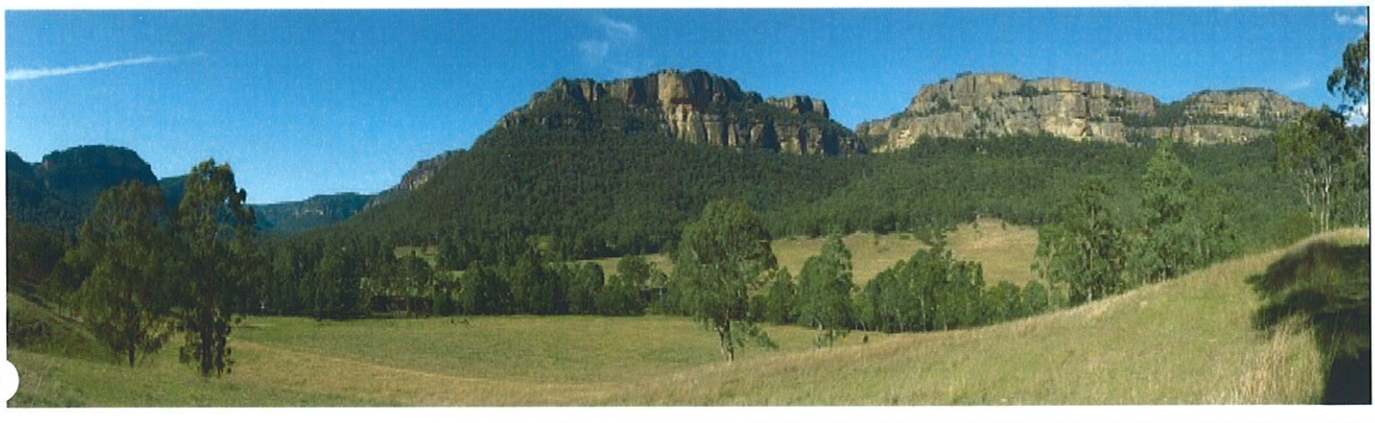

# CMP - SOIL AND WATER MANAGEMENT PLAN

EMIRATES WOLGAN VALLEY RESORT
DEVELOPMENT

Date: November 2006

a Coffey International Limited company

coffey SPECIALIST KNOWLEDGE EXTRAORDINARY OUTCOMES

Clifton Coney Group

Redefining Project Management

# SOIL AND WATER MANAGEMENT PLAN

This Soil and Water Management Plan (SWMP) has been prepared by the Project Manager, Clifton Coney Group (CCG) and the Project Civil Engineer, Taylor Thomson Whitting. The Plan addresses the requirements of the Concept Plan Conditions of Consent and the Project Particulars issued by the Minister for Planning on 12 May 2006.

## Purpose and Procedure

The purpose of the SWMP is to ensure that the impacts of construction works on the site are considered by the proponent and the Lithgow City Council and then reviewed by the Department of Planning. The SWMP must ensure that public safety is maintained at all times and that development maintains the following objectives:

- Prevent contamination of, or damage to, stormwater drains and waterways; and
- Ensure sediment from the building site is retained onsite during construction work.

## Description of the Building Works

The Emirates Wolgan Valley Resort and Spa is a tourist facility that includes a nature conservation area. The objectives of the nature conservation area are detailed in the Landscape Management Plan, which is a part of the overall Construction Management Plan. Development of the Resort includes:

- 40 villas, with an average floor area of 115m$^2$
- Ancillary facilities, including:
    - a main reception building with administration, gift shop, lounges, library, restaurant, bar and conference rooms
    - a spa building with a gym, change rooms, spa, sauna, pools and various treatment rooms;
- Staff accommodation for up to 90 people
- Workshops and vehicles maintenance area
- Associated infrastructure, including:
    - Road and internal access works
    - Utility works, including on-site sewage treatment and disposal works; and
    - A helipad
- Landscaping the site in five (5) precincts;
- Conserving the existing slab homestead and wattle and daub hut; and
- Visitor and Resort Activity Parking
- Horse stables
- Security Gatehouse
- Dam

## Duration of Construction

The preliminary construction program forecasts the following milestones:

- Award of Building Works Tender Late April 2007
- Site Establishment Early May 2007
- Construction Period of 12 months
- Practical Completion Late May 2008
- Resort Opening Late June 2008

## Site Location and Existing Use

The site is located 190km (approximately 3 hours drive) north-west of the Sydney Central Business District and The Sydney International Airport on the western escarpment of the Blue Mountains. It is 35 kilometres north of the town Lithgow, and 8 kilometres south of the former industrial town of Newnes, within the Lithgow Local Government Area.

The site is contained within the 'Wolgan Valley' which is surrounded by spectacular rock outcrops and sheer cliff faces. The Wolgan Valley borders the Gardens of Stone National Park to the north and south and the Wollemi National Park to the east. These parks form part of the Greater Blue Mountains World Heritage area. Ben Bullen State Forest is located to the west and Newnes States Forest to the south-east.

Current access to the site is via Wolgan Road at the town of Lidsdale. Wolgan Road is partially tar sealed, and generally in poor state of repair. Caution is required on the descent into the Valley due to the narrow and winding nature of the road.

The development site itself comprises a gently sloping valley floor and is currently cleared for grazing, with interspersed blue gum trees. Two intersecting watercourses (Wolgan River and Carne Creek) traverse the site. Road access is available via a single road through the narrow valley to the west.

## Civil Drawings

The Project Engineer has completed a detailed set of construction drawings and supporting guidelines for the construction and management of soil and water related facilities on the site. The Document Register, which identifies each drawing by Title and Number, is located at the conclusion of the Plan. A complete set of the drawings is contained in the Volume marked "Civil Drawings". **This plan must be read with reference to the drawings.**

In summary the drawings are as follows:

| Description | Drawing Reference |
|---|---|
| Internal Site Roads and Drainage | C00 to C12 |
| Water Storage Dam (capacity of 116 ML) | C18 |
| Internal Site Bridges | C19-C20 and C80-C81 |
| Flooding Extents Plan | C21 |
| Overall Road Layout | C22 |
| Resort and Staff Site Drainage and Access | C50 to C54 |
| Erosion and Sediment Control Measures and Methods | C56 to C58 |
| Disturbance Zone of the Proposed Development | C70 to C72 |
| Flood Analysis Report | Separate Report appended to CMP |

## Site Access, Flood Extents and Water Supply Storage Locations

Refer to Drawings C00 to C23. These plans describe the access road route to accommodate the proposed traffic loading. The design provides a stable and safe access in the event of storms up to the 100 year flood level and provide suitable access for fire fighting vehicles. The plans describe:

- The flood extent;
- The location and form of bridges;
- The location and form of the water supply storage dam.

## Resort Stormwater Management and Site Access Layout

Refer to Drawings C50 to C54. These plans detail the design measures, devices and practices to manage overland flow in a manner that minimises erosion, sediment and pollutant loads and hydrological impacts.

Development is limited inside the required 50m buffers adjacent to any waterway or wetland to act as a protection buffer for the adjacent waterway.

Fish passage will be maintained along waterways. Bridge crossings are designed to clear the stream flow zone up to the 1 in 5 year storm flood flow as a minimum.

The proposed development is planned to achieve no net increase in runoff or reduction in water quality.

## Erosion and Sediment Construction Management

Refer to Drawings C56 to C59. These plans detail construction measures and practices which when implemented will minimise potential construction impacts such as erosion and sediment transfer.

The building works contractor is required to stage the works such that the agents of erosion are minimised at any one time. Necessary measures will be adopted for erosion control, including the following requirements as outlined on the drawings:

- Staging: Staging of operations (eg. Clearing and stripping);
- Restoration: Progressive restoration of disturbed areas;
- Drains: Temporary drains and catch drains;
- Dispersal: Diversion and dispersal of concentrated flows to points where the water can pass through the site without damage;
- Spreader banks: Use spreader banks or other structures to disperse concentrated silt traps;
- Silt Traps: These must be constructed and maintained to prevent discharge of scoured material to downstream areas;
- Temporary grassing: Use grassing or other treatments to disturbed areas (eg. Contour ploughing);
- Temporary fencing.

## Stormwater Design Parameters

### General

Stormwater drainage includes all bridges, stormwater culverts, pipe work, open channels and overland flow paths.The stormwater drainage system is designed to protect all buildings, bridges and the environment from damage from stormwater and floodwater.

Stormwater drainage outlets and culverts shall be positioned to prevent water ponding outside the building or on roads or paved areas.The design will, in the event of blockage or other failure of the stormwater system, divert water from buildings entrances by providing escape over adjoining paved or ground surfaces in the manner of the major/ minor system recommended by "Australian Rainfall and Runoff".

### Design Parameters

Design the primary stormwater system to convey the 1 in 20 year Average Recurrence Interval (ARI) storm. The primary system shall consist of pipes and access pits to the requirements of Australian Rainfall and Runoff, Council and AS 3500.3. A secondary overland flow stormwater system must be defined to convey storms up to the 1 in 100 average recurrence interval storm. The secondary system shall ensure stormwater flows cannot enter buildings, maintaining the appropriate freeboard.

### Calculations

Full calculations can be provided for review as the design progresses for items such as pit catchments pits capacities, Hydraulic Grade Line calculations for the 20 year ARI storm and the 100 year ARI storm, and calculations to confirm overland flowpath capacities and the available free board at buildings.

### Landscaping

Consider the effects of trees and locate stormwater pipes so that tree roots will not effect the pipes.

## Building Works Contractor Requirements

The successful building works contractor will be required to liaise with and comply with the requirements of the Department of Environment and Conservation (Soil Conservation Service) and Lithgow City Council. The Construction Contract contains clauses, which require the Contractor to comply with these requirements and implement a responsible Environmental Management Plan. The Contractor is required to implement the works in accordance with the following controls that form part of the Civil Drawings set.

### Erosion and Sediment Control

1. All work shall be generally carried out in accordance with
   a) Local authority requirements
   b) EPA - Pollution control manual for urban stormwater
   c) Department of conservation and land management manual - 'Urban Erosion and Sediment Control'

2. Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may require to be modified. Variation to these details may require to be approved by the relevant authorities. The erosion and sediment floor plan shall be implanted and adapted to meet the varying situations as work on site progresses.

3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.

4. When storm water pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits

5. Minimise the area of site being disturbed at any one time

6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.

7. All soil and water measures are to be put back in place at the end of each working and modified to best suit site conditions.

8. Control water from upstream of the site such that it does not enter the disturbed site.

9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.

10. All vehicles leaving the site shall be cleaned and inspected before leaving.

11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.

12. Clean out all erosion and sediment control devices after each storm event.

**Sequence of Works**

1. Prior to commencement of excavation the following soil management devices must be installed.

    I. Construct site fences below the site and across all potential runoff sites
    II. Construct temporary construction entry/exit and divert runoff to suitable control systems
    III. Construct measures to divert upstream of flows into existing stormwater system.
    IV. Construct sedimentation traps/basins including outlet control and overflow
    V. Construct turf lined swales
    VI. Provide sandbag sediment traps upstream of existing pits

2. Construct geotextile filter pit surround around all proposed pits as they are constructed

3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.

4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs

**Additional Management Requirements**

The Project Manager is responsible to ensure that the Contractor implements the works in accordance with the contract including the drawings and specifications. To ensure that the Contractor is aware of his obligations, the Project Manager will hold a Contractor Start Up Meeting immediately following appointment of the Contractor.

In addition, Council's Building Inspector will regularly inspect the works. On completion of construction, the Civil Engineer will certify that the civil works are constructed in accordance with the plans and specifications.

The following checklist will be made available to the Contractor for checking prior to commencement of work on site.

## Construction Management Plan
## Element 4: Stormwater and Sediment Control

### Objectives

- Prevent contamination of, or damage to, stormwater drains and waterways.
- Ensure sediment from the building site is retained onsite during construction work.

### Required Measures

| | Stormwater and Sediment Requirements | Yes | No | N/A | Outline details | Shown on plan? |
|---|---|---|---|---|---|---|
| | **Stormwater Measures** | | | | | |
| 1 | How is stormwater to be prevented from entering adjoining properties? | | | | Provide details: | Yes / No |
| 2 | How is upslope water to be diverted to prevent it travelling through the site? | | | | Provide details: | Yes / No |
| 3 | Are down pipes to be connected as soon as any roof is installed onsite? | | | | | Yes / No |
| 4 | Specify how stormwater will be filtered before being pumped to a legal point of discharge? | | | | Provide details: | Yes / No |
| | **Excavation Work** | | | | | |
| 5 | Has the location and extent of excavations been provided in the Stormwater Plan of the site at Appendix A? | | | | Provide details: | Yes / No |
| 6 | Will the site area need to be cleared? | | | | Provide details: | Yes / No |
| 7 | Has excavation and topsoil stripping been avoided until the site is ready for construction? | | | | Provide details: | Yes / No |
| 8 | Has consent been obtained for excavations that occur within three metres of a road? | | | | Provide details: | Yes / No |
| 9 | Has consent been obtained for excavations that occur within a 45 degree angle of | | | | Provide details: | Yes / No |

| | | | | | | |
|---|---|---|---|---|---|---|
| | the road? | | | | | |
| | **Site Entries** | | | | | |
| 10 | Has the location of site entries been specified on the Plan? | | | | Provide drawing and give details: | Yes / No |
| 11 | Are the site entry and traffic routes to be stabilised? | | | | Provide details: | Yes / No |
| 12 | Are rumble grids or similar to be provided to collect mud from vehicles leaving the site? | | | | Provide drawing and give details: | Yes / No |
| 13 | Is a cleaning plan specified for rumble grids? | | | | Provide details: | Yes / No |
| 14 | Is a grated drain provided at the entrance of the site to prevent uncontrolled run-off? | | | | Provide details: | Yes / No |
| | **Drainage and Sediment Control** | | | | | |
| 15 | Will the site be properly drained to prevent site water retention that may cause structural damage to excavations or retaining walls? | | | | Provide details: | Yes / No |
| 16 | Will provisions be made to pump out any water collected at bottom of excavation sites? Will water with greater than 50mg/L of total suspended solids be pumped to the sewer with the necessary approvals? | | | | Provide details: | Yes / No |
| 17 | Have natural falls of the site and sediment controls been identified in the Stormwater Plan? | | | | Provide details: | Yes / No |
| 18 | Is there a maintenance program to replace sediment barriers when sediment controls become ineffective? | | | | Provide details: | Yes / No |
| 19 | Will drains on and near the site have sediment traps or filters around them? Will these be checked daily? | | | | Provide details: ..... ..... ..... ..... ..... | Yes / No |
| 20 | How will any loose materials such as soil, sand and gravel be managed to prevent displacement? | | | | Provide details: | Yes / No |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Washing and Clean-Up** | | | | | |
| 21 | Are vehicle wash down areas provided near site entries? Do they capture and treat water prior to discharge? | | | | Provide details: | Yes / No |
| 22 | Do wash down areas use more than 3000 litres per day of recycled water? | | | | Provide details: | Yes / No |
| 23 | Are facilities in place to enable paint brushes, rollers and spray equipment to be cleaned without discharge of by-product into stormwater systems? | | | | Provide details: | Yes / No |
| | **Vegetation** | | | | | |
| 24 | Is vegetation retained where possible to absorb water flows and minimise dust? | | | | Provide details: | Yes / No |
| 25 | Will vegetation be reinstated as soon as possible on completion of works? | | | | Provide details: | Yes / No |

I have read the Explanatory Guideline for Stormwater and Sediment Control. I am aware of the overall statutory and Council requirements and my responsibilities and obligations to such requirements.