type	Condition	Length of Grate/Inlet	Width of Grate/Inlet	Height of Headwall	Width of Headwall	Depth from Kerb/[Surface] to Invert	Depth from Kerb to Grate/Inlet	Lintel	Grate	X Coordinate	Y Coordinate	Surface RL on Kerb/Surface	Indicative Invert (mAHD)	Estimated or Surveyed
80295		Captain Cook Drive - Woolooware	Stormwater Pit	Stormwater Pit	Very Good	1	0.42			Inaccessible	0.15	3.8M LINTEL	GALVANISED GRATE	328348.086	6231896.832	2.098	1.438	estimated
80296		Woolooware Golf Course	Stormwater Pit	Stormwater Pit	Good	0.8	1.1			0.83	N/A	No Lintel	GALVANISED GRATE	328337.681	6231889.045	2.399	1.569	Surveyed
80297		Captain Cook Drive - Woolooware	Stormwater Pit	Stormwater Pit	Very Good	1	0.42			2	0.16	3.8M LINTEL	GALVANISED GRATE	328433.104	6231888.411	2.429	0.589	surveyed
80298		Golf Course Nat Strp - Captain Cook Dr	Stormwater Pit	Stormwater Pit	Good	1.09	0.79			1.55	N/A	No Lintel	GALVANISED GRATE	328434.333	6231878.933	1.928	0.378	Surveyed
80299		Golf Course Nature Strip - Woolooware Rd	Stormwater Pit	Stormwater Pit	Very Good	1.1	0.8			0.7	N/A	No Lintel	GALVANISED GRATE	328554.148	6231903.753	2.025	1.325	Surveyed
80300		Golf Course Nat Strp - Captain Cook Dr	Stormwater Pit	Stormwater Pit	Undetermined	NOT FOUND	0			N/A	N/A	Not Specified	Not Specified	328557	6231912	N/A	1.546	estimated
80301		Mangrove Bdwalk/Woolooware Bay Foreshore	Stormwater Pit	Stormwater Pit	Very Good	1	0.95			0.8	N/A	No Lintel	GALVANISED GRATE	328623.265	6231982.055	2.459	1.659	Surveyed
80302		Captain Cook Drive - Woolooware	Stormwater Pit	Stormwater Pit	Very Good	0.98	0.98			1.08	N/A	No Lintel	GALVANISED GRATE	328626.483	6231977.559	2.295	1.215	Surveyed
80303		Captain Cook Drive - Woolooware	Stormwater Pit	Stormwater Pit	Very Good	1	1			0.8	N/A	No Lintel	GALVANISED GRATE	328658.57	6231989.522	1.594	0.794	Surveyed
80304		Captain Cook Drive - Woolooware	Stormwater Pit	Stormwater Pit	Good	1.25	1.25			1.4	N/A	No Lintel	GALVANISED GRATE	328696.206	6232005.646	1.669	0.269	Surveyed
80305		Captain Cook Drive - Woolooware	Headwall	Concrete Headwall	Very Good	N/A	N/A	1.25	1.1	1.25	N/A	Not Applicable	NO GRATE INSTALLED	328715.485	6232010.28	1.310	0.060	Surveyed
80408		Captain Cook Drive - Kurnell	Headwall	Assumed Headwall	Very Good	N/A	N/A	PIPE ONLY	0	0.55	N/A	Not Applicable	NO GRATE INSTALLED	329868.627	6232011.158	1.292	0.742	Surveyed
80409		Captain Cook Drive - Kurnell	Stormwater Pit	Grated Pit	Very Good	1.03	0.44			0.91	0.19	2.4M LINTEL	GALVANISED GRATE	329892.537	6232000.219	2.165	1.445	surveyed
80410		Captain Cook Drive - Kurnell	Stormwater Pit	Stormwater Pit	Very Good	0.9	1			0.63	N/A	No Lintel	GALVANISED GRATE	329888.808	6231992.069	1.975	1.455	Surveyed
80512		Woolooware Golf Course	Stormwater Pit	Assumed Node	Undetermined	N/A	N/A			N/A	N/A	Not Specified	NO GRATE INSTALLED	327761	6231641	N/A	4.119	surveyed
80513		Mangrove Lane - Taren Point	Stormwater Pit	Stormwater Pit	Undetermined	NOT FOUND	0			N/A	N/A	Not Specified	Not Specified	327588	6233715	N/A	-0.212	estimated
80514		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	0.97	0.44			1.4	0.21	3.6M LINTEL	GALVANISED GRATE	327512.983	6233588.629	2.430	1.240	surveyed
80515		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	0.43			1.2	0.2	2.4M LINTEL	GALVANISED GRATE	327498.77	6233612.964	2.194	1.194	surveyed
80516		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.3	0.22	3.6M LINTEL	GALVANISED GRATE	327486.495	6233616.481	2.003	0.923	surveyed
80517		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	0.43			1.05	0.22	3.6M LINTEL	GALVANISED GRATE	327410.943	6233633.326	1.938	1.108	surveyed
80518		Mangrove Lane - Taren Point	Stormwater Pit	Stormwater Pit	Very Good	0.58	0.58			1.47	N/A	No Lintel	GALVANISED GRATE	327423.714	6233624.563	2.250	1.332	Surveyed
80519		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	0.4			1.8	0.2	3.6M LINTEL	GALVANISED GRATE	327416.802	6233643.907	1.917	0.317	surveyed
80520		Mangrove Lane - Taren Point	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	327421	6233647	N/A	1.222	estimated
80521		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.55	0.2	3.6M LINTEL	GALVANISED GRATE	327423.434	6233629.55	1.971	0.621	surveyed
80522		Mangrove Lane - Taren Point	Headwall	Assumed Headwall	Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	Not Applicable	Unknown	327488	6233723	N/A	-0.230	estimated
80523		Atkinson Road - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	1			1.28	0	No Lintel	GALVANISED GRATE	327298.705	6233718.658	2.214	0.934	surveyed
80524		Mangrove Lane - Taren Point	Stormwater Pit	Grated Pit	Very Good	1	0.45			0.73	0.2	3.6M LINTEL	GALVANISED GRATE	327309.761	6233731.36	1.775	1.245	surveyed
80578		Robin Place Reserve	Stormwater Pit	Assumed Node	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	326877	6230881	N/A	45.349	estimated
80579		High Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.43			0.9	0.17	2.4M LINTEL	GALVANISED GRATE	328916.773	6231412.226	11.944	11.214	surveyed
80581		Berry Street - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	330071	6231744	N/A	12.149	estimated
80582		Berry Street - Cronulla	Stormwater Pit	Bandage Joint	Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	330097	6231828	N/A	12.313	estimated
80584		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329830	6231899	N/A	1.193	estimated
80585		Elouera Road - Cronulla	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329830	6231900	N/A	1.197	estimated
80586		Captain Cook Drive - Kurnell	Stormwater Pit	Bandage Joint	Very Good	N/A	N/A			N/A	N/A	Not Specified	Unknown	329835	6231934	N/A	1.269	estimated
80590		Hume Road - Cronulla	Stormwater Pit	Stormwater Pit	Good	1.04	0.45			0.81	N/A	No Lintel	GALVANISED GRATE	329093.221	6231668.092	1.601	0.791	Surveyed
80591		Hume Road - Cronulla	Stormwater Pit	Stormwater Pit	Good	1.04	0.43			0.78	N/A	No Lintel	GALVANISED GRATE	329154.154	6231656.854	1.183	0.403	Surveyed
80592		Hume Road - Cronulla	Stormwater Pit	Stormwater Pit	Good	1.03	0.43			1.45	N/A	No Lintel	GALVANISED GRATE	329202.502	6231648.523	1.400	-0.050	Surveyed
80593		Hume Road - Cronulla	Stormwater Pit	Stormwater Pit	Good	1	1			0.8	N/A	No Lintel	GALVANISED GRATE	329201.355	6231641.186	0.873	0.073	Surveyed
90031		Elouera Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.97	0.57			1.86	0.2	3.6M LINTEL	DOUBLE IRON GRATE	329835.871	6231860.09	3.153	1.493	surveyed
90033		Berry Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			Abt 1.35	0.15	1.0M LINTEL	GALVANISED GRATE	330075.394	6231762.417	13.170	11.970	surveyed
90034		Berry Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.45			Abt 1.5	0.18	1.0M LINTEL	GALVANISED GRATE	330081.834	6231793.137	12.974	11.654	surveyed
91108		Glassop Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.42			1.3	0.17	3.0M LINTEL	GALVANISED GRATE	326909.641	6231820.279	17.885	16.755	surveyed
91109		Wyanbah Road - Cronulla	Stormwater Pit	Assumed Node	Very Good	N/A	N/A			N/A	N/A	Not Specified	GALVANISED GRATE	329519	6231082	N/A	13.649	estimated
91110		Wyanbah Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.68	0.68			0.85	N/A	No Lintel	GALVANISED GRATE	329556.029	6231076.974	4.637	3.787	Surveyed
91123		Taywood Street - Woolooware	Headwall	Concrete Headwall	Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	Not Applicable	Unknown	328709	6231243	N/A	13.527	estimated
91262		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.36	0.2	2.4M LINTEL	GALVANISED GRATE	329250.07	6231410.113	9.311	8.151	surveyed
91263		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.01	0.44			1.25	0.2	1.0M LINTEL	GALVANISED GRATE	329239.914	6231404.45	9.316	8.266	surveyed
91264		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.01	0.44			1.01	0.2	2.4M LINTEL	GALVANISED GRATE	329234.818	6231405.121	9.285	8.475	surveyed
91265		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.08	0.2	2.4M LINTEL	GALVANISED GRATE	329218.205	6231407.45	10.186	9.306	surveyed
91266		Alfred Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.15	0.2	2.4M LINTEL	GALVANISED GRATE	329191.8	6231418.29	11.678	10.728	surveyed
91267		Marsh Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.7	0.18	2.4M LINTEL	GALVANISED GRATE	329162.651	6231327.18	16.330	14.810	surveyed
91268		Marsh Avenue - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.26	0.2	2.4M LINTEL	GALVANISED GRATE	329226.062	6231311.061	13.776	12.716	surveyed
91269		Robinson Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.02	0.44			1.17	0.2	3.0M LINTEL	GALVANISED GRATE	329223.552	6231218.424	18.916	17.946	surveyed
91276		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			0.65	0.17	2.4M LINTEL	GALVANISED GRATE	326883.018	6232190.033	17.678	17.198	surveyed
10145X	CGC-8	Cronulla Golf Course	Stormwater Pit	Grated Pit	Very Good	8.5	6.2			2.614	N/A	No Lintel	GALVANISED GRATE	329623.176	6231459.935	2.484	-0.130	Surveyed
10150A		Franklin Road - Cronulla	Stormwater Pit	Grated Pit	Very Good	1.04	0.43			1.43	0.16	3.0M LINTEL	GALVANISED GRATE	329104.753	6231569.078	11.171	9.901	surveyed
10173A		Cronulla Golf Course	Stormwater Pit	Stormwater Pit	Good	5 x 0.65	0.6			1.82	N/A	No Lintel	GALVANISED GRATE	329253.666	6231751.181	1.845	0.025	Surveyed
10187A		Marlo Road - Cronulla	Headwall	Concrete Headwall	Not Assessed	N/A	N/A	0.97	0.8	N/A	N/A	Not Applicable	Not Specified	329592.258	6231035.974	3.739	3.039	estimated
10214A		Tullimbar Road - Cronulla	Stormwater Pit	Stormwater Pit	Very Good	1	1			2.25	N/A	No Lintel	GALVANISED GRATE	329661.582	6231213.197	4.680	2.430	Surveyed
10214B		Tullimbar Road - Cronulla	Stormwater Pit	Stormwater Pit	Very Good	1	1			1.77	N/A	No Lintel	GALVANISED GRATE	329657.852	6231194.078	4.221	2.451	Surveyed
10231A		Riverview Avenue - Cronulla	Stormwater Pit	Grated Pit	Good	1.2	1.2			1.55	N/A	No Lintel	CONCRETE LID	328860.967	6231303.916	14.701	13.660	Surveyed
10378A		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.94	0.55			1.6	N/A	No Lintel	DOUBLE IRON GRATE	327247.132	6231480.231	23.196	21.596	Surveyed
10409A		Yathong Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.04	0.82			0.6	N/A	No Lintel	GALVANISED GRATE	327276.378	6231691.62	15.791	14.880	Surveyed
10415A		Banksia Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.5	0.55			0.7	N/A	No Lintel	SINGLE IRON GRATE	326871.741	6231562.634	33.783	33.282	Surveyed
10430A		Caringbah Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.43			1.4	0.19	1.5M LINTEL	GALVANISED GRATE	327244.674	6231004.708	34.024	32.814	surveyed
10542A		Woolooware Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.46			1.03	0.14	No Lintel	GALVANISED GRATE	328554.081	6231557.917	3.818	2.928	surveyed
10713A		Captain Cook Drive - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.42			0.85	0.24	2.4M LINTEL	GALVANISED GRATE	326909.809	6232627.049	11.130	10.520	surveyed
10782A		Captain Cook Drive - Caringbah	Stormwater Pit	Stormwater Pit	Very Good	0.65	0.65			1.16	N/A	No Lintel	GALVANISED GRATE	326783.424	6232607.129	16.738	15.578	Surveyed
10965A		Captain Cook Drive - Caringbah	Stormwater Pit	Median Pit	Very Good	INACCESSIBLE	0			N/A	N/A	Unknown	Unknown	327697.067	6232049.625	2.972	2.222	estimated
93011		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.4			1.1	0.17	No Lintel	GALVANISED GRATE	328821.242	6231565.45	10.564	9.634	surveyed
93012		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	1	0.45			0.84	0.15	No Lintel	GALVANISED GRATE	328818.536	6231546.251	10.015	9.325	surveyed
93014		Wills Road - Woolooware	Stormwater Pit	Grated Pit	Very Good	0.45	0.45			0.33	N/A	Not Specified	SINGLE IRON GRATE	328821.601	6231469.095	8.163	7.833	Surveyed
93015		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.99	0.55			1.2	0.21	2.4M LINTEL	GALVANISED GRATE	327464.391	6231322.642	20.876	19.886	surveyed
15476A		Jacaranda Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	1.07	1.07			1.3	N/A	No Lintel	GALVANISED GRATE	327031.452	6231314.574	39.487	38.636	Surveyed
15817A		Bellevue Parade - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.57	0.57			1.6	N/A	No Lintel	GALVANISED GRATE	327128.23	6231777.884	15.276	14.696	Surveyed
15953A		Woolooware Golf Course	Stormwater Pit	Assumed Node	Good	N/A	N/A			0.5	N/A	No Lintel	Not Specified	328512.815	6231627.076	2.416	2.587	Surveyed
93016		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.28	0.22	1.6M LINTEL	GALVANISED GRATE	327484.681	6231311.886	19.996	18.936	surveyed
16275A		Grenville Avenue - Caringbah	Stormwater Pit	Stormwater Pit	Very Good	0.8 Diam	0			N/A	N/A	Not Specified	CONCRETE LID	327148.999	6232195.635	7.107	6.421	estimated
16283A		Meta Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	0.54			0.65	0.18	3.0M LINTEL	GALVANISED GRATE	327236.526	6232717.105	3.320	2.850	surveyed
93017		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.57			1.17	0.2	No Lintel	GALVANISED GRATE	327503.574	6231301.866	19.016	18.046	surveyed
93018		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Very Good	1	1			1.2	N/A	No Lintel	DOUBLE IRON GRATE	327589.092	6231225.956	15.140	14.452	Surveyed
93003		Hume Street - Cronulla	Stormwater Pit	Grated Pit	Very Good	0.65	0.65			0.83	N/A	No Lintel	GALVANISED GRATE	329647.689	6231429.15	3.497	2.987	Surveyed
31708A		Woolooware Golf Course	Headwall	Brick Headwall	Very Good	N/A	N/A	1.03	3.3	1.03	N/A	Not Applicable	Not Specified	327851.399	6231660.189	3.059	2.029	Surveyed
31714A	CGC-17	Cronulla Golf Course	Headwall	Concrete Headwall	Very Good	N/A	N/A	1.07	2.1	1.07	0.37	Not Applicable	GRATE INSTALLED	329605.796	6231533.769	2.096	1.396	surveyed
31753A		Woolooware Golf Course	Stormwater Pit	Assumed Node	Good	N/A	N/A			0.5 (silted)	N/A	No Lintel	Not Specified	328493.485	6231633.304	2.167	2.310	Surveyed
31877A		Woolooware Golf Course	Headwall	Concrete Headwall	Good	N/A	N/A	1.45	2.5	1.45	N/A	Not Applicable	Not Specified	328547.602	6231618.069	3.920	2.470	Surveyed
40305A		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Good	0.6	0.5			1.56	N/A	No Lintel	SINGLE IRON GRATE	326850.008	6231834.956	19.528	18.907	Surveyed
40306A		Cawarra Road - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.96	0.55			0.93	0.15	3.0M LINTEL	DOUBLE IRON GRATE	326838.129	6231845.977	20.193	19.413	surveyed
40330A		Kingsway - Caringbah	Stormwater Pit	Grated Pit	Good	1	0.44			2	0.22	3.0M LINTEL	GALVANISED GRATE	327017.354	6231420.514	35.403	33.623	surveyed
40392A		Marlo Road - Cronulla	Stormwater Pit	Stormwater Pit	Good	0.9	0.95			0.4	N/A	No Lintel	GALVANISED GRATE	329670.923	6231004.615	4.342	3.788	Surveyed
41359A		Captain Cook Oval	Stormwater Pit	Stormwater Pit	Poor	1.05	0.85			Debris	N/A	No Lintel	GALVANISED GRATE	327974.471	6231872.401	1.843	1.243	estimated
41380A		Woolooware Golf Course	Headwall	Stone Headwall	Not Assessed	N/A	N/A	0.95	2	0.95	N/A	Not Applicable	Not Specified	328389.331	6231654.07	1.760	0.810	Surveyed
50041A		Endeavour Road - Caringbah	Stormwater Pit	Stormwater Pit	Very Good	1	0.6			1.25	N/A	No Lintel	GALVANISED GRATE	327434.604	6232664.313	1.658	0.408	Surveyed
50141A		Solander Playing Fields	Headwall	Assumed Headwall	Undetermined	N/A	N/A	N/A	N/A	Abt 1.0	N/A	Not Applicable	Not Specified	328018.837	6232229.942	0.700	-0.300	Surveyed
60850A		Parraweena Road - Caringbah	Stormwater Pit	Stormwater Pit	Good	1	1			1.65	N/A	No Lintel	GALVANISED GRATE	327287.359	6233371.14	4.938	3.288	Surveyed
61221A		Woolooware Golf Course	Headwall	Brick and Stone Headwa	Good	N/A	N/A	1.2	1.3	1.2	N/A	Not Applicable	Not Specified	327806.127	6231646.452	3.974	2.774	Surveyed
70562A		Resolution Drive - Caringbah	Stormwater Pit	Grated Pit	Good	0.67	0.67			1.16	N/A	No Lintel	SINGLE IRON GRATE	327698.634	6232563.285	2.232	1.072	Surveyed
70788A		Northumberland Road - Caringbah	Headwall	Concrete Headwall	Very Good	N/A	N/A	1.6	3.6	1.6	N/A	Not Applicable	Not Specified	327558.47	6233110.741	1.196	-0.404	Surveyed
70814A		Northumberland Road - Caringbah	Headwall	Concrete Headwall	Very Good	N/A	N/A	2.35	4.35	2.35	N/A	Not Applicable	Not Specified	327622.719	6232863.157	1.766	-0.584	Surveyed
72004A		Dwyer Reserve	Stormwater Pit	Grated Pit	Good	0.94	0.56			0.9	0.17	3.0M LINTEL	DOUBLE IRON GRATE	327493.541	6231147.699	19.640	18.910	surveyed
72467A		Glassop Street - Caringbah	Stormwater Pit	Grated Pit	Very Good	0.98	0.43			1.18	0.16	1.8M LINTEL	GALVANISED GRATE	326881.796	6231677.489	24.849	23.829	surveyed
80590A		Hume Road - Cronulla	Stormwater Pit	Stormwater Pit	Good	1.04	0.45			0.35	N/A	Not Specified	GALVANISED GRATE	329089.556	6231665.023	1.100	0.750	Surveyed
92001		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.24	0.17	2.4M LINTEL	GALVANISED GRATE	327622.08	6230990.574	19.510	18.440	surveyed
92002		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	0.73	0.8			1.15	N/A	No Lintel	GALVANISED GRATE	327616.098	6230991.148	19.532	18.893	Surveyed
92003		Gannons Road - Caringbah South	Stormwater Pit	Grated Pit	Very Good	1	0.44			1.28	0.22	1.6M LINTEL	GALVANISED GRATE	327633.739	6230997.892	19.251	18.191	surveyed
CGC-9	CGC-9	Cronulla Golf Course	Stormwater Pit	Assumed Node	Undetermined	N/A	N/A			N/A	N/A	Unknown	Unknown	329582	6231526	N/A	2.104	estimated
CGC-10	CGC-10	Cronulla Golf Course	Stormwater Pit	Assumed Node	Undetermined	N/A	N/A			N/A	N/A	Unknown	Unknown	329605	6231526	N/A	1.617	estimated
CGC-3	CGC-3	Cronulla Golf Course	Stormwater Pit	Assumed Node	Undetermined	N/A	N/A			N/A	N/A	Unknown	Unknown	329283	6231636	N/A	0.988	estimated
CGC-4	CGC-4	Cronulla Golf Course	Stormwater Pit	Assumed Node	Undetermined	N/A	N/A			N/A	N/A	Unknown	Unknown	329286	6231638	N/A	0.611	estimated
316-1/01	316-1/01	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	N/A	N/A			1.18	N/A	Unknown	Unknown	326868.94	6231623.13	28.930	27.750	Surveyed
316-1/02	316-1/02	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	0.6	0.6			2.49	N/A	Unknown	GALVANISED GRATE	326872.13	6231630.73	28.830	26.340	Surveyed
316-1/03	316-1/03	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	N/A	N/A			2.41	N/A	Unknown	Unknown	326880.04	6231649.55	27.360	24.950	Surveyed
322-2/01	322-2/01	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	N/A	N/A			1.1	N/A	Unknown	Unknown	327381.2	6231438.84	19.600	18.500	Surveyed
322-2/02	322-2/02	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	N/A	N/A			1.26	N/A	Unknown	Unknown	327383.63	6231453.96	19.260	18.000	Surveyed
322-2/03	322-2/03	Sutherland to Cronulla Railway Line	Headwall	Assumed Headwall	Undetermined	N/A	N/A	N/A	N/A	0.9	N/A	Not Applicable	Unknown	327383.84	6231455.2	18.860	17.960	Surveyed
327-1/04	327-1/04	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	0.6	0.6			1.1	N/A	Unknown	GALVANISED GRATE	327809.77	6231274.64	14.760	13.660	Surveyed
327-2/08	327-2/08	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	0.762	1.6			2.6	N/A	Unknown	DOUBLE IRON GRATE	327813.41	6231280.23	14.560	11.960	Surveyed
327-2/09	327-2/09	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	0.6	0.6			0.83+BC?	N/A	Unknown	GRATE INSTALLED	327816.83	6231286.12	11.210	10.280	Surveyed
330-1/07	330-1/07	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	0.8	0.9			1.08	N/A	Unknown	SINGLE IRON GRATE	328076.15	6231175.24	15.480	14.400	Surveyed
335-4/02	335-4/02	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	N/A	N/A			0.95	N/A	Unknown	Unknown	328656.83	6231010.55	27.170	26.220	Surveyed
335-4/03	335-4/03	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	N/A	N/A			1.85	N/A	Unknown	Unknown	328658.78	6231015.29	28.050	26.200	Surveyed
335-4/04	335-4/04	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	N/A	N/A			2.79	N/A	Unknown	Unknown	328660.09	6231019.76	28.970	26.180	Surveyed
335-1/06	335-1/06	Sutherland to Cronulla Railway Line	Stormwater Pit	Stormwater Pit	Undetermined	0.9	1.2			1.27	N/A	Unknown	DOUBLE IRON GRATE	328662.48	6231030.98	26.920	25.650	Surveyed
6426A		Captain Cook Drive - Cronulla	Headwall	Other Headwall	Good	N/A	N/A	PIPE ONLY	0	0.525	N/A	Not Applicable	NO GRATE INSTALLED	329019.17	6231967.85	1.045	0.520	estimated
6426B		Captain Cook Drive - Cronulla	Headwall	Other Headwall	Good	N/A	N/A	PIPE ONLY	0	1.5	N/A	Not Applicable	NO GRATE INSTALLED	329039.99	6231965.11	1.350	-0.150	estimated

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	U/S Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
10117/10116		Franklin Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10117	10116	1	329090.886	6231466.5	329094.477	6231491.592
10118/10117		Franklin Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10118	10117	1	329086.715	6231436.896	329090.886	6231466.5
10119/91265		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10119	91265	1	329194.96	6231410.789	329218.205	6231407.45
10121/40427		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			10121	40427	1	329243.455	6231410.962	329244	6231415
10122/10121		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			10122	10121	1	329255.986	6231402.116	329243.455	6231410.962
10124/40425		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10124	40425	1	329302.45	6231385.962	329299	6231394
10125/10124		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10125	10124	1	329312.589	6231379.526	329302.45	6231385.962
10126/10129		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10126	10129	1	329408.658	6231465.468	329424	6231464
10127/10128		Judd Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10127	10128	1	329412.965	6231442.172	329423.21	6231449.762
10128/40434		Judd Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10128	40434	1	329423.21	6231449.762	329423.962	6231455.136
10129/10130		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10129	10130	1	329424	6231464	329505.419	6231453.055
10130/10133		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10130	10133	1	329505.419	6231453.055	329534.208	6231449.315
10131/27167		Seaview Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10131	27167	1	329512.886	6231437.208	329524.675	6231442.191
10133/10134		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10133	10134	1	329534.208	6231449.315	329602.883	6231440.408
10134/10145X		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10134	10145X	1	329602.883	6231440.408	329623.176	6231459.935
10135/10145		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10135	10145	1	329611.358	6231438.251	329611.006	6231450.544
10136/10145X		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1200			10136	10145X	1	329623.375	6231428.147	329623.176	6231459.935
10137/10145X		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	750			10137	10145X	1	329650.039	6231434.277	329623.176	6231459.935
10138/10139		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10138	10139	1	329608.348	6231394.804	329618.368	6231401.823
10139/10136		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1200			10139	10136	1	329618.368	6231401.823	329623.375	6231428.147
10140/10139		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1200			10140	10139	1	329614	6231357	329618.368	6231401.823
10141/10140		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10141	10140	1	329602.871	6231352.613	329614	6231357
10142/10140		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10142	10140	1	329608.488	6231325.336	329614	6231357
10143/10142		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10143	10142	1	329598.706	6231320.304	329608.488	6231325.336
10145X/10166	CGC-8/14	Cronulla Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	750			10145X	10166	3	329623.176	6231459.935	329617.817	6231491.246
10146/10137		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10146	10137	1	329702.184	6231427.675	329650.039	6231434.277
10147/10146		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10147	10146	1	329759.854	6231420.245	329702.184	6231427.675
10148/16958		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10148	16958	1	329787.746	6231430.932	329787	6231431
10149/10263		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10149	10263	1	329785.191	6231412.073	329785	6231417
10150/10153		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10150	10153	1	329099.892	6231577.886	329106	6231577
10152/10715		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10152	10715	1	329142.023	6231572.004	329196.617	6231564.23
10153/10152		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10153	10152	1	329106	6231577	329142.023	6231572.004
10154/10155		Croydon Street - Cronulla	Box Culvert	Concrete Culvert	Good	Not Applicable	0.9	0.2	10154	10155	1	329467.369	6230722.807	329479.939	6230721.211
10155/10156		Croydon Street - Cronulla	Box Culvert	Concrete Culvert	Good	Not Applicable	0.9	0.2	10155	10156	1	329479.939	6230721.211	329572	6230711
10156/61238		Nerang Road - Cronulla	Stormwater Pipe	Assumed Pipe	Good	375			10156	61238	1	329572	6230711	329577	6230746
10157/10175		Nerang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10157	10175	1	329590.961	6230769.468	329608.973	6230906.921
10158/10157		Nerang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10158	10157	1	329601.33	6230759.208	329590.961	6230769.468
10160/10158		Nerang Lane - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			10160	10158	1	329626.923	6230752.601	329601.33	6230759.208
10166/10167	CGC-14/18	Cronulla Golf Course	Channel	Earth Channel	Very Good	Not Applicable	6	1.5	10166	10167	1	329617.817	6231491.246	329605.719	6231518.592
10168/10169	CGC-7/6	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Good	750			10168	10169	3	329509	6231527	329409	6231529
10169/10170	CGC-6/5	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Good	750			10169	10170	3	329409	6231529	329330.045	6231624.279
10172/10171		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			10172	10171	1	329278.84	6231563.83	329294.052	6231616.577
10174/50176		Captain Cook Drive - Cronulla	Channel	Earth Channel	Good	Not Applicable	3.2	1	10174	50176	1	329155.994	6231948.614	329066.362	6231965.671
10175/10176		Burke Road - Cronulla	Box Culvert	Concrete Culvert	Good	Not Applicable	1.2	0.65	10175	10176	1	329608.973	6230906.921	329591.761	6230913.555
10176/30272		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10176	30272	1	329591.761	6230913.555	329589	6230927
10177/10180		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10177	10180	1	329572.582	6230916.007	329577.617	6230928.371
10180/50179		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10180	50179	1	329577.617	6230928.371	329578.965	6230933.038
10181/30272		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10181	30272	1	329594.176	6230926.242	329589	6230927
10182/10198		Nerang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10182	10198	1	329616.644	6230903.946	329618	6230911
10183/10198		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10183	10198	1	329624.697	6230909.392	329618	6230911
10184/10185		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			10184	10185	1	329552.413	6230960.698	329556.994	6230996.366
10185/10186		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10185	10186	1	329556.994	6230996.366	329561.972	6231034.989
10186/30271		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10186	30271	1	329561.972	6231034.989	329577.162	6231032.268
10188/10187		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			10188	10187	1	329590.013	6231019.403	329591.528	6231030.207
10189/10187		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10189	10187	1	329630.867	6231025.254	329591.528	6231030.207
10190/10189		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10190	10189	1	329638.428	6231013.185	329630.867	6231025.254
10191/10197		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10191	10197	1	329739.595	6231012.211	329733	6231013
10192/10191		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10192	10191	1	329747.723	6231011.975	329739.595	6231012.211
10193/12124		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10193	12124	1	329737.838	6231001.33	329732	6231003
10194/10193		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10194	10193	1	329745.857	6230999.32	329737.838	6231001.33
10196/12124		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10196	12124	1	329731.774	6230996.651	329732	6231003
10197/40391		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10197	40391	1	329733	6231013	329712.47	6231015.391
10198/10181		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10198	10181	1	329618	6230911	329594.176	6230926.242
10199/10200		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10199	10200	1	329568.701	6231087.298	329578.305	6231081.083
10200/10201		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10200	10201	1	329578.305	6231081.083	329597	6231077
10201/6455		Marlo Road Drainage Reserve	Channel	Concrete Channel	Good	Not Applicable	0.75	0.38	10201	6455	1	329597	6231077	329603.563	6231111.588
10202/61240		Seaview Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10202	61240	1	329477.33	6231106.328	329509	6231100
10203/10202		Seaview Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10203	10202	1	329468.191	6231107.426	329477.33	6231106.328
10204/12125		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10204	12125	1	329575.275	6231138.757	329656.367	6231128.235
10205/31525		Ocean Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10205	31525	1	329570.929	6231198.682	329581	6231182
10208/10223		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10208	10223	1	329771.617	6231306.446	329772	6231313
10210/40393		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			10210	40393	1	329673	6231324	329652	6231335
10211/10222		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10211	10222	1	329761.226	6231225.419	329760	6231220
10212/10222		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10212	10222	1	329765.553	6231219.797	329760	6231220
10213/27198		Tullimbar Road - Cronulla	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2.7	1.4	10213	27198	1	329664.48	6231232.782	329674.055	6231317.388
10214/10213		Tullimbar Road - Cronulla	Box Culvert	Concrete Culvert	Good	Not Applicable	2.7	1.4	10214	10213	1	329662.971	6231221.854	329664.48	6231232.782
10215/10221		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10215	10221	1	329764.098	6231208.785	329758	6231209
10216/10221		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10216	10221	1	329758.642	6231204.594	329758	6231209
10217/40387		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10217	40387	1	329747	6231117	329721.92	6231119.959
10218/10217		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10218	10217	1	329745.289	6231100.66	329747	6231117
10219/72376		Bando Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10219	72376	1	329750.83	6231104.152	329752.645	6231116.916
10220/27194		Bando Road - Cronulla	Stormwater Pipe	Assumed Pipe	Good	300			10220	27194	1	329653	6231110	329648.993	6231118.189
10221/10222		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10221	10222	1	329758	6231209	329760	6231220
10222/40399		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10222	40399	1	329760	6231220	329736.677	6231223.641
10223/40474		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			10223	40474	1	329772	6231313	329749.278	6231315.252
10224/30190		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10224	30190	1	328793.007	6231273.834	328781.986	6231286.874
10226/27972		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10226	27972	1	328789.148	6231337.903	328796.763	6231392.152
10227/27969		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10227	27969	1	328806.189	6231321.434	328799.109	6231331.005
10228/10227		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10228	10227	1	328810.001	6231314.047	328806.189	6231321.434
10229/10227		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10229	10227	1	328857.825	6231314.194	328806.189	6231321.434
10230/10229		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10230	10229	1	328909.862	6231306.913	328857.825	6231314.194
10231/10229		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10231	10229	1	328861.478	6231307.045	328857.825	6231314.194
10232/10230		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10232	10230	1	328913.582	6231299.685	328909.862	6231306.913
10233/10230		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10233	10230	1	328954.509	6231300.617	328909.862	6231306.913
10234/10233		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10234	10233	1	328958.469	6231293.171	328954.509	6231300.617
10235/27975		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10235	27975	1	328805	6231450	328807.473	6231467.859
10236/10237		High Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10236	10237	1	328818.552	6231419.281	328816	6231433
10237/10235		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10237	10235	1	328816	6231433	328805	6231450
10241/10242		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10241	10242	1	328807.928	6231470.878	328803.485	6231471.515
10242/6484		Wills Road - Woolooware	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2	1.2	10242	6484	1	328803.485	6231471.515	328738	6231480
10243/10241		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10243	10241	1	328811.051	6231492.886	328807.928	6231470.878
10244/10243		Cook Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10244	10243	1	328834	6231511	328811.051	6231492.886
10245/27977		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10245	27977	1	328826.499	6231537.813	328827.815	6231521.257
10246/27976		Cook Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10246	27976	1	328843.502	6231517.918	328835.288	6231511.425
10247/40435		Cook Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10247	40435	1	328901	6231502	328875	6231505
10248/10247		Cook Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10248	30290	1	328911.968	6231507.262	328902.942	6231502.446
10249/10263		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10249	10263	1	329790.98	6231415.276	329785	6231417
10250/10249		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10250	10249	1	329795.664	6231428.156	329790.98	6231415.276
10251/10250		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10251	10250	1	329899.078	6231414.377	329795.664	6231428.156
10252/10251		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10252	10251	1	329899.081	6231401.387	329899.078	6231414.377
10253/10251		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10253	10251	1	329946.135	6231408.287	329899.078	6231414.377
10254/10253		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10254	10253	1	329952.437	6231394.489	329946.135	6231408.287
10255/10253		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10255	10253	1	330017.647	6231399.094	329946.135	6231408.287
10256/10255		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10256	10255	1	330020.72	6231385.799	330017.647	6231399.094
10257/10255		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10257	10255	1	330091.59	6231389.613	330017.647	6231399.094
10258/10257		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10258	10257	1	330102.087	6231388.414	330091.59	6231389.613
10259/10258		Mitchell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10259	10258	1	330114.703	6231400.176	330102.087	6231388.414
10260/10258		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10260	10258	1	330094.697	6231376.289	330102.087	6231388.414
10261/10260		Mitchell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10261	10260	1	330097.673	6231363.125	330094.697	6231376.289
10262/10261		Mitchell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10262	10261	1	330095.032	6231358.286	330097.673	6231363.125
10263/10147		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10263	10147	1	329785	6231417	329759.854	6231420.245
10265/16978A		Bate Bay Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10265	16978	1	329856	6231879	329838	6231882
10265/16978B		Bate Bay Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10265	16978	1	329856	6231879	329838	6231882
10266/80584		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10266	80584	1	329846.998	6231895.093	329830	6231899
10267/80584		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10267	80584	1	329828.889	6231891.554	329830	6231899
10268/10274		Captain Cook Drive - Kurnell	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	900			10268	10274	1	329963.024	6232093.296	329957	6232129
10269/10268		Cronulla High School Playing Field	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	900			10269	10268	1	329976.646	6232082.069	329963.024	6232093.296
10270/62682		Captain Cook Drive - Kurnell	Channel	Earth Channel	Fair	Not Applicable	8	1.5	10270	62682	1	329924	6232050	329922	6232052
10271/10270		Bate Bay Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10271	10270	1	329940.924	6232049.842	329924	6232050
10272/80408		Captain Cook Drive - Kurnell	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10272	80408	1	329882	6232012	329868.627	6232011.158
10273/10269		Cronulla High School Playing Field	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	900			10273	10269	1	330019	6232067	329976.646	6232082.069
10274/62680		Captain Cook Drive - Kurnell	Stormwater Pipe	Stormwater Pipe	Undetermined	900			10274	62680	1	329957	6232129	329921	6232130
10285/10286		Castlewood Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10285	10286	1	328110.735	6230770.403	328104.338	6230780.333
10286/10288		Castlewood Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10286	10288	1	328104.338	6230780.333	328025.696	6230792.281
10287/10288		Castlewood Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10287	10288	1	328027.774	6230782.919	328025.696	6230792.281
10288/11029		Castlewood Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10288	11029	1	328025.696	6230792.281	328017	6230798
10289/10290		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10289	10290	1	327014.834	6232611.367	327024	6232622
10290/15893		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10290	15893	1	327024	6232622	327054	6232618
10292/10294		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10292	10294	1	327077	6232615	327127	6232607
10293/10294		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10293	10294	1	327123.362	6232595.215	327127	6232607
10294/10791		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10294	10791	1	327127	6232607	327173	6232600
10295/10296		Grenville Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10295	10296	1	327180.037	6232575.759	327189.744	6232578.504
10296/10297		Grenville Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10296	10297	1	327189.744	6232578.504	327198.746	6232583.957
10297/10298		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10297	10298	1	327198.746	6232583.957	327208	6232595
10298/10792		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10298	10792	1	327208	6232595	327260	6232587
10299/26467		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			10299	26467	1	327322.869	6232576.687	327337.348	6232571.558
10300/50084		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10300	50084	1	327301.121	6232568.326	327309	6232579
10301/10302		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			10301	10302	1	327340.926	6232555.131	327376.724	6232533.783
10302/10306		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10302	10306	1	327376.724	6232533.783	327426.035	6232477.305
10303/16233		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10303	16233	1	327386.93	6232456.219	327388.567	6232465.042
10306/10307		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10306	10307	1	327426.035	6232477.305	327438.225	6232481.597
10307/26443		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10307	26443	1	327438.225	6232481.597	327453	6232475
10308/26443		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10308	26443	1	327447.554	6232485.64	327453	6232475
10309/10952		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10309	10952	1	327397.433	6232362.871	327398.232	6232352.753
10310/10311		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10310	10311	1	327450.116	6232406.376	327462.544	6232409.093
10311/10312		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	1050			10311	10312	1	327462.544	6232409.093	327474.218	6232403.964
10312/32141		Captain Cook Drive - Caringbah	Stormwater Pipe	Stormwater Pipe	Fair	900			10312	32141	1	327474.218	6232403.964	327480.69	6232375.116
10313/10314		Fenton Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10313	10314	1	327403.969	6232346.873	327418.683	6232344.841
10314/10315		Fenton Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10314	10315	1	327418.683	6232344.841	327464.535	6232342.74
10315/10316		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10315	10316	1	327464.535	6232342.74	327488.021	6232342.657
10316/10322		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			10316	10322	1	327488.021	6232342.657	327501.059	6232284.739
10317/10318		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10317	10318	1	327348.896	6232249.971	327357.911	6232248.669
10318/10319		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10318	10319	1	327357.911	6232248.669	327372	6232255
10319/10320		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			10319	10320	1	327372	6232255	327384.627	6232252.796
10320/50043		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			10320	50043	1	327384.627	6232252.796	327398	6232251
10321/32142A		Captain Cook Dr N/S -Fenton to Carabella	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2.6	1.5	10321	32142	1	327479.988	6232259.063	327510	6232273
10321/32142B		Captain Cook Dr N/S -Fenton to Carabella	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2.6	1.5	10321	32142	1	327479.988	6232259.063	327510	6232273
10322/32142		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	1050			10322	32142	1	327501.059	6232284.739	327510	6232273
10323/50054		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10323	50054	1	327504	6232248	327508.983	6232256.228
10324/50049		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10324	50049	1	327495	6232230	327506	6232236
10325/10327		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10325	10327	1	327140.057	6232399.757	327149.287	6232390.644
10327/16232		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10327	16232	1	327149.287	6232390.644	327164	6232388
10329/16209		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10329	16209	1	327150	6232287	327167.239	6232284.895
10330/10329		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10330	10329	1	327136.007	6232290.185	327150	6232287
10333/10329		Grenville Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10333	10329	1	327143.824	6232302.977	327150	6232287
10335/10841		Frobisher Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10335	10841	1	327149.109	6232194.494	327236.471	6232180.383
10336/16275		Grenville Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10336	10335	1	327128.569	6232187.358	327149.109	6232194.494
10337/16276		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10337	16276	1	327337	6232163	327346.307	6232159.885
10338/10337		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10338	10337	1	327332.83	6232156.704	327337	6232163
10339/50043		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10339	50043	1	327385.406	6232262.337	327398	6232251
1034/6476		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			1034	6476	1	327391.274	6230990.745	327399.362	6230982.849
10340/10324		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10340	10324	1	327510.417	6232200.604	327495	6232230
10341/50049		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			10341	50049	1	327519.16	6232205.967	327506	6232236
10342/50054		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10342	50054	1	327534	6232210	327508.983	6232256.228
10343/10344		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			10343	10344	1	327541.801	6232160.833	327549.172	6232167.98
10344/50168		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10344	50168	1	327549.172	6232167.98	327558.417	6232176.447
10346/10344		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10346	10344	1	327560.458	6232157.203	327549.172	6232167.98
10348/10346		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10348	10346	1	327573.021	6232146.78	327560.458	6232157.203
10349/50163		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10349	50163	1	327625.493	6232092.512	327625.713	6232105.323
10353/10354		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10353	10354	1	326882	6232182	326875.828	6232134.295
10354/10356		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10354	10356	1	326875.828	6232134.295	326899	6232131
10355/10354		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10355	10354	1	326873.875	6232119.239	326875.828	6232134.295
10356/40269		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10356	40269	1	326899	6232131	326931.924	6232126.282
10357/40269		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10357	40269	1	326920.446	6232118.837	326931.924	6232126.282

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	US Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
10607/50191		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10607	50191	1	328397.419	6230936.283	328364.897	6230946.313
10608/10607		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10608	10607	1	328444	6230922	328397.419	6230936.283
10609/10608		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10609	10608	1	328464.879	6230915.396	328444	6230922
10619/10620		Begonia Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10619	10620	1	327906.598	6230940.325	327910.456	6230965.323
10620/10621		Begonia Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10620	10621	1	327910.456	6230965.323	327903.06	6230966.564
10621/15281		Begonia Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10621	15281	1	327903.06	6230966.564	327904	6230990
10623/10625		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10623	10625	1	327416.113	6231619.696	327417	6231615
10624/10625		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10624	10625	1	327414.546	6231608.752	327417	6231615
10625/10637		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			10625	10637	1	327417	6231615	327431	6231613
10626/10625		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			10626	10625	1	327406.564	6231616.137	327417	6231615
10628/10743		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10628	10743	1	327396.868	6231549.666	327401	6231598
10629/10628		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10629	10628	1	327404.995	6231542.223	327396.868	6231549.666
10630/10629		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10630	10629	1	327398.805	6231497.759	327404.995	6231542.223
10631/10630		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			10631	10630	1	327387.422	6231482.633	327398.805	6231497.759
10632/10638		Denman Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10632	10638	1	327377.592	6231475.278	327386	6231472
10633/10638		Denman Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10633	10638	1	327381	6231465	327386	6231472
10634/30204		Nullaburra Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10634	30204	1	327378	6231438	327384.312	6231460.275
10635/10638		Denman Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10635	10638	1	327425.174	6231456.467	327386	6231472
10636/10635		Denman Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10636	10635	1	327422.931	6231447.75	327425.174	6231456.467
10637/10723		Nullaburra Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	675			10637	10723	1	327431	6231613	327484	6231605
10638/10631		Denman Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10638	10631	1	327386	6231472	327387.422	6231482.633
10639/10640		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10639	10640	1	327798.435	6230797.876	327800	6230808
10640/40313		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10640	40313	1	327800	6230808	327806.265	6230850.902
10641/10640		English Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10641	10640	1	327814.052	6230789.133	327800	6230808
10642/10641		English Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10642	10641	1	327812.494	6230781.323	327814.052	6230789.133
10644/6542		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10644	6542	1	327449.303	6231294.165	327461.101	6231299.213
10645/10644		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10645	10644	1	327437.796	6231304.174	327449.303	6231294.165
10646/10644		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10646	10644	1	327434.874	6231284.746	327449.303	6231294.165
10647/10644		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10647	10644	1	327441.555	6231252.437	327449.303	6231294.165
10648/10647		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10648	10647	1	327428.684	6231243.161	327441.555	6231252.437
10649/10648		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10649	10648	1	327418.723	6231244.825	327428.684	6231243.161
10653/10648		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10653	10648	1	327419.345	6231180.071	327428.684	6231243.161
10654/10653		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10654	10653	1	327414.756	6231149.291	327419.345	6231180.071
10656/10657		Banksia Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10656	10657	1	326612.193	6231754.494	326626	6231747
10657/10658		Banksia Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10657	10658	1	326626	6231747	326635	6231750
10658/40308		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10658	40308	1	326635	6231750	326640.35	6231752.262
10659/10658		Banksia Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10659	10658	1	326639.016	6231724.801	326635	6231750
10660/15482		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			10660	15482	1	326643.749	6231768.092	326655.166	6231769.992
10661/10685		Duraba Place - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			10661	10685	1	326662.585	6231772.022	326721.04	6231763.076
10662/10661		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10662	10661	1	326656.405	6231787.329	326662.585	6231772.022
10663/10662		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10663	10662	1	326659.921	6231814.466	326656.405	6231787.329
10664/10663		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10664	10663	1	326652.826	6231824.557	326659.921	6231814.466
10665/10663		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10665	10663	1	326667.676	6231866.426	326659.921	6231814.466
10666/10665		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10666	10665	1	326660.956	6231876.077	326667.676	6231866.426
10669/10656		Banksia Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10669	10656	1	326570.091	6231776.211	326612.193	6231754.494
10670/16270		Irrubel Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10670	16270	1	327498.601	6231728.788	327506.13	6231727.726
10672/16271		Burrawalla Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10672	16271	1	327512.866	6231718.428	327559.325	6231711.768
10673/10672		Burrawalla Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10673	10672	1	327487.863	6231722.001	327512.866	6231718.428
10674/10673		Burrawalla Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10674	10673	1	327481.07	6231713.877	327487.863	6231722.001
10676/10677		Burrawalla Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10676	10677	1	327562.302	6231702.024	327567	6231687
10677/50152		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10677	50152	1	327567	6231687	327563.464	6231663.526
10680/10731		Wallumatta Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	750			10680	10731	1	327574	6231613	327633.58	6231604.244
10681/30205		Wallumatta Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	675			10681	30205	1	327548	6231596	327555	6231603
10682/30227		Banksia Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10682	30227	1	327215.19	6231438.154	327238	6231431
10685/10686		Duraba Place - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			10685	10686	1	326721.04	6231763.076	326733.686	6231771.778
10686/6512		Duraba Place - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10686	6512	1	326733.686	6231771.778	326744.201	6231784.084
10687/10689		Duraba Place - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10687	10689	1	326756.871	6231790.759	326762	6231793
10688/10689		Duraba Place - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			10688	10689	1	326750.621	6231802.34	326762	6231793
10689/31592		Duraba Place - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			10689	31592	1	326762	6231793	326781	6231799
10690/10691		Atkinson Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10690	10691	1	327251.752	6233554.145	327266.353	6233564.622
10691/16029		Atkinson Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10691	16029	1	327266.353	6233564.622	327282.891	6233677.161
10699/10504		Burraneer Bay Rd - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			10699	10504	1	327100	6230617	327134	6230611
10700/15884		Burraneer Bay Rd - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10700	15884	1	326986.026	6230625.283	326985.4	6230634.621
10703/10704		Booyong Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10703	10704	1	326894.496	6232336.046	326895.389	6232343.536
10704/60835		Booyong Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			10704	60835	1	326895.389	6232343.536	326903	6232347
10705/10706		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1050			10705	10706	1	326911.615	6232415.916	326915	6232438
10706/40232		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1050			10706	40232	1	326915	6232438	326929.068	6232549.511
10710/10712		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1050			10710	10712	1	326937.903	6232617.089	326937	6232622
10712/10714		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			10712	10714	1	326937	6232622	326956	6232658
10713/50082		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10713	50082	1	326905.089	6232627.83	326911	6232637
10714/10948		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			10714	10948	1	326956	6232658	326967.925	6232747.712
10715/15983		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10715	15983	1	329196.617	6231564.23	329258.147	6231555.529
10716/10172		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			10716	10172	1	329279.979	6231552.476	329278.84	6231563.83
10717/10716		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10717	10716	1	329318.076	6231546.906	329279.979	6231552.476
10718/10717		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			10718	10717	1	329319.567	6231558.049	329318.076	6231546.906
10722/61228		Yathong Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	450			10722	61228	1	327365	6231848	327306	6231856
10723/10681		Nullaburra Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	675			10723	10681	1	327484	6231605	327548	6231596
10724/72102		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10724	72102	1	327556.081	6231611.701	327567	6231614
10725/30205		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10725	30205	1	327553.622	6231594.832	327555	6231603
10726/10725		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10726	10725	1	327551.242	6231577.928	327553.622	6231594.832
10731/10732		Wallumatta Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	750			10731	10732	1	327633.58	6231604.244	327700	6231597
10732/10733		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10732	10733	1	327700	6231597	327710.727	6231601.781
10733/10738		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10733	10738	1	327710.727	6231601.781	327715	6231631
10734/10733		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10734	10733	1	327706.198	6231570.945	327710.727	6231601.781
10735/10734		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10735	10734	1	327700.378	6231531.116	327706.198	6231570.945
10736/10735		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10736	10735	1	327692.346	6231476.726	327700.378	6231531.116
10737/10736		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10737	10736	1	327683	6231473	327692.346	6231476.726
10738/30206		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10738	30206	1	327715	6231631	327728.27	6231633.982
10739/10740		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10739	10740	1	327729.071	6231639.341	327737	6231640
10740/31706		Woolooware Golf Course	Channel	Masonry Channel	Very Good	Not Applicable	0	0	10740	31706	1	327737	6231640	327741	6231638
10741/10738		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			10741	10738	1	327717.084	6231645.117	327715	6231631
10742/10743		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10742	10743	1	327334	6231607	327401	6231598
10743/10626		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10743	10626	1	327401	6231598	327406.564	6231616.137
10744/16264		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10744	16264	1	327400.894	6231577.61	327410	6231580
10745/10624		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10745	10624	1	327405.004	6231606.161	327414.546	6231608.752
10746/10634		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10746	10634	1	327377.799	6231429.462	327378	6231438
10747/10748		Belair Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			10747	10748	1	327440.259	6230767.916	327468.471	6230763.656
10748/10751		Belair Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			10748	10751	1	327468.471	6230763.656	327469.29	6230772.395
10749/10750		Belair Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10749	10750	1	327475.402	6230755.45	327478.796	6230778.019
10750/10752		Belair Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10750	10752	1	327478.796	6230778.019	327481.569	6230796.627
10751/10750		Belair Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10751	10750	1	327469.29	6230772.395	327478.796	6230778.019
10752/10753		Belair Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10752	10753	1	327481.569	6230796.627	327492.183	6230834.576
10753/10762		Belair Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10753	10762	1	327492.183	6230834.576	327509.286	6230948.246
10754/16291		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10754	16291	1	327453.023	6230954.277	327454	6230957
10755/16290		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10755	16290	1	327482.629	6230950.102	327486	6230952
10756/16294		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			10756	16294	1	327500.141	6230944.394	327502	6230950
10762/16293		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10762	16293	1	327509.286	6230948.246	327511	6230954
10763/16299		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10763	16299	1	327548.067	6230942.464	327549.536	6230951.273
10764/40345		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10764	40345	1	327603.911	6230934.201	327608	6230942
10765/40345		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10765	40345	1	327603.53	6230943.211	327608	6230942
10767/40344		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10767	40344	1	327510.712	6230957.127	327513.787	6230974.665
10768/10769		Short Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10768	10769	1	328449.406	6231354.46	328426.673	6231357.935
10769/30181		Short Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10769	30181	1	328426.673	6231357.935	328410	6231364
10772/6487		Arcadia Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10772	6487	1	328440.985	6231532.907	328462.947	6231600.6
10774/10775		Woolooware Golf Course	Stormwater Pipe	Terracotta Pipe	Very Good	300			10774	10775	1	327977.398	6231412.142	327926.673	6231419.947
10775/10776		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10775	10776	1	327926.673	6231419.947	327906.323	6231429.389
10776/61210		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	7	2	10776	61210	1	327906.323	6231429.389	327971.749	6231502.279
10777/10778		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10777	10778	1	326718.948	6232516.176	326745.058	6232512.634
10778/10779		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10778	10779	1	326745.058	6232512.634	326771.878	6232508.346
10779/10780		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10779	10780	1	326771.878	6232508.346	326778.658	6232552.253
10780/10781		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10780	10781	1	326778.658	6232552.253	326781.759	6232573.726
10781/10782		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10781	10782	1	326781.759	6232573.726	326784.82	6232594.718
10783/10784		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			10783	10784	1	326788.692	6232641.164	326789	6232645
10784/26472		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10784	26472	1	326789	6232645	326837.069	6232637.897
10785/10786		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10785	10786	1	326834	6232646	326846	6232650
10786/50082		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10786	50082	1	326846	6232650	326911	6232637
10787/10786		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10787	10786	1	326823.593	6232663.058	326846	6232650
10788/10791		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10788	10791	1	327164.475	6232612.319	327173	6232600
10789/10792		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			10789	10792	1	327249.52	6232576.499	327260	6232587
10790/10793		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10790	10793	1	327268.19	6232596.799	327276	6232585
10791/50081		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10791	50081	1	327173	6232600	327193	6232597
10792/10793		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10792	10793	1	327260	6232587	327276	6232585
10793/15012		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10793	15012	1	327276	6232585	327301	6232581
10794/10569		Pandala Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10794	10569	1	327735.705	6231014.4	327704.223	6231020.648
10795/10794		Pandala Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10795	10794	1	327746	6231020	327735.705	6231014.4
10796/10794		Pandala Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10796	10794	1	327737.535	6231005.429	327735.705	6231014.4
10797/40368		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10797	40368	1	328040.269	6231015.61	328050	6231017
10798/10799		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10798	10799	1	328001.637	6231058.636	327967.919	6231069.062
10799/10800		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10799	10800	1	327967.919	6231069.062	327932.869	6231079.862
10800/15280		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10800	15280	1	327932.869	6231079.862	327919.263	6231084.121
10801/10802		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10801	10802	1	327903.887	6231088.831	327865.361	6231100.718
10802/10803		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10802	10803	1	327865.361	6231100.718	327838.558	6231108.879
10803/40354		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10803	40354	1	327838.558	6231108.879	327837.777	6231119.069
10804/10803		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10804	10803	1	327842.454	6231100.515	327838.558	6231108.879
10805/10804		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10805	10804	1	327856.341	6231098.724	327842.454	6231100.515
10806/10804		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10806	10804	1	327851.569	6231083.663	327842.454	6231100.515
10807/10806		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10807	10806	1	327844.983	6231054.122	327851.569	6231083.663
10828/50095		Captain Cook Oval	Box Culvert	Concrete Culvert	Good	Not Applicable	2.8	1.2	10828	50095	2	328264.288	6231894.542	328269	6231909
10830/50095		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10830	50095	1	328271.327	6231908.277	328269	6231909
10832/10336		Frobisher Avenue - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			10832	10336	1	327122.293	6232191.201	327128.569	6232187.358
16272/10834		Frobisher Avenue - Caringbah	Stormwater Pipe	Stormwater Pipe	Good	375			10834	16272	1	327014.653	6232215.152	327049	6232210
10835/16272		Frobisher Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10835	16272	1	327041.426	6232203.513	327049	6232210
10837/10841		Frobisher Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10837	10841	1	327228.916	6232174.01	327236.471	6232180.383
10838/31719		Fenton Avenue Reserve	Channel	Assumed Channel	Good	Not Applicable	2	1	10838	31719	1	327404.111	6232152.628	327404	6232151
10839/10337		Frobisher Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10839	10840	1	327322.269	6232159.43	327329.654	6232165.894
10840/10337		Frobisher Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10840	10337	1	327329.654	6232165.894	327337	6232163
10841/10840		Frobisher Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10841	10840	1	327236.471	6232180.383	327329.654	6232165.894
10937/10938		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10937	10938	1	327075.642	6232511.026	327086.278	6232501.784
10938/10939		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10938	10939	1	327086.278	6232501.784	327162.146	6232490.363
10939/16237		Raleigh Avenue - Caringbah	Stormwater Pipe	Stormwater Pipe	Good	375			10939	16237	1	327162.146	6232490.363	327171	6232490
10940/10939		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10940	10939	1	327155.899	6232499.001	327162.146	6232490.363
10941/10943		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10941	10943	1	327183	6232487	327232.456	6232479.919
10942/10941		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10942	10941	1	327178.12	6232484.886	327183	6232487
10943/10945		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10943	10945	1	327232.456	6232479.919	327301.247	6232469.525
10944/10943		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10944	10943	1	327226.638	6232488.477	327232.456	6232479.919
10945/10946		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10945	10946	1	327301.247	6232469.525	327317.875	6232474.824
10946/10947		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10946	10947	1	327317.875	6232474.824	327362.2	6232468.576
10947/16233		Raleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10947	16233	1	327362.2	6232468.576	327388.567	6232465.042
10948/15860		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			10948	15860	1	326967.925	6232747.712	326968	6232751
10950/16277		Meta Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1200			10950	16277	1	326985.698	6232761.667	327040	6232754
10951/50083		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10951	50083	1	326917.799	6232625.875	326921	6232635
10952/10313		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			10952	10313	1	327398.232	6232352.753	327403.969	6232346.873
10953/10309		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10953	10309	1	327385.271	6232363.875	327397.433	6232362.871
10954/10955		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10954	10955	1	327113.162	6232403.731	327118.94	6232395.195
10955/10327		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10955	10327	1	327118.94	6232395.195	327149.287	6232390.644
10956/10957		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10956	10957	1	327265.563	6232373.321	327312.451	6232366.302
10957/10952		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10957	10952	1	327312.451	6232366.302	327398.232	6232352.753
10958/10957		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10958	10957	1	327306.217	6232375.05	327312.451	6232366.302
10959/15545		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10959	15545	1	327706.797	6231997.66	327726	6231994
10960/10961		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10960	10961	1	327759.98	6231985.628	327767	6231987
10961/10969		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			10961	10969	1	327767	6231987	327796	6231990
10962/15461		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			10962	15461	1	327763.2	6231959.901	327765	6231970
10963/10962		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10963	10962	1	327760.966	6231944.46	327763.2	6231959.901
10964/10962		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10964	10962	1	327774.648	6231949.699	327763.2	6231959.901
10965/10966		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10965	10966	1	327722.654	6232029.753	327734.922	6232020.334
10966/10967		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			10966	10967	1	327734.922	6232020.334	327747.001	6232012.274
10967/10968		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			10967	10968	1	327747.001	6232012.274	327756	6232007
10968/10969		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			10968	10969	1	327756	6232007	327796	6231990
10969/10979		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			10969	10979	1	327796	6231990	327811	6231988
10970/50180		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			10970	50180	1	327773.818	6232029.599	327803.922	6232016.086
10971/16203		Captain Cook Drive - Woolooware	Stormwater Pipe	Stormwater Pipe	Undetermined	375			10971	16203	1	327856.928	6231970.179	327861	6231980
10972/10963		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10972	10963	1	327758.55	6231928.139	327760.966	6231944.46
10974/61231		Milba Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10974	61231	1	327638.571	6231901.68	327653	6231998
10975/10974		Milba Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10975	10974	1	327637.508	6231894.326	327638.571	6231901.68

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	US Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
10976/50180		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			10976	50180	1	327807.196	6232056.75	327803.922	6232016.086
10977/16203		Captain Cook Drive - Woolooware	Stormwater Pipe	Stormwater Pipe	Good	375			10977	16203	1	327860.285	6231992.922	327861	6231980
10979/10980		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			10979	10980	1	327811	6231988	327825	6231986
10980/16203		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			10980	16203	1	327825	6231986	327861	6231980
10984/10980		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			10984	10980	1	327819	6231995	327825	6231986
10986/10988		Dianella Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			10986	10988	1	326665.944	6232056.969	326685	6232054
10987/10988		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10987	10988	1	326684.126	6232046.077	326685	6232054
10988/10989		Dianella Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10988	10989	1	326685	6232054	326774.628	6232040.614
10989/10990		Dianella Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10989	10990	1	326774.628	6232040.614	326853.155	6232028.605
10990/40270		Dianella Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10990	40270	1	326853.155	6232028.605	326862	6232028
10991/10990		Dianella Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10991	10990	1	326849.476	6232038.451	326853.155	6232028.605
10992/40272		Cawarra Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	375			10992	40272	1	326860.643	6232023.909	326878.569	6232015.916
10993/40272		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10993	40272	1	326860.016	6232013.583	326878.569	6232015.916
10994/10993		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10994	10993	1	326856.75	6231988.891	326860.016	6232013.583
10995/71009		Kitchener Street - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	375			10995	71009	1	327030.198	6231976.786	327031	6231985
10996/71008		Kitchener Street - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	375			10996	71008	1	327039.576	6231976.273	327046	6231983
10997/40283A		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10997	40283	1	327054.751	6231990.594	327084.316	6231986.364
10997/40283B		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10997	40283	1	327054.751	6231990.594	327084.316	6231986.364
10998/71009		Taronga Parade - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	375			10998	71009	1	327019.024	6231986.49	327031	6231985
10999/72466		Glassop Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10999	72466	1	326889.386	6231670.39	326892	6231683
11000/10999		Glassop Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			11000	10999	1	326880	6231670	326889.386	6231670.39
11001/10373		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1200			11001	10373	1	326836.035	6231829.969	326836	6231829
11003/11001		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1200			11003	11001	1	326831.354	6231794.238	326836.035	6231829.969
11004/11003		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1200			11004	11003	1	326825.855	6231752.057	326831.354	6231794.238
11005/11006		Gordon Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11005	11006	1	326833.469	6231897.321	326841.607	6231872.864
11006/40306		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11006	40306	1	326841.607	6231872.864	326838.61	6231849.418
11007/11008		Harnleigh Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			11007	11008	1	327966.673	6231324.376	327968.957	6231339.847
11008/11009		Harnleigh Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			11008	11009	1	327968.957	6231339.847	327961.083	6231349.273
11009/11010		Harnleigh Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			11009	11010	1	327961.083	6231349.273	327919.756	6231378.151
11010/11011		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			11010	11011	1	327919.756	6231378.151	327890.837	6231411.089
11011/10776		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	7	2	11011	10776	1	327890.837	6231411.089	327906.323	6231429.389
11013/11014		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			11013	11014	1	327728.061	6231157.712	327745.214	6231173.632
11014/40367		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			11014	40367	1	327745.214	6231173.632	327745	6231185
11015/30207		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			11015	30207	1	327666.316	6231299.875	327674	6231307
11017/6508		Denman Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			11017	6508	1	327688.528	6231360.886	327705	6231353
11018/11011		Woolooware Golf Course	Stormwater Pipe	Assumed Pipe	Good	1800			11018	11011	1	327858.105	6231359.081	327890.837	6231411.089
11020/11021		Ambyne Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			11020	11021	1	328357.194	6231250.461	328302.332	6231262.216
11021/11022		Ambyne Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			11021	11022	1	328302.332	6231262.216	328280.403	6231272.173
11022/11023		Ambyne Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			11022	11023	1	328280.403	6231272.173	328254.403	6231291.753
11023/11024		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			11023	11024	1	328254.403	6231291.753	328246.186	6231320.384
11024/6653		Woolooware Golf Course	Channel	Earth Channel	Very Good	Not Applicable	2	1	11024	6653	1	328246.186	6231320.384	328211	6231418
11025/40369		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	500			11025	40369	1	328053.793	6231031.592	328064.748	6231039.042
11026/40368		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			11026	40368	1	328044.811	6230983.836	328050	6231017
11027/11026		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			11027	11026	1	328042.574	6230968.875	328044.811	6230983.836
11028/11027		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			11028	11027	1	328027.029	6230872.625	328042.574	6230968.875
11029/11028		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			11029	11028	1	328017	6230798	328027.029	6230872.625
11036/11037		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11036	11037	1	328486.95	6231198.964	328499.674	6231208.184
11037/15946		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11037	15946	1	328499.674	6231208.184	328513.727	6231298.71
11039/10330		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11039	10330	1	327131.188	6232300.024	327136.007	6232290.185
11040/16208		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11040	16208	1	327088.362	6232297.295	327102.152	6232304.422
11045/10318		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11045	10318	1	327347.906	6232242.432	327357.911	6232248.669
11046/10319		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			11046	10319	1	327341.493	6232259.554	327372	6232255
11047/11046		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			11047	11046	1	327296.08	6232266.445	327341.493	6232259.554
11048/11047		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11048	11047	1	327287.088	6232276.897	327296.08	6232266.445
11049/11047		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			11049	11047	1	327231.21	6232276.01	327296.08	6232266.445
11050/11049		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			11050	11049	1	327223.271	6232286.177	327231.21	6232276.01
12106/40415		Port Hacking Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			12106	40415	1	326785.256	6231338.053	326790	6231372
12124/10197		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			12124	10197	1	329732	6231003	329733	6231013
12125/27195		Bando Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			12125	27195	1	329656.367	6231128.235	329651.11	6231130.465
15008/15009		Whitewood Place - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15008	15009	1	327074.393	6230903.985	327063.567	6230896.646
15009/10528		Whitewood Place - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15009	10528	1	327063.567	6230896.646	327059.683	6230869.933
15010/15008		Whitewood Place - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15010	15008	1	327086.49	6230926.463	327074.393	6230903.985
15012/50084		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	675			15012	50084	1	327301	6232581	327309	6232579
15014/10789		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			15014	10789	1	327235.788	6232578.458	327249.52	6232576.499
15085/15086		Milba Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15085	15086	1	327637.408	6231744.963	327645.912	6231743.482
15086/15088		Milba Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15086	15088	1	327645.912	6231743.482	327665	6231730
15088/15089		Milba Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			15088	15089	1	327665	6231730	327728.844	6231725.311
15196/10440		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1650			15196	10440	1	327332	6230898	327382.843	6230934.093
15200/15202		Jacaranda Road - Caringbah South	Stormwater Pipe	Assumed Pipe	Good	375			15200	15202	1	326938	6230685	326945	6230685
15201/15202		Jacaranda Road - Caringbah South	Stormwater Pipe	Assumed Pipe	Good	375			15201	15202	1	326939	6230682	326945	6230685
15202/10462		Jacaranda Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15202	10462	1	326945	6230685	326952.595	6230739.382
15203/15204		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15203	15204	1	327522.365	6232309.02	327524.79	6232298.244
15204/70552		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15204	70552	1	327524.79	6232298.244	327534	6232295
15205/15204		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15205	15204	1	327509.799	6232306.763	327524.79	6232298.244
15206/70555		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15206	70555	1	327701.013	6232428.939	327706	6232427
15209/70557		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			15209	70557	1	327690.616	6232448.825	327710.479	6232446.071
15227/15228		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15227	15228	1	327513.215	6233621.471	327596	6233704
15228/80513		Mangrove Lane - Taren Point	Stormwater Pipe	Stormwater Pipe	Undetermined	375			15228	80513	1	327596	6233704	327588	6233715
15262/15263		Murrami Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			15262	15263	1	327460.298	6232148.036	327477.251	6232152.918
15263/15264		Murrami Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	500			15263	15264	1	327477.251	6232152.918	327483.803	6232158.053
15264/50044		Murrami Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	500			15264	50044	1	327483.803	6232158.053	327471	6232185
15265/60620		Murrami Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	500			15265	60620	1	327462.052	6232218.29	327466.576	6232251.327
15279/15280		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			15279	15280	1	327918.489	6231080.005	327919.263	6231084.121
15280/10801		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			15280	10801	1	327919.263	6231084.121	327903.887	6231088.831
15281/15279		Begonia Place - Woolooware	Stormwater Pipe	Assumed Pipe	Good	375			15281	15279	1	327904	6230990	327918.489	6231080.005
15283/10795		Pandala Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15283	10795	1	327754.093	6231022.789	327746	6231020
15375/15377		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15375	15377	1	327458.114	6232562.55	327455	6232577
15376/15377		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15376	15377	1	327451.915	6232572.412	327455	6232577
15377/15378		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15377	15378	1	327455	6232577	327447.231	6232609.344
15378/15379		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15378	15379	1	327447.231	6232609.344	327435.569	6232659.435
15380/15381		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			15380	15381	1	327502.349	6232733.402	327499.095	6232745.875
15381/15382		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1350			15381	15382	1	327499.095	6232745.875	327556.088	6232760.932
15382/17029		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1350			15382	17029	1	327556.088	6232760.932	327581	6232767
15384/15381		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1650			15384	15381	1	327419	6232726	327499.095	6232745.875
15425/15426		Woodward Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			15425	15426	1	327334.995	6230472.579	327335.116	6230481.295
15426/31703		Woodward Avenue - Caringbah South	Stormwater Pipe	Assumed Pipe	Good	300			15426	31703	1	327335.116	6230481.295	327348	6230560
15440/15441		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1650			15440	15441	1	327393.596	6230944.366	327421.469	6230970.535
15441/6650		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1650			15441	6650	1	327421.469	6230970.535	327442	6230993
15449/10588		Gannons Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			15449	10588	1	327582.104	6230655.129	327595.314	6230743.04
15454/10568		Gannons Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			15454	10568	1	327638	6231024	327639.282	6231034.981
15455/72393		Caringbah Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			15455	72393	1	327631	6230931	327625	6230939
15461/10961		Gannons Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			15461	10961	1	327765	6231970	327767	6231987
15474/40247		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15474	40247	1	326989.619	6231035.746	326996	6231034
15475/15877		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			15475	15877	1	327041.32	6231340.24	327051.475	6231408.319
15476/15475		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			15476	15475	1	327037.236	6231313.289	327041.32	6231340.24
15477/15476		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			15477	15476	1	327032.551	6231281.616	327037.236	6231313.289
15478/15477		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			15478	15477	1	327029.488	6231261.225	327032.551	6231281.616
15479/15478		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15479	15478	1	327038.831	6231250.111	327029.488	6231261.225
15480/15478		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			15480	15478	1	327022.388	6231214.176	327029.488	6231261.225
15482/10661		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			15482	10661	1	326655.166	6231769.992	326662.585	6231772.022
15483/10987		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15483	10987	1	326681.843	6232025.599	326684.126	6232046.077
15545/10960		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15545	10960	1	327726	6231994	327759.98	6231985.628
15547/10959		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15547	10959	1	327663.003	6232004.686	327706.797	6231997.66
15548/15555		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15548	15555	2	327533.369	6232022.598	327391.094	6232045.562
15549/15548		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15549	15548	1	327552.582	6232018.971	327533.369	6232022.598
15550/15548		Irrubel Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15550	15548	1	327547.035	6232013.492	327533.369	6232022.598
15553/50155		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			15553	50155	1	327392.917	6232054.547	327391	6232071
15555/15553		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15555	15553	1	327391.094	6232045.562	327392.917	6232054.547
15556/10359		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			15556	10359	1	327212.924	6232073.062	327220	6232081
15574/16277		Meta Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15574	16277	1	327032.205	6232744.382	327040	6232754
15575/16278		Meta Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15575	16278	1	327063.015	6232740.216	327074.084	6232749.765
15604/15196		Oleander Parade - Caringbah South	Stormwater Pipe	Assumed Pipe	Good	1500			15604	15196	1	327315	6230894	327332	6230898
15705/15707		Kitchener Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15705	15707	1	327013.454	6231792.847	327021.344	6231849.132
15707/10368		Kitchener Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15707	10368	1	327021.344	6231849.132	327033.167	6231931.582
15730/10488		Holly Street - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1500			15730	10488	1	327221	6230869	327252.508	6230877.092
15815/10680		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15815	10680	1	327565.149	6231610.828	327574	6231613
15817/40293		Bellevue Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15817	40293	1	327134.624	6231785.171	327141.098	6231790.301
15820/10376		Bellevue Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15820	10376	1	327215.375	6231773.58	327269.025	6231765.493
15839/6243		Parraweena Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			15839	6243	1	327323.437	6233325.978	327342.089	6233323.318
15860/10950		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			15860	10950	1	326968	6232751	326985.698	6232761.667
15876/10457		Jacaranda Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			15876	10457	1	326963.697	6230813.589	326962.485	6230805.981
15877/15879		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			15877	15879	1	327051.475	6231408.319	327064.58	6231407.955
15878/30212		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			15878	30212	1	327074.506	6231412.726	327125.067	6231405.775
15879/15878		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			15879	15878	1	327064.58	6231407.955	327074.506	6231412.726
15884/16350		Burraneer Bay Rd - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15884	16350	1	326985.4	6230634.621	326993.494	6230633.371
15887/10506		Burraneer Bay Rd - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15887	10506	1	327148.059	6230597.466	327172.615	6230593.698
15888/15890		Warrington Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15888	15890	1	327198.841	6231951.14	327204	6231960
15889/15888		Warrington Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15889	15888	1	327192.063	6231946.918	327198.841	6231951.14
15890/40299		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15890	40299	1	327204	6231960	327255.702	6231952.735
15891/15890		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15891	15890	1	327184.751	6231962.919	327204	6231960
15893/10292		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			15893	10292	1	327054	6232618	327077	6232615
15894/15893		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			15894	15893	1	327045.277	6232606.784	327054	6232618
15895/15894		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			15895	15894	1	327030.498	6232609.032	327045.277	6232606.784
15896/32140		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			15896	32140	1	327455.062	6232439.737	327458.432	6232427.062
15897/15896		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			15897	15896	1	327450.187	6232454.335	327455.062	6232439.737
15898/15897		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			15898	15897	1	327445.482	6232466.474	327450.187	6232454.335
15899/10475		Yathong Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			15899	10475	1	327127.343	6230744.46	327134.252	6230790.98
15940/10118		Franklin Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			15940	10118	1	329092.723	6231414.291	329086.715	6231436.896
15945/10562		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15945	10562	1	328526.701	6231383.144	328531.886	6231415.516
15946/15949		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15946	15949	1	328513.727	6231298.71	328517.53	6231323.856
15947/15948		Taywood Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			15947	15948	1	328521.641	6231306.253	328523.212	6231313.532
15948/15949		Taywood Street - Woolooware	Stormwater Pipe	Stormwater Pipe	Good	375			15948	15949	1	328523.212	6231313.532	328517.53	6231323.856
15949/15950		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15949	15950	1	328517.53	6231323.856	328519.329	6231335.136
15950/15945		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15950	15945	1	328519.329	6231335.136	328526.701	6231383.144
15951/15950		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15951	15950	1	328507.657	6231332.226	328519.329	6231335.136
15952/15953		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15952	15953	1	328544.98	6231571.434	328540.114	6231582.321
15953/10566		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			15953	10566	1	328540.114	6231582.321	328542.813	6231617.39
15954/80230		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15954	80230	1	328561.725	6231679.164	328570	6231670
15967/50250		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15967	50250	1	329289.225	6231293.136	329274	6231312
15969/15967		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15969	15967	1	329299.396	6231286.124	329289.225	6231293.136
15970/15969		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15970	15969	1	329293.288	6231241.666	329299.396	6231286.124
15971/50251		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			15971	50251	1	329294.968	6231222.237	329292	6231226
15972/50251		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15972	50251	1	329291.163	6231219.685	329292	6231226
15973/15974		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15973	15974	1	329286.54	6231194.317	329276.371	6231200.868
15974/15976		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15974	15976	1	329276.371	6231200.868	329260.248	6231220.299
15976/50254		Robinson Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15976	50254	1	329260.248	6231220.299	329234.168	6231224.019
15981/10150		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15981	10150	1	329021.832	6231588.847	329099.892	6231577.886
15983/10716		Sturt Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			15983	10716	1	329258.147	6231555.529	329279.979	6231552.476
15988/11018		Woolooware Golf Course	Stormwater Pipe	Assumed Pipe	Good	600			15988	11018	1	327739	6231351	327858.105	6231359.081
15990/15988		Denman Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15990	15988	1	327768.514	6231324.601	327739	6231351
15991/15990		Denman Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			15991	15990	1	327763.858	6231313.562	327768.514	6231324.601
16006/16007		Atkinson Road - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16006	16007	1	327282.112	6233759.889	327296.5	6233769.197
16007/16008		Atkinson Road - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			16007	16008	1	327296.5	6233769.197	327307.018	6233840.185
16008/16011		Atkinson Road - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			16008	16011	1	327307.018	6233840.185	327308.694	6233850.62
16009/16008		Atkinson Road - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16009	16008	1	327293.843	6233838.601	327307.018	6233840.185
16011/60882		Atkinson Road - Taren Point	Channel	Earth Channel	Good	Not Applicable	2.5	0.8	16011	60882	1	327308.694	6233850.62	327310	6233871
16026/16027		Pathway-Meta St to Captain Cook Drive	Stormwater Pipe	Assumed Pipe	Good	375			16026	16027	1	327331	6232623	327337	6232671
16027/16028		Pathway-Meta St to Captain Cook Drive	Stormwater Pipe	Assumed Pipe	Good	375			16027	16028	1	327337	6232671	327343.017	6232713.774
16028/17045		Meta Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1200			16028	17045	1	327343.017	6232713.774	327361	6232712
16029/31320		Atkinson Road - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			16029	31320	1	327282.891	6233677.161	327291	6233735
16203/16205		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			16203	16205	1	327861	6231980	327867	6231979
16205/50146		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			16205	50146	1	327867	6231979	327890.062	6231991.931
16208/11039		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16208	11039	1	327102.152	6232304.422	327131.188	6232300.024
16209/11049		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16209	11049	1	327167.239	6232284.895	327231.21	6232276.01
16210/16209		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16210	16209	1	327160.917	6232295.884	327167.239	6232284.895
16211/16213		Church Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16211	16213	1	328174.389	6230875.276	328176	6230889
16212/16213		Fairs Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16212	16213	1	328183.589	6230882.132	328176	6230889
16213/50203		Church Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16213	50203	1	328176	6230889	328190.066	6230980.398
16214/16215		Fairs Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16214	16215	1	328287.188	6230858.13	328318.959	6230850.761
16215/16220		Fairs Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			16215	16220	1	328318.959	6230850.761	328343.145	6230845.1
16216/16218		Fairs Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16216	16218	1	328353.188	6230842.788	328356	6230853
16217/16221		Fairs Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16217	16221	1	328345.255	6230852.435	328349	6230851
16218/16219		Fairs Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			16218	16219	1	328356	6230853	328360	6230864
16219/61205		Fairs Avenue - Woolooware	Stormwater Pipe	Assumed Pipe	Good	450			16219	61205	1	328360	6230864	328379	6230938

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	U/S Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
16316/16313		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			16316	16313	1	327306	6231965	327310	6231990
16318/16315		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			16318	16315	1	327294.513	6231880.902	327301	6231926
16319/10394		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16319	10394	1	327321.166	6231945.292	327324.631	6231944.795
16320/10403		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			16320	10403	1	327317	6231975	327321	6231998
16321/10545		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			16321	10545	1	328588.782	6231483.39	328557.237	6231487.832
16322/27128		Edinburgh Close - Woolooware	Channel	Masonry Channel	Very Good	Not Applicable	2.7	1.1	16322	27128	1	328694.167	6231483.823	328676	6231489
16323/16322		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			16323	16322	1	328689.299	6231460.389	328694.167	6231483.823
16324/30192		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			16324	30192	1	328685.352	6231434.927	328687	6231448
16325/16324		Goodwin Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16325	16324	1	328691.626	6231420.604	328685.352	6231434.927
16326/16324		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16326	16324	1	328682.178	6231414.547	328685.352	6231434.927
16327/16326		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16327	16326	1	328679.086	6231394.881	328682.178	6231414.547
16328/16327		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16328	16327	1	328672.647	6231392.953	328679.086	6231394.881
16329/16328		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16329	16328	1	328659.225	6231384.061	328672.647	6231392.953
16330/16329		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16330	16329	1	328645.4	6231386.009	328659.225	6231384.061
16331/16330		Edinburgh Crescent - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16331	16330	1	328638.976	6231380.802	328645.4	6231386.009
16338/16340		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Butt Joint)	Good	300			16338	16340	1	326999.808	6230516.107	327004	6230508
16339/16340		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16339	16340	1	327000.652	6230508.581	327004	6230508
16340/10496		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16340	10496	1	327004	6230508	327014.896	6230507.898
16341/16340		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16341	16340	1	327000.912	6230506.286	327004	6230508
16342/16343		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16342	16343	1	326997.291	6230489.046	327003	6230495
16343/16341		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16343	16341	1	327003	6230495	327000.912	6230506.286
16344/10496		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16344	10496	1	327003.645	6230479.965	327014.896	6230507.898
16345/16339		Dudley Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16345	16339	1	326991.119	6230497.857	327000.652	6230508.581
16346/16345		Dudley Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16346	16345	1	326985.742	6230491.056	326991.119	6230497.857
16347/16348		Dudley Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16347	16348	1	326974.793	6230492.723	326982.329	6230499.253
16348/16345		Dudley Avenue - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16348	16345	1	326982.329	6230499.253	326991.119	6230497.857
16349/16350		Saunders Bay Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16349	16350	1	326987.786	6230617.996	326993.494	6230633.371
16350/40239		Burraneer Bay Rd - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			16350	40239	1	326993.494	6230633.371	327068.321	6230621.501
16400/10382		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16400	10382	1	327220.818	6231377.401	327221.842	6231385.613
16401/30216		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			16401	30216	1	327208.641	6231394.293	327221	6231393
16402/30217		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16402	30217	1	327276.043	6231384.62	327309	6231375
16403/6543		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16403	6543	1	327344.036	6231361.163	327370.228	6231347.375
16435/10441		Caringbah Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	600			16435	10441	1	327522.198	6231032.694	327500	6231059
16436/16438		Dwyer Reserve	Stormwater Pipe	Assumed Pipe	Good	600			16436	16438	1	327565	6231141	327591	6231167
16437/16436		Gannons Road - Caringbah South	Stormwater Pipe	Assumed Pipe	Good	600			16437	16436	1	327598	6231137	327565	6231141
16438/61206		Caringbah Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	600			16438	61206	1	327591	6231167	327642	6231181
16439/16436		Dwyer Reserve	Stormwater Pipe	Assumed Pipe	Good	600			16439	16436	1	327555	6231112	327565	6231141
16958/10263		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16958	10263	1	329787	6231431	329785	6231417
16959/16962		Links Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			16959	16962	1	329821.13	6231633.248	329814	6231642
16960/16962		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16960	16962	1	329813.094	6231628.737	329814	6231642
16961/16963		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16961	16963	1	329814.107	6231655.365	329811	6231662
16962/16966		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			16962	16966	1	329814	6231642	329809	6231648
16963/16964		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			16963	16964	1	329811	6231662	329812	6231675
16964/16970		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16964	16970	1	329812	6231675	329822	6231754
16965/16964		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16965	16964	1	329801.57	6231663.258	329812	6231675
16966/16963		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			16966	16963	1	329809	6231648	329811	6231662
16967/16970		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			16967	16970	1	329823.084	6231753.149	329822	6231754
16970/16971		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			16970	16971	1	329822	6231754	329828.881	6231806.334
16971/90031		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			16971	90031	1	329828.881	6231806.334	329835.871	6231860.09
16972/16971		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16972	16971	1	329816.662	6231791.804	329828.881	6231806.334
16974/80584A		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			16974	80584	1	329828.33	6231878.562	329830	6231899
16974/80584B		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1050			16974	80584	1	329828.33	6231878.562	329830	6231899
16976/16978		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16976	16978	1	329844.536	6231869.641	329838	6231882
16978/80584A		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			16978	80584	1	329838	6231882	329830	6231899
16978/80584B		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1200			16978	80584	1	329838	6231882	329830	6231899
16979/10272		Captain Cook Drive - Kurnell	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1200			16979	10272	1	329844	6231987	329882	6232012
17026/17028		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			17026	17028	1	327557.874	6232748.085	327584.253	6232754.923
17028/17029		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			17028	17029	1	327584.253	6232754.923	327581	6232767
17029/61196		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Good	Not Applicable	1.8	1.8	17029	61196	1	327581	6232767	327651.984	6232785.945
17030/17028		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			17030	17028	1	327596.082	6232710.242	327584.253	6232754.923
17031/17030		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			17031	17030	1	327585.454	6232700.243	327596.082	6232710.242
17032/17034		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			17032	17034	1	327610.979	6232603.689	327632.141	6232529.975
17033/17032		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			17033	17032	1	327621.449	6232614.226	327610.979	6232603.689
17034/17036		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			17034	17036	1	327632.141	6232529.975	327669.902	6232471.354
17035/17034		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			17035	17034	1	327641.206	6232541.848	327632.141	6232529.975
17036/15209		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			17036	15209	1	327669.902	6232471.354	327690.616	6232448.825
17037/17036		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			17037	17036	1	327671.846	6232488.593	327669.902	6232471.354
17038/80126		Resolution Drive Reserve & Cycleway	Channel	Concrete Channel	Undetermined	Not Applicable	6.7	N/A	17038	80126	1	327722.389	6232436.068	327732	6232443
17039/70554		Endeavour Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	900			17039	70554	1	327627.555	6232356.376	327627	6232360
17040/15203		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			17040	15203	1	327509.398	6232366.234	327522.365	6232309.02
17041/17040		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			17041	17040	1	327494.085	6232375.45	327509.398	6232366.234
17042/15375		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			17042	15375	1	327471.825	6232501.976	327458.114	6232562.55
17043/15375		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			17043	15375	1	327474.764	6232547.653	327458.114	6232562.55
17044/15379		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			17044	15379	1	327448.086	6232662.174	327435.569	6232659.435
17045/15384		Endeavour Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	1200			17045	15384	1	327361	6232712	327419	6232726
18576/10472		Whitewood Place - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			18576	10472	1	327042.077	6230751.95	327050.941	6230751.263
24074/31320		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			24074	31320	1	327301.875	6233722.457	327291	6233735
25022/25023		Crusade Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			25022	25023	1	327698.879	6230756.722	327703.1	6230784.182
25023/25024		Crusade Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			25023	25024	1	327703.1	6230784.182	327713.52	6230822.942
25024/25025		Crusade Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			25024	25025	1	327713.52	6230822.942	327720.383	6230848.75
25025/25026		Crusade Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			25025	25026	1	327720.383	6230848.75	327726.797	6230891.097
25026/40338		Crusade Place - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			25026	40338	1	327726.797	6230891.097	327720.75	6230909.313
26443/10312		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			26443	10312	1	327453	6232475	327474.218	6232403.964
26450/10307		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26450	10307	1	327432.908	6232491.139	327438.225	6232481.597
26453/26457		Captain Cook Drive - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	525			26453	26457	1	327414.032	6232517.588	327423	6232509
26454/26455		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26454	26455	1	327426.791	6232500.886	327432	6232501
26455/10308		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26455	10308	1	327432	6232501	327447.554	6232485.64
26456/26457		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26456	26457	1	327420.448	6232509.683	327423	6232509
26457/26455		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26457	26455	1	327423	6232509	327432	6232501
26458/26453		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26458	26453	1	327410	6232522	327414.032	6232517.588
26459/26458		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26459	26458	1	327407.17	6232525.168	327410	6232522
26460/26459		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26460	26459	1	327398	6232533	327407.17	6232525.168
26462/26460		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26462	26460	1	327391.506	6232539.56	327398	6232533
26463/26462		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26463	26462	1	327376	6232550	327391.506	6232539.56
26464/26463		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			26464	26463	1	327373.431	6232549.663	327376	6232550
26465/26463		Captain Cook Drive - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	750			26465	26463	1	327361.042	6232560.262	327376	6232550
26466/26465		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			26466	26465	1	327352.198	6232564.928	327361.042	6232560.262
26467/26466		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			26467	26466	1	327337.348	6232571.558	327352.198	6232564.928
26471/50081		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			26471	50081	1	327179.473	6232586.885	327193	6232597
26472/10786		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			26472	10786	1	326837.069	6232637.897	326846	6232650
27094/27096		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27094	27096	1	327367.219	6230767.822	327371	6230797
27096/40337		Oleander Parade - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27096	40337	1	327371	6230797	327373.854	6230812.557
27124/27125		Edinburgh Close - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			27124	27125	1	328729.483	6231515.666	328721.964	6231516.586
27125/27126		Edinburgh Close - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			27125	27126	1	328721.964	6231516.586	328639	6231527
27126/61225		Woolooware Road - Woolooware	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2	1.2	27126	61225	1	328639	6231527	328602	6231564
27128/27126		Edinburgh Close - Woolooware	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2	1.2	27128	27126	1	328676	6231489	328639	6231527
27167/10133		Seaview Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			27167	10133	1	329524.675	6231442.191	329534.208	6231449.315
27174/27178		Croydon Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27174	27178	1	329492.644	6230919.208	329494	6230926
27175/10177		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27175	10177	1	329513.54	6230923.662	329572.582	6230916.007
27176/27178		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27176	27178	1	329487.701	6230927.058	329494	6230926
27178/27175		Burke Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27178	27175	1	329494	6230926	329513.54	6230923.662
27193/27194		Bando Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27193	27194	1	329664.471	6231116.178	329648.993	6231118.189
27194/27195		Bando Road - Cronulla	Stormwater Pipe	Stormwater Pipe	Undetermined	600			27194	27195	1	329648.993	6231118.189	329651.11	6231130.465
27195/31718		Bando Road Drainage Reserve	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			27195	31718	1	329651.11	6231130.465	329651.813	6231151.354
27196/40393		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27196	40393	1	329653.139	6231340.548	329652	6231335
27197/40393		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27197	40393	1	329651.273	6231327.906	329652	6231335
27198/10210		Tullimbar Road Drainage Reserve	Stormwater Pipe	Stormwater Pipe	Undetermined	750			27198	10210	1	329674.055	6231317.388	329673	6231324
27199/10137		Girrilang Road - Cronulla	Stormwater Pipe	Assumed Pipe	Good	450			27199	10137	1	329635.462	6231340.789	329650.039	6231434.277
27204/27205		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27204	27205	1	329317.031	6231477.519	329309.577	6231488.301
27205/27209		Pozieres Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			27205	27209	1	329309.577	6231488.301	329271	6231494
27206/27204		Kurnell Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27206	27204	1	329325.223	6231468.708	329317.031	6231477.519
27209/27210		Pozieres Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			27209	27210	1	329271	6231494	329272.883	6231502.778
27210/27212		Pozieres Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			27210	27212	1	329272.883	6231502.778	329276	6231527
27212/10716		Pozieres Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			27212	10716	1	329276	6231527	329279.979	6231552.476
27229/10223		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27229	10223	1	329777.435	6231311.507	329772	6231313
27230/27229		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27230	27229	1	329782.755	6231323.855	329777.435	6231311.507
27231/27229		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27231	27229	1	329812.096	6231307.056	329777.435	6231311.507
27232/27231		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27232	27231	1	329828.228	6231318.041	329812.096	6231307.056
27233/27232		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27233	27232	1	329859.742	6231313.992	329828.228	6231318.041
27234/27233		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27234	27233	1	329865.534	6231300.193	329859.742	6231313.992
27235/27233		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27235	27233	1	329886.193	6231310.58	329859.742	6231313.992
27236/27235		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			27236	27235	1	329891.32	6231296.847	329886.193	6231310.58
27252/10188		Burke Road Drainage Reserve	Channel	Concrete Channel	Very Good	Not Applicable	0.6	0.8	27252	10188	1	329586	6230970	329590.013	6231019.403
27968/27972		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			27968	27972	1	328805.496	6231382.268	328796.763	6231392.152
27969/27968		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			27969	27968	1	328799.109	6231331.005	328805.496	6231382.268
27970/27969		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			27970	27969	1	328798.248	6231310.959	328799.109	6231331.005
27971/27973		High Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27971	27973	1	328830.001	6231417.631	328822.892	6231426.232
27972/10235		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			27972	10235	1	328796.763	6231392.152	328805	6231450
27973/10237		High Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			27973	10237	1	328822.892	6231426.232	328816	6231433
27974/10241		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			27974	10241	1	328816.943	6231469.939	328807.928	6231470.878
27975/10242		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			27975	10242	1	328807.473	6231467.859	328803.485	6231471.515
27976/10244		Cook Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27976	10244	1	328835.288	6231511.425	328834	6231511
27977/10244		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			27977	10244	1	328827.815	6231521.257	328834	6231511
29573/29574		Delagoa Reserve	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			29573	29574	1	327196	6231697	327199	6231722
29574/29575		Delagoa Place - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			29574	29575	1	327199	6231722	327205	6231725
29575/15820		Bellevue Parade - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			29575	15820	1	327205	6231725	327215.375	6231773.58
29576/10746		Kingsway - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	375			29576	10746	1	327311.851	6231456.279	327377.799	6231429.462
30139/40230		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			30139	40230	1	326539.936	6231725.246	326556.53	6231739.119
30177/10772		Arcadia Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			30177	10772	1	328432	6231523	328440.985	6231532.907

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	U/S Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
40290/40291		Dianella Street Reserve	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40290	40291	1	326726.621	6232115.81	326723.361	6232095.647
40291/40288		Dianella Street Reserve	Stormwater Pipe	Stormwater Pipe	Good	375			40291	40288	1	326723.361	6232095.647	326766.285	6232050.938
40292/15705		Kitchener Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40292	15705	1	327001.834	6231777.61	327013.454	6231792.847
40293/40294		Bellevue Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40293	40294	1	327141.098	6231790.301	327203.978	6231781.338
40294/15820		Bellevue Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40294	15820	1	327203.978	6231781.338	327215.375	6231773.58
40295/40296		Warrington Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40295	40296	1	327182.8	6231882.235	327186.386	6231907.18
40296/15889		Warrington Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40296	15889	1	327186.386	6231907.18	327192.063	6231946.918
40297/15888		Warrington Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40297	15888	1	327195.991	6231931.749	327198.841	6231951.14
40298/15891		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			40298	15891	1	327176.671	6231964.11	327184.751	6231962.919
40299/40300		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			40299	40300	1	327255.702	6231952.735	327287.544	6231948.175
40300/10395		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			40300	10395	1	327287.544	6231948.175	327295.988	6231956.246
40301/10396		Taronga Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			40301	10396	1	327291.961	6231947.569	327295.43	6231947.021
40302/40303		Grenville Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40302	40303	1	327118.695	6232105.666	327123	6232096
40303/10358		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			40303	10358	1	327123	6232096	327136.085	6232094.27
40304/10373		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			40304	10373	1	326832.549	6231835.899	326836	6231829
40305/10371		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			40305	10371	1	326847.72	6231834.356	326902	6231829
40306/40307		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40306	40307	1	326838.61	6231849.418	326849.56	6231848.413
40307/40305		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1200			40307	40305	1	326849.56	6231848.413	326847.72	6231834.356
40308/10660		Sunnyside Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			40308	10660	1	326640.35	6231752.262	326643.749	6231768.092
40309/40310		Caringbah Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40309	40310	1	327881.639	6230894.016	327856.188	6230897.796
40310/10578		Caringbah Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40310	10578	1	327856.188	6230897.796	327835.324	6230900.903
40311/10577		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40311	10577	1	327827.049	6230901.502	327820.626	6230891.007
40312/40314		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			40312	40314	1	327812.989	6230894.651	327801	6230907
40313/40312		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40313	40312	1	327806.265	6230850.902	327812.989	6230894.651
40314/10575		Caringbah Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40314	10575	1	327801	6230907	327733.698	6230915.212
40319/10422		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			40319	10422	1	327207.681	6231270.782	327215.96	6231325.855
40320/40319		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			40320	40319	1	327197.881	6231204.771	327207.681	6231270.782
40321/40322		Port Hacking Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			40321	40322	1	326797.503	6231433.056	326799	6231451
40322/40325		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			40322	40325	1	326799	6231451	326855.135	6231442.753
40350/10639		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40350	10639	1	327790.835	6230746.148	327798.435	6230797.876
40351/40350		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40351	40350	1	327796.612	6230731.79	327790.835	6230746.148
40352/40350		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40352	40350	1	327784.037	6230701.507	327790.835	6230746.148
40353/40352		Coral Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40353	40352	1	327791.19	6230695.046	327784.037	6230701.507
40354/40356		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40354	40356	1	327837.777	6231119.069	327822.778	6231123.734
40355/40354		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40355	40354	1	327852.728	6231114.433	327837.777	6231119.069
40356/40357		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40356	40357	1	327822.778	6231123.734	327809.311	6231128.341
40357/40358		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40357	40358	1	327809.311	6231128.341	327794.674	6231134.157
40358/40359		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40358	40359	1	327794.674	6231134.157	327783.192	6231141.01
40359/40360		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40359	40360	1	327783.192	6231141.01	327770.627	6231148.79
40360/40361		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40360	40361	1	327770.627	6231148.79	327754.868	6231157.17
40361/11013		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			40361	11013	1	327754.868	6231157.17	327728.061	6231157.712
40362/11013		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			40362	11013	1	327739.471	6231151.644	327728.061	6231157.712
40364/40365		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			40364	40365	1	327670.385	6231188.359	327694.933	6231175.335
40365/11013		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			40365	11013	1	327694.933	6231175.335	327728.061	6231157.712
40366/40367		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			40366	40367	1	327740.627	6231176.079	327745	6231185
40368/11025		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40368	11025	1	328050	6231017	328053.793	6231031.592
40369/41385		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40369	41385	1	328064.748	6231039.042	328057.833	6231072.894
40370/40369		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			40370	40369	1	328103.065	6231027.252	328064.748	6231039.042
40386/10217		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40386	10217	1	329747.892	6231121.263	329747	6231117
40387/40389		Bando Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40387	40389	1	329721.92	6231119.959	329678.94	6231125.356
40388/40389		Bando Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40388	40389	1	329690.46	6231112.745	329678.94	6231125.356
40389/12125		Bando Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40389	12125	1	329678.94	6231125.356	329656.367	6231128.235
40390/10197		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40390	10197	1	329734.401	6231016.797	329733	6231013
40391/10189		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40391	10189	1	329712.47	6231015.391	329630.867	6231025.254
40392/10190		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			40392	10190	1	329671.421	6231008.997	329638.428	6231013.185
40393/27199		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			40393	27199	1	329652	6231335	329635.462	6231340.789
40394/10213		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40394	10213	1	329668.47	6231232.246	329664.48	6231232.782
40395/40394		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40395	40394	1	329672.311	6231231.706	329668.47	6231232.246
40396/40394		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40396	40394	1	329670.287	6231220.886	329668.47	6231232.246
40397/40398		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40397	40398	1	329689.528	6231218.367	329687	6231230
40398/40395		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40398	40395	1	329687	6231230	329672.311	6231231.706
40399/40398		Tullimbar Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40399	40398	1	329736.677	6231223.641	329687	6231230
40400/10149		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40400	10149	1	329781.446	6231382.914	329785.191	6231412.073
40413/12106		Port Hacking Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40413	12106	1	326784.451	6231332.259	326785.256	6231338.053
40414/40415		Port Hacking Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40414	40415	1	326775.103	6231359.218	326790	6231372
40415/40416		Port Hacking Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40415	40416	1	326790	6231372	326790.502	6231378.609
40416/40321		Port Hacking Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			40416	40321	1	326790.502	6231378.609	326797.503	6231433.056
40418/40419		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			40418	40419	1	326661.474	6231557.923	326638.391	6231589.616
40419/30139		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			40419	30139	1	326638.391	6231589.616	326539.936	6231725.246
40423/30254		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			40423	30254	1	326752	6231485	326730.236	6231501.372
40424/40423		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			40424	40423	1	326784	6231477	326752	6231485
40425/10122		Alfred Avenue - Cronulla	Stormwater Pipe	Stormwater Pipe	Undetermined	375			40425	10122	1	329299	6231394	329255.986	6231402.116
40426/10122		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			40426	10122	1	329259	6231398	329255.986	6231402.116
40427/61234		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40427	61234	1	329244	6231415	329250	6231450
40428/10205		Ocean Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40428	10205	1	329530.614	6231203.776	329570.929	6231198.682
40429/40431		Ocean Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40429	40431	1	329459.208	6231213.016	329480	6231210
40430/40431		Ocean Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			40430	40431	1	329478.322	6231198.095	329480	6231210
40431/40428		Ocean Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40431	40428	1	329480	6231210	329530.614	6231203.776
40432/40429		Ocean Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40432	40429	1	329453.287	6231202.643	329459.208	6231213.016
40433/40435		Cook Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40433	40435	1	328877.214	6231506.042	328875	6231505
40434/10129		Judd Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			40434	10129	1	329423.962	6231455.136	329424	6231464
40435/10244		Cook Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			40435	10244	1	328875	6231505	328834	6231511
40463/40464		Links Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40463	40464	1	329991.738	6231632.648	329978.697	6231634.406
40464/40465		Links Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40464	40465	1	329978.697	6231634.406	329927.348	6231639.908
40465/40467		Links Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40465	40467	1	329927.348	6231639.908	329915.916	6231622.813
40466/72353		Links Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	675			40466	72353	1	329898.563	6231624.228	329862.808	6231627.983
40467/40466		Kirkwood Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			40467	40466	1	329915.916	6231622.813	329898.563	6231624.228
40468/40466		Kirkwood Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			40468	40466	1	329907.169	6231615.51	329898.563	6231624.228
40469/40468		Kirkwood Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			40469	40468	1	329912.828	6231603.942	329907.169	6231615.51
40470/40469		Kirkwood Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			40470	40469	1	329911.11	6231590.08	329912.828	6231603.942
40471/40470		Kirkwood Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			40471	40470	1	329905.355	6231545.278	329911.11	6231590.08
40472/40468		Kirkwood Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			40472	40468	1	329896.253	6231529.894	329907.169	6231615.51
40473/40471		Kirkwood Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40473	40471	1	329901.482	6231515.998	329905.355	6231545.278
40474/72074		Girrilang Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			40474	72074	1	329749.278	6231315.252	329694.578	6231322.259
41321/40258		Holly Street - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			41321	40258	1	327253	6230700	327249	6230704
41322/10583		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			41322	10583	1	327644.769	6231201.877	327649.159	6231186.844
41354/41355		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			41354	41355	1	328426.563	6231802.838	328431.987	6231859.954
41355/41356		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			41355	41356	1	328431.987	6231859.954	328359	6231873
41355/80298		Woolooware Golf Course	Stormwater Pipe	Stormwater Pipe	Good	375			41355	80298	1	328431.987	6231859.954	328434.333	6231878.933
41356/10828		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			41356	10828	1	328359	6231873	328264.288	6231894.542
41357/41358		Captain Cook Oval	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			41357	41358	1	327999.175	6231926.613	327990.996	6231927.97
41359/61218		Captain Cook Oval	Channel	Concrete Channel	Good	Not Applicable	2	1	41359	61218	1	327944.999	6231857.95	327953	6231811
41361/41362		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	6.7	2	41361	41362	1	327862.536	6231674.064	327874	6231693
41362/61220		Woolooware Golf Course	Channel	Earth Channel	Fair	Not Applicable	6.7	2	41362	61220	1	327874	6231693	327878	6231697
41363/61218		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	5	1.5	41363	61218	1	327932.834	6231781.85	327953	6231811
41364/41365		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			41364	41365	1	328469.537	6231630.884	328467.055	6231640.868
41365/41382		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	4	1.5	41365	41382	1	328467.055	6231640.868	328444.683	6231654.158
41366/61211		Woolooware Golf Course	Channel	Earth Channel	Very Good	Not Applicable	2	1	41366	61211	1	328039.521	6231559.541	328028	6231578
41367/41366		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	900			41367	41366	1	328048.874	6231554.073	328039.521	6231559.541
41368/41367		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	3.4	1.5	41368	41367	1	328066.463	6231503.233	328048.874	6231554.073
41369/6653		Woolooware Golf Course	Channel	Earth Channel	Very Good	Not Applicable	2	1	41369	6653	1	328260.652	6231399.915	328211	6231418
41370/41372		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	4	1.3	41370	41372	1	328134.49	6231277.116	328119	6231326
41371/41372		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	5	1.5	41371	41372	1	328094.724	6231305.471	328119	6231326
41372/41368		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	4	1.3	41372	41368	1	328119	6231326	328066.463	6231503.233
41373/41374		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			41373	41374	1	328186.229	6231470.581	328125.387	6231484.98
41374/41368		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			41374	41368	1	328125.387	6231484.98	328066.463	6231503.233
41375/61215		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	5	1.5	41375	61215	1	328141.748	6231716.053	328118	6231725
41376/41375		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			41376	41375	1	328199.623	6231686.791	328141.748	6231716.053
41377/61224		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			41377	61224	1	328258.67	6231661.759	328255.438	6231660.347
41378/61223		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			41378	61223	1	328307	6231658	328276.791	6231658.832
41379/41378		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			41379	41378	1	328352.421	6231652.749	328307	6231658
41381/41380		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			41381	41380	1	328440.998	6231658.616	328413.393	6231656.376
41382/41381		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			41382	41381	1	328444.683	6231654.158	328440.998	6231658.616
41384/41386		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			41384	41386	1	328060.325	6231074.125	328067.977	6231127.312
41385/41384		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			41385	41384	1	328057.833	6231072.894	328060.325	6231074.125
41386/31748		Dolans Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			41386	31748	1	328067.977	6231127.312	328073	6231161
50037/10656		Banksia Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			50037	10656	1	326590.242	6231749.596	326612.193	6231754.494
50040/70553		Endeavour Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	750			50040	70553	1	327620.695	6232367.422	327626	6232366
50041/15384		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50041	15384	1	327432.372	6232672.926	327419	6232726
50042/16234		Fenton Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50042	16234	1	327404.344	6232448.419	327407	6232470
50043/31872		Drake Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			50043	31872	1	327398	6232251	327411.971	6232249.333
50044/15265		Murrami Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			50044	15265	1	327471	6232185	327462.052	6232218.29
50045/50046		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50045	50046	1	327469.508	6232377.943	327472	6232358
50046/10316		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50046	10316	1	327472	6232358	327488.021	6232342.657
50048/10316		Endeavour Road Reserve	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	1050			50048	10316	1	327490	6232361	327488.021	6232342.657
50049/50054		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			50049	50054	1	327506	6232236	327508.983	6232256.228
50050/10322		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50050	10322	1	327486.892	6232290.172	327501.059	6232284.739
50051/50050		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50051	50050	1	327483.913	6232303.161	327486.892	6232290.172
50052/50051		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50052	50051	1	327480.543	6232318.253	327483.913	6232303.161
50053/50052		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50053	50052	1	327477	6232334	327480.543	6232318.253
50054/32142		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			50054	32142	1	327508.983	6232256.228	327510	6232273
50058/10956		Burleigh Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50058	10956	1	327185.373	6232385.716	327265.563	6232373.321
50059/16232		Grenville Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			50059	16232	1	327168	6232422	327164	6232388
50069/50070		Woodfield Boulevarde - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50069	50070	1	326850.287	6232787.859	326862.006	6232783.401
50070/50078		Woodfield Boulevarde - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			50070	50078	1	326862.006	6232783.401	326955	6232770
50071/50072		Woodfield Boulevarde - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50071	50072	1	326867.992	6232905.911	326879.852	6232903.567
50072/50074		Woodfield Boulevarde - Caringbah	Stormwater Pipe	Assumed Pipe	Good	375			50072	50074	1	326879.852	6232903.567	326973.273	6232885.681
50073/50074		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50073	50074	1	326982.346	6232954.174	326973.273	6232885.681
50074/50075		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50074	50075	1	326973.273	6232885.681	326968.464	6232849.077
50075/50076		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50075	50076	1	326968.464	6232849.077	326964.482	6232819.242
50076/50077		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50076	50077	1	326964.482	6232819.242	326960.569	6232789.57
50077/50079		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50077	50079	1	326960.569	6232789.57	326970.667	6232779.295
50078/72275		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50078	72275	1	326955	6232770	326959.408	6232780.737
50079/50080		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			50079	50080	1	326970.667	6232779.295	326969	6232767
50080/10950		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			50080	10950	1	326969	6232767	326985.698	6232761.667
50081/10298		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			50081	10298	1	327193	6232597	327208	6232595
50082/50083		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			50082	50083	1	326911	6232637	326921	6232635
50083/10714		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			50083	10714	1	326921	6232635	326956	6232658
50084/10299		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	750			50084	10299	1	327309	6232579	327322.869	6232576.687
50085/50086		Restormel Street - Woolooware	Channel	Concrete Channel	Very Good	Not Applicable	0.56	0.34	50085	50086	1	328674.003	6231825.284	328697.3	6231813.434
50086/50087		Restormel Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			50086	50087	1	328697.3	6231813.434	328709.354	6231807.856
50087/50088		Restormel Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			50087	50088	1	328709.354	6231807.856	328715.36	6231802.71
50088/50224		Woolooware Road - Woolooware	Channel	Concrete Channel	Very Good	Not Applicable	0.76	0.26	50088	50224	1	328715.36	6231802.71	328800.736	6231767.021
50089/6423		Glandore Street - Woolooware	Stormwater Pipe	Stormwater Pipe	Good	450			50089	6423	1	328812.732	6231758.567	328812.981	6231760.701
50094/50093		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50094	50093	1	328263.903	6231909.391	328266	6231909
50123/50085		Restormel Street - Woolooware	Channel	Concrete Channel	Very Good	Not Applicable	0.56	0.34	50123	50085	1	328610.679	6231852.593	328674.003	6231825.284
50138/50139		Solander Playing Fields	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			50138	50139	1	328075	6232003	328082.737	6232049.927
50139/50140		Solander Playing Fields	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	600			50139	50140	1	328082.737	6232049.927	328092.851	6232119.11
50140/50141		Solander Playing Fields	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			50140	50141	1	328092.851	6232119.11	328103.396	6232160.786
50141/6417		Solander Playing Fields	Channel	Earth Channel	Fair	Not Applicable	2.7	0.9	50141	6417	1	328103.396	6232160.786	328100.58	6232183.62

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	U/S Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
50142/50144		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50142	50144	1	327963	6231955	327969	6231997
50143/50145		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50143	50145	1	327946	6231957	327956	6232011
50144/50145		Solander Playing Fields	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50144	50145	1	327969	6231997	327956	6232011
50145/50147		Solander Playing Fields	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			50145	50147	1	327956	6232011	327961	6232036
50146/72674		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			50146	72674	1	327890.062	6231991.931	327900.167	6232003.489
50147/50140		Solander Playing Fields	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	900			50147	50140	1	327961	6232036	328092.851	6232119.11
50148/50149		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			50148	50149	1	327513.12	6231305.076	327520.943	6231300.875
50149/6506		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50149	6506	1	327520.943	6231300.875	327524.335	6231294.146
50150/16265		Nullaburra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50150	16265	1	327427	6231700	327429.842	6231714.413
50151/10673		Burrawalla Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50151	10673	1	327455.251	6231726.637	327487.863	6231722.001
50152/16239		Wallumatta Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50152	16239	1	327563.464	6231663.526	327559	6231631
50153/50154		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50153	50154	1	327382.454	6232047.004	327383.701	6232056.012
50154/50155		Carabella Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1500			50154	50155	1	327383.701	6232056.012	327391	6232071
50155/6415		Fenton Avenue Reserve	Box Culvert	Concrete Culvert	Good	Not Applicable	4	2	50155	6415	1	327391	6232071	327392.788	6232083.728
50156/15263		Murrami Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50156	15263	1	327506.905	6232118.532	327477.251	6232152.918
50159/50158		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50159	50158	1	327674.543	6232067.259	327685.13	6232058.958
50160/50159		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50160	50159	1	327662.232	6232076.859	327674.543	6232067.259
50161/50160		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50161	50160	1	327650.088	6232086.325	327662.232	6232076.859
50162/50161		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50162	50161	1	327637.886	6232095.835	327650.088	6232086.325
50163/50171		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50163	50171	1	327625.713	6232105.323	327626.653	6232120.691
50164/50165		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50164	50165	1	327606.455	6232120.376	327594.883	6232129.423
50165/50167		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50165	50167	1	327594.883	6232129.423	327583.235	6232138.695
50166/50167		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50166	50167	1	327576.637	6232130.849	327583.235	6232138.695
50167/50170		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50167	50170	1	327583.235	6232138.695	327583.24	6232154.575
50168/10342		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	500			50168	10342	1	327558.417	6232176.447	327534	6232210
50170/50168		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50170	50168	1	327583.24	6232154.575	327558.417	6232176.447
50171/50170		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50171	50170	1	327626.653	6232120.691	327583.24	6232154.575
50176/50177		Captain Cook Drive - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	1200			50176	50177	4	329066.362	6231965.671	329049.66	6232001.14
50177/6425		Captain Cook Drive - Cronulla	Channel	Earth Channel	Fair	Not Applicable	9	1.4	50177	6425	1	329049.66	6232001.14	329051.11	6232021.41
50179/27252		Burke Road Drainage Reserve	Channel	Concrete Channel	Good	Not Applicable	1.7	1.1	50179	27252	1	329578.965	6230933.038	329586	6230970
50180/10984		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50180	10984	1	327803.922	6232016.086	327819	6231995
50181/50182		Flinders Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50181	50182	1	328828.678	6231168.345	328813.033	6231170.621
50182/50183		Flinders Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50182	50183	1	328813.033	6231170.621	328787.158	6231174.415
50183/10557		Flinders Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			50183	10557	1	328787.158	6231174.415	328780	6231176
50184/50187		Flinders Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			50184	50187	1	328724.835	6231183.851	328699.242	6231187.49
50185/50186		Flinders Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50185	50186	1	328680.94	6231190.08	328692.363	6231188.444
50186/30187		Flinders Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			50186	30187	2	328692.363	6231188.444	328697.693	6231199.026
50187/30188		Flinders Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			50187	30188	1	328699.242	6231187.49	328699.566	6231198.799
50188/30186		Flinders Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			50188	30186	1	328661.948	6231192.818	328668.13	6231203.233
50189/10603		Denman Avenue - Woolooware	Channel	Earth Channel	Good	Not Applicable	1.8	1.2	50189	10603	1	328260	6231117	328254.249	6231125.739
50190/10560		Denman Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			50190	10560	1	328641.775	6231075.369	328654.792	6231073.581
50191/50192		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50191	50192	1	328364.897	6230946.313	328319.345	6230960.405
50192/50193		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50192	50193	1	328319.345	6230960.405	328319	6230961
50193/10604		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50193	10604	1	328319	6230961	328322.155	6230982.812
50194/50193		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50194	50193	1	328318.149	6230957.421	328319	6230961
50195/50196		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50195	50196	1	328290.941	6230969.178	328261.415	6230978.297
50196/50197		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50196	50197	1	328261.415	6230978.297	328233.274	6230986.969
50197/50198		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50197	50198	1	328233.274	6230986.969	328204.937	6230995.75
50198/50204		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			50198	50204	1	328204.937	6230995.75	328196	6230999
50199/50201		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			50199	50201	1	328195.35	6230994.324	328181.03	6230996.132
50200/50205		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50200	50205	1	328175.888	6231004.58	328137.655	6231016.519
50201/50200		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			50201	50200	1	328181.03	6230996.132	328175.888	6231004.58
50202/50201		Church Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			50202	50201	1	328180.938	6230988.728	328181.03	6230996.132
50203/50202		Church Street - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			50203	50202	1	328190.066	6230980.398	328180.938	6230988.728
50204/50200		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			50204	50200	1	328196	6230999	328175.888	6231004.58
50205/40370		Kingsway - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50205	40370	1	328137.655	6231016.519	328103.065	6231027.252
50206/10554		Denman Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			50206	10554	1	328679.465	6231080.497	328671.99	6231081.517
50207/10555		Denman Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	450			50207	10555	1	328686.686	6231069.717	328680	6231071

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	U/S Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
7046/15556		Carabella Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	1200			7046	15556	1	327192	6232051	327212.924	6232073.062
70552/70573		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70552	70573	1	327534	6232295	327581	6232331
70553/70575		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70553	70575	1	327626	6232366	327651	6232385
70554/70576		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70554	70576	1	327627	6232360	327654	6232380
70555/17038		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70555	17038	1	327706	6232427	327722.389	6232436.068
70556/17038		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70556	17038	1	327712	6232425	327722.389	6232436.068
70557/70558		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			70557	70558	1	327710.479	6232446.071	327725.955	6232442.843
70558/80126		Resolution Drive Reserve & Cycleway	Stormwater Pipe	Stormwater Pipe	Undetermined	750			70558	80126	1	327725.955	6232442.843	327732	6232443
70559/70560		Resolution Drive Reserve & Cycleway	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.9	70559	70560	2	327787	6232484	327791	6232487
70560/61197		Resolution Drive Reserve & Cycleway	Channel	Concrete Channel	Undetermined	Not Applicable	0	0	70560	61197	1	327791	6232487	327793.66	6232489.1
70561/80126		Resolution Drive Reserve & Cycleway	Stormwater Pipe	Stormwater Pipe	Undetermined	750			70561	80126	1	327726.954	6232435.442	327732	6232443
70562/70563		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			70562	70563	1	327707.423	6232552.973	327717.097	6232541.473
70563/70564		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			70563	70564	1	327717.097	6232541.473	327726.487	6232530.425
70564/70565		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			70564	70565	1	327726.487	6232530.425	327737.171	6232517.859
70565/70566		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			70565	70566	1	327737.171	6232517.859	327744	6232510
70566/70567		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			70566	70567	1	327744	6232510	327771.118	6232476.323
70567/70569		Resolution Drive Reserve & Cycleway	Stormwater Pipe	Stormwater Pipe	Undetermined	750			70567	70569	1	327771.118	6232476.323	327775	6232475
70569/70559		Resolution Drive Reserve & Cycleway	Channel	Concrete Channel	Undetermined	Not Applicable	0	0	70569	70559	1	327775	6232475	327787	6232484
70570/70571		Resolution Drive Reserve & Cycleway	Stormwater Pipe	Stormwater Pipe	Undetermined	900			70570	70571	1	327730.707	6232438.271	327741	6232450
70571/70569		Resolution Drive Reserve & Cycleway	Channel	Concrete Channel	Undetermined	Not Applicable	0	0	70571	70569	1	327741	6232450	327775	6232475
70572/70570		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			70572	70570	1	327744	6232441	327730.707	6232438.271
70573/70555		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70573	70555	1	327581	6232331	327626	6232366
70574/70554		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70574	70554	1	327584	6232326	327627	6232360
70575/70555		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70575	70555	1	327651	6232385	327706	6232427
70576/70556		Endeavour Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	2.6	1.5	70576	70556	1	327654	6232380	327712	6232425
70578/70556		Endeavour Road - Caringbah	Stormwater Pipe	Assumed Pipe	Good	750			70578	70556	1	327713.067	6232422.656	327712	6232425
70597/41371		Dolans Road - Woolooware	Stormwater Pipe	Stormwater Pipe	Undetermined	750			70597	41371	1	328093.495	6231293.907	328094.724	6231305.471
70598/31750		Denman Avenue - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	750			70598	31750	1	328081.711	6231192.691	328079.245	6231199.646
70712/10447A		Robin Place - Caringbah South	Stormwater Pipe	Assumed Pipe	Good	300			70712	10447	1	326923	6230907	326934	6230934
70712/10447B		Robin Place - Caringbah South	Stormwater Pipe	Assumed Pipe	Good	300			70712	10447	1	326923	6230907	326934	6230905
70771/70772		Adventure Place - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	600			70771	70772	1	327458.742	6233076.642	327455.165	6233089.024
70772/70773		Adventure Place - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	675			70772	70773	1	327455.165	6233089.024	327478.878	6233095.071
70773/70787		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	825			70773	70787	1	327478.878	6233095.071	327484	6233104
70774/70775		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	600			70774	70775	1	327454.756	6233136.418	327462.792	6233105.852
70775/70787		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	600			70775	70787	1	327462.792	6233105.852	327484	6233104
70779/70780		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Good	500			70779	70780	2	327497.895	6232971.889	327510.254	6232976.009
70780/70781		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Good	600			70780	70781	1	327510.254	6232976.009	327493.735	6233038.469
70781/70782		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Good	600			70781	70782	1	327493.735	6233038.469	327492.54	6233043.191
70782/70773		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Good	600			70782	70773	1	327492.54	6233043.191	327478.878	6233095.071
70783/70784		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	375			70783	70784	1	327506.486	6233007.768	327497.984	6233039.302
70784/70785		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	450			70784	70785	1	327497.984	6233039.302	327489.569	6233071.936
70785/70786		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	525			70785	70786	1	327489.569	6233071.936	327483.168	6233097.133
70786/70787		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	525			70786	70787	1	327483.168	6233097.133	327484	6233104
70787/70788		Northumberland Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	3.6	2.1	70787	70788	1	327484	6233104	327540	6233119
70788/70788A		Northumberland Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	3.6	2.1	70788	70788A	1	327540	6233119	327558.47	6233110.741
70807/70808		Resolution Drive Reserve & Cycleway	Stormwater Pipe	Stormwater Pipe	Undetermined	600			70807	70808	1	327505.465	6233248.819	327513.086	6233219.914
70808/70809		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	600			70808	70809	1	327513.086	6233219.914	327522.111	6233185.661
70809/70810		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	600			70809	70810	1	327522.111	6233185.661	327530.549	6233153.228
70810/70811		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	675			70810	70811	1	327530.549	6233153.228	327538.791	6233121.805
70811/70788		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	675			70811	70788	1	327538.791	6233121.805	327540	6233119
70812/70813A		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	825			70812	70813	1	327547.389	6232843.626	327566	6232847
70812/70813B		Northumberland Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Undetermined	825			70812	70813	1	327547.389	6232843.626	327566	6232849
70813/70814		Northumberland Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	1.8	0.9	70813	70814	1	327566	6232849	327607	6232860
70814/70814A		Northumberland Road - Caringbah	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	1.8	0.9	70814	70814A	1	327607	6232860	327622.719	6232863.157
70815/70813		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70816/70817		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70817/70812		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70818/70815		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70819/70814		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70820/70821		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70821/70822		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70822/70819		Northumberland Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70823/70824		Resolution Drive Reserve & Cycleway	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70825/70826		Resolution Drive Reserve & Cycleway	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
71008/10997		Taronga Parade - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
71009/71008		Taronga Parade - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
71010/40275		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72008/80305		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72044/72045		Dwyer Reserve	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72045/16436		Dwyer Reserve	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72074/10142		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72100/72101		Wallumatta Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72101/10726		Wallumatta Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72102/10680		Wallumatta Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72272/80281		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72275/50079		Cawarra Road - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72353/16959		Links Avenue - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72376/10217		Bando Road - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72377/10219		Bando Road - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72393/10570		Gannons Road - Caringbah South	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72412/72413		Kirkwood Road - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72413/10265		Bate Bay Road - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72459/40279		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72460/40281		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72461/10370		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72462/10370		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72463/72462		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72464/72463		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72465/72464		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72466/72463		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72467/72466		Glassop Street - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72474/10224		Wills Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72475/72474		Wills Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72476/72474		Wills Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72477/10559		Wills Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72502/15455		Caringbah Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72609/72610		Locksley Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72610/72611		Locksley Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72611/72612		Locksley Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72612/16423		Hume Road - Cronulla	Channel	[illegible]	[illegible]	Not Applicable	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72663/72664		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72664/72665		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72665/72666		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72666/72668		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72668/72666		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72674/50147		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
73744/73745		Mansfield Avenue - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
73745/73746		Mansfield Avenue - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80126/70571		Resolution Drive Reserve & Cycleway	Channel	Concrete Channel	[illegible]	Not Applicable	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80211/80213		Robin Place - Caringbah South	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80213/80578		Robin Place - Caringbah South	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80215/10712A		Robin Place Reserve	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80215/10712B		Robin Place Reserve	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80225/80226		Woolooware Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80226/80300		Woolooware Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80227/80228		Woolooware Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80228/80291		Woolooware Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80229/80290		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80230/10563		Woolooware Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80231/80230		Woolooware Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80232/80233		Sturt Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80233/10538		Sturt Road - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80239/80240		High Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80240/27973		High Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80241/80240		High Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80242/80241		High Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80243/80242		High Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80244/80242		High Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80245/80244		High Street - Cronulla	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80262/80263		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80263/80265		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80264/80263		Captain Cook Oval	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80265/50144		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80266/80270		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80267/80266		Toyota & Solander Field Road Island	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80268/80267		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80269/50138		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80270/80269		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80271/80270		Solander Playing Fields	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80272/80273		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80273/80274		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80274/80266		Captain Cook Drive - Caringbah	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80275/80274		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80276/80275		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80277/80275		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80278/80277		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80279/80272		Captain Cook Drive - Woolooware	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80281/50096		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			80281	50096	1	328275.056	6231929.818	328273	6231933
80282/80283		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80282	80283	1	328262.402	6231931.715	328264	6231935
80283/10829		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80283	10829	1	328264	6231935	328269.923	6231941.864
80284/80283		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80284	80283	1	328239.556	6231938.847	328264	6231935
80285/80280		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80285	80280	1	328306	6231918	328274	6231923
80286/80287		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80286	80287	1	328427.335	6231921.629	328432.777	6231921.649
80287/80291		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			80287	80291	1	328432.777	6231921.649	328428.656	6231910.456
80289/80290		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80289	80290	1	328454.55	6231919.303	328444	6231919
80290/80292		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80290	80292	1	328444	6231919	328440.449	6231917.194
80291/80293		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80291	80293	1	328428.656	6231910.456	328351	6231915
80292/80291		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80292	80291	1	328440.449	6231917.194	328428.656	6231910.456
80293/80285		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80293	80285	1	328351	6231915	328306	6231918
80294/80293		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80294	80293	1	328357.183	6231919.042	328351	6231915
80295/80293		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80295	80293	1	328348.086	6231896.832	328351	6231915
80296/80295		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80296	80295	1	328337.681	6231889.045	328348.086	6231896.832
80297/80291		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80297	80291	1	328433.104	6231888.411	328428.656	6231910.456
80298/80297		Golf Course Nat Strp - Captain Cook Dr	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			80298	80297	1	328434.333	6231878.933	328433.104	6231888.411
80299/80300		Golf Course Nature Strip - Woolooware Rd	Stormwater Pipe	Stormwater Pipe	Very Good	375			80299	80300	1	328554.148	6231903.753	328557	6231912
80300/80227		Golf Course Nat Strp - Captain Cook Dr	Stormwater Pipe	Stormwater Pipe	Undetermined	375			80300	80227	1	328557	6231912	328549	6231918
80301/80302		Mangrove Bdwalk/Woolooware Bay Foreshore	Stormwater Pipe	Stormwater Pipe	Very Good	375			80301	80302	1	328623.265	6231982.055	328626.483	6231977.559
80302/80303		Captain Cook Drive - Woolooware	Stormwater Pipe	Stormwater Pipe	Very Good	375			80302	80303	1	328626.483	6231977.559	328658.57	6231989.522
80303/80304		Captain Cook Drive - Woolooware	Stormwater Pipe	Stormwater Pipe	Very Good	375			80303	80304	1	328658.57	6231989.522	328696.206	6232005.646
80304/80305		Captain Cook Drive - Woolooware	Stormwater Pipe	Stormwater Pipe	Good	700			80304	80305	1	328696.206	6232005.646	328715.485	6232010.28
80409/10272		Captain Cook Drive - Kurnell	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80409	10272	1	329892.537	6232000.219	329882	6232012
80410/80409		Captain Cook Drive - Kurnell	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80410	80409	1	329888.808	6231992.069	329892.537	6232000.219
80512/31707		Woolooware Golf Course	Channel	Earth Channel	Very Good	Not Applicable	4	1.3	80512	31707	1	327761	6231641	327765	6231642
80514/80515		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80514	80515	1	327512.983	6233588.629	327498.77	6233612.964
80515/80516		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			80515	80516	1	327498.77	6233612.964	327486.495	6233616.481
80516/80521		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80516	80521	1	327486.495	6233616.481	327423.434	6233629.55
80517/80519		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			80517	80519	1	327410.943	6233633.326	327416.802	6233643.907
80518/80521		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			80518	80521	1	327423.714	6233624.563	327423.434	6233629.55
80519/80520		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			80519	80520	1	327416.802	6233643.907	327421	6233647
80520/80522		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			80520	80522	1	327421	6233647	327488	6233723
80521/80517		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	675			80521	80517	1	327423.434	6233629.55	327410.943	6233633.326
80523/24074		Atkinson Road - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80523	24074	1	327298.705	6233718.658	327301.875	6233722.457
80524/24074		Mangrove Lane - Taren Point	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80524	24074	1	327309.761	6233731.36	327301.875	6233722.457
80578/80215		Robin Place Reserve	Stormwater Pipe	Assumed Pipe	Good	525			80578	80215	1	326877	6230881	326890.837	6230909.671
80579/80241		High Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80579	80241	1	328916.773	6231412.226	328913	6231415
80581/30339		Berry Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			80581	30339	1	330071	6231744	330068.631	6231748.386
80581/90033		Berry Street - Cronulla	Stormwater Pipe	Stormwater Pipe	Undetermined	500			80581	90033	1	330071	6231744	330075.394	6231762.417
80582/30346		Berry Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			80582	30346	1	330097	6231828	330093.9	6231834.461
80584/80585		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	1200			80584	80585	1	329830	6231899	329830	6231900
80585/80586		Elouera Road - Cronulla	Stormwater Pipe	Stormwater Pipe	Undetermined	1200			80585	80586	1	329830	6231900	329835	6231934
80586/16979		Captain Cook Drive - Kurnell	Stormwater Pipe	Stormwater Pipe	Undetermined	1200			80586	16979	1	329835	6231934	329844	6231987
80590/80591		Hume Road - Cronulla	Stormwater Pipe	Stormwater Pipe	Good	375			80590	80591	1	329093.221	6231668.092	329154.154	6231656.854
80591/80592		Hume Road - Cronulla	Stormwater Pipe	Stormwater Pipe	Good	375			80591	80592	1	329154.154	6231656.854	329202.502	6231648.523
80592/80593		Hume Road - Cronulla	Stormwater Pipe	Stormwater Pipe	Good	375			80592	80593	1	329202.502	6231648.523	329201.355	6231641.186

Pipe_ID	Pipe_ID (Alt - RailCorp/CGC)	Site_Name	Item	Pipe_Type	Condition	Pipe_Size	Width of Culvert/Channel	Depth of Culvert/Channel	U/S Pit	D/S Pit	No. of Pipe/Culvert(s)	U/S X Coordinate	U/S Y Coordinate	D/S X Coordinate	D/S Y Coordinate
80593/10171		Hume Road - Cronulla	Stormwater Pipe	Stormwater Pipe	Good	375			80593	10171	1	329201.355	6231641.186	329294.052	6231616.577
90031/16974		Elouera Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	1050			90031	16974	1	329835.871	6231860.09	329828.33	6231878.562
90033/30344		Berry Street - Cronulla	Stormwater Pipe	Stormwater Pipe	Undetermined	750			90033	30344	1	330075.394	6231762.417	330092.342	6231795.534
90034/30343		Berry Street - Cronulla	Stormwater Pipe	Stormwater Pipe	Undetermined	525			90034	30343	1	330081.834	6231793.137	330086.864	6231802.21
91108/72462		Glassop Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			91108	72462	1	326909.641	6231820.279	326911	6231821
91109/91110		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			91109	91110	1	329519	6231082	329556.029	6231076.974
91110/10199		Wyanbah Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	525			91110	10199	1	329556.029	6231076.974	329568.701	6231087.298
91123/6485		Taywood Street - Woolooware	Channel	Masonry Channel	Very Good	Not Applicable	1.2	0.7	91123	6485	1	328709	6231243	328713.941	6231274.047
91262/40427		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91262	40427	1	329250.07	6231410.113	329244	6231415
91263/10121		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91263	10121	1	329239.914	6231404.45	329243.455	6231410.962
91264/91263		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91264	91263	1	329234.818	6231405.121	329239.914	6231404.45
91265/91264		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91265	91264	1	329218.205	6231407.45	329234.818	6231405.121
91266/10119		Alfred Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91266	10119	1	329191.8	6231418.29	329194.96	6231410.789
91267/50246		Marsh Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91267	50246	1	329162.651	6231327.18	329163	6231328
91268/50249		Marsh Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91268	50249	1	329226.062	6231311.061	329245.995	6231308.205
91269/50255		Robinson Street - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			91269	50255	1	329223.552	6231218.424	329233.024	6231217.112
91276/10353		Cawarra Road - Caringbah	Stormwater Pipe	Stormwater Pipe	Good	375			91276	10353	1	326883.018	6232190.033	326882	6232182
40250/10451		Jacaranda Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			40250	10451	1	326981.634	6230934.292	326975.56	6230893.332
15089/50157		Yeramba Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			15089	50157	1	327728.844	6231725.311	327740	6231716
15090/50157		Yeramba Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			15090	50157	1	327740.356	6231716.05	327740	6231716
50157/10739		Yeramba Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50157	10739	1	327740	6231716	327729.071	6231639.341
10145/10145X		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			10145	10145X	1	329611.006	6231450.544	329623.176	6231459.935
10167/CGC-10	CGC-18/10	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			10167	CGC-10	2	329605.719	6231518.592	329605	6231526
31714A/CGC-10	CGC-17/10	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			31714A	CGC-10	2	329605.796	6231533.769	329605	6231526
CGC-10/CGC-9	CGC-10/9	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			CGC-10	CGC-9	1	329605	6231526	329582	6231526
31714/CGC-9	CGC-11/9	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			31714	CGC-9	1	329594.89	6231539.433	329582	6231526
31713/CGC-9	CGC-12/9	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			31713	CGC-9	1	329596.977	6231511.16	329582	6231526
CGC-9/10168	CGC-9/7	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			CGC-9	10168	3	329582	6231526	329509	6231527
10145X/10168	CGC-8/7	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			10145X	10168	3	329623.176	6231459.935	329509	6231527
10170/CGC-4	CGC-5/4	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			10170	CGC-4	3	329330.045	6231624.279	329286	6231638
10171/CGC-3	CGC-13/3	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			10171	CGC-3	2	329294.052	6231616.577	329283	6231636
CGC-4/10173	CGC-4/2	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			CGC-4	10173	3	329286	6231638	329279.332	6231715.054
CGC-3/10173	CGC-3/2	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			CGC-3	10173	2	329283	6231636	329279.332	6231715.054
10173/10173A	Part of CGC-2/1	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			10173	10173A	5	329279.332	6231715.054	329253.666	6231751.181
10173A/10174	Part of CGC-2/1	Cronulla Golf Course	Stormwater Pipe	Assumed Pipe	Undetermined	750			10173A	10174	5	329253.666	6231751.181	329155.994	6231948.614
316-1/01/316-1/02		Sutherland to Cronulla Railway Line	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	1.8	0.6	316-1/01	316-1/02	1	326868.94	6231623.13	326872.13	6231630.73
316-1/02/316-1/03		Sutherland to Cronulla Railway Line	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	1.8	0.6	316-1/02	316-1/03	1	326872.13	6231630.73	326880.04	6231649.55
322-2/01/322-2/02		Sutherland to Cronulla Railway Line	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	0.8	0.65	322-2/01	322-2/02	1	327381.2	6231438.84	327383.63	6231453.96
322-2/02/322-2/03		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	900			322-2/02	322-2/03	1	327383.63	6231453.96	327383.84	6231455.2
40367/327-2/09		Sutherland to Cronulla Railway Line	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	0.9	0.9	40367	327-2/09	1	327745	6231185	327816.83	6231286.12
327-1/04/327-2/08		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	225			327-1/04	327-2/08	1	327809.77	6231274.64	327813.41	6231280.23
327-2/08/327-2/09		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	375			327-2/08	327-2/09	1	327813.41	6231280.23	327816.83	6231286.12
327-2/09/11018		Sutherland to Cronulla Railway Line	Box Culvert	Concrete Culvert	Undetermined	Not Applicable	0.9	0.9	327-2/09	11018	1	327816.83	6231286.12	327858.105	6231359.081
31748/330-1/07		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	750			31748	330-1/07	1	328073	6231161	328076.15	6231175.24
330-1/07/31749		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	750			330-1/07	31749	1	328076.15	6231175.24	328076.949	6231184.263
50208/335-4/02		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	600			50208	335-4/02	1	328653.946	6230997.898	328656.83	6231010.55
335-4/02/335-4/03		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	600			335-4/02	335-4/03	1	328656.83	6231010.55	328658.78	6231015.29
335-4/03/335-4/04		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	600			335-4/03	335-4/04	1	328658.78	6231015.29	328660.09	6231019.76
335-4/04/335-1/06		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	600			335-4/04	335-1/06	1	328660.09	6231019.76	328662.48	6231030.98
335-4/04/10560		Sutherland to Cronulla Railway Line	Stormwater Pipe	Concrete Pipe	Undetermined	600			335-4/04	10560	1	328660.09	6231019.76	328654.792	6231073.581
41380/41380A		Woolooware Golf Course	Channel	Earth Channel	Good	Not Applicable	Dam	Dam	41380	41380A	1	328413.393	6231656.376	328389.331	6231654.07
41380A/41379		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			41380A	41379	1	328389.331	6231654.07	328352.421	6231652.749
50095/50096		Captain Cook Oval	Box Culvert	Concrete Culvert	Good	Not Applicable	2.8	1.2	50095	50096	2	328269	6231909	328273	6231933
50096/10829		Captain Cook Oval	Box Culvert	Concrete Culvert	Good	Not Applicable	3.6	0.8	50096	10829	3	328273	6231933	328269.923	6231941.864
10829/61207		Captain Cook Oval	Box Culvert	Concrete Culvert	Good	Not Applicable	3.6	0.8	10829	61207	3	328269.923	6231941.864	328268	6231949
6426A/6426		Captain Cook Drive - Cronulla	Stormwater Pipe	Stormwater Pipe	Undetermined	525			6426A	6426	3	329019.17	6231967.85	329029	6231970
10116/10150A		Franklin Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10116	10150A	1	329094.477	6231491.592	329104.753	6231569.078
10150A/10153		Franklin Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			10150A	10153	1	329104.753	6231569.078	329106	6231577
10187/10187A		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375/675			10187	10187A	2/2	329591.528	6231030.207	329592.258	6231035.974
10187A/10201		Marlo Road - Cronulla	Channel	Masonry Channel	Very Good	Not Applicable	0.74	0.4	10187A	10201	1	329592.258	6231035.974	329597	6231077
31718/10214B		Bando Road Drainage Reserve	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2.7	1.4	31718	10214B	1	329651.813	6231151.354	329657.852	6231194.078
10214B/10214A		Bando Road Drainage Reserve	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2.7	1.4	10214B	10214A	1	329657.852	6231194.078	329661.582	6231213.197
10214A/10214		Bando Road Drainage Reserve	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2.7	1.4	10214A	10214	1	329661.582	6231213.197	329662.971	6231221.854
10231A/10231		Riverview Avenue - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			10231A	10231	1	328860.967	6231303.916	328861.478	6231307.045
10378/10378A		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10378	10378A	1	327245.447	6231479.689	327247.132	6231480.231
30231/10409A		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	900			30231	10409A	1	327271.512	6231655.561	327276.378	6231691.62
10409A/10409		Yathong Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	900			10409A	10409	1	327276.378	6231691.62	327277.544	6231699.686
10415A/10415		Banksia Road Car Park	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	250			10415A	10415	1	326871.741	6231562.634	326875.56	6231551.94
10430A/10431		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10430A	10431	1	327244.674	6231004.708	327274.989	6231001.912
10543/10542A		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10543	10542A	1	328546.422	6231508.704	328554.081	6231557.917
10542A/10542		Woolooware Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	600			10542A	10542	1	328554.081	6231557.917	328555.281	6231565.438
10713A/10713		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			10713A	10713	1	326909.809	6232627.049	326905.089	6232627.83
10782/10782A		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	450			10782	10782A	1	326784.82	6232594.718	326783.424	6232607.129
10782A/10783		Captain Cook Drive - Caringbah	Stormwater Pipe	Assumed Pipe	Good	450			10782A	10783	1	326783.424	6232607.129	326788.692	6232641.164
50158/10965A		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			50158	10965A	1	327685.13	6232058.958	327697.067	6232049.625
10965A/10965		Captain Cook Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			10965A	10965	1	327697.067	6232049.625	327722.654	6232029.753
93011/93012		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			93011	93012	1	328821.242	6231565.45	328818.536	6231546.251
93012/10245		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	375			93012	10245	1	328818.536	6231546.251	328826.499	6231537.813
6494/93014		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	100			6494	93014	1	328825	6231469	328821.601	6231469.095
93014/27974		Wills Road - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	100			93014	27974	1	328821.601	6231469.095	328816.943	6231469.939
93015/93016		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			93015	93016	1	327464.391	6231322.642	327484.681	6231311.886
93016/93017		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			93016	93017	1	327484.681	6231311.886	327503.574	6231301.866
93017/6506		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	500			93017	6506	1	327503.574	6231301.866	327524.335	6231294.146
15476A/15476		Jacaranda Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	600			15476A	15476	1	327031.452	6231314.574	327037.236	6231313.289
15817A/15817		Bellevue Parade - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			15817A	15817	1	327128.23	6231777.884	327134.624	6231785.171
15953/15953A		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	450			15953	15953A	1	328540.114	6231582.321	328512.815	6231627.076
31877/15953A		Woolooware Golf Course	Channel	Masonry Channel	Very Good	Not Applicable	3	0.8	31877	15953A	1	328547.385	6231618.928	328512.815	6231627.076
15953A/31753A		Woolooware Golf Course	Channel	Masonry Channel	Very Good	Not Applicable	3	0.8	15953A	31753A	1	328512.815	6231627.076	328493.485	6231633.304
31753A/41365		Woolooware Golf Course	Channel	Masonry Channel	Very Good	Not Applicable	3	0.8	31753A	41365	1	328493.485	6231633.304	328467.055	6231640.868
16275A/10335		Frobisher Avenue - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			16275A	10335	1	327148.999	6232195.635	327149.109	6232194.494
16283A/16283		Meta Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	750			16283A	16283	1	327236.526	6232717.105	327243.117	6232716.257
93018/41322		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	225			93018	41322	1	327589.092	6231225.956	327644.769	6231201.877
93003/10137		Hume Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	250			93003	10137	1	329647.689	6231429.15	329650.039	6231434.277
61221/31708A		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			61221	31708A	1	327847.007	6231654.681	327851.399	6231660.189
31708A/31708		Woolooware Golf Course	Box Culvert	Concrete Culvert	Fair	Not Applicable	1.4	0.7	31708A	31708	1	327851.399	6231660.189	327851.98	6231661.073
10539/31877A		Woolooware Road - Woolooware	Box Culvert	Concrete Culvert	Very Good	Not Applicable	2.03	1.06	10539	31877A	1	328567.173	6231613.96	328547.602	6231618.069
31877A/31877		Woolooware Golf Course	Channel	Masonry Channel	Very Good	Not Applicable	3	0.8	31877A	31877	1	328547.602	6231618.069	328547.385	6231618.928
40305A/40305		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	750			40305A	40305	1	326850.008	6231834.956	326847.72	6231834.356
40306A/40306		Cawarra Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			40306A	40306	1	326838.129	6231845.977	326838.61	6231849.418
40329/40330A		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			40329	40330A	1	326957.234	6231428.756	327017.354	6231420.514
40330A/40330		Kingsway - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	525			40330A	40330	1	327017.354	6231420.514	327044.571	6231416.753
40392A/40392		Marlo Road - Cronulla	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			40392A	40392	1	329670.923	6231004.615	329671.421	6231008.997
41358/41359A		Captain Cook Oval	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			41358	41359A	1	327990.996	6231927.97	327974.471	6231872.401
41359A/61218		Captain Cook Oval	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	300			41359A	61218	1	327974.471	6231872.401	327953	6231811
15379/50041A		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			15379	50041A	1	327435.569	6232659.435	327434.604	6232664.313
50041A/50041		Endeavour Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	525			50041A	50041	1	327434.604	6232664.313	327432.372	6232672.926
72666/50141A		Solander Playing Fields	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			72666	50141A	1	327967	6232198	328018.837	6232229.942
60850/60850A		Parraweena Road - Caringbah	Stormwater Pipe	Plastic Pipe	Good	300			60850	60850A	1	327291.908	6233400.331	327287.359	6233371.14
60850A/31330		Parraweena Road - Caringbah	Stormwater Pipe	Plastic Pipe	Good	300			60850A	31330	1	327287.359	6233371.14	327284.536	6233352.997
31707/61221A		Woolooware Golf Course	Channel	Assumed Channel	Undetermined	Not Applicable	0	0	31707	61221A	1	327765	6231642	327806.127	6231646.452
61221A/61221		Woolooware Golf Course	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	450			61221A	61221	1	327806.127	6231646.452	327847.007	6231654.681
70568/70562A		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			70568	70562A	1	327690.378	6232573.295	327698.634	6232563.285
70562A/70562		Resolution Drive - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	500			70562A	70562	1	327698.634	6232563.285	327707.423	6232552.973
72004A/72044		Dwyer Reserve	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Very Good	300			72004A	72044	1	327493.541	6231147.699	327548.079	6231158.56
72467A/72467		Glassop Street - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			72467A	72467	1	326881.796	6231677.489	326891.051	6231682.5
80590A/80590		Hume Road - Cronulla	Stormwater Pipe	Stormwater Pipe	Good	250			80590A	80590	1	329089.556	6231665.023	329093.221	6231668.092
92002/92001		Gannons Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	300			92002	92001	1	327616.098	6230991.148	327622.08	6230990.574
92001/92003		Gannons Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			92001	92003	1	327622.08	6230990.574	327633.739	6230997.892
40346/92003		Gannons Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			40346	92003	1	327627	6230959	327633.739	6230997.892
92003/15454		Gannons Road - Caringbah South	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	900			92003	15454	1	327633.739	6230997.892	327638	6231024
61222/31706		Gannons Road - Caringbah	Channel	Masonry Channel	Very Good	Not Applicable	0	0	61222	31706	1	327734.368	6231635.548	327741	6231638
10432/10433		Caringbah Road - Caringbah	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Good	375			10432	10433	1	327306.349	6230997.383	327384	6230990
50093/10829		Captain Cook Drive - Woolooware	Stormwater Pipe	Rnfcd Concrete (Rubber Ring)	Fair	375			50093	10829	1	328266	6231909	328269.923	6231941.864
6426/6426B		Captain Cook Drive - Cronulla	Stormwater Pipe	Stormwater Pipe	Good	1500			6426	6426B	1	329029	6231970	329039.99	6231965.11
6426B/50176		Captain Cook Drive - Cronulla	Channel	Earth Channel	Good	Not Applicable	3.2	1	6426B	50176	1	329039.99	6231965.11	329066.362	6231965.671

Response to Submissions

Appendix D

Sutherland Shire COUNCIL

WOOLOOWARE BAY CATCHMENT FLOOD STUDY

FREQUENTLY ASKED QUESTIONS

We have lived for many years at our property and have not experienced any flooding. It is impossible for my property to flood.

All properties within the Woolooware Bay Catchment, liable to some inundation of ground (not necessarily over floor flooding) in the largest possible flood event, the Probable Maximum Flood (PMF), received a letter in regard to potentially being impacted by flood. As such receipt of a letter does not indicate over floor flood liability of any particular property.

The computer model used to describe flooding in the Woolooware Bay Catchment has been developed using best practice data and modelling techniques. Where possible the model has been verified by reference to observations of flooding in historic flood events (May 2003 for example).

Where long standing residents have not observed flooding themselves, but have received a letter indicating that their land may be flood liable in the PMF event, or been mapped as flood liable in the Draft Study, we advise as follows:

The event used to select properties to receive a letter, and some of the events mapped in the Draft Study, are very rare flood events. As such the extent of inundation is highly unlikely to have been observed by residents, even when they have lived at their properties for many decades. We agree that many residents included in the letter mail out for example will never, even in the largest possible flood the PMF, experience over floor flooding.

The “Sharkies” development will exacerbate existing flood problems.

All proposed development in flood liable areas within the catchment is assessed via detailed hydraulic modelling to ensure that it causes no impact on adjoining land. Even where the development does not come under Council approval guidelines other consent authorities will similarly ensure no impact on flooding in order to approve development. As such the contention that the “Sharkies” development will exacerbate existing flood problems is not correct.

Our property is not prone to flooding from Woolooware Bay as we are well above mean sea level.

The draft Woolooware Bay Catchment Flood Study considers flooding that results from the Bay as well as flooding that occurs due to overland flow (i.e. where rainfall in the upper catchment is unable to enter the pit/pipe system). We agree that very few residential properties (if any) are subject to any inundation risk due to high levels in Woolooware Bay, even under extreme sea level rise predictions. Residences in the Woolooware Bay Catchment generally have no reason to be concerned about potential flooding due to Woolooware Bay levels. All residential flood liability identified in the draft Study is due to intense rainfall leading to runoff which then, unable to enter the pit/pipe system, runs downstream along roads and/or through private property toward the Bay under the influence of gravity.

Here are some photos taken during a recent event that caused inundation of our property (not necessarily over floor, but just in the yard). We have never been flooded inside our house or yard prior to this event.

Thankyou for the photos that clearly do indicate that some properties (limited amounts) have some level of flood liability when significant rainfall occurs.

Your assistance in providing data useful to the Flood Study is gratefully acknowledged and the photos provided were used to verify the modelling results.

We assure you that photos are not presented in any public documents with address specific details.

The model results shown are an over-reaction to climate change.

The purpose of running model simulations with climate change predictions (sea level rise and rainfall intensity increase) is simply to examine how flood liability may change should climate change predictions eventuate. They are not used however to define flood liability at this time. Where such modelling indicates sensitivity to climate change predictions a precautionary principle approach may be warranted. All such modelling for the Woolooware Bay Catchment indicates that there is very little sensitivity to climate change predictions. That is, even with the most severe of the predictions for sea level rise and rainfall intensity increase modelled, i.e. sea level to increase 0.9 m by 2100 and rainfall intensity to increase 30%, very little change to flood liability occurs.

Insurance Costs due to flood liability.

The flood study carried out by Council does not necessarily inform premium decisions made by Insurers. Insurers make their own decisions about premiums for flood coverage and certainly Council does not seek to inform Insurers of any results from the flood study. That said where publically available information exists it may be shared between parties as and when requested.

The Insurance Council of Australia has previously remarked that where residents or business owners find their insurer providing unsuitable quotations for flood coverage, they should seek alternative quotes. As different Insurers assess flood risk in a variety of different ways there will often be a range of prices provided by a range of insurers.

Also residents and business owners should be aware that, where they believe an Insurer overstates the risk of flooding at their property, they are able to approach Insurers with flood information specific to their property and ask that the Insurer include such information in any assessment of their individual flood risk.

Property Values because of flood liability.

There is little information in regard to how property values are impacted by overland flow flooding in Sydney. In particular there is little information in regards to how disclosure of flood liability, via work such as the Woolooware Bay Catchment Flood Study, impacts values.

A study in 2003 (Yeo) found mixed results and few if any of the studies reviewed, had examined the impact of overland flood, a less severe flood mechanism than River flooding. Overall no negative trend could be established. Another study (Egan et al, 2000) looking at Sydney property prices found no impact where the PMF was used for flood liability classification.

It is of note however that as a result of an actual flood event, flooded property will sustain a reduction in value, although this tends to be temporary (Yeo, 2003).

Blockage Factors.

Flood modelling has taken into account blockage of pits and pipes. Pipe systems typically have the capacity to deal with events smaller than those used for flood planning purposes, for example two to five year events versus the 100 year (Average Recurrence Interval) planning event. As such the 50% blockage factor that has been applied for the 100 year (ARI) event does not overly impact results.

Note that the use of 50% blockage of pipes and culverts is best practice. In most flood events debris will be transported into the stormwater system leading, to some degree, widespread blockage of these systems. This occurred for example in Wollongong (August 1998) and Newcastle (June 2007).

Why Council cannot stop overland flooding by building larger pipes etc.

Whilst in theory this is possible, practically it is not achievable. Rainfall in the area is highly variable, ranging from drought to flood. Building a drainage system capable of draining the event likely to happen on average once every 100 years for example (100 year ARI event) is infeasible. Rather the extreme variability in rainfall makes effective planning controls that govern future development the most cost effective way to manage flood risk.

Next Steps – Floodplain Risk Management Plan & Study.

In the next stage of the NSW Floodplain Risk Management Program for the Woolooware Bay Catchment, over floor flood liability will be assessed in order to calculate flood risk. Generally speaking it is anticipated that few homes will be found to be liable to over floor flooding in the 100 year ARI event.

Further work to be carried out will be:

- calculating an average annual damages estimate due to flooding;
- examining ways the existing drainage system might be altered in order to reduce flood liability and risk;
- examining current flood related development controls and in what ways these might be updated given the flood study findings;
- comparing flood risk mapping with current land use planning and looking for potential improvements or incompatibilities; and finally
- *establishing which properties need Section 149 (2) notations so that Council can continue to adequately manage catchment flood risk into the future given its responsibility to do so under Section 733 of the Local Government Act (1993).*

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