

26 Jun 2024

Ref: SY230695-02-CTST01 (Rev 3)

Georgia McKenzie
Centuria Capital Limited
Level 41, Chifley Tower Click or tap here to enter text.
Sydney NSW 2000

Dear Georgia,

Re: Alexandria Health Centre- Centuria – Structural Design for SSDA

Site Details:

Project Name.	Alexandria Health Centre- Centuria
Address:	28-32 Bourke Road, Alexandria, NSW

Description of Work:	Construction of a health centre , including carparking on basement, ground and mezzanine level, medical centre uses Levels 1-4, and mental health hospital on Level 5-7.
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Development Consent:

DA/CDC No.	SSD-38600121	Consent authority:	City of Sydney
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We, Northrop Consulting Engineers, being professional engineers, are the structural engineers on the above project.

The structural design is completed:

- Under the supervision of a professional structural engineer certified under NER; and
- In accordance with the relevant structural requirements of the Building Code of Australia and relevant referenced standards, including:
 - AS1170 Structural Design Actions
 - AS1170.0 Part 0: General principles
 - AS1170.1 Part 1: Permanent, imposed and other actions
 - AS1170.2 Part 2: Wind actions
 - AS1170.4 Part 4: Earthquake actions in Australia
 - AS2159 Piling – Design and Installation
 - AS3600 Concrete structures
 - AS3700 Masonry structures
 - AS4100 Steel structures
 - ABCB Standard: Construction of buildings in flood hazard areas: 2012.3

The structural design will be completed taking into consideration the flood actions for structural design outlined in the letter attached, prepared by Enstruct, on the 26th of June 2024. These actions include the predicted flood level in the 1% Annual Exceedance Probability (AEP) storm event including additional freeboard due to wave action, the predicted flood level in the Probable Maximum Flood (PMF) event, and the velocity of the flows.

The pressure resulting from the water velocity is significantly less than the ultimate wind pressure, therefore does not dictate the structural design. The flood velocity is also below the level for scour or debris actions to impact the design.

Based on this information we can confirm the structural building elements including the basement retaining walls and external columns, will have the concrete thickness and reinforcement designed for the hydrostatic pressure in such a flooding event (PMF) where the water reaches RL10.40. In addition to this, confirming the retaining walls will be constructed from concrete that is a flood compatible building element. The structural integrity of the building during the PMF and smaller storm events will therefore be maintained.

This letter shall not be construed as relieving any other party of their responsibility.

Yours faithfully,

A handwritten signature in blue ink, appearing to read "Miriam Salter".

Miriam Salter

Structural Group Manager | Senior Engineer

BE(Civil)(Structural)(Hons) MIE Aust NER 3047736CPEng

On behalf of Northrop Consulting Engineers Pty Ltd

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Australia

Date 27/06/2024

Johnstaff
Level 5
9 Castlereagh Street
Sydney NSW 2000

Job Number: 6691

For the attention of : - Maria Neuenschwander

Dear Maria,

*Alexandria Health Centre
Predicted flood actions for structural design*

This letter has been prepared to summarise the predicted flood actions on the proposed building at 28-32 Bourke Road Alexandria to inform the structural design of the proposed building. These actions are based on flood modelling referenced in the Civil Engineering Flood Report, prepared by Enstruct dated 3/06/2024.

1% Annual Exceedance Probability (AEP) storm event

During a 1% AEP storm event, the predicted flood level on Bourke Road at the site is RL8.80mAHD. In order to account for the potential for wave action in Bourke Road (due to, for example, the bow wave of a passing emergency vehicle, or local effects of debris within the flood zone) an additional 500mm of freeboard, equating to a flood level of 9.30mAHD.

The flow velocity in Bourke Road for this event varies from less than 0.2m/s up to approximately 0.4m/s

Probable Maximum Flood (PMF) event

The PMF is the most extreme storm event studied in the Civil Engineering Flood Report. The annual exceedance probability for this storm is approximately one in one million.

The PMF flood level is 10.40mAHD on Bourke Road at the site. The building must be designed to prevent the ingress of water to the basement during this event.

The peak velocity of floodwaters during the PMF is approximately 2.5m/s at the centre of Bourke Road. The direction of flow is from east to west along Bourke Road.

Scour at columns

The architectural design shows two columns within the PMF flood extents. Based on the above parameters, the potential scour at the columns during a PMF is 1.5m to 2m deep. This, however, is a conservative estimate that does not consider retaining walls and other structures located near the columns that would reduce the amount of scour.

It is understood that the columns will be founded piles down to rock at a depth of approximately 8m below the surface.

Design for flood actions

Reference should be made to "ABCB Standard: Construction of buildings in flood hazard areas: 2012.3" when design the building to resist flood actions, including hydrostatic and dynamic forces, and debris.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'T. Henderson'.

for
enstruct group pty ltd

Tim Henderson
Associate