GREENCAP
Going Further in Managing Risk

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TSA Management
17 Brett Street
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10 April 2019

Att: Sue Folliott

RE: J156455 Tweed Valley Hospital Development – Stormwater Management - Ecological Response to DPE

Dear Sue,

Greencap has reviewed the letter provided by Robert Bird Group (Ref: CR: KO LTR/C 19005C; 9 April 2019), with respect to stormwater quantity and quality. We note that the one of the OEH requirements referenced in the letter from Robert Bird Group is that:

> *'The discharge of stormwater to OEH land, where the quantity and quality of stormwater differs from natural levels, must be avoided.'*

We note, sufficient historical baseline data does not exist to derive what the 'natural' water quality and quantity of stormwater would have been. However, based on the limited information that has been provided, it is our professional opinion that should the predicted discharge volumes be achieved, the proposed Water Sensitive Urban Design (WSUD) measures would be adequate in meeting the following requirements:

- no increase in pre-development peak flows from rainfall events with a 1 in 5-year and 1 in 100-year recurrence interval;
- no increase in the natural annual average load of nutrients and sediments; and
- no increase in the natural average annual runoff volume.

The Water Sensitive Urban Design measures proposed for the final development are designed to provide a reduction in nutrient levels. It is our professional opinion that a reduction in nutrient levels of stormwater discharged from the site to those outlined in the above letter (Table 2) would be beneficial to ecological receptors in the wetlands. Note, historical nutrient levels under the former agricultural land use has promoted the growth of salvinia *Salvinia molesta* in the dam and agricultural drain that is located on the site.

In order to provide this advice Greencap has assumed that the MUSIC and DRAINS models developed by Robert Bird Group, have been developed appropriately and in accordance with the relevant guidelines. Greencap are not in a position to verify the accuracy of the modelling contained within the letter, especially given time constraints.

Additional controls and contingency measures should be developed for potential failure or overload of the detention basins. Consideration should also be given to impacts on groundwater as a result of infiltration of nutrient rich stormwater.

Greencap have reviewed information provided by the supplier of the proposed flocculent (Turbiclear), including the product's Safety Data Sheet (SDS), ecological reports and emails provided by the supplier verifying the product's history of use on other projects with similar ecological constraints. Based on the information that has been provided, when used in accordance with both the manufacturers recommendations and in accordance with the proposed Erosion and Sediment Control Plan the use of Turbiclear as a flocculant in the onsite sediment basins during Stage 1 and Stage 2 construction works is not expected to be detrimental to downstream ecological receptors in the wetlands. Ongoing water quality monitoring of the downstream receptors will be important to confirm that there is no impact.

Kind regards,

Dr Damian Licari,
Principal Consultant – Environment