Our Ref: 238111 / ENG : SWMP / JW:LG

30th October 2012

Janine Koppel
Erosion and Sediment Control Officer
Lake Macquarie City Council
PO Box 1906
HMRC NSW 2310

Dear Janine,

RE: DEVELOPMENT APPLICATION NO. DA/2233/2010, EROSION AND SEDIMENT CONTROL PLANS;
153, 153A MARMONG STREET, MARMONG POINT

I refer to your letter dated 2nd July 2012 and forward the revised Concept Soil and Water Management plans (CENG-016 to 023) with the following comment responses (original comments are shown in grey);

1.0 Planning Provisions

The area of disturbance associated with the development is over 2500m2. Lake Macquarie LEP 2004, Clause 31(2)(c), requires a Soil and Water Management Plan (SWMP) for developments where the area of soil surface exposure is greater than 2500m2. In addition, LMCC's DCP No.1 states that for developments over 2500m2, a SWMP is required.

The Plan does not comply with the requirements of LMCC's LEP or DCP.

The Soil and Water Management Plan (SWMP) has been amended to accommodate for the requirements of LMCC's LEP and DCP, as per your comments.

2.0 Site Risk

1. Proximity to Lake Macquarie – the site is within 50m of Lake Macquarie.

   The proximity to Lake Macquarie is noted.

2. Site is next to Marmong Creek which flows directly into Lake Macquarie.

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The proximity to Marmong Creek is noted.

3. Area of the development is over 7 hectares with maximum disturbed area at any time listed as 2.5 hectares.

   The overall development and maximum disturbance area is noted.

4. Moderate to high soil erodibility.

   The soil erodibility is noted as moderate to high (erodibility factor K of 0.025).

5. Very high soil erosion hazard.

   The anticipated soil erosion hazard is high to very high.

6. **Dispersible soils** – as no soil tests results were provided with the Statement of Environmental Effects, the Newcastle Soil Landscape Map identified the soils as part of the Awaba Soil Landscape. This soil landscape is known for its highly dispersible soils.

   The soil is anticipated to be dispersive (type D), which will be confirmed prior to Construction Certificate stage upon a detailed geotechnical assessment of the site.

7. Contaminated soils present onsite.

   It is noted that some contaminated soils may be present at the site (due to the site's former land-use). Contamination reports have been undertaken and stormwater management has taken this into consideration during the selection of treatment options.

3.0 Plan Quality

8. Existing land contours.

   Existing contours for the development area are now shown in the drawings (refer CENG-016 to 021).

9. Location of existing trees and vegetation.

   The extent of vegetation canopy is now indicated on the plan sheets (refer CENG-016 to 021).

10. Existing watercourses and drains flowing through, or adjacent to, the site (show all including creeks).

Existing watercourses are noted on the plans (refer CENG-016 to 021).

11. Extent of vegetation to be cleared.

    Vegetation to be cleared has been hatched on the plan sheets (refer CENG-016 to 021).

12. Location of proposed temporary erosion prevention and sediment control measures – show all.

    Temporary erosion and sediment control measures are now shown for each stage (refer CENG-016 to 021).

13. Location of temporary and permanent revegetation areas – information on stabilisation method and timetable for batter along western side road 1.

    Timetable and locations of temporary/permanent revegetation are now shown for the Road 1 batter (refer CENG-022 to 023).

14. An explanation of any changes to the erosion prevention and sediment controls as the works proceed (through Stages).

    Separate concept plans for each stage have been produced as per previous comments (refer CENG-016 to 021).

15. Supplementary notes covering inspection and maintenance requirements.

    Notes for the inspection and maintenance requirements have been included as part of the details sheet (refer CENG-016 to 021).

16. Soil classification and statement regarding erosion hazard.

    Refer to Table 1 in these comment responses, numerous site and soil classifications used in the calculation of erosion and sediment control measures are noted in this table.

17. Locations where ground cover will be maintained as 'no access' areas.

    'No access' areas are now noted on the plans and exclusion fencing provided (refer CENG-016 to 021).

18. Topsoil storage, protection and re-use methodologies (if topsoil to be reused).

    Suggested areas of topsoil stockpiling and protection measures are shown

on the plans (refer CENG-016 to 021).

19. Catchment definition and calculations.

    Contributing catchments and areas are now shown on the plans (refer CENG-016 to 021).

20. Site rehabilitation including schedules and a revegetation program.

    Timetable of erosion and sediment control measures (including site rehabilitation/revegetation) are now shown (refer CENG-022 and 023). Refer to the landscape concept plans for vegetation details.

21. The frequency and nature of maintenance activities recommended.

    Notes for the inspection and maintenance requirements have been included as part of the details sheet (refer CENG-022 to 023).

22. Symbols key (ensure all measures shown on plan are in key, and vice versa).

    The legend for the plans has been updated (refer CENG-016 to 021).

23. Standard notes – update to include information required as stated in this section.

    Noted.

24. Diagrams of erosion and sediment control measures must be from the Blue Book (Managing Urban Stormwater: Soils and Construction. Landcom. 2004.) or other current recognised industry standard.

    Typical sections and details for the erosion and sediment control measures are now from the 'Blue Book', refer CENG-022 to 023.

Additional items

25. Scale of SWMP to be maximum 1:1000 A3

    Plan re-scaled to suit 1:1000 @ A3

26. Individual Concept plans for each stage of development, and calculations of area contributing to basin at each stage.

    The concept SWMP for the site has now been divided up into separate plans

for each stage of the development (refer CENG-016 to 021). Catchment areas are also noted.

27. Plan is to cover the construction of the whole length of the entry road and include information on erosion and sediment control measures along the entire length of the road.

    Plans have been updated to provide erosion and sediment control measures along the entire length of road, in accordance with 'Blue Book' procedures (refer CENG-016 to 021).

28. Basin will be constructed in the first stage of the development. It will not be removed, decommissioned etc until completion of all construction activities for the development including dwelling construction, or at end of the final stage.

    Noted.

29. Identify who is responsible for flocculating water and verifying that water is clean enough to discharge, and how this will be done.

    Plans have been updated to provide responsibilities and technique in the notation section of the detail plans (refer CENG-022 to 023).

30. Clearly describe the use of the coffer dam in this development including, reason for use, installation/construction method, length of installation, removal method.

    Due to a recent development layout change, due to bushfire protection requirements, the cofferdam has been removed from the design (refer CENG-016 to 021).

31. Show location of all bioswales/swales to be used as part of erosion and sediment control.

    Two permanent vegetated swales and a bio-swale are to be installed as part of the stormwater management works for the development, temporary treatments during the construction phase are shown separately as part of the SWMPs (refer CENG-016 to 021).

32. Provide dimensions, design SD and lining material (if used) for all water diversion banks/drains. Clearly show on Plan which construction/installation method will be used for each structure.

    Dimensions and design information (e.g. SD type) now shown for each

diversion bank/drain (refer CENG-016 to 021).

33. No erosion and sediment control measures within EEC's.

    Noted, we have assumed that 'no access' fencing would be permitted.

34. Show how all dirty water will be treated prior to leaving site. Ensure dirty water diversions do not bypass the basin.

    Direction of flows noted on the plans, and in each case dirty water is captured prior to leaving the development site.

35. Will the excavation of the basin result in the exposure of any PASS or ASS?

    According to the preliminary geotechnical assessment for the site, neither PASS nor ASS are anticipated to be encountered during the development for the majority of the site, however this will be confirmed with detailed investigations. It is noted that some ASS may be present on the northern portion of the site, if these are identified during the detailed site investigations an ASS management plan will be formulated to manage the site risk both during construction and long-term.

Additional Information

36. Detailed calculations to determine the soil loss and the size of any sediment basins that may be required on the site – need full calculations for basin (s) based on the maximum disturbed area that will contribute flow to the basin.

    Calculations, in accordance with the procedures in the 'Blue Book', are included as an attachment to this letter.

37. Show how water will be diverted to basin during each stage.

    The stage water diversion paths are now shown for each stage (refer CENG-016 to 021).

38. Procedures for the operation and maintenance of pollution control equipment/works must also be noted e.g.

    – Quality and characteristic of any wastes before treatment

    – Details of permitted maximum pollution levels specified by Council or the EPA

– Details of the treatment methods e.g. flocculation methods and agents

– Methods of disposal of the wastes, including discharge points and/or disposal areas

– Details of major items of equipment used e.g. pumps, sprays etc Identify inspection procedures and inspectors.

There are no requirements for these items as part of the concept SWMPs in the 'Blubook' (Landcom, 2004), however a preliminary list of these details have been supplied on CENG-023.

Due to the proximity to Lake Macquarie it is recommended that only gypsum be used as a flocculating agent due to the potential effects of incorrect dosing of alum (Landcom, 2004). An application rate of 0.3kg/m^3 of stored water.

Application of the gypsum would be as per Figure E1 of the 'Blue Book' (Landcom, 2004).

39. The applicant shall also submit with the SWMP, a Statement of Compliance, stating that:

– The Plan has been developed by an appropriately qualified professional in erosion and sediment control, or similar;

– The Plan complies with the requirements of a SWMP as set out in LMCC's DCP No. 1;

– The Plan and associated documents, calculations and drawings, have been prepared to a standard which, if properly implemented, will achieve the water release criteria of 50mg/L of Total Suspended Solids (TSS) as identified in LMCC DCP No.1 and The Blue Book (Managing Urban Stormwater – Soils and Construction. Landcom, 2004); and

– All erosion and sediment control measures are in accordance with the latest version of The Blue Book (Managing Urban Stormwater – Soils and Construction. Landcom, 2004).

A 'Statement of Compliance' letter will be compiled once all Council comments are closed out.

Table 1 Site constraints and characteristics

Constraint/characteristic	Value/rating
Rainfall erosivity	Moderate (R-factor is 2,500)
Slope gradient	Moderate
Potential erosion hazard	High (from figure 4.6 in Landcom (2004))
Rainfall zone	Zone 1
Soil erodibility (subsoil)	Moderate - high (0.025, from Table C13 in Landcom (2004))
Calculated soil loss	Up to 370 t/ha/yr
Soil Loss Class	Class 3 adopted
Soil texture group	Type D adopted
Percent dispersible	Up to 15% adopted
Runoff coefficient	0.5
Total site area	>7 ha
Disturbed site area	2.5 ha (at any one time)
75th %ile, 5-day rainfall event	Marmong Pont = 24.4mm (typical from Newcastle, Table 6.3a in Landcom (2004))

If you have any questions regarding the above information, or the content of the SWMPs, please don't hesitate to contact the undersigned on (02) 4978 5100.

Yours Sincerely,

JOSHUA WUKOWIC
ENVIRONMENTAL ENGINEER

ADW JOHNSON PTY LTD – (Hunter Office)

Encl. **Sediment basin calculation spreadsheets**
Concept SWMP plans

Description		Typical Value/Source		
Marmong Aged Care Facility				
Type F/D				
Catchment Site Area (hectares)	2.5			
Settling Zone				
Runoff Coefficient, Cv	0.5	0.5		
80th %, 5 day Rainfall Event	30.5	Newcastle	Table 6.3a, pg 6-24	
Settling Zone Volume	**381**	m^3		
Sediment Zone				
Disturbed Site Area (hectares)	2.5			
Rainfall Erosivity Factor, R	2500		Appendix B, Sydney Map B-12	
Soil Erodibility Factor, K	0.025		Appendix A, Figure A3	
Slope Length Gradient Factor, LS	3.7	80m@12%	Table A1, pg A-9	Averaged slope
Erosion Control Practice Factor, P	1.3	1.3	Table A2, pg A-11	
Cover Factor, C	1	1	Figure A5, pg A-12	
Sediment Zone Volume	**98**	m^3		
Total Storage required (overall)				
Settling + Sediment	**480**		**m^3**	

Description		Typical Value/Source		
Marmong Aged Care Facility				
Type F/D				
Catchment Site Area (hectares)	0.15			
Settling Zone				
Runoff Coefficient, Cv	0.5	0.5		
80th %, 5 day Rainfall Event	30.5	Newcastle	Table 6.3a, pg 6-24	
Settling Zone Volume	**23**	m^3		
Sediment Zone				
Disturbed Site Area (hectares)	0.15			
Rainfall Erosivity Factor, R	2500		Appendix B, Sydney Map B-12	
Soil Erodibility Factor, K	0.025		Appendix A, Figure A3	
Slope Length Gradient Factor, LS	3.7	80m@12%	Table A1, pg A-9	Averaged slope
Erosion Control Practice Factor, P	1.3	1.3	Table A2, pg A-11	
Cover Factor, C	1	1	Figure A5, pg A-12	
Sediment Zone Volume	**6**	m^3		
Total Storage required (overall)				
Settling + Sediment	**29**		**m^3**	