



Health Infrastructure
PO Box 1060
NORTH SYDNEY NSW 2059

11th July 2016

Attention: Mr Stephen Spedding

Dear Stephen,

**WESTMEAD HOSPITAL REDEVELOPMENT
TECHNICAL NOTE 5
FLOOD ADVICE RELATED TO CENTRAL ACUTE SERVICES BUILDING (CASB)
STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSDA)**

Health Infrastructure, acting on behalf of the NSW Government, is planning to construct a new Acute Services Building and comprehensive care centre within the Westmead Hospital Precinct. Architectus is preparing an Environmental Impact Statement (EIS) for the State Significant Development Application (SSDA).

Health Infrastructure recognises that the Central Acute Services Building will be constructed on land that is subject to a range of planning controls. One of the planning controls relates to the potential flood risk that the site may be exposed to and the compatibility of the proposed works to that flood risk.

The following serves as a Technical Note addressing the flood related issues associated with construction of the new Central Acute Services Building.

1. INTRODUCTION

Health Infrastructure, acting on behalf of the NSW Government, is planning to redevelop the Westmead Hospital Precinct. The redevelopment is to include the construction of a new Central Acute Services Building (CASB) and comprehensive care centre which will co-locate all complex and critical care services within the Precinct.

The CASB will be a multi-storey building which will include acute inpatient emergency and paediatric emergency departments, operating theatres, surgical and intensive care wards, and various clinical and medical support areas. It will be co-located with an Innovation Centre which will include a University of Sydney innovation hub and teaching and learning facility. The buildings will include:

- a forecourt comprising:
 - vehicular access to emergency department and proposed car park, including two separate public set-down/pick-up loops;
 - undercroft car park; and,
 - landscaping.
- overhead pedestrian connections to other parts of the Precinct;
- internal roads;
- loading dock and ambulance access via Redbank Road; and,
- a rooftop helipad.



2. SITE FLOOD CHARACTERISTICS

Flood characteristics for the Upper Parramatta River and the lower reaches of Toongabbie Creek are documented in the '*Upper Parramatta River Flood Study*' which was published in varying parts in 1993, 1994 and 1995. Parramatta City Council has developed flood mapping from the results of flood modelling that was undertaken for these reports.

Mapping for areas near the Westmead Hospital Site indicates that very little of the site would be affected by flooding in events up to and including the 1% Annual Exceedance Probability (AEP) flood. However, the flood affected area of the Precinct increases significantly as flood severity increases. At least half of the Precinct would be inundated at the peak of the largest possible flood which is referred to as the Probable Maximum Flood (PMF).

The frequency of the PMF in the lower reaches of Toongabbie Creek is not known. However, it is customary to apply an average recurrence interval (ARI) to the PMF of between 10,000 and 100,000 years for flood damages assessments undertaken as part of government funded floodplain risk management studies. This provides context to the extreme nature of this event.

Predicted peak flood levels at the site for a range of floods are listed in **Table 1**.

Table 1 Design Flood Levels in the vicinity of the Central Acute Services Building Site

DESIGN EVENT (AEP)	PEAK FLOOD LEVEL (mAHD)
5%	12.38 to 11.96*
1%	13.24 to 12.82*
0.5%	13.36 to 13.08 ⁺
0.2%	13.81 to 13.54 ⁺
Probable Maximum Flood	18.28 to 17.94*

Source: * Parramatta City Council Flood Map (2014)

⁺ Upper Parramatta River MIKE-Flood Model Results (2010)

3. FLOOD RELATED PLANNING CONTROLS FOR DEVELOPMENT

3.1 Flood Planning Level

Development on flood prone land within the Parramatta LGA is typically assessed with reference to the Parramatta Local Environmental Plan 2011 (PLEP 2011) and the Parramatta Development Control Plan 2011 (PDCP 2011). PLEP 2011 is based on the Standard Instrument as required under the *NSW Environmental Planning & Assessment Act 1979*. The plan includes a model flood clause which the Department of Planning & Infrastructure requires all Councils to use where there is a flood hazard in an urban area.

The PDCP 2011 makes reference to Parramatta City Council's Floodplain Risk Management Policy. The Floodplain Risk Management Policy has been in force since July 2006 and seeks to provide a framework for development on flood affected land that meets the objectives of the NSW Government's Flood Prone Land Policy.

In this regard, Council's Floodplain Risk Management Policy specifies the Flood Planning Level (FPL) as the level below which Council places restrictions on development due to the hazards associated with flooding.



The adopted FPL used for planning controls is derived from a combination of the 1% AEP flood and a freeboard of 500 mm. This is in accordance with Direction No 15 of Section 117 of the *Planning and Environmental Assessment Act 1979*, which directs all local planning instruments to be consistent with the principles of the NSW Government's *Floodplain Development Manual (2005)*.

Therefore, the FPL for all areas within the Parramatta LGA is equivalent to the 1% AEP flood level plus 0.5 metres. On this basis, and assuming that the upper bound peak 1% AEP flood level listed in **Table 1** is adopted, it follows that the FPL for the Acute Services Building site is 13.74 mAHd.

Figure 1 shows the extent of the Flood Planning Area (FPA) along the entirety of the north-western perimeter of the Acute Services Building site. This shows that the Acute Services Building site does not encroach into the FPA.

3.2 Application of PLEP 2011 to the SSDA for the Central Acute Services Building

The SSDA for the Acute Service Building needs to address the requirements of PLEP 2011. Clause 6.3 of PLEP 2011 outlines the objectives related to Flood Planning. These are as follows:

(1) *The objectives of this clause are:*

- (a) *to minimise the flood risk to life and property associated with the use of land;*
- (b) *to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change; and,*
- (c) *to avoid significant adverse impacts on flood behaviour and the environment.*

Clause 6.3 also states the following sub-clauses:

(2) *This clause applies to land at or below the flood planning level.*

(3) *Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:*

- (a) *is compatible with the flood hazard of the land, and*
- (b) *is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and*
- (c) *incorporates appropriate measures to manage risk to life from flood, and*
- (d) *is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and*
- (e) *is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.*

Clause 6.3 (2) of PLEP 2011 indicates that the broader requirements of Clause 6.3 only apply to land below the Flood Planning Level (FPL), or land within the Flood Planning Area (FPA). As shown in **Figure 1**, the Central Acute Services Building site is located outside the FPA. Therefore, the flood related provisions of the FPA do not apply to the Central Acute Services Building site.

Figure 1 also shows the extent of the PMF relative to the boundaries of the Central Acute Services Building site (*refer yellow line on Figure 1*). The comparison indicates that the Central Acute Services Building site is outside the predicted extent of the PMF. Hence, it can be concluded that the site does not fall within the floodplain of Toongabbie Creek, and therefore is not subject to any of the flood related planning controls referenced in PLEP 2011 or PDCCP 2011.

FIGURE 1





4. CONCLUSIONS

The Central Acute Services Building is to be located on land within the Westmead Hospital Precinct that is above the predicted peak level of the Probable Maximum Flood. As a consequence, it is to be sited on land that does not classify as falling within the floodplain of Toongabbie Creek. Accordingly, the flood related provisions of PLEP 2011 and PDCP 2011 do not apply to the proposed development associated with preparing the site for construction of the Central Acute Services Building.

5. REFERENCES

- Health Infrastructure (July 2014), 'Westmead Hospital Redevelopment Masterplan Optimisation'
- NSW Government (2005), 'Floodplain Development Manual: the Management of Flood Liable Land'; ISBN 07313 0370 9.
- Parramatta City Council (1995), 'Upper Parramatta River Flood Study'
- Parramatta City Council (2003), 'Upper Parramatta River Catchment Floodplain Risk Management Study'; prepared by Bewsher Consulting
- Parramatta City Council (2006), 'Parramatta Local Floodplain Risk Management Policy'
- Parramatta City Council Development Control Plan 2011
- Parramatta Local Environment Plan 2011
- Upper Parramatta River Catchment Trust (2010) *MIKE-Flood Modelling Results for the Upper Parramatta River*
- WorleyParsons (September 2014), 'Westmead Hospital Redevelopment – Assessment of Potential Flood Constraints'; prepared for Health Infrastructure

I trust that this Technical Note meets your requirements. Please feel free to contact me should you require clarification of any item.

Yours faithfully
WorleyParsons

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