Our Ref : W4771

Contact : Andrew Reid

21 November 2008

Goodman International
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Dear Richard,

17 O'RIORDAN ST, ALEXANDRIA FLOOD STUDY – OVERLAND FLOWPATH

A flood study for the proposed redevelopment of 17 O'Riordan Street, Alexandria for the Australian Red Cross Medical Research and Development Project was completed by Cardno Lawson Treloar as detailed in the report '*Flood Study for 17 O'Riordan Street, Alexandria*' (28 July 2008). Supplementary information regarding the flood planning level and operation procedures was detailed in our letter of 22 September 2008.

Sydney Water, in its comments on the flood study to the Department of Planning dated 12 November 2008, requested an investigation of overland flowpaths in the vicinity of the site.

During storm events, runoff is detained in the lowpoint in O'Riordan Street between Johnson Street and Bourke Road. Similarly, ponding also occurs upstream in lowpoints in Botany Street and Joynton Avenue.

A hydraulic model of the subject site and adjoining areas was developed in SOBEK; a linked one- and two-dimensional modelling system that models flood behaviour. The model is described in the Flood Study Report (28 July 2008). Figure D1 (attached) shows the 1% Annual Exceedence Probability (AEP) peak flood depth under existing conditions.

Under existing conditions, the subject site is situated on the southern fringe of the O'Riordan Street pond and does not act as a flowpath for runoff to be distributed through to Bourke Road in the 1% AEP event. Additionally, the modelling shows that water does not flow overland across adjoining properties to Bourke Road in a 1% AEP event due to the current ground levels on the adjoining undeveloped lot.

Flood modelling completed for a 2008 study of overland flooding in the wider Green Square Precinct, '*Draft Flood Mitigation Options Report – Green Square Town Centre*' (Connell Wagner and Cardno Lawson Treloar), indicates that lowpoints in a number of roadways (namely O'Riordan Street, Botany Street, and Joynton Avenue) act as de facto detention basins. Thus the reduction or elimination of flood storage in these ponding sites would increase the flood impact on properties and roads downstream. The flood impact in this catchment therefore requires an approach that addresses overland flooding in the whole catchment through to Alexandra Canal.

The Flood Study Report for the subject site (28 July 2008) demonstrates that the proposed development does not have adverse impacts on neighbouring properties up to and including the 1% AEP event as required by the City of Sydney Council.

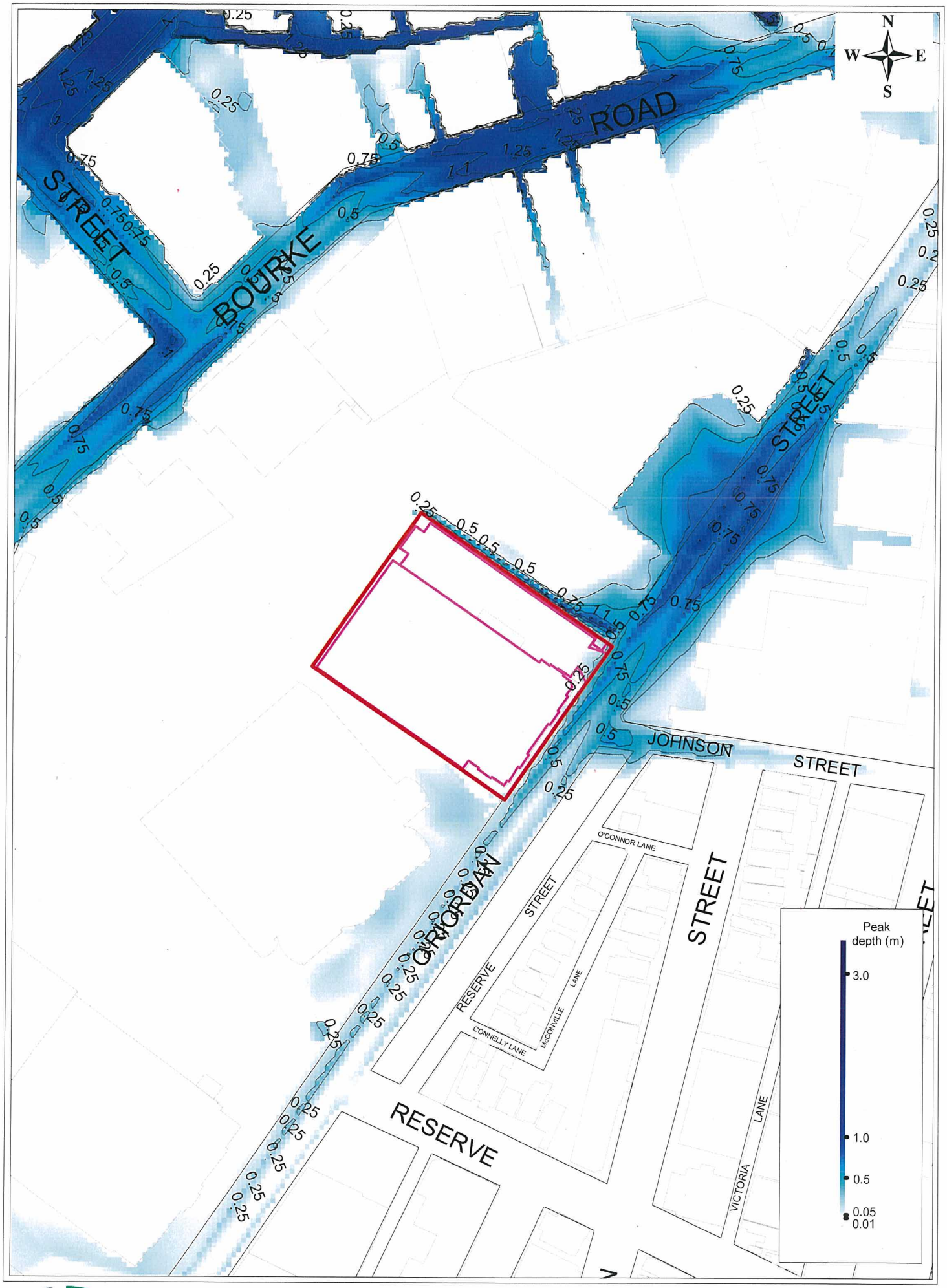
Figure D2 (attached) shows the peak flood depth in the PMF event for the existing site layout. A relatively small depth of flow is shown as conveyed from O'Riordan Street to Bourke Road through the property on the northern boundary of the subject site. O'Riordan Street thus acts as a pond detaining runoff with some overflow to Bourke Road. Under the proposed development, the PMF ponding level in O'Riordan Street in the PMF increases by a maximum of 0.02m.

In summary, 17 O'Riordan Street does not act as an overland flowpath to Bourke Road in the 1% AEP event. In the PMF event, only a minor increase in depth results from the proposed development. If it is planned to establish an overland flowpath from O'Riordan Street to Bourke Road then consideration should be given to regrading the adjacent undeveloped lots. Any decision to create an overland flowpath however needs to be informed of the downstream impacts on flooding at the precinct scale.

Yours faithfully,

Andrew Reid
Project Engineer
for **Cardno Lawson Treloar**

Attachment: Figure D1 1% AEP 60m Peak Flood Depth
Figure D2 PMF 45m Peak Flood Depth



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Flood Study

FIGURE D1
PEAK FLOOD DEPTH - 1% AEP 60m
EXISTING SITE LAYOUT
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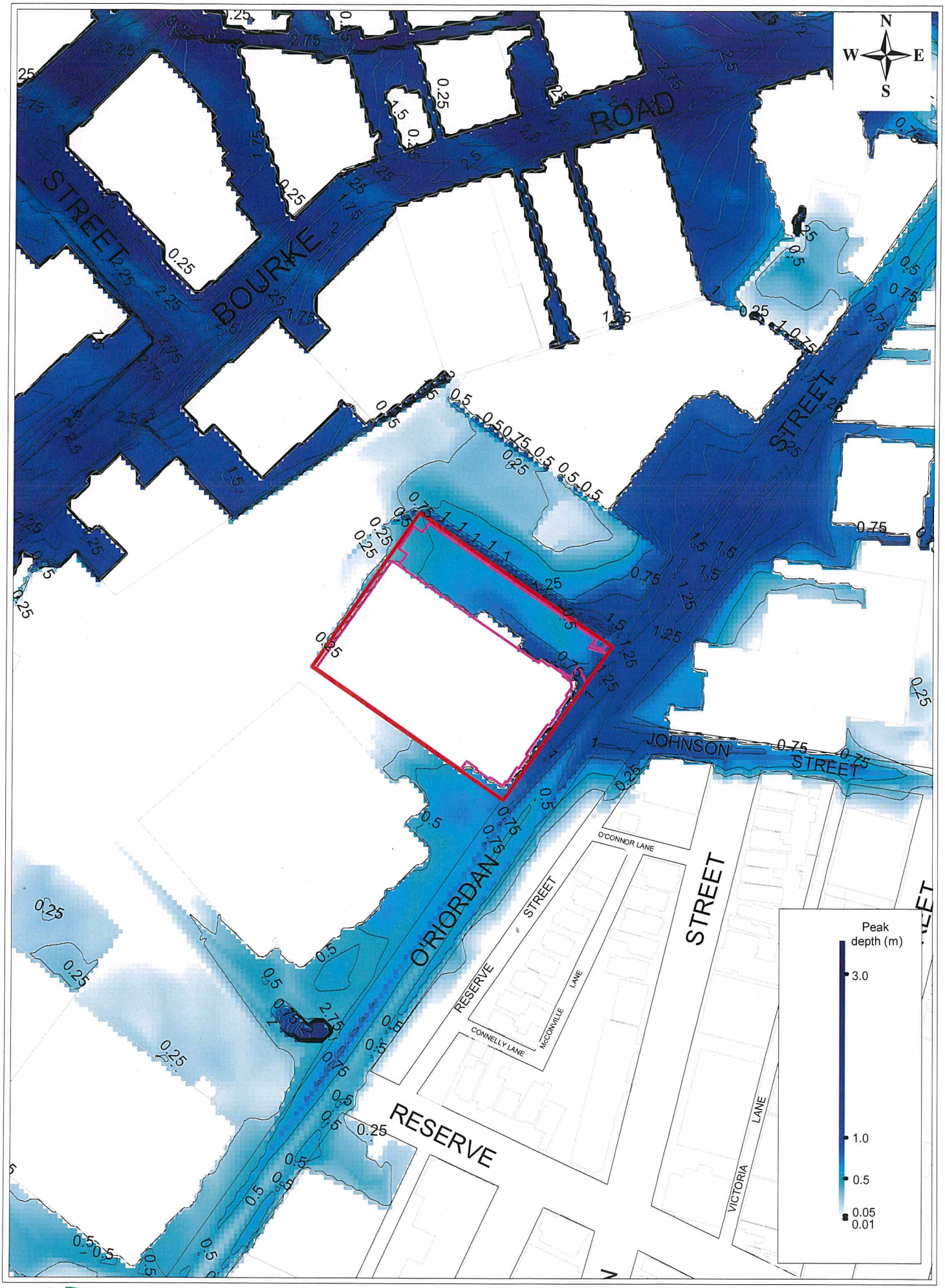

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FIGURE D2
PEAK FLOOD DEPTH - PMF 45m
EXISTING SITE LAYOUT
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