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Monday, 26 November 2007

SUPPLEMENTARY REPORT ON FLOOD IMPACTS OF FILLING ADDITIONAL LAND ADJACENT TO ALBION PARK AIRPORT for Delmo Pty. Ltd.

Contact Glenn Mealey 0412425907

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Our Ref.

Friday, 23 November 2007

1. INTRODUCTION

1.1 BACKGROUND INFORMATION

From the Shellharbour City Council, Draft Letter for Council's Consideration Submission on Environmental Assessment Exhibition the following questions were asked:

Flooding Council's assessment of the flooding information submitted with the application indicates further analysis is required by the proponent to enable the following questions to be answered by the proponent.

- 1What is the total loss of flood plain storage?
- 2What is the total volume of flood storage?
- 3What is the percentage loss of the total flood storage?
- 4What is a reasonable estimate to the probable impact of further filling of the flood plain?
- 5What is the impact on the peak discharge at the down stream control?
- 6Why was compensatory cut not provided to ameliorate the impact?
- 7What is the order of accuracy of the model used to predict the impact?

Jordan Mealey and Partners has been contracted by Delmo Pty Ltd to provide a to address the above questions. Jordan Mealey and Partners in turn contracted Rienco Consulting to provide the addition flood analysis.

1.2 AVAILABLE DATA

To compile this report Jordan Mealey have used the two Flood Modeling Reports (Existing Conditions¹) and (Post Development Conditions²) by Rienco Pty Ltd, Extension To Albion Park Flood Study³, Final Report, prepared by Kinhill Engineers (1993). The Albion Park Flood Study Report⁴ prepared by Water Resources Commission of NSW January 1986. A detailed survey of the site and surrounding area has been undertaken. ALS data for the study area was also obtained from AAM Hatch. We have also undertaken an additional flood study to determine other land that may be filled in the floodplain and the effects on that filling.

1.3 STORAGE LOSS

- What is the total loss of flood plain storage?
- What is the total volume of flood storage?
- What is the percentage loss of the total flood storage?

See appendix B attached. As can be seen in the appendix the loss of storage in the 1% event is 138,000 m³ which is a loss of flood storage of less than 1.93%. In the PMF the loss of storage in is 214,500 m³ which is a loss of flood storage of less than 1.84%. Essentially the area becomes a large lake during extreme flood events and the filling and the development does not have a significant effect on these floods.

1.4 FUTURE FILLING

What is a reasonable estimate to the probable impact of further filling of the flood plain?

We carried out an investigation of the area surrounding the floodplain to determine areas of future filling, only one other area could be considered for filling. The area considered was the Western side of Croome Lane. This area has been the subject of a previous DA where residential development was considered this old DA did not proceed due to economic reasons and this had minimal impact on the flood levels.

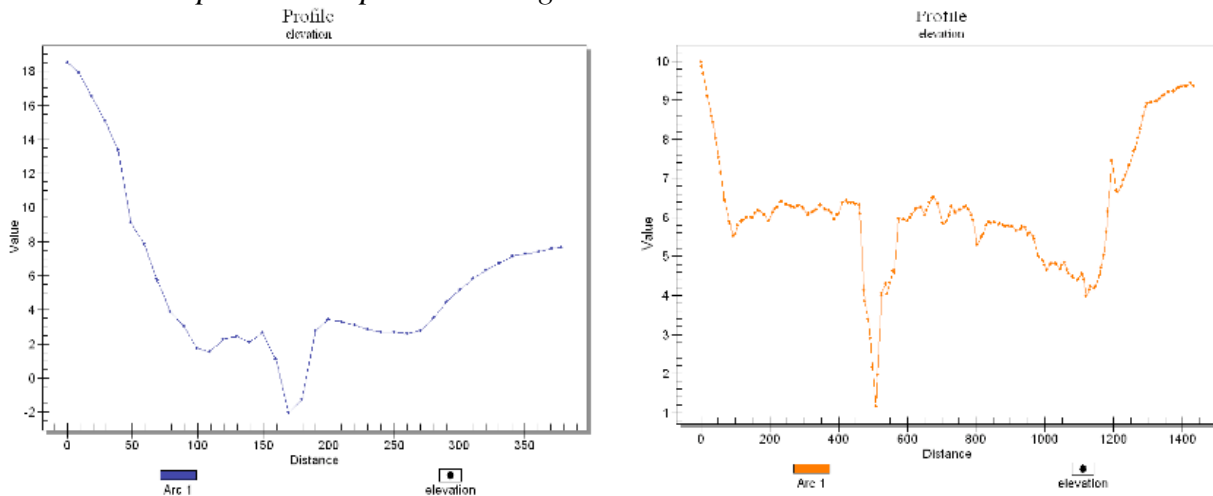
We investigated the impact of filling land on the western side of Croome Lane on flood levels in 1% AEP and PMF flood events. In this (1D) scenario, an earthworks platform 100m wide has been created within the properties along the western side of Croome Lane with the outer (western) boundary of the platform at a minimum of RL 6.5m AHD (viz at the level of a 1% flood) and with a minimum crest level of RL 7.0m AHD running parallel to the lane about midway across the site. In reality this has mostly resulted in filling a naturally low area (sag) in property near the southern end of Croome Lane, aligned with the low point in the adjacent runway. As such these earthworks have not significantly increased filling on the floodplain below the 1% flood level and should not therefore be expected to significantly impact levels generally across the floodplain. As discussed, it is however one of the few locations in the floodplain where (despite the presence of serious risk in a PMF flood event) future development might be proposed. Contours of the modified surface in this area are reproduced in Appendix E attached.

Other than changes made to surface levels and to surface roughness reflecting the new levels and land use of the platform, this simulation was otherwise as run for the 1B (proposed development) case.

The impacts of this additional development on flood levels associated with the proposed (1B) development scheme are shown in Appendix F attached for a PMF event. It is noted that no significant (less than 5mm) impact on flood levels was created anywhere by the modelled fill platform in a 100YR ARI event. This is, as previously noted, to be expected as most of the fill in the fill platform was added above the 1% flood level.

In a PMF event however, filling the sag in the fill platform increases flood levels locally in the vicinity of the sag, reaching a maximum of about 200mm at the western platform crest, dissipating across the runway to disappear altogether about 150m east of the runway. There is however no associated increase in flood level on the floodplain generally as a consequence of the addition of the Croome platform to the 1B scenario. While this scenario has been modelled as one possible additional floodplain fill scenario, development of the Croome site would, present some serious evacuation difficulties and does not therefore seem a very probable future development.

What is the impact on the peak discharge at the down stream control?



The impact on peak discharge is approximately 1.4%.

Why was compensatory cut not provided to ameliorate the impact?

Compensatory excavation was not considered as all excavation in the floodplain would be inundated during the smallest flood events and therefore it has no effect on the dynamic flood event.

What is the order of accuracy of the model used to predict the impact?

The TufLOW modeling software is the most accurate flood modelling software available, it relies on ALS survey data which is accurate to $\pm 100\text{mm}$. This gives TufLOW a modeling accuracy of approximately $\pm 150\text{mm}$.

If you have any further queries please contact the undersigned.

Yours faithfully,

Mr. G. A. Mealey.