AUDIT LOCATION:
Tweed Shire Council & Depot Road fill/ sports fields site, Kings Forest

AUDIT DATE: 13/11 & 13/12/2013
Subsequent documentation 24/01/2014

AUDITOR:
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AUDITEES:
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AUDIT TYPE:
Compliance

REFERENCE DOCUMENTS / AUDIT CRITERIA:
DA09/0186 Filling of Land
DA09/0836 Sports fields
Tweed Shire Council Development Design Specification D7 – Stormwater Quality (Section D7.07)
Code of Practice for Soil and Water Management on Construction Sites

C = Compliance
NC = Non Conformance
O = Observation

General Comments

There is some lack of clarity relating to the specifics of the two approvals, particularly in relation to the amount of fill approved.

The Statement of Environmental Effects (SEE) prepared for DA09/0186 indicates that the development would involve the placement of around 50,000m^3 of imported material. The SEE for DA09/0836 does not contain any figure relating to filling, describing the works (in part) as "*land forming"* for sports fields. It further states that *"the importation of all fill material required for land forming would be undertaken in accordance with previously approved Development Consent (DA09/0186)*".

The approved plans (for DA09/0836) show proposed design levels, and typical cross-section showing design and existing site levels, but do not quantify total fill volumes. There is a note of the cross-section (Plan RC10006-05 E) to the effect "*approval to fill, spread & compact on site previously granted under separate DA*".

The design levels clearly indicate a need for more than 50,000m^3 of material, but the amount of fill material is not quantified.

The sportsfield approval (DA09/0836) clearly authorises filling across the site up to the design levels shown on the approved plans. There is therefore no question or issue of non-conformance here. The observation is made merely to suggest that greater clarity in describing the detail of development would assist third-parties in interpreting approvals.

Documentation provided by Council, titled "*Attachment B Lot 1 DP 397082 Depot Road Kings Forest Quantities and sources of fill*" (undated) shows that the following fill amounts have been deposited at the site:

Fill DA (i.e. DA09/0186)	24,731m^3
BPUA Certificates (i.e. material from Banora upgrade)	115,000m^3
Sports field DA (DA09/0836)	32,970m^3
TOTAL	172,701m^3

PART A: DA09/0186

Observations:

O1 (Condition 2):

Condition No 2 requires that appropriate sediment and erosion controls be implemented, and that these controls "*be provided and maintained in accordance with Tweed Shire Council Development Design Specification D7 - Stormwater Quality and its Annexure A - "Code of Practice for Soil and Water Management on Construction Works".*

Controls were provided in accordance with Council's adopted Standard Operating Procedure (SOP), which adequately addressed site conditions and risks. Compliance with the condition was therefore achieved.

The observations are:

- While the SOP adequately addresses the risks at this site, it does not address all of the matters outlined in *Tweed Shire Council Development Design Specification D7 - Stormwater Quality and its Annexure A - "Code of Practice for Soil and Water Management on Construction Works;* and
- There is no documentation to demonstrate how the SOP was interpreted into specific controls at the site (i.e. no specific ESCP prior to July 2011) and no record of regular inspection, monitoring and maintenance (I note that the neither the condition nor the SOP specifically require such documentation).

Given the scale of the works, I consider that it would have been appropriate for a site-specific Erosion and Sediment Control Plan (ESCP), prepared in accordance with the above documents, to have been prepared prior to the commencement of the works, and for regular inspections to have been carried out and documented.

Notwithstanding that, there is no evidence that any significant erosion or sedimentation issues arose during the works.

O2 (Condition 3):

Condition No. 3 seeks to ensure that "*all imported material shall be from an approved source*". It required details of the source of fill and its nature be submitted "*to the satisfaction of the General Manager or his delegate*" prior to the commencement of filling operations.

The fill material was sourced from Council infrastructure projects and from the Banora Point highway upgrade project, with a very small amount remaining from previous operations of capping the land fill (previously determined to be Virgin Excavated Natural Material –VENM).

Individual environmental assessments were undertaken for the majority of the Council infrastructure projects, including consideration of soil contamination. Certification was provided for the material sourced from the Banora Point highway project, demonstrating it to be 'uncontaminated soil'.

The Banora Point project and each of these infrastructure projects were therefore considered to be 'approved sources' for the purposes of this condition.

Council advise that, of the total volume of fill taken to site (under both DAs), only 1.2% of material was not formally assessed. In the context of the total fill volumes (i.e. over 172,000m^3), this represents a very small risk.

There does not appear, however, to be any 'sign-off' or the like from 'the General Manager or his delegate', prior to commencement, to confirm that this approach would satisfy this condition, and I note that, in the circumstances of obtaining material from Council infrastructure projects as they arise, it would not be possible to provide information about all 'approved sources' prior to the commencement of the filling operation.

Subsequently, after filling began, a checklist approach was agreed to satisfy this condition, as documented by internal Council emails. However, it appears that the checklist was not used.

I also note that asbestos material was uncovered onsite during the operations. Council advises that the source of this material is not known and it came either from an old shed that was at the site, or it could have been illegally dumped by a third party.

O3 (Conditions 6 & 7):

All work associated with this approval is to be carried out so as not to impact on neighbourhood, adjacent premises or the environment.

This condition does not specifically require the preparation of any formal management system or reporting in regard to the management of impacts. However, in the absence of any such system, it is difficult to clearly demonstrate that the works were planned and carried out to ensure compliance.

General supervision was undertaken based on Council's Standard Operating Procedures. However, there is little documentation of inspections/ audits and the like.

An ESCP was subsequently developed in July 2011.

Council advise that inspections "would have been carried out by outdoor staff operating at the site under the direction of either the works unit or recreation services". No records were kept of these inspections.

Site inspections by Environmental Scientists (Design Section) were not carried out until July 2011 at the earliest.

O4 (Condition 9):

Appropriate measures are to be put in place to prevent the transport of sediment from the site. Should any material be transported onto the road or any spills occur it is to be cleaned up prior to cessation of same day's work and/or commencement of any rain event.

A shake-down grid was installed, but apparently not until Banora Alliance material started to come to site. Prior to that, truck movements to and from the site were minimal and Council considered that a shaker grid was not necessary.

An ESCP plan was developed, but not until July 2011. No documentation was prepared to indicate the measures put in place prior to ESCP, with Council's SOP relied on to manage risks.

O5 (Condition 11):

All waters that are to be discharged from the site shall have a pH between 6.5 and 8.5 and suspended solids not greater than 50mg/kg.

It does not appear that any water monitoring was undertaken. Compliance with the criteria contained in the condition cannot, therefore, be determined.

However, it is noted that the nature of the filling works avoided the channelization of stormwater flows, with 'sheet flow' around edges into grassed perimeter drains. This could be expected to provide sufficient controls to manage water quality in all but extreme storm events.

Detailed response to Audit Criteria

DA09/0186 Filling of Land

Condition Number	*Requirement*	*Compliance*	*Evidence, Observation*
1	*The development shall be completed in accordance with the Statement of Environmental Effects and Plan Nos RC08008/01 - RC08008/07 prepared by Tweed Shire Council and dated December 2008, except where varied by the conditions of this consent.*	C	Documentation proposes *'placement of about 50,000m³ of clean fill material to achieve the levels required for future sports fields…*' Approved plans show two options – Option 1 shows 3 fields; Option 2 shows only 2 fields Approved plans show filling restricted to field areas generally (i.e. not to all boundaries), with differing fill areas for the two options. Subsequent design plans (RC08008, Nov 2009 – approved under DA09/0836) indicate 3 fields to be constructed in stages, with slightly increased lateral extent of filling. Compliance regarding "clean fill": Fill material came from Council infrastructure works. In majority of cases, assessment undertaken for the particular infrastructure project included assessment for potential of contamination. See further detail below.
2	*Appropriate erosion and sediment control shall be provided and maintained in accordance with Tweed Shire Council Development Design Specification D7 - Stormwater Quality and its Annexure A - "Code of Practice for Soil and Water Management on Construction Works".*	O1	Council advise that early stages of filling involved small quantities of material, brought in intermittently over a two-year period. During that period, erosion and sediment control was managed in accordance with Council's *Standard Operating Procedure, Erosion and Sediment Control 46* (SOP). Subsequently, to manage the larger amounts of fill available from the Banora Point highway upgrade, a site-specific ESCP was developed. The SOP outlines general information useful for managing environmental risks, including key principles for appropriate erosion and sediment control measures and descriptions of common ERSED measures (including typical drawings). In this case, adherence to the SOP would have been adequate to manage the anticipated erosion risks at the fill site, and therefore 'appropriate erosion and sediment control' was provided in compliance with this condition. While reference to SOP would assist to adequately manage erosion and sedimentation risk, the SOP does not contain the level of detail that is outlined under *Tweed Shire Council Development Design Specification D7 -*

Condition Number	Requirement	Compliance	Evidence, Observation
			Stormwater Quality and its *Annexure A - "Code of Practice for Soil and Water Management on Construction Works.* I have been advised that measures were implemented onsite and works were supervised by Works Unit Construction Supervisors in accordance with the SOP. However, I have not seen any documentation of either an interim ESCP or inspection/ audits that could demonstrate that the level of control used.
3	*All imported fill material shall be from an approved source. Prior to commencement of filling operations details of the source of fill, nature of material, proposed use of material and confirmation further blending, crushing or processing is not to be undertaken shall be submitted to the satisfaction of the General Manager or his delegate.*	O2	Prior to obtaining material from the Banora Point Highway project, the majority of fill material was sourced from Council infrastructure projects. Individual environmental assessments were undertaken for these infrastructure projects, including consideration of soil contamination. Each of these infrastructure projects were therefore considered to be 'an approved source' for the purposes of this condition. Council advise that, *of the total volume of fill taken to site (under both DAs), only 6.7% of material was not assessed in this manner and can be divided between the following categories:* ▪ *1.5% was taken to Depot Road under the Exempt Development Emergency provisions of the State Environment Planning Policy (Infrastructure) 2007 as a result of emergency works. Of this, 1.4% of the material came from earth bank slips as a result of natural disaster (major flooding), and 0.1% from water main failures. The earth bank slip material was considered VENM whereas the material associated with water main failures would be ENM.* ▪ *1.9% was taken to Depot Road from Kingscliff TAFE. Assessment of suitability for this material was carried out independent of TSC (TAFE NSW operates under State Government and not Local Government).* ▪ *2.2% was already stockpiled at the site. Further investigation (including discussion with retired Council staff) has revealed that the source of material was from two large earth bank slips at Carool Road Bilambil and Cudgen Road Duranbah. The material is considered to be VENM. Records have been updated to accurately reflect the source of this material.* For the material from the Banora Point project,

Condition Number	Requirement	Compliance	Evidence, Observation
			documentation was provided to Council certifying that it was not contaminated. There does not appear to be any 'sign-off' or the like from 'the General Manager or his delegate', prior to commencement, to confirm that this approach would satisfy this condition. Subsequently, a checklist approach was agreed internally to satisfy this condition, as documented by internal Council emails. However, it appears that the checklist was not used.
4	*Site work including the entering and leaving of vehicles is limited to the following hours, unless otherwise permitted by Council: -* *Monday to Saturday from 7.00am to 7.00pm* *No work to be carried out on Sundays or Public Holidays* *The proponent is responsible to instruct and control subcontractors regarding hours of work.*	C	General Council work hours were used for project. I am advised that standard hours are included in all sub-contractors contracts.
5	*No soil, sand, gravel, clay or other material shall be disposed of off the site without the prior written approval of Tweed Shire Council General Manager or his delegate.*	N/A	N/A – no material associated with this approval disposed of off site
6	*All work associated with this approval is to be carried out so as not to impact on neighbourhood, adjacent premises or the environment. All necessary precautions, covering and protection shall be taken to minimise impact from: -* ▪ *Noise, water or air pollution* ▪ *Minimise impact from dust during filling operations and also from construction vehicles* ▪ *No material is removed from the site by wind*	O3	There was no CEMP or other formal control document developed for the works. General supervision was undertaken based on Council's Standard Operating Procedures. However, there is little documentation of inspections/ audits and the like. An ESCP was subsequently developed in July 2011; i.e. associated with sports field DA09/0836. Council advise that inspection "*would have been carried out by outdoor staff operating at the site under the direction of either the works unit or recreation services*". No records kept of these inspections. Site inspections by Environmental Scientists (Design Section) were not carried out until July 2011 at the earliest (i.e. associated with sports field DA09/0836).
7	*All practicable measures must be taken to prevent and minimise harm to the environment as a result of the construction, operation and, where relevant, the decommissioning of the development.*	O3	As above

Condition Number	Requirement	Compliance	Evidence, Observation
8	*Any damage caused to public infrastructure (roads, footpaths, water and sewer mains, power and telephone services etc.) during construction of the development shall be repaired in accordance with Councils adopted Design and Construction Specifications prior to the issue of a Subdivision Certificate and/or prior to any use or occupation of the buildings* [Note: this condition 'technically' does not apply, as development does not require Subdivision Certificate, nor does it involve buildings – ideally, condition should have been tailored for specifics of this development]	C	No repairs required
9	*Appropriate measures are to be put in place to prevent the transport of sediment from the site. Should any material be transported onto the road or any spills occur it is to be cleaned up prior to cessation of same day's work and/or commencement of any rain event.*	O4	Shake-down grid installed, but apparently not until Banora Alliance material started to come to site (i.e. with sports field DA09/0836). Prior to Banora Alliance material, truck movements to and from the site were minimal and Council considered that a shaker grid was not necessary. ESCP plan developed in July 2011. No documentation to indicate the measures put in place prior to ESCP, other than reliance on vegetated perimeter drain.
10	*The site shall not be dewatered, unless written approval to carry out dewatering is received from the Tweed shire Council General Manager or his delegate.*	N/A	N/A – no dewatering
11	*All waters that are to be discharged from the site shall have a pH between 6.5 and 8.5 and suspended solids not greater than 50mg/kg.*	O5	It does not appear that any water monitoring was undertaken. Compliance with the criteria contained in the condition cannot, therefore, be determined. However, it is noted that the nature of the filling works avoided the channelization of stormwater flows, with 'sheet flow' around edges into grassed perimeter drains. This could be expected to provide sufficient controls to manage water quality in all but extreme storm events.
12	*Fill material introduced to the site shall be free from contamination. Records shall be maintained of the source and nature of all fill materials introduced to the site and made available to Council's Environment and Health Unit upon request.*	O2	See above for general comments on sources of material.
13	*Acid sulphate soils shall not be exposed or disturbed*	N/A	The works involved filling, so no sub-surface soils were exposed or disturbed.

Condition Number	*Requirement*	*Compliance*	*Evidence, Observation*
14	*Water Quality monitoring results in accordance with DECC regulations for remediated land fill to be provided to the General Manager (or his delegate) as produced to DECC.*	C	I am advised that regular monitoring was carried out of remediated landfill site, as part of landfill licencing requirements.
15	*The use to be conducted so as not to cause disruption to the amenity of the locality, particularly by way of the emission of noise, dust and odours or the like.*	O3	See above (conditions 6 & 7)
16	*Except as may be expressly provided in a licence approval under the Protection of the Environment Operations Act 1997 (POEO) Act, the licence holder must comply with section 120 of the POEO Act 1997 prohibiting the pollution of waters.*	N/A	No licence required No CEMP, general supervision relied upon.

PART B: DA09/0836

Non-compliances:

NC1 (Condition 18):

Erosion and Sediment Control shall be provided in accordance with the following:

a) The Construction Certificate Application must include a detailed erosion and sediment control plan prepared in accordance with Section D7.07 of Development Design Specification D7 – Stormwater Quality

b) Construction phase erosion and sediment control shall be designed, constructed and operated in accordance with Tweed Shire Council Development Design Specification D7 – Stormwater Quality and its Annexure A – "Code of Practice for Soil and Water Management on Construction Works".

The following minor non-compliances are noted for the ESCP:

- Section 3 of the Design Specification requires that the ESCP should contain reporting procedures and a proposed response to failure of systems and non-compliance with discharge quality standards.
- The Code of Practice requires that specific measures be documented to control '*lands, stockpiles and other exposed materials scheduled to remain unattended for a duration of more than 20 working days*'. The ESCP discusses rehabilitation of the final surfaces, but does not provide information addressing unattended areas.
- The Code also requires that '*stormwater monitoring shall take place at all locations where drainage or surface waters leave the site*'. Council advise that, other than opportunistic visual monitoring (for turbidity), no monitoring was undertaken.

The first two matters are not considered significant, and the absence of this information in the ESCP does not suggest that appropriate controls were not implemented.

From on-site observations and discussions with Council officers, it is apparent that the substantial perimeter grassed swale was the primary control relied on to manage ERSED risks, together with internal grading of the fill platform to avoid channelling stormwater flows.

This is considered an appropriate response to the nature of the site and the filling works.

The lack of water quality monitoring, however, prevents Council from clearly demonstrating the quality of water leaving the site.

Observations:

O1 (Condition 1):

The Statement of Environmental Effects refers to "land forming" and the construction of 3 fields and associated facilities. It states: "*The importation of all fill material required for land forming would be undertaken in accordance with previously approved Development Consent (DA09/0186)*".

See 'General Comments' (above) for further discussion.

O2 (Condition 5):

The speed limit along Depot Road must be limited to 40km/hr through traffic calming methods. Signage must be placed to clearly indicate the road crosses a wildlife corridor and is a Koala crossing.

40 speed limit signage is in place and a Vehicle Management Plan was prepared (see Attachment A), including a 40km/hr speed limit.

It does not appear, however, that signage was erected advising of wildlife or koalas. I note an internal Council memo (from Nigel Dobson to David Hannah, dated 31 August 2011) indicating that traffic control personnel will be provided to watch for koalas (and control speed) during hauling of material from Banora Upgrade project.

The issue, therefore, was adequately addressed, but not in strict accordance with the terms of the condition.

O3 (Condition 12):

All imported fill material shall be from an approved source. Prior to the issue of construction certificate details of the source of fill, description of material, proposed use of material, documentary evidence that the fill material is free of any contaminants and haul route shall be submitted to Tweed Shire Council for the approval of the General Manager or his delegate.

See Observation O3 relating to DA09/0186 relating to assessment of fill material.

I also note that some acid sulfate soil material was deposited and treated on site in late 2011. Strictly, the material was not /clean' when brought to the site. Council advise that it was treated promptly at the site, with subsequent testing verifying that the material was adequately neutralised.

O4 (Condition 18 & Compliance with D7 – see Tables A & B):

The Construction Certificate Application must include a detailed erosion and sediment control plan (ESCP) for the construction phase of development and a detailed stormwater management plan (SWMP) for the occupational or use stage of the development.

A detailed ESCP was prepared, dated July 2011, although the cover page indicates it relates to DA09/0186.

For sites where more than 1,000m^2 is disturbed, barrier fencing should be installed and the maximum length of exposed slope needs to be determined in accordance with the table in section 5.6 of *Code of Practice for Soil and Water Management on Construction Sites*.

No barrier fencing was observed during site inspection. ESCP proposes staged filling in smaller pads, and recommends that, once land shaping is completed for each pad, "revegetation or stabilisation will be undertaken as soon as possible and within 15 working days from placement of topsoil in a particular area". Limited revegetation was observed during site inspection.

'High efficiency' dust controls are required, including wind-break barrier fencing for larger sites. I am advised that water carts were used during filling operations on an as-needs basis. It is not clear whether a barrier fence wind break was utilised during the filling.

Where more than 2,500m^2 of land are disturbed, a self-auditing program must be developed for the site. Section 5.5 of the ESCP incorporates requirements for a self-audit program. Three examples of inspection checklists have been provided. It is not clear, however, whether weekly inspections were undertaken and/ or records kept.

Detailed response to Audit Criteria

DA09/0836 Sports fields

Condition Number	*Requirement*	*Compliance*	*Evidence, Observation*
1	*The development shall be completed in accordance with the Statement of Environmental Effects and the following Plans (approved plan list)*	O1	Statement of Environmental Effects refers to "land forming" and the construction of 3 fields and associated facilities. It states: "*The importation of all fill material required for land forming would be undertaken in accordance with previously approved Development Consent (DA09/0186)*". This could be interpreted to indicate that no additional material would be imported to the site under this DA. Approved plans, however, show proposed finished levels for fill (not including topsoil etc.), that would indicate the importation of filling in excess of the 50,000m^3 previously approved.
5	*The speed limit along Depot Road must be limited to 40km/hr through traffic calming methods. Signage must be placed to clearly indicate the road crosses a wildlife corridor and is a Koala crossing. No street lighting is to be erected along the access road.*	O2	A Vehicle Management Plan (VMP) was developed for the project, with the specific aim "*to reduce speed limits of construction traffic in order to maintain the local amenity at the site including noise, dust and caring for wildlife".* The VPM includes the requirement for the 40km/hr speed limit. 40 speed limit signage in place. I did not see any signs advising of wildlife or koalas, but I note an internal Council memo (from Nigel Dobson to David Hannah, dated 31 August 2011) indicating that traffic control personnel will be provided to watch for koalas (and control speed) during hauling of material from Banora Upgrade project.

Condition Number	Requirement	Compliance	Evidence, Observation
	Prior to issue of a Construction Certificate		CC11/0455 issued 25/10/2011 for bulk earthworks
12	*All imported fill material shall be from an approved source. Prior to the issue of construction certificate details of the source of fill, description of material, proposed use of material, documentary evidence that the fill material is free of any contaminants and haul route shall be submitted to Tweed Shire Council for the approval of the General Manager or his delegate*	O3	See comments relating to DA09/0186 (above). I note that acid sulfate soils were taken to the site for treatment. Council advises that it was treated promptly and spread following verification sampling results obtained from Tweed Laboratory demonstrating that the material was neutralised in accordance with the requirements of NSW ASS Manual.
14	*Site filling and associated drainage is to be designed to address drainage on the site as well as existing stormwater flows onto or through the site, and minimising the impact of filing on local drainage. Detailed engineering plans of fill levels and perimeter drainage shall be submitted for Council approval*	C	CC plan RC10006-23 E shows drainage catchments and provides drainage calculations. Stormwater Drainage Works approval SWD11/0279 approved 3 November 2011.
17	*Permanent stormwater quality treatment shall be provided in accordance with the following:*	N/A	Condition relates to 'occupation stage'. CC11/0455 was issued 25/10/2011 for bulk earthworks stage. A future CC application will be lodged for car park/ building works. Occupation stormwater management will be addressed in that future application. Notwithstanding that, a Stormwater Management Plan was prepared for the bulk earthworks stage. Council issued Stormwater Drainage Works Approval SDW11/0279 on 3 November 2011.
18	*Erosion and Sediment Control shall be provided in accordance with the following:* *a) The Construction Certificate Application must include a detailed erosion and sediment control plan prepared in accordance with Section D7.07 of Development Design Specification D7 – Stormwater Quality* *b) Construction phase erosion and sediment control shall be designed, constructed and operated in accordance with Tweed Shire Council Development Design Specification D7 – Stormwater Quality and its Annexure A – "Code of Practice for Soil and Water Management on Construction Works".*	NC1 O4	See Tables A and B below
20	*An Ecological Monitoring report must be submitted and approved by Director Planning and Regulation or his delegate prior to issue of the Construction Certificate*	C	Council have assessed that, in the circumstances, the only potential for ecological impact come from the operational stage of the development, associated with traffic movement and lighting. Accordingly, the required

Condition Number	Requirement	Compliance	Evidence, Observation
			report will be prepared as part of the subsequent CC application (for finishing works).
21	*A detailed landscape plan containing only local native species must be submitted and approved by Director Planning and Regulation or his delegate. Such plan must include screen planting on mounds between the sports fields and the SEPP 14 wetlands.*	C	Landscape Plan RC10006-22 C approved as part of CC11/0455.
	Prior to commencement of work		Work has commenced
34	*Fauna survey targeting Bush Stone-curlew must be undertaken prior to commencement of works. Should potential exist for works to impact breeding habitat, works must be delayed until chicks have fledged.*	C	Council advise that fauna surveys were undertaken prior to commencement, targeting the Bush Stone-curlew. None were detected, so no reporting was initiated.
	During Construction		
42	*All cut or fill on the property is to be battered at an angle not greater than 45^{o} within the property boundary, stabilised and provided with a dish drain or similar at the base in accordance with Tweed Shire Councils Design and Construction Specifications, Development Control Plan Part A1 to the satisfaction of the Principal Certifying Authority.*	C	Site looks to have complied
43	*All work associated with this approval is to be carried out so as not to impact on the neighbourhood, adjacent premises or the environment. All necessary precautions, covering and protection shall be taken to minimise impact from:* ▪ *Noise, water or air pollution* ▪ *dust during filling operations and also from construction vehicles* ▪ *material removed from the site by wind*		See comments above in relation to DA09/0186.

Table A: Tweed Shire Council Development Design Specification D7 – Stormwater Quality (Section D7.07)

Condition Number	*Requirement*	*Compliance*	*Evidence, Observation*
1	*The Construction Certificate Application must include a detailed erosion and sediment control plan (ESCP) for the construction phase of development and a detailed stormwater management plan (SWMP) for the occupational or use stage of the development.*	C	Detailed ESCP prepared, dated July 2011. Although cover pages indicates it relates to DA09/0186, Council advises that intention was for this Plan to manage filling under both DA09/0186 and DA09/0836. SWMP was prepared.
3	*The ESCP (for all development except single dwellings and duplexes) shall include*		
	a) Adoption of the Code Of Practice For Soil And Water Management On Construction Works contained in Annexure A		See Table B below
	b) Plans of external and internal catchments	C	Internal catchments mapped in ESCP. Given site is raised above surrounding landscape, there are no relevant external catchments.
	c) Site layout to include *i. plans showing existing site topography and final contours with cut and fill locations identified. property boundaries and lot lines*	C	Plans within ESCP do not show typography. I note, however, survey and bulk earthworks design plans were provided with CC application.
	ii. staging of works, including staging of site clearing and topsoil stripping	C	Staging shown. Note, given site history, clearing and topsoil stripping not involved
	iii. location of all site access points, parking areas, site facilities and on site roadways/tracks	C	Shown
	iv. location of site storage and stockpile areas (sand, gravel, topsoil, building materials, fuel etc)	C	CC for bulk earthworks only – site storage and stockpiling not needed
	v. utility plans	N/A	
	vi. erosion risk mapping - identification of low, medium, high and extreme erosion risk areas	N/A	Not shown – given nature of site, all areas have same erosion risk, which is quantified in report
	vii. topographic site limitations which may include:- excessive slope gradients; unstable of hazardous terrain; flood inundation areas; rock outcrops; active coastal dune systems; land subject to wave attack; existing erosion; water bodies; drainage problem areas; areas of potential mass movement.	N/A	None relevant to this site
	d) Vegetation layout	N/A	Note relevant to this site
	e) Soil properties	C	Properties quantified in report

Condition Number	Requirement	Compliance	Evidence, Observation
	f) Drainage	C	Information provided
	g) Erosion and sediment control proposal including		
	i. Site specific text overview and design philosophy or erosion and sediment control proposal	C	Contained in report
	ii. location (on plans), type, function, and timing (instigation and decommissioning) of all drainage, erosion and sediment control measures (the location plans must include areas external to the site where these areas impact or are impacted upon by the drainage or ESCP of the subject site). Preliminary calculations of sedimentation pond sizing	C	Information contained in SWMP and ESCP
	iii. timetable, integration/sequencing of ESCP with staging of works, detailed RUSLE calculations to evaluate current annual soil loss and likely annual soil losses from the proposed development incorporating the proposed ESCP	C	Information generally provided
	iv. water quality monitoring program with water quality criteria goals, parameters to be monitored, monitoring locations, monitoring frequency	C	Water quality goals included. Inspection program included
	v. proposed response to failure of system and non-compliance with discharge quality standards	NC1	Not included
	vi. reporting procedures	NC1	Not included
	h) Acid soil management	N/A	
	i) Details of receiving waters including quality characteristics	NC	Not included
	j) Procedures for amending the ESCP	NC	Not included

Table B: Code of Practice for Soil and Water Management on Construction Sites

Condition Number	*Requirement*	*Compliance*	*Evidence, Observation*
1.5	*Design Average Recurrence Interval (ARI): Unless advised elsewhere in this code, works to capture sediment laden water will be designed to accommodate a design storm of the ARI 3 month storm (deemed to be 40% of the ARI one year event), however overflow/ bypass arrangements are to be designed to accommodate an ARI 100 year storm without erosion, scouring or structural damage to erosion or sediment control devices, or re-mobilisation of previously captured sediment.*	O4	This requirement relates to sediment basins (i.e. 'works to capture sediment laden water'). ESCP indicates that basins could not be excavated, given that the site contains a clay cap over a previous landfill site. When basins cannot be achieved, the 'Blue Book' indicates that other adequate controls should be provided to prevent / minimise erosion and/ or treat sediment laden water. Design parameters outlined in ESCP are consistent with the 'Blue Book'. The overflow area requirement also does not strictly apply, as it relates to overflows from a basin. However, I note that the vegetated perimeter drain appears to be sufficient to prevent scour / erosion for the ARI 100 year storm, based on grass cover and a 0.5% grade. However, this is not confirmed in either ESCP or design plans (drain long section – RC08008/06 A). Design plans do not show any detail of outlet of perimeter drain in sites south-west corner, but observations on site indicate that this was constructed as a rock-lined batter chute, which would appear to adequately address scour potential.
2.1	*ESCP prepared for site, demonstrating consideration of relevant factors (a) to (t)*	C	ESCP complies
2.2	*Classification of soil loss for this site*	C	Section 2 of ESCP contains calculations.
3.2	*Vegetated buffer zones*	C	Complies – Sections 4 & 5.
4.3	*Shakedown device for construction site > 1 hectare* ▪ *minimum length 7m* ▪ *10m long shakedown area constructed with 75mm diameter crushed rock*	C	Plans show stabilised access to comply with SD6-14 (from Blue Book), which complies.
4.4	*Regular maintenance of shakedown devices is required*	C	ESCP calls for regular maintenance of all controls.
5.5	*Runoff and erosion controls* ▪ *diversion of upslope runoff* - *waters diverted to a legal point of*	C	ESCP notes that, because previously filled pad is elevated above surrounding land, run-on controls not required.

Condition Number	Requirement	Compliance	Evidence, Observation
	discharge - *carry peak flows at non-erosive velocities* ▪ *sediment control fencing* ▪ *maintenance of all controls*		Plans show bulk of site water diverted to perimeter drain (pre-existing), with discharge at south-wester corner; with small area (basically around stabilised site entry) discharging to north-east corner
5.6	*Sites where more than 1,000 square metres disturbed:* ▪ *barrier fencing* ▪ *maximum length of exposed slope determined in accordance with table*	O4	No barrier fencing was observed during site inspection. Plan proposes staged filling in smaller pads, and recommends that, once land shaping is completed for each pad, "revegetation or stabilisation will be undertaken as soon as possible and within 15 working days from placement of topsoil in a particular area". Limited revegetation observed during site inspection.
5.13	*High efficiency dust control techniques must be employed* *Dust control techniques must be employed on site at all times including outside of normal working hours* *All permanent roads and trafficable areas must be sealed or hard surfaced to minimise dust generation* *Unless an exemption from Council is obtained, all sites where over 1,500m^2 are to be disturbed must be provided with a barrier fence wind break*	O4	Advised that water carts were used during filling operations on an as-needs basis. It appears that a barrier fence wind break was not utilised during the filling.
7.2	*Sediment basin(s) must be constructed where the area to be developed exceeds 1 ha.*	C	ESCP indicates that sediments basins not possible, as filling was on top of clay cap of previous landfill. Basins could not be excavated into through this clay cap.
7.3	*Design requirements for silt fences, hay bales and other sediment filters*	C	ESCP refers to standard Blue Book designs. Example site management inspection checklist (dated 17/10/2011) noted need for maintenance of controls and need to fully implement ESCP controls.
7.9	*All sediment control structures must be operated and maintained in an effective operational condition following good engineering practice.*		See above
7.13	*Work adjacent to water bodies – must be carried out in a manner that prevents sediment being transported to the adjacent water body*	C	Vegetation channels used to capture site water and convey majority away from dams. Smaller area (effectively around access) flows to

Condition Number	*Requirement*	*Compliance*	*Evidence, Observation*
			first small dam (partly on the property), through vegetated swale.
10.2	*The C-factor is to be reduced to less than 0.15 (e.g. greater than 50% grass cover) on all lands, stockpiles and other exposed materials scheduled to remain unattended for a duration of more than 20 working days*	NC1	ESCP does not appear to contain controls relating to 'unfinished' fill areas which would be left unattended for more than 20 working days.
11.2, 11.3, 11.4	*Where more than 2,500m² of land are disturbed, a self-auditing program must be developed for the site. A site inspection self-audit and monitoring program must be undertaken by the land developer:* ▪ *at least each week* ▪ *immediately following rainfall events that case runoff* *Audit records in accordance with 11.3* *Signed, completed self-audits, original test results, weekly and other result sheets shall be kept on site*	O4	Section 5.5 incorporates requirements for a self-audit program. Three examples of inspection checklists provided. Not clear whether weekly inspections undertaken and/ or records kept.
12.1	*Stormwater monitoring shall take place at all locations where drainage or surface water leaves the site*	NC1	No evidence of stormwater monitoring. I am advised that visual monitoring was undertaken on an opportunistic basis, and that some testing of the adjoining dam was undertaken.