Flood Emergency Response Plan

Cranbrook School, Bellevue Hill

SCP Ref: S191132

Client Richard Crookes Construction

Project Cranbrook Stage 2 Redevelopment

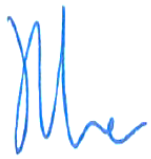
Date 28 November 2019

Revision table

Revision #	Date	Issue description	Prepared by	Reviewed by	Issued by
A	21/10/2019	Draft	JC	-	JC
B	25/10/2019	Final	JC	JB	JC
C	28/11/2019	Final	JC	-	JC

Statement of Competency

I, James Clare of SCP Consulting Pty Ltd at Level 2, 507 Kent Street, Sydney NSW 2000, am an appropriately qualified and competent person in this area being listed in the National Professional Engineers Register (NPER) and as such can certify that the contents of this report complies with relevant standards and guidelines.



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1 Introduction

As part of the detailed design process for the civil and stormwater works associated with the Cranbrook Stage 2 Redevelopment, SCP Consulting have been engaged to develop a Flood Emergency Response Sub-Plan (FERSP). This sub-plan is currently required under conditions C12 and C17 of the State Significant Development Application (SSDA 8812) and Floodplain Risk Management Guidelines (OEH, 2007).

1.1 Purpose of Report

The purpose of this report is to:

- Describe the flood emergency response during the construction works;
- Outline predicted flood levels for large storm events;
- Identify flood warning times and flood notification procedures.
- Identify emergency assembly points and evacuation routes and protocols.
- Describe awareness training for employees and contractors involved with the construction works;

1.2 Proposed Development

The site is located at Cranbrook School within the Hordern Oval adjacent New South Head Road. Cranbrook School is within Woollahra Council local government area. The site is approximately 2.5 ha and the proposed development footprint covers the majority of the Hordern Oval which sits at the bottom of a large upstream catchment to the south. Figure 1 below presents the site location within the School.

The proposed development includes the construction of a new aquatic and fitness centre and associated carparking under the Hordern Oval and reinstatement of the Oval upon completion of the works.

Due to the location of the proposed development a robust site management plan must be implemented to ensure that flood emergency response is considered and communicated to all employees and contractors involved with the proposed development.

The proposed construction works are to be undertaken in a conventional construction sequence and are not proposed to be staged with the basement excavation and associated landscape earthworks being the commencement of the works followed by structure and fit out of the proposed buildings and landscaping of surrounding areas not impacted by the building works completed immediately after the completion of the earthworks.

This report details the triggers, responses and training required to appropriately manage flood risk on-site from the commencement of works up to handover, in order to effectively manage all employees and contractors and to protect the surrounding properties and critical infrastructure from flooding.

Staff, students and visitors to the School which are not involved with the construction of the project are not considered under this FERSP and should make themselves familiar with the appropriate response plans developed by the School for flood prone areas across their campus.

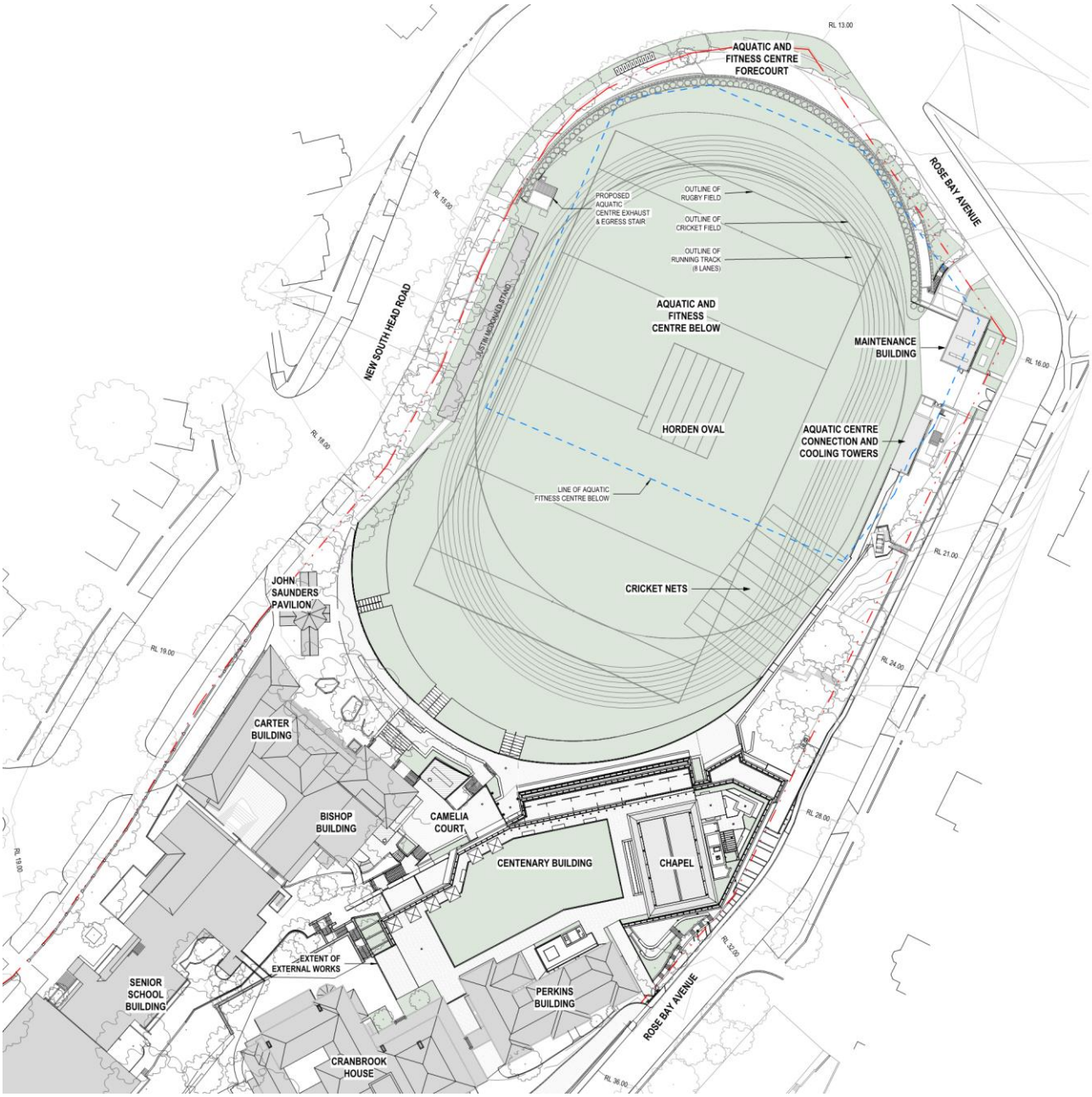

Figure 1 – Site Plan

2 Flooding

Flood modelling completed by WMA Water on behalf of Woollahra Council indicates that the site is not flood prone during the 1% Annual Exceedance Probability (AEP) storm. Figure 2 below shows the location of the site and the 1% AEP flooding extents.

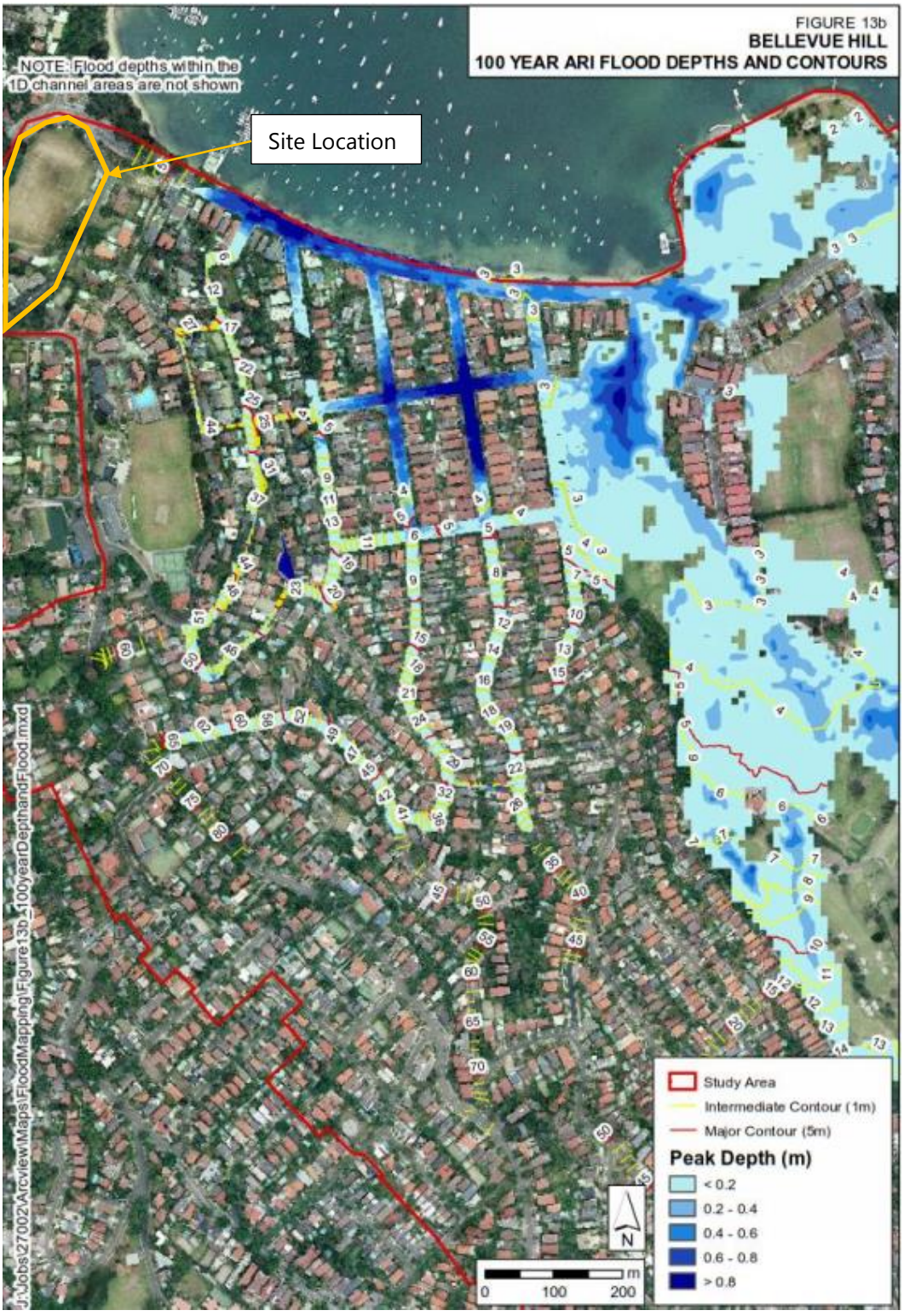

Figure 2 – Existing 1% AEP Peak Flood Extent (Woollahra Council))

The site is located adjacent to New South Head Road which is a significant overland flow path for Bellevue Hill. This overland flow path will not be impacted by the construction or operation of the proposed development.

Localised flooding may be experienced on the oval during heavy rainfall which may result in a risk to the excavation of the aquatic and fitness facility. The following sections will outline the triggers and responses to ensure all employees and contractors are aware of the flood risk on site albeit very minimal.

3 Flood Warning

Flood warnings are provided through many communication channels when extreme storm events are forecast. Applications such as Weather-Zone, the Bureau of Meteorology, FM and AM radio stations and SES bulletins all provide notification of storm events which have the potential to cause flooding.

If Bellevue Hill is forecast as having a storm or heavy rainfall in excess of 50mm during any day the site is operational this shall be communicated to all workers within the pre-start meeting and the site manager and supervisors tasked with regularly checking their preferred communication channel for updates on when the rainfall event may occur.

3.1 Warning Timeframe

There is no information on the critical storm for the Hordern Oval however there is no anticipated flood depth during the 1% AEP storm. Localised flash flooding could occur during intense periods of rainfall. It is recommended that a flood gauge be installed in a visible location on Hordern Oval to provide indication of the rate of rise in flood levels on the Oval for the duration of the construction works.

During periods of intense rainfall and if flood depths are noticeable on the Hordern Oval all plant should be relocated to an area above the flood extent. All work shall cease within the flooded area and employees and contractors shall take shelter within the site amenities.

Works should not recommence within any flooded area until the excavation has been adequately pumped out and the flooding on the Oval has subsided.

3.2 Flood Warning Notification

Flood warning notifications are the first stage of the flood warning system implemented by the managing contractor. Flood warnings are triggered when flooding is likely to cut evacuation routes or inundate flood prone areas of the site.

During intense rainfall the site manager and/or supervisor shall review the flood gauge on the Oval at the commencement of the rainfall, 5 minutes and 10 minutes after the rainfall event starts. If flooding in excess of 300mm is observed then the site manger or supervisor shall notify any workers within the flooded area to cease work immediately and relocate themselves, plant and any other loose items clear of the flooded area.

A call shall be put over the site radio that a flood warning notification has been issued and the areas of the site that have flooded shall be classified as an exclusion zone during the rainfall event. This is discussed further in Section 4.

3.3 Assembly Location and Refuge Protocol

In the event of a flood warning notification being issued all workers within the flooded areas shall assemble at the site accommodation and where a check will be undertaken to ensure all employees and contractors present in the flood prone area during the notification are accounted for.

Should any employees or contractors be unaccounted for the following emergency steps will be followed:

1. A radio call be put out across the emergency site channel asking for the missing workers to identify themselves at the assembly point immediately. This call shall be put out three (3) times;
2. The site manager/supervisor that issued the flood warning notification shall insect the flood prone area from an area outside of flood exclusion zone to see if the missing worker can be identified;
3. Contact with the missing worker shall be attempted using any means necessary including email, mobile phone call, office phone call, text message, etc.
4. Should a worker and/or plant become trapped in rising flood waters then the emergency services shall be called to conduct a flood rescue. **AT NO TIME SHALL ANY EMPLOYEES OR CONTRACTORS ENTER THE FLOOD EXCLUSION ZONE WHILST FLOOD WATER ARE STILL RISING**

Workers shall take refuge in the site accommodations until the flood risk has abated and the 'All Clear' has been provided by the site manger to return to work.

4 Flood Evacuation

Since the site isn't flood prone and site accommodations have been located outside of the 1% AEP flood extent there is no foreseeable reason why the site would have to be fully evacuated due to a flood. Should an evacuation be required for any other reason then the Emergency Management Plan prepared by the managing contractor shall be implemented.

5 Flood Awareness Training

Flood awareness training shall be provided as part of site-specific induction for all employees and contractors as part of the induction process.

The following items shall be covered as part of the flood awareness:

- Location of the flood exclusion zone and predicated flood levels on Hordern Oval;
- Details of flood warning times and flood warning notifications;
- Assembly locations and refuge protocols;
- Changes to site access during heavy rainfall;

Pre-start meetings and Toolbox Talks focussed on the risks associated with working in flood prone areas including the rapid rising flood waters and entering flood waters should be completed on a 3 monthly basis to ensure all workers remain clear on the associated flood risk present at the site.

6 Flood Emergency Response transition to Operational Phase

During proposed construction works all site employees and contractors will be informed about the Schools site wide flood evacuation/emergency management plan requirements and guidelines.

Richard Crookes Construction will work with the School prior to completion of the works to incorporate any changes required to this plan as a result of this development.

7 Conclusion

The following strategies have been documented and require implementation to ensure that the requirements of the Conditions of Consent are achieved:

- Predicated flood levels and extent of flooding on-site, as outlined in Section 2.
- Flood warning times and flood notification Monitoring, as per details in Section 3.
- Assembly points and refuge protocols as detailed in Section 3.
- Changes to site access as a result of flooding as detailed in Section 4.
- Ensuring employees and contractors are aware of the site-specific flood risk as outlined in Section 5.