EXCEPTIONAL CIRCUMSTANCES APPLICATION

Submission to the Department of Planning and Environment and Office of Environment and Heritage from the City of Parramatta for exceptional circumstances to apply planning controls above the 100-year Flood Planning Level.

21 November 2017

Exceptional Circumstances DRAFTS

Council versions:

No.	Author	Version
1.	City of Parramatta Council	Draft – for comment from Office of Environment and Heritage and Department of Planning and Environment

Contents

EXECUTIVE SUMMARY

Parramatta is Sydney's Central City. It is located centrally in the heart of the Sydney metropolitan area and performs a key economic, social and cultural role, particularly for Western Sydney which is home to nearly half of Sydney's population. The Parramatta CBD is of metropolitan significance as a regional employment centre, and it will continue to increase in importance as Western Sydney's population continues to grow.

In recognition of Parramatta's growing role, Council has commissioned a number of studies to identify how City of Parramatta Council can develop and implement a planning framework to create a world class city. The results of these studies informed a Planning Proposal to amend the planning controls to allow for additional employment opportunities supported by high density residential uses. Of particularly relevance to this application is the draft *Update of Parramatta Floodplain Risk Management Plans (2016)* prepared by consultants Molino Stewart ("Update of Parramatta FRMP").

The draft Update of Parramatta FRMP describes how a very large part of the Parramatta CBD is affected by overbank flooding of the Parramatta River, which passes through the heart of the City. Different parts of the City are shown to be at different levels of risk of damage / risk to human life, depending on the size of the flood. It also describes how flooding of the Parramatta River occurs very rapidly ("flash flooding"), and with little or no advance warning. The report recommends various methods to manage these different types of flood risk, and concludes with the following statement:

> *"The risk assessment in this report has been carried out in line with the principles and guidelines of the Floodplain Development Manual (2005). It is our view that the planning proposal presents a tolerable flood risk to life and property if the recommendations made within this report, with regard to LEP and DCP revisions and other flood risk management measures, are implemented. This conclusion has been made recognising that while the planning proposal increases the overall population at risk, it will also provide the opportunity to decrease the risk to that population through encouraging re-development which is more compatible with the flood risk".*

One of the key findings of the report is that there is not sufficient advance warning of a major flood to evacuate large parts of the CBD, therefore potentially leaving many thousands of people (residents, visitors and workers) trapped in the CBD until the flood waters subside. The recommendation of the report is that, for those areas that cannot be evacuated in time, that "shelter in place" (otherwise known as vertical evacuation) or, alternatively, "flood free evacuation routes" (otherwise known as high level horizontal evacuation) be provided.

Council considered the draft Updated FRMP at the Council Meeting on 11 April 2016 and resolved to support the report recommendation to seek an exemption to the current adopted Flood Planning Level to enable flood related development controls above the 1% annual exceedance probability (AEP) up to the PMF for certain areas within the Parramatta CBD.

This recommended flood emergency response strategy was further explored in subsequent studies being:

1. *Parramatta CBD Flood Evacuation Assessment (2017)* prepared by consultants Molino Stewart
2. *Horizontal Evacuation Pilot Study for Parramatta CBD (2017)* prepared by consultants SJB Urban.

One of the key findings in both studies was there are practical challenges and issues with implementing high level horizontal evacuation routes in the Parramatta CBD and the preferable response option is Shelter In Place.

If the Shelter In Place recommendation is accepted it would require some controls on land above the Flood Planning Level (1% AEP + 0.5m freeboard). The imposition of controls above this flood level is currently restricted by the State Government for residential properties unless there are "Exceptional Circumstances", via Direction 4.3 Flood Prone Land issued by the Minister for Planning under section 117(2) of the Environmental Planning and Assessment Act, the associated Planning Circular PS 07-003; and the *Guideline on Development Controls on Low Flood Risk Areas – Floodplain Development Manual* ("the Guideline").

Council submits that the proposal to intensify development in the Parramatta CBD and the nature of the flood risk meets this "Exceptional Circumstances" test of Planning Circular PS 07-003 and the Guideline, and therefore the State Government should formally recognise this status and implement flood planning controls above the 1% AEP as recommended in the draft Update of Parramatta FRMP. The imposition of flood planning controls in an area where warning times of a flood are very short (minutes) and the rapid rate of flood water rise, together with the number of people who could be isolated in high rise buildings, will facilitate safer individual development and cumulatively a safer CBD.

If the implementation of flood planning controls above the 1% AEP is approved by the Department of Planning and Environment, Council would insert a suitable clause in the draft Parramatta Local Environmental Plan (LEP) 2011 and revise the relevant Development Control Plan (DCP) accordingly.

PARRAMATTA CBD AND FLOODING

Named after its original inhabitants, the Burramatta people, Parramatta was Australia's first viable colonial settlement. Located at the head of Sydney Harbour between the hills and valleys to the north, and the Cumberland Plain to the south, the city has developed along the banks of the Parramatta River.

The Parramatta River Catchment stretches for over 212 square kilometres in area, with more than 20 major adjoining creek tributaries linking to the Parramatta River which discharges into Sydney Harbour. Historically the Parramatta River catchment has been divided at the Charles Street Weir in the Parramatta CBD into the Upper Parramatta Catchment and the Lower Parramatta Catchment.

The Parramatta CBD sits in the floodplain of both the Upper and Lower Parramatta Catchments. The confluence of the topography, the low-lying terrain and the tributary systems makes the CBD extremely susceptible to flooding, with medium to severe flooding occurring every few decades. Another very important factor is the speed with which floods reach Parramatta after heavy rainfall - sometimes as little as an hour or two separates rainfall and the start of a flood. Similarly, the duration of floods in Parramatta CBD is relatively short – no more than a few hours, even in the largest possible flood. This type of flooding is known as "flash flooding" and the Parramatta CBD is the most susceptible major CBD in Australia to this kind of flooding.

The extent of flood affectation is graphically highlighted in Figure 1, below. This figure shows the predicted extent of the mainstream 20-year and 100-year ARI floods, as well as the Probable Maximum Flood (PMF).

In floods up to the 100 year ARI, the mainstream flooding is confined to a relatively narrow river corridor, although overland flow flooding is likely to be very significant around the CBD (overland flow flood modelling is not currently available for the Parramatta CBD). However, in floods larger than the 100 year ARI, mainstream flooding becomes increasingly widespread and deep across the CBD. These larger floods have the potential of causing many hundreds of millions of dollars in damages and possible widespread loss of life.

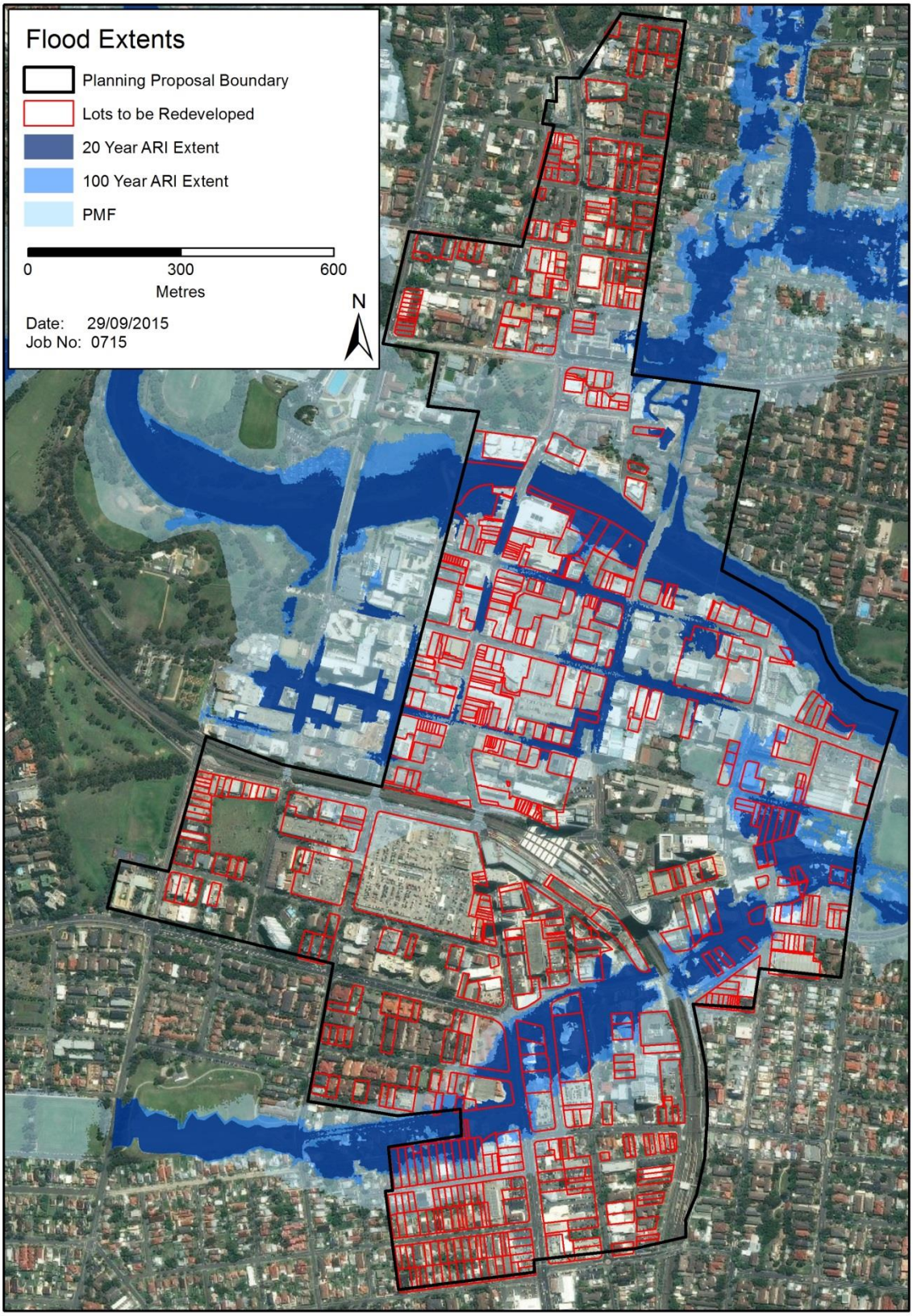

Figure 1 – Flood Extents in the Parramatta CBD
(Source: Molino Stewart Report)

PARRAMATTA CBD PLANNING PROPOSAL

To facilitate the expected population and jobs growth and manage changes in the CBD, Council has prepared a Planning Proposal (at Attachment 1) to amend the planning controls contained in Parramatta Local Environmental Plan 2011 (PLEP 2011). The Planning Proposal attempts to balance the need for growth in the CBD with the need to manage flooding.

The key aims of the Planning Proposal are to:

- Provide for an expanded and more intense commercial core to strengthen and facilitate the role of Parramatta as a dual CBD; and
- Support the CBD as a vibrant centre by surrounding the core with higher density mixed use.

There are 49,513[1] jobs and 4,769[2] dwellings in the Parramatta CBD (as at 2011). It is expected that the Planning Proposal will provide capacity for an additional 48,763 jobs and 20,297 dwellings.

This Planning Proposal allows a significant increase in development potential in the flood-affected areas of the Parramatta CBD. This proposed increase in density raises serious issues associated with the safety of people during floods and managing the potential for damage to property. To address these issues, Council commissioned a report into how flooding in the CBD could best be managed, given the likely future increased density; this report is the draft *Update of Parramatta Floodplain Risk Management Plans (2016)* (Update of Parramatta FRMP) prepared by consultants Molino Stewart (included with Appendix 2 of this report).

The Update of Parramatta FRMP recommended several strategies to manage flood risks in the CBD, but one of the key recommendations from this report is that Council -

"seek Minister Approval to impose controls for development within the Probable Maximum Flood area to enable occupants of buildings in identified areas that have particular evacuation or emergency response issues to:

(a) Shelter within a building above the probable maximum flood level; or

(b) Evacuate safely to land located above the probable maximum flood level."

The main reason for this recommendation is that a review of the:

- numbers of people to be evacuated;
- methods by which they could be evacuated;
- speed of rise of floodwater; and
- behaviour of floodwaters

indicated that it is not possible to evacuate large parts of the CBD in the available time, if a very large flood were to occur in the CBD. Figure 2 (below) shows in red those areas within the Planning Proposal area which could not be evacuated at street level in a PMF event.

[1] NSW Bureau of Transport Statistics, Employment Forecasts, September 2014 release figure
[2] Figure provided by Forecast.id for the planning proposal area

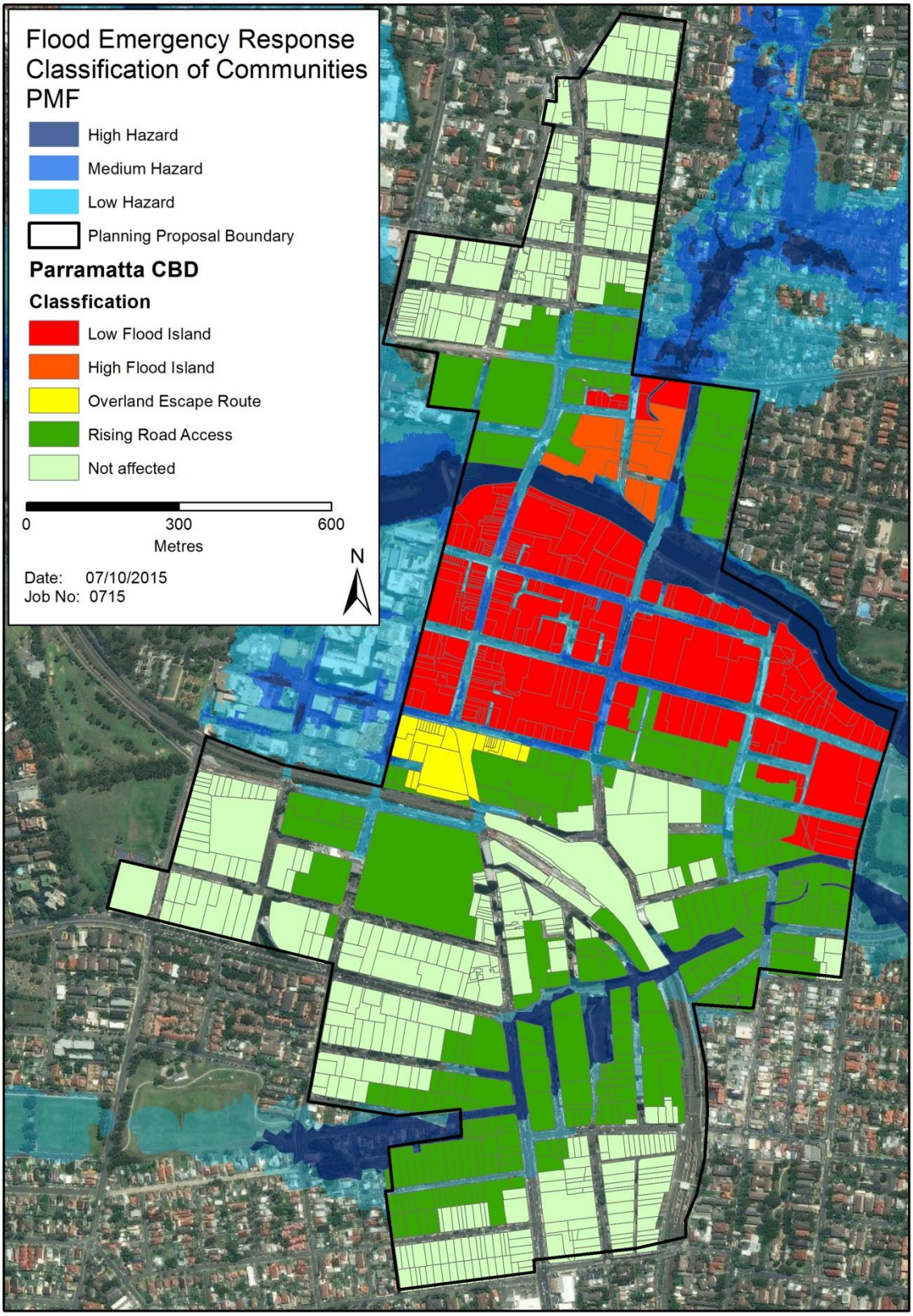

Figure 2 – Flood Emergency Response (Classification of Communities, PMF)
(Source: Update of Parramatta FRMP, Molino Stewart)

The evacuation strategies recommended in the Update of Parramatta FRMP were further explored in subsequent studies being the *Parramatta CBD Flood Evacuation Assessment (2017)* ("Flood Evacuation Assessment") prepared by consultants Molino Stewart and the *Horizontal Evacuation Pilot Study for Parramatta CBD (2017)* prepared by consultants SJB Urban. Please note that the Flood Evacuation Assessment project was carried out with advice from the SES and OEH, who commented on the initial consultant brief, attended various project meetings, and commented on the draft report, although neither organisation has formally endorsed the findings of the Assessment.

The aim of the *Flood Evacuation Assessment* was to identify the most suitable flood emergency response strategy for Parramatta CBD, under existing and future conditions. This was achieved by assessing and comparing the following possible flood evacuation strategies:

- Horizontal Street Level (HSL) evacuation, achieved by vehicle and on foot before any roads are cut by floodwaters;
- Horizontal High Level (HHL) evacuation, achieved on foot by using a network of elevated walkways which would allow late evacuation.
- Vertical Evacuation through Sheltering In Place (SIP), in which evacuees would take refuge above the flood level within their building and wait for floodwaters to recede.

The analysis was performed using different flood events (20 year ARI, 100 year ARI, PMF), different degrees of implementation of the draft planning proposal, and different times of the day.

The results showed that:

- Under the assumptions of the NSW SES Timeline Evacuation Model, safe vehicular evacuation would not be realistically achievable under any circumstances;
- A network of elevated walkways would allow safe HHL evacuation (including late evacuation), however evacuation time would be of the same order of magnitude as the flood duration, e.g. by the time all people had been evacuated the flood would be over.
- A network of elevated walkways would have a high cost ($94.5-$324 million) and significant impacts on the CBD urban landscape, including impacts to trees, light/overshadowing, streetscape, pedestrian circulation and heritage buildings.
- SIP is the most appropriate flood emergency response strategy for Parramatta CBD. However, it was recognised SIP could expose people to a number of secondary risks to life, including (but not limited to) those arising from: building structural failure, medical emergencies, building fires or people deciding to leave the shelter and walk through floodwaters. To address this, the report recommends investigation of a "lightweight managed high-level evacuation or access system" to be used mainly by emergency responders.

The *Horizontal Evacuation Pilot Study* tested the viability of three types of Horizontal High Level (HHL) evacuation (top of podium, indoor street, above awning) on the proposed 'Civic Link' (Figure 3). The Civic Link concept is for a car-free north-south link through the heart of the Parramatta CBD, connecting Parramatta train station and Parramatta Square in the south, to the river foreshore in the north. The key conclusion from this study was that each method of evacuation presents a series of implications and challenges for Civic Link and the broader CBD ranging from design, staging, implementation, governance and suitability.

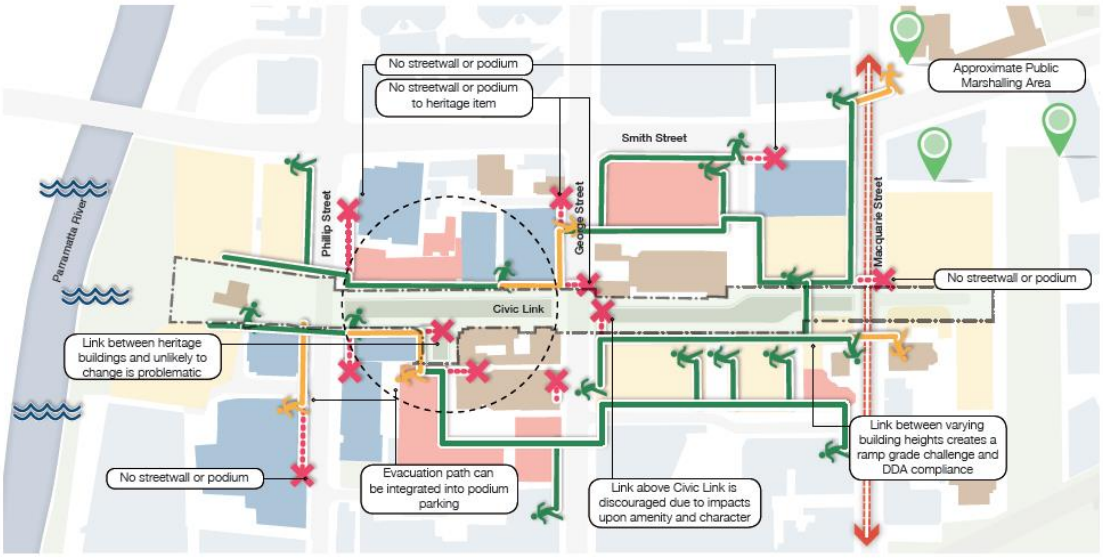

Figure 3 – Top of podium high level evacuation route along the Civic Link
(Source: SJB)

The key finding in both studies discussed above is that there are very significant practical challenges, costs and issues with implementing high level horizontal evacuation routes in the Parramatta CBD and the preferable response option is Shelter In Place.

Therefore, Council has added a draft LEP control to the Parramatta CBD Planning Proposal for the areas shown in blue in Figure 4 (being the PMF extent), which requires that:

All buildings must either have flood free access to an area beyond the PMF
OR
they must have provision for shelter in place for the occupants of the building.

An additional planning control would be that:

All buildings in the CBD in the PMF area must be able to structurally withstand the force of a PMF flood

Where Shelter In Place is proposed, the endorsed draft Updated FRMP also recommends an additional planning control to address the issue of 'secondary risk' (medical or fire emergency that occurs during a flood). The recommended DCP planning control to address this issue is to require an emergency access point from a site to land above the 1% AEP event. Council officers are considering elevating this recommended draft DCP control to an LEP control so that in the event of a fire there is a low probability of exiting the building into flood waters or in the case of a medical emergency paramedics not being able to reach the building.

In making its case, Council has been guided by Planning Circular PS 07-003 and the Guidleine which states, *in proposing a case for exceptional circumstances, a council would need to demonstrate that a different FPL was required for the management of residential development due to local flood behaviour, flood history, associated flood hazards or a particular historic flood.* Council believes that the unique flash flooding circumstances of the Parramatta CBD, coupled with the increased development intensity under the Parramatta CBD Planning Proposal require a different FPL to appropriately manage flood risks in the Parramatta CBD.

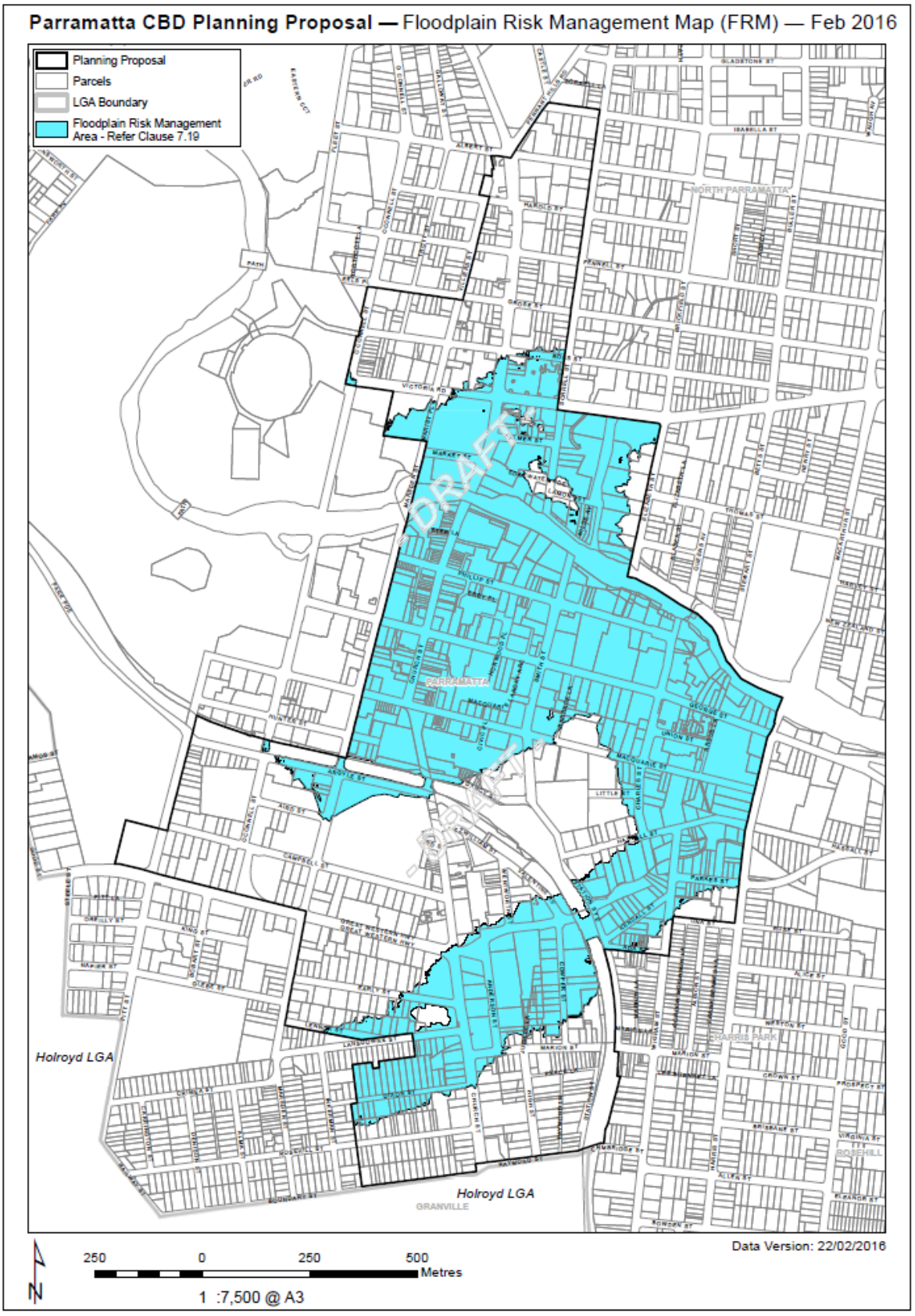

Figure 4 – Floodplain Risk Management Map (Feb2016) – Draft Parramatta CBD Planning Proposal – adopted by Council on 11 April 2016
(Source: City of Parramatta Council)

COMMUNITY CONSULTATION

The Parramatta Flood Risk Management Committee has been set up in accordance with the principles described for such Committees in the Floodplain Development Manual, and consists of representatives of the community, major landowners, business, and the State Government. The Committee has considered the issues relating to the proposed intensification of occupation of the floodplain in the Parramatta CBD at two meetings, on 20th August 2015 and 24th November 2015. In general, the Committee was supportive of the process being undertaken by Council to understand and manage the risks of flooding in the CBD.

Another meeting was held on 24th August 2016 at Council to discuss the issues associated with the concept of Shelter In Place during very large floods for the CBD. Meeting participants included representatives from the State Emergency Services (SES), Office of Environment and Heritage (DPE), Department of Planning and Environment and the City of Parramatta Council. At the time, the SES expressed concern about the principle of Shelter In Place during a flood, and consider that evacuation outside of flood-affected areas is always the best option.

Finally, the results of the *Parramatta CBD Flood Evacuation Assessment* (2017) prepared by consultants Molino Stewart were presented to the Parramatta Flood Risk Management Committee on 21 June 2017. Meeting participants included representatives from the SES and OEH. The Committee recognised the complexity of the evacuation needs of the Parramatta CBD during a major flood and supported further development of an integrated evacuation strategy for the Parramatta CBD, which could include horizontal evacuation at ground level, horizontal evacuation via high level bridges and podiums, and vertical evacuation within buildings.

PARRAMATTA FLOOD RISK MANAGEMENT ACTIVITIES

The City of Parramatta Council has worked to reduce risks of flooding to the community for many years, and continues to develop new strategies towards risk reduction. A wide range of past, current and future flood risk management activities undertaken in this area are discussed in more detail at Appendix 3 – City of Parramatta Flood Risk Management Activities.

CONCLUSION

In conclusion, Council requests permission to apply flood planning controls above the 1% AEP as recommended in the draft Update of Parramatta FRMP to the draft amendment to Parramatta LEP 2011, being the draft 'Parramatta CBD Planning Proposal'. As described earlier in this report Council contends that the flood situation in the Parramatta CBD is such that the "Exceptional Circumstances" referenced in Direction 4.3 Flood Prone Land issued by the Minister for Planning under section 117(2) of the Environmental Planning and Assessment Act, the associated Planning Circular PS 07-003; and the *Guideline on Development Controls on Low Flood Risk Areas – Floodplain Development Manual* is met. Further, that the imposition of flood planning controls in an area where warning times of a flood are very short (minutes) together with the rapid rate of flood water rise and the number of people who could be isolated in high rise buildings, will facilitate safer individual development and cumulatively a safer CBD.

REFERENCES

Molino Stewart, 2014, *Literature Survey of Parramatta River Catchment within Parramatta LGA,* prepared for Parramatta City Council, February 2014.

Molino Stewart, 2016, *Draft Update of Floodplain Risk Management Plans*, prepared for Parramatta City Council, February 2016.

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Appendix 1 – Update of Parramatta Floodplain Risk Management Plans (2016)

Appendix 2 – Parramatta CBD Planning Proposal

Appendix 3 – City of Parramatta Flood Risk Management Activities

Appendix 4 – Parramatta CBD
Flood Evacuation Assessment (2017)

Appendix 5 – Horizontal Evacuation Pilot Study for Parramatta CBD (2017)

Prepared by City of Parramatta


PARRAMATTA WE'RE BUILDING AUSTRALIA'S NEXT GREAT CITY