

Our Ref: TRW: L.B19044.003.docx

3 October 2012

NSW Department of Planning and Infrastructure  
Metropolitan and Regional Projects North  
GPO Box 39  
Sydney NSW 2001

Attention: Stuart Withington

Dear Stuart

**RE: REVIEW OF PRELIMINARY MUSIC MODELLING BY MARTENS FOR RIVERSIDE AT TEA GARDENS**

I have reviewed the letter dated 12 September 2012 and associated modelling files provided by Martens in relation to modelling of stormwater quality at the proposed Riverside at Tea Gardens development. Overall, the modelling is more consistent with my previous recommendations, however there remains some significant errors that would need correcting prior to more detailed modelling being undertaken.

The first major issue is that the climate data has been adjusted incorrectly to model the Tea Gardens area accurately. While the Williamstown rainfall data has been scaled up appropriately to increase the mean annual rainfall to a more reasonable value, the potential evapotranspiration (PET) has been incorrectly increased, meaning that the PET is now set at a value equivalent to that experienced west of Townsville, rather than that typical for Tea Gardens. The rainfall data only should be scaled upwards, the PET values should be kept as equivalent to the Williamstown monthly PET data.

The second major issue is the use of Gross Pollutant Traps (GPT) downstream of biofilter systems. Vegetated systems such as biofilters are efficient at trapping gross pollutants as there is a physical barrier (the filter media), between the inlet and the outlet meaning the only litter that leaves a biofilter is that associated with system overflow, as the image of a biofilter below shows.



**Figure 1 Litter collecting on the surface of a biofilter**

As such, having a GPT downstream of a biofilter will mean it will be ineffective, both from a modelling and practical perspective. It is therefore recommended that the proponent revise their stormwater treatment strategy to remove litter and other gross pollutants by installing a GPT upstream of any biofilter where possible.

The biofilter nodes in the MUSIC model also have the bypass set incorrectly. MUSIC calculates the overflow of a system according to a stage height relationship based on surface area, extended detention depth, filter media hydraulic conductivity and overflow weir width. It is therefore unnecessary to establish a high flow bypass value for the biofilter in most circumstances, as the model itself will determine when overflows occur. The proponent should therefore set this value as per the defaults ( $100 \text{ m}^3/\text{s}$ ) unless a dedicated bypass system is to be installed upstream of the biofilter.

For the source nodes, the roof parameters should also contain a value for dry weather concentration to prevent the MUSIC model showing an error when running. While the dry weather concentration value would not be used due to the roof area being 100% impervious, having a value for dry weather concentration will prevent a divide by zero error which can happen depending on the version of MUSIC being used.

I hope the above is satisfactory for your current purposes. Please feel free to contact me if I can be of further assistance.

Yours Faithfully  
**BMT WBM Pty Ltd**

Tony Weber  
National Practice Leader – Water Quality  
Associate