

ATTACHMENT B

EROSION AND SEDIMENTATION CONTROL REPORT



BALLINA HOMEMAKERS CENTRE

EROSION AND SEDIMENT CONTROL PLAN

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BALLINA HOMEMAKERS CENTRE EROSION AND SEDIMENT CONTROL PLAN

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EXECUTIVE SUMMARY

An Erosion and Sediment Control Plan (ESCP) has been prepared for a proposed commercial development over Lot 11 on DP 1011575 in response to the *Ballina Shire Combined Development Control Plan; Chapter 13 – Stormwater Management*. The ESCP provides strategies for the management of stormwater quality during the bulk earthworks and the construction of the proposed development.

A number of measures are proposed to treat stormwater runoff during bulk earthworks and civil construction including sediment fences, temporary sediment basins and the suitable locating of site compounds, a stabilised entry/exit point and stockpiles.

This ESCP provides management strategies for monitoring, maintenance and corrective actions to ensure the treatment train meets the intended performance criteria.

1. INTRODUCTION

1.1 Purpose

This Erosion and Sediment Control Plan (ESCP) has been prepared on behalf of The Condon Group Pty Ltd for the proposed Ballina Homemaker Centre development to be located on part of Lot 11 on DP 1011575. The aim of this management plan is to provide detailed policies, procedures and performance criteria to minimise the impact of the development on the natural and social environment. In particular, the ESCP provides monitoring and reporting mechanisms whereby the performance of the development can be measured and that agreed corrective actions are implemented in a timely manner if problems occur.

This Erosion and Sediment Control Plan intends to address the construction phase of the development, including the earthworks and civil construction. It is possible that some procedures may require modification or clarification to suit detailed requirements of the Contractor(s) and the Council.

1.2 Implementation

This plan responds to the Ballina Shire Combined Development Control Plan and is in accord with the requirements of Chapter 13 – Stormwater Management. The proposed release criteria for discharge are in compliance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC Guidelines).

2. DEVELOPMENT CONTROL PROVISIONS

The Ballina Shire Combined Development Control Plan, Chapter 13 – Stormwater Management outlines performance objectives for the management of stormwater on new developments within Ballina Shire. The Development Control Plan allows for the adoption of stormwater management objectives as specified in the **Table 1**.

Table 1 Pollutant Treatment Objectives

Pollutant	Environmentally Sustainable Development Treatment Objective
Construction Phase	
Suspended Solids	Effective treatment of 90% of daily runoff events (eg. < 4 month ARI). Effective treatment equates to a 50%ile suspended solid concentration of 50 mg/L.
Other Pollutants	Limit the application, generation and migration of toxic substances to the maximum extent practicable.

To demonstrate compliance with the Development Control Plan, specific stormwater treatment is to be provided during both the construction and operational phases of the development.

Compliance during the construction phase includes the management of erosion and sediment issues, dust management, suitable locating of site compounds and acid sulphate soil management.

3. EXISTING CONDITIONS

3.1 Site Description

The proposed commercial development will be located on part of Lot 11 on DP 1011575. The site is bounded to the south by the existing Pacific Highway and to the west by the Ballina Bypass, which is currently under construction. At present the site has multiple zonings under the Ballina Local Environmental Plan 1987, including Residential Living, Secondary Agricultural Land and Proposed Main Roads. The site is currently used as a cane farm. Aerial photography indicates that the surrounding land uses are primarily agricultural.

3.2 Vegetation Description

The majority of the subject site has previously been cleared for agricultural uses, and is currently used for sugarcane farming. The existing crop will be harvested and the site cleared prior to construction.

3.3 Soil Properties

The Development Control Plan maps the soil type on the site as alluvial, described as moderately dispersive. For the purposes of determining the estimated average annual loss Soil Type D has been used from *Managing Urban Stormwater; Soils and Construction* (NSW Department of Housing)

Based on the revised Universal Soil Loss Equation, the estimated soil loss rate has been calculated at 32 tonnes/ha/yr ($R=5000$, $K=0.04$, $LS=0.20$, $P=0.8$, $C=1.0$) for the disturbed area of the site. Based on this information, the soils on-site have been classified as SOIL LOSS CLASS 1, which is a very low erosion risk (0-250 tonnes/ha/yr).

3.4 Site Drainage

Due to the existing cane farm the site drainage is likely to be highly modified. Topoview Raster 2006 Sheet number 96403N indicates that the site is serviced by two existing drainage lines, located externally to the site. One drainage line originates from the north east of the site and continues adjacent to the site's southern boundary, before turning south under the highway and discharging to Emigrant Creek. The other drainage line originates from the north of the site and continues south along Teven Road, passing the western boundary of the site and discharging to Emigrant Creek. These drainage lines may have been realigned slightly during the construction of the Ballina bypass.

Site runoff during the construction phase will be controlled by the devices shown on Cardno Drawing GCE1022 - Sketch No.1. Sediment basins will be used to detain the runoff and assist in sediment deposition from the flow before it leaves the site. The sediment basins have been sized to treat a one in three month storm event. Surface runoff from larger storm events will bypass the basin via an overflow weir. Shakedown device/stabilised site access points will be located at the entrance/exit to the site in accordance with the superintendent's instructions.

The proposed devices are to be installed prior to construction and maintained until completion of construction or as long as practical.

3.5 Proposed Works

The proposed development works will be undertaken on part of Lot 11 on DP1011575. Cardno Drawing GCE1022 - Sketch No.1 shows the locations and extents of the proposed earthworks and the minimum required erosion control measures to be incorporated on-site.

Sediment filter fencing should be installed along the downstream property boundaries to assist in removing sediments from the surface runoff prior to discharging off-site. To reduce re-suspension of suspended solids and scour, any catch drains constructed are to have rock check dams installed if necessary.

Where possible the existing grassed areas will be retained to assist in filtering and dispersing runoff from the development site and to aid in stabilising the slopes on-site.

The location of site storage, car parking and temporary site office facilities shall be determined on site. Access shall only be from the designated entry/exit access points to the development site.

All areas where the civil works will not commence immediately are to be stabilised and grassed.

4. EROSION AND SEDIMENT CONTROL

The ESCP comprises of water quality management and dust management related to construction activities across the site.

All works are to be carried out in accordance with the following elements.

4.1 General

All construction activities are to be carried out in accordance with this Erosion and Sediment Control Plan (ESCP). Refer to **Section 4** of this ESCP and to *Ballina Shire Combined Development Control Plan, Chapter 13 - Stormwater Management* to minimise the impact the development has on the surrounding environment.

4.2 Construction Water Quality

4.2.1 Objective/Target

To control soil erosion on the site and prevent sediment discharge to local water courses or road stormwater drainage systems during storm events for the construction phase of the project.

4.2.2 Performance Objectives

To avoid detrimental impact on the water quality and aquatic environment of the downstream catchment, as a result of the discharge of contaminated stormwater runoff.

To comply with the *Environmental Planning and Assessment Act 1979*, Ballina Shire Combined Development Control Plan, and with the approved Acid Sulphate Soils Management Plan.

Water discharged off site is to have a suspended solids concentration of 50 mg/L or less and a pH between 6.5 and 8.5.

To limit the application, generation and migration of toxic substances to the maximum extent practicable.

4.2.3 Control measures

All erosion and sediment control devices must be operated in accordance with the ESCP and maintained to be fully operational at all times. Worn, damaged or otherwise defective materials and components are to be repaired, refurbished or replaced as they become ineffective for their design purpose.

All contaminated surface runoff shall be directed to a treatment device to prevent sediment transport from the site. As a minimum the Contractor shall provide the temporary erosion control measures as detailed on Cardno Drawing GCE1022 - Sketch No.1, to prevent soil erosion, scouring, sediment transport and deposition. Temporary control measures may include:

- temporary sediment basins
- temporary sediment filter fences
- controls on amount of open ground
- stabilisation of stockpiles
- catch drains / perimeter bunds
- check dams

The control devices listed above and shown on the Cardno Drawing GCE1022 - Sketch No.1 are the minimum requirements. The Contractor shall install whatever measures are considered necessary to minimise the impact of construction activities on the surrounding environment.

Any stockpiles of topsoil and/or fill will be located as far away as possible from dwellings and other buildings near the site and will have perimeter sediment filter fencing installed.

Any chemicals (including lime) or fuel/oil stored on site shall be stored under cover in a bunded area or placed sufficiently above ground level to preclude contamination of surface water.

Permanent stormwater treatment measures shall be provided as soon as possible after the completion of each construction area.

All sediment control structures must be operated and maintained in an effective operational condition. These structures must not be allowed to accumulate sediment volumes in excess of 70% sediment storage design capacity. Where sediment basins are used, a marker shall be placed within the basin to show the level above which the design capacity occurs. Materials removed from sediment retention devices must be disposed of in a manner approved by Council that does not cause pollution.

4.2.4 Monitoring

If temporary sediment basins are utilised on-site as an erosion control device, then regular on-site monitoring of discharge water quality shall be required. **Table 2** provides a breakdown of monitoring to be undertaken by the contractor.

Table 2 Temporary sediment basin monitoring

Parameter	Frequency	Reporting
Suspended Solids, Non-Filterable Residue (NFR)	During discharge event (defined as >25mm in any 24 hour period) and monthly in primary sediment ponds	Non complying test results are to be notified within 24 hours to the developer.
pH	During controlled discharge events and monthly in primary sediment ponds	Non complying test results are to be notified immediately to the developer.

A self auditing program must be developed for the site. A site inspection must be undertaken by the contractor:

- at least each week
- immediately before site closure
- immediately following rainfall events that cause runoff.

The self audit must be undertaken systematically on site (e.g. walking anticlockwise from main entrance) and recording:

- installation/removal of any erosion and sediment control device
- the condition of each device employed (particularly outlet devices), noting whether it is likely to continue in an effective condition until the next self audit
- circumstances contributing to damage of any devices, accidental or otherwise
- storage capacity available in pollution control structures
- time, date, volume and type of any additional flocculants
- the volumes of sediment removed from sediment retention systems, where applicable, and the site where sediment is disposed
- maintenance or repair requirements (if any) for each device

- circumstances contributing to the damage to device
- repairs effected on erosion and pollution control devices

Signed, completed self audits, original test results, weekly and other result sheets shall be kept on site and are to be available on request to Council officers and other relevant statutory authorities. All records are to be maintained in a form suitable for Council submission.

4.2.5 Responsible Person/Organisation

The Contractor is the responsible party for all of the above items.

4.2.6 Corrective Action

Non compliance with this Stormwater Management Plan, approved drawings and conditions of consent must be dealt with immediately. If there is a breach or infringement of the plan or conditions, action will be taken consistent with the nature and seriousness of the breach or infringement. Action may include:

- re-establish control structures if they have failed
- more intensive implementation of erosion control measures in accordance with the NSW Department of Housing document: ‘*Managing Urban Stormwater – Soils and Construction (1998)*’
- issue of “stop work notice”
- notice to comply pending re-inspection of the site

Standard responses to non compliance

Table 3 outlines the responses required by the contractor for non complying monitoring test results.

Table 3 Non compliance responses

Indicator	Response	Comments
pH too low <6.5	<ul style="list-style-type: none"> • If possible stop discharge and store runoff on site • lime dose to restore to acceptable pH before further discharge • Notify Council’s Environmental and Health Services Unit of non compliant discharge (within 24 hours) 	Reporting as shown in monitoring
pH too high >8.5	<ul style="list-style-type: none"> • If possible stop discharge and store runoff on site • Dilute with other water until pH in acceptable range • re-test for compliance before further discharge 	
Suspended Solids (NFR) >50mg/litre	<p>Identify if non compliance is due to storm event greater than design storm of control devices. If so accept non compliance. If not then:-</p> <ul style="list-style-type: none"> • If possible stop discharge and store runoff on site • Use flocculation agents to lower NFR or • Pump contaminated water over grassed filter strips or buffer areas to lower NFR • Identify (by inspection and/or analysis) if non compliance is due to damage or ineffectiveness of erosion and sediment control devices. Repair or redesign/replace if necessary (or required by Council) to ensure future compliance. 	Non compliance may occur, by design, in > 3month ARI event (deemed to be 40% of the ARI one year event)

4.3 Dust Management

4.3.1 Objective/Target

To minimise dust emission onsite.

4.3.2 Performance Objectives

To achieve air quality standards through the control of the movement of dust offsite from the site works.

4.3.3 Control Measures

The minimisation of the movement of dust offsite will be achieved through the following onsite practices:

- The pre-clearing of land will be minimised. No vegetation clearing or stripping will occur in situations of high wind.
- All permanent bunds and reshaped areas will be revegetated as quickly as possible.
- Stockpiling onsite will be minimised where possible.
- An onsite water cart will be available at all times.

4.3.4 Monitoring

Visual monitoring will be undertaken throughout the construction phase. The Contractor is to ensure any dust production is kept to a minimum and that action is taken on any complaints received.

4.3.5 Reporting

The Contractor shall maintain a daily record of site conditions and the dust management measures implemented. Complaints by residents are to be recorded in a complaints register.

Dust problems will be identified by site monitoring.

4.3.6 Corrective Action

Depending on the source of the dust the following measures will be implemented:

- Apply water sprays to vegetation
- Dampen exposed areas
- Ensure all loaded trucks are covered
- Increase number of water trucks in operation
- Cease operations during periods of extreme winds