NORTHROP

Level 11, 345 George Street, Sydney NSW 2000
T (02) 9241 4188 F (02) 9241 4324
E sydney@northrop.com.au ABN 81 094 433 100

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Job Number: S180594

Ying Chan
Lend Lease
Tower Three, International Towers Sydney
Exchange Place, 300 Barangaroo Avenue

RE: CESSNOCK CORRECTIONAL CENTRE – STORMWATER DESIGN

Northrop Consulting Engineers Pty Ltd, as the civil engineering consultant for the above mentioned project, hereby confirms that, based on our professional opinion, the stormwater design for the above mentioned project has been undertaken in accordance with normal engineering practice.

OVERALL STORMATER STRATGEY

The overall design of the stormwater system consists of an in-ground pit and pipe system, with the incorporation of internal drainage swales and minor drainage outlets. In addition, an On-Site Detention (OSD) basin is proposed for the new carpark works.

The stormwater network effectively consists of two discharge locations;

1. Majority of the stormwater runoff from the 220 bed complex will be conveyed through an in-ground pit and pipe network prior to discharging to an existing On-Site Detention basin that has recently been constructed as part of the adjacent 330 bed complex works (design by others);
2. An in-ground drainage network is proposed for the new carpark works. Due to the existing topography of the site, an additional On-Site Detention basin is proposed for the site to restrict flow rates exiting the site.

The ultimate discharge location from the site will be to an existing tributary located directly adjacent Birkdale Boulevard. Refer to civil drawing CV-AA-54.01 and CV-AA-60.01 through to CV-AA-60.08 for the overall stormwater design for the site.

WATER SENSITIVE URBAN DESIGN (WSUD)

Water Sensitive Urban Design (WSUD) measures have been incorporated into the stormwater design for the project. These mainly consist of;

1. Internal drainage swales; and
2. Bio-retention Filter media within the On-Site Detention basins. The filter media for the larger 330 bed basin has been sized to accommodate the 220 bed complex works.

STORMWATER CAPACITY

Confirming the Inground drainage network is capable of conveying the 1 in 20 year (5% AEP) storm event, with the allowance for overland flow paths in storm events greater than the 1 in 20 year event.

EXISTING INFRASTRUCTURE

Northrop Engineers confirms that the existing On-Site Detention (OSD) basin, constructed as part of the 330 bed complex (by others), has been designed to accommodate the volume of water generated of the proposed correctional centre works, excluding the carpark. The additional On-Site

Detention basin for the proposed carpark works is designed to restrict the overall resultant flows exiting the site.

As a result of the above, there is no increase to the flow rates at the external discharge point (in reference to the original NBRS scheme).

We trust you find this information satisfactory. If you have any queries please feel free to contact me – (02) 9241 4188.

Yours faithfully,

Matthew Condos

Civil Engineer

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NORTHROP CONSULTING ENGINEERS