

BAYSIDE BRUNSWICK – SUMMARY OF GOVERNMENT AUTHORITY SUBMISSIONS (Engineering Matters)

GOVERNMENT AUTHORITY	RESPONSE
<u>DEPT OF PRIMARY INDUSTRIES (FISHERIES & AGRICULTURE) (9.12.11)</u> Issues: - DPI would not support 'drain cleaning' of Everitts Creek as the instream values of vegetation, snags and general morphology contribute to the improvement of water quality entering the adjacent Cape Byron Marine Park as well as providing fish habitat for both Simpsons Creek and Cape Byron Marine Park. - Requires greater use of water sensitive urban design principles (WSUD) to reduce reliance on the natural environment as a treatment strategy as proposed in the environmental assessment (EA).	Everitts Creek will not be altered. The proposal is to shape the existing drain flowing north south to the intersection of the Creek. The drain is being maintained by Byron Shire Council and has been cleaned out earlier this year as part of the regular maintenance program. The preliminary modelling was carried out in accordance with Byron Councils Stormwater Management Guidelines. WSUD measures are proposed in the preliminary design and the modelling indicates that a net reduction of pollutant loads will be achieved. The central feature of the WSUD approach is the stormwater basin as detailed which is designed to process and treat runoff in order to achieve the required standards.
<u>OFFICE OF WATER 24.11.11 (NOW)</u> Issues: - Applicant to be aware of licensing requirements under the Water Act & Management Act. Dam construction may require consent. - NOW recommends the applicant prepare Groundwater & Surface Water Management Plans that incorporate a detailed description of a sustainable and efficient water supply.	The proposed stormwater basin is in the same alignment as the existing drain. The work will require controlled activity approval. It is usual practice to address this requirement as part of the CC submission. The proposed road embankment crossing the drain and incorporating the outlet of the basin is not considered to be a 'dam construction'. The Water Cycle Management Concept plan addresses the requirements for pollution reduction and management of stormwater runoff volumes. Full design details will be provided with the CC application. Measures for reduction of water consumption are included in the BASIX assessments and require all buildings to achieve a 40% reduction in water use. Compliance to BASIX requirements forms part of the DA & CC approval process for each proposed dwelling and will be addressed at individual lot level after the issue of the subdivision certificate.



- NOW Water is satisfied that the stormwater management arrangements adequately addresses the type and location of on-site detention, major overland flows and discharge calculations and the quantity direction and rate of surface and nutrients discharges from the site. However, concerns and recommendations include but are not limited to: - the potential to contaminate groundwater through the direct infiltration of stormwater runoff or the construction of stormwater detention basins and swales that intercept the water table which may provide further movement of pollutants down gradient that could discharge to surface waters; - detention basins and swales that are constructed below the water table should be lined (clay or geo-fabric) to minimise the hydraulic connection within the surrounding groundwater system or if unlined constructed so that the base of the excavation is 1m above the water table for most of the time; - the potential of ASS to be exposed when constructing detention basins, swales and drains creating acid leachate; - on coastal land of very low relief flooding is an issue especially considering the longer term possibility of sea level rise and increase in the range of inundation depths; - Applicant to provide evidence that sediment and erosion works concur with the 'blue book'. ESCP to be incorporated into a GWMP and/or SWMP.	The direct infiltration of stormwater into the groundwater is hindered by the presence of layers of indurated sand located above the deep water table beyond the perched water near the surface. (Refer to WSA report for further details on the coffee rock layer) Waste Solutions Australia's Groundwater Assessment, dated Dec 12 indicates the existence of a substantial layer of indurated sand which is of low permeability and will have a similar effect to an artificial liner. For the construction of the swales and the basin the depth of excavation will generally be less than 2m, where the potential of acid sulphate exposure is low according to the acid sulphate soil assessment by Bordertech (2010). Isolated trenches may be deeper than 2m (subject to detailed design). Should this occur the acid sulphate soils would be managed by the construction contractor. An acid sulphate management plan would be prepared as part of the CC submission if assessed as necessary during the detailed design phase. A flood report was prepared by BMT WBM in November 2010. Its modelling of the DECCW 1:100 year flood + climate change gave a level of 3.5 at the intersection of Everitts Creek and the N/S drain. The lowest surface level on the proposed lots is 3.7m AHD. A "Water Cycle Stormwater Management Plan" was prepared by LandPartners. Section 6 outlines the ESCP in accordance with the "Blue Book". CTCE have included a conceptual ESCP. Detailed ESCP can only be done as part of the detailed design. This will be carried out for each phase at the Construction Certificate stage.
---	--



- Applicant must demonstrate in a SWMP and GWMP what mitigation measures will be adopted to avoid and/or treat the following potential impacts: - TSS (total suspended solids) may increase in surface water due to erosion and runoff of cleared areas during construction stages of the proposed development; - low conductivity in Simpsons Creek and high conductivity in groundwater from stormwater runoff discharge and reduced recharge respectively due to sealed surfaces on the site; - decreases in groundwater level and flow rates from reduced recharge which may potentially impact on GDEs; - Eutrophication of water sources and higher PH from increase application of fertilisers and soil conditioning agents to gardens/lawns; and - increased concentrations of TPH (total petroleum hydrocarbons), BTEX (benzene toluene ethyl-benzene xylene), pesticides and metal from road runoff and domestic activities. - Recommended baseline monitoring for water quality for a minimum of 2 years. Also recommend more extensive monitoring program which includes all aquifers, watercourses and wetlands within and adjacent to the project site. - The GWMP and SWMP should incorporate the results of the baseline data monitoring already undertaken, proposed future monitoring and reporting programs, including a contingency plan. Should also include measures to protect natural environment (SEPP 14, 7(a) zone land etc.). The plans should be forwarded to the Office of Water for review. - Give consideration to NSW State Rivers & Estuaries Policy 1993 when preparing SWMP and GWMP.	The "Water Cycle Stormwater Management Plan" prepared by LandPartners details the proposed mitigation measures and shows preliminary results of the reductions in Gross Pollutants, Suspended Solids, Phosphorous and Nitrogen that will be achievable. These pollutants are reduced to the levels required by BSC DCP2010 Section N7 - (points 1 & 4) This issue is discussed by WSA in their December 12 report This issue is discussed by WSA in their December 12 report Byron SC's DCP 2010 Part N7.1 states that Hydrocarbons, motor fuels, oils and grease pollution is not significant in low density residential developments. MUSIC does not model the reduction of TPH, BTEC, pesticides etc. However, bioretention basins are considered one of the best methods for the removal of hydrocarbons, metals and pathogens and considered adequate in this situation. Baseline monitoring is in progress. Hydrological Consultant to propose details of monitoring program taking into account results from existing monitoring at similar sites in the Council to avoid duplication and over-servicing. MUSIC modelling predicts performance of proposed treatment measures using mean annual flow of pollutants in kg/ha per year. The settings of the model parameters include pollutant loads derived from generalized baseline data. It is not possible to insert site specific baseline data into MUSIC as part of modeling a single subdivision site. It is considered that the proposed measures as detailed will improve the protection of and enhance the natural environment at the site. Consideration to the policy has been given for the reparation of the SWMP especially in relation to water quality and erosion control at
---	--



	conceptual design level, full details will be included in the CC submission. The proposed basin and drainage system do not introduce any new flow path but build on the existing drainage regime by updating existing features and generally improve the system in order to enable processing and treatment of runoff from the proposed development as well as achieving controlled discharge. The conceptual SWMP was conceived keeping in mind the interplay between the objectives expressed in the six principles of the policy and the environmental and engineering demands of the proposal. No works are proposed in the coastal habitat zone or on the banks of Simpson Creek.
<u>BYRON SHIRE COUNCIL (7.11.11)</u> Issues: • A number of elements of the proposed development are unreasonably and significantly detrimental to the sites ecological values and are not justified by the merits of the circumstance. • Flooding – impact of adopting the climate change parameters of DECCW (2009) instead of BSC (2009) on future house construction has not been addressed. • Impact of the stormwater detention basin on flood levels (or vice versa) has not been addressed. • Roads – layout/hierarchy does not appear to provide for bus routes. Further discussion required with Council's Traffic Engineer concerning intersection with Old Pacific Highway which may need upgrading.	A flood report was prepared by BMT WBM in November 2010. Its modelling of the DECCW 1:100 year flood + climate change gave a level of 3.5m at the intersection of Everitts Creek and the N/S drain. The lowest level on the lots adjoining the basin is 3.7. Compliance with minimum floor levels nominated by Council will be achievable for all dwellings on proposed lots. The basin will have a retardation effect on flows from rainfall events with runoff volumes less than that needed to fill the basin. This will have a moderating effect on downstream flood levels. For events with basin overflow the flood levels in the overall catchment area (as per flood study) will govern the water level in the basin until the downstream and upstream water levels are equal. At this stage the basin will become part of the overall flood event and act as backwater storage. It is proposed that an 8m one-way bus route would connect the end of Kingsford Drive (at the pre-school) around to the end of Torkina Place as recommended by the traffic consultant. Bus stops and footpaths will be provided to councils standards and detailed as part of the CC submission.



<u>MARINE PARKS AUTHORITY (20.10.11)</u> Issues: - Stormwater management should represent the best available contemporary management practices and be designed to improve quality of discharge. - MPA normally requires a minimum buffer of 50 metres between new developments and the marine park. - Car parking and access to Simpsons Creek – must be considered in the context of the high degree of protection in force and presence of Tyagarah Nature Reserve opposite. Any proposals would need to be low impact. Provision of advisory and regulatory signage would be required. <u>ROADS & TRAFFIC AUTHORITY (29.9.11)</u> - No objections. <u>PLANNING & INFRASTRUCTURE (30.01.12)</u> <u>Flora & Fauna</u> Stormwater & Erosion & Sediment Control - WSUD – Stormwater treatment train is unclear. Identify the location of all water cycle mitigation measures as described in 7.1.1.9 of the EA. Water quality modelling should be included. - Downstream drainage – clarify manner in which drainage downstream of the bioretention basin out of the site draining into Everitts Creek will be maintained given the land is in different ownership and no assessment has been made of its current ecological development.	Preliminary SW design will be carried out using MUSIC and DRAINS software to ensure compliance with current SW quality and quantity requirements. Detailed modelling will be done as part of the construction certificate stage. Buffers available are > 50m Measures to ensure low impact for access and parking are proposed by the environmental consultants. CTCE will provide details of the geometric and engineering design in accordance with current design standards as part of the CC submission.
The SWMP or stormwater concept plans prepared as part of the submission outline the treatment measures and modeling results and the engineering drawings show details of the proposed treatment. It was found that the proposed measures are capable of achieving the required design goals. Byron Shire Council provides on-going regular maintenance to drain linking development to Everitts Creek. No change proposed to the downstream maintenance regime.	

