DM & RD DOSSOR

COASTAL GROVE, LENNOX HEAD
CONSTRUCTION ENVIRONMENTAL AND WASTE
MANAGEMENT PLAN

Issue No. 2 SEPTEMBER 2006

Patterson Britton & Partners Pty Ltd consulting engineers

DM & DR DOSSOR



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1 INTRODUCTION

1.1 BACKGROUND

Patterson Britton & Partners (PBP) has been engaged to address the civil engineering and construction plan to accompany the Project Application and Environmental Assessment for the proposed 45 residential lot development of Coastal Grove at Lennox Heads as required under Part 3A of the EP & A Act. This report should be read in conjunction with the Water Cycle Management and Infrastructure Strategy reports prepared by Patterson Britton & Partners dated September 2006.

The issues addressed in this report include those raised in the Department of Planning Director General's requirements dated 15 May 2006 and those raised by various stakeholders during consultation meetings.

In accordance with the Director Generals requirements, the following agencies have been consulted in development of the infrastructure strategy for the site:-

- Department of Natural Resources (DNR);
- Department of Primary Industries (DPI);
- Northern Rivers Catchment Management Authority (NRCMA);
- Ballina Council.

Furthermore, in addition to consulting government agencies and relevant guidelines, the local community was consulted at a community information night.

The proposed development has been presented to the abovementioned group/agencies and comments from them have been considered in the formulation of the proposed development.

The Flora and Fauna Report by Peter Parker dated August 2006 has identified threatened flora either on the site or on adjoining sites which need to be protected during the construction works for the subdivision. The hairy-joint grass is located in a small area of the proposed riparian corridor and a buffer has been established (known as an ecological polygon) by Peter Parker to provide an adequate protection area. This area is depicted on **Figure 3**. The littoral rainforest is located on the southern boundary of the site while the coastal fontainea is located on the adjoining Amber Drive Reserve (refer Figure 3).

1.2 EXISTING CONDITIONS

The site is located approximately 1km south east of the Lennox Head town centre, as shown on **Figure 1.1**.

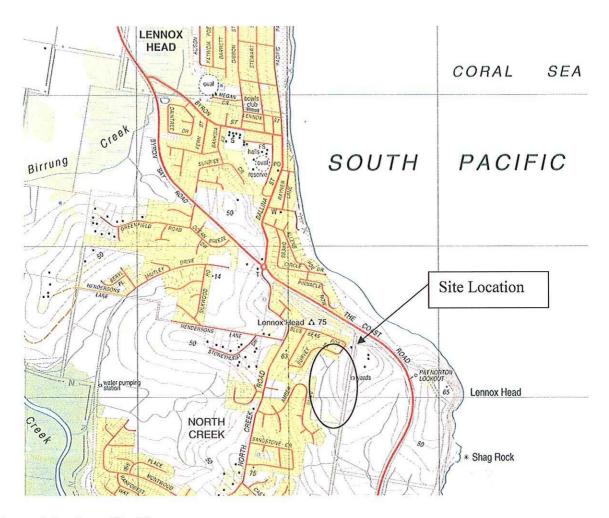


Figure 1.1 - Locality Plan

The total site area is approximately 14.7ha, comprising 10ha of developable land including residential and open space areas with the remaining portion containing the escarpment to the Coast Road.

The site generally slopes from north to south, where a natural drainage gully has formed. In its existing condition the 10ha of developable land was used as low level grazing land. As such, most of the significant vegetation has been cleared.

The area along the Coast Road escarpment would not be developed under this application. The area of existing rainforest trees along the southern boundary would also not be developed as part of this application.

An aerial photograph of the site has been included at the rear of this document to provide an understanding of the sites existing condition.

1.3 PROPOSED CONSTRUCTION

It is proposed to subdivide the site into residential lots of various sizes and construct necessary infrastructure to service them *(refer Figure 1)*. This project application and environmental assessment relates to the construction of the following items:-

- Internal access roads (*approximately 1,200m*) linking the site with Survey Street and Blue Seas Parade;
- Stormwater management infrastructure including pipe drainage, stormwater quality and stormwater quantity facilities (refer Water Cycle Management report by Patterson Britton & Partners);
- Spring water interception trenches;
- Utilities infrastructure (power, telecommunications, potable water, recycled water and sewer)
- Road crossing of the existing drainage corridor (culvert); and
- Pedestrian/cycleway with a crossing of the existing drainage corridor.

The internal access roads have been designed to minimise the amount of cut and fill required. Due to the relatively steep slope on some parts of the site it will be necessary to have retaining walls at the boundary of the road reserve and some lots. These retaining walls would be constructed of black rock to match existing retaining walls in the area.

2 PROPOSED CONSTRUCTION METHODS

2.1 CONSTRUCTION STAGING

The subdivision is relatively small and does not warrant staging of its construction. The construction sequence would be:-

- Peg the location of the 'ecological polygon' in the drainage corridor;
- Install the erosion and sediment control measures;
- Excavate Road 1 and place sub grade;
- Repeat for Roads 2 & 3;
- Install drainage and other services;
- Install culvert across drainage corridor;
- Upgrade external sewer infrastructure;
- Apply first seal to roads;
- Construct road verges, swales and raingardens;
- Landscape open space and construct pedestrian/cycleway;
- Establish riparian corridor; and
- Final seal to roads.

2.2 EARTHWORKS

Excavation will be required for the roads, services and stormwater trenches, swales and raingardens. The extent of works is detailed on **Drawings 6324-01-01**, **6324-01-02** and **6324-02-01 to 6324-02-13**. Where possible, fill will be reused onsite. It is anticipated that approximately 5,000m³ of excess excavated sediment would need to be disposed offsite to an approved landfill site.

Clay is located at relatively shallow depths across the site and it is expected that all bulk earthworks would be undertaken by a medium sized bulldozers (*D6 or similar*). An excavator and dump trucks would be used to transport fill around the site. It is expected that a 12 tonne excavator or similar would be utilised in the construction of the proposed stormwater basin and for the construction of water and sewer infrastructure.

2.3 ROAD CONSTRUCTION

It is expected that boxing out of the proposed road would be completed by a medium sized bulldozer (D6 or similar). Road base and sub-base material would be supplied to the site by dump truck and spread by grader. Compaction of road base material would be undertaken using a roller compacter.

Laying of the asphaltic wearing course would then be completed by an asphalt paving machine. The wearing course would then be rolled to achieve the finished surface.

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2.4 SERVICES

Internal reticulation of services would generally be within the road reserve where possible however, in certain locations trenching within lots and across the existing drainage line would be required to provide sewer, trench drains and interallotment drainage. The water (*potable and recycled*) and sewer layout plans are shown on **Figures 1** and **2**.

3 ENVIRONMENTAL MANAGEMENT MEASURES

Various management measures to minimise the risk of environmental impacts would be adopted during the construction phase of the development. The proposed environmental management measures are detailed below.

3.1 THREATENED FLORA

The three areas containing threatened flow consist of the littoral rainforest on the southern boundary, the coastal fontainea in Amber Drive Reserve and the hairy-joint grass in the ecological polygon.

Access of runoff or machinery from the construction area for the proposed subdivision to the littoral rainforest and Amber Drive Reserve would be blocked by fences and mounds. It is relatively straight forward to alleviate construction impacts on these two areas (*refer Figure 3*).

The hairy-joint grass is located on the bank of the existing drainage corridor. Any direct impact of construction on this grass would be avoided by implementation of physical barriers as detailed in **Figure 3**. No works are proposed within the ecological polygon other than for weeding and planting. Works in the drainage corridor upstream of the grass would be limited to the culvert crossing, one rock bar and scour protection at structures. Further localised sediment and erosion control measures would be implemented to minimise the potential for impacts on runoff water quality which may indirectly affect the grass. Any indirect impacts due to runoff water quality are likely to be low risk given the runoff the grass would have experienced from the existing residential development around the site. The sewer and pedestrian/cycleway crossing of the drainage corridor has been located downstream of the grass to minimise the potential adverse impacts due to runoff during the construction works.

The proposed measures would mitigate against any significant adverse impacts during the subdivision construction on the threatened flora and the downstream water quality.

3.2 WATER CONSERVATION

Throughout the construction period, water would be sprayed over disturbed areas to suppress dust. It is expected that a 5,000L to 10,000L water cart would be used for this purpose. The disturbed area would be kept to a minimum to minimise the volume of water required for dust suppression.

3.3 AIR QUALITY

Dust blown from dry disturbed areas has the potential to adversely impact on adjoining residents. The extent of area disturbed at any one time would be minimised and sediment and erosion control measures would be implemented as required in "The Blue Book" (refer Section 3.3). A water cart would be utilised to suppress dust on disturbed areas. It is expected that by suppressing dust during the construction phase that air pollution from the site would be minimised and not adversely impact on adjoining residents.

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Machinery used during the construction period would be required to meet government air quality guidelines for exhaust generation. Therefore, pollution from machinery is not expected to impact significantly on air pollution in the area nor on local residents.

3.4 RECEIVING WATER QUALITY

During the construction period, stormwater runoff from the site would have the potential to carry exposed soil particles offsite. However, the adoption of erosion and sediment control measures outlined in the Department of Housing's "Blue Book" would reduce the potential for adverse impacts on receiving water quality during construction of the subdivision. The erosion and sediment control measures to be adopted for the site are detailed in **Section 4** of this report.

3.5 HAZARDOUS MATERIAL STORAGE

Bunding, in accordance with DEC requirements, around any fuels, chemicals and wastes stored on site during construction would be provided for containment in the event of any spills. This would alleviate the potential for adverse environmental impacts on the site and adjoining land due to accidental spills of hazardous materials.

3.6 NOISE

Noise associated with the construction of the project will be principally associated with material deliveries and the operation of machinery. Work will be carried out in accordance with the provisions of the Noise Control Act 1975 and DEC guidelines for control of construction site noise. Work would only be undertaken between 7:00am and 5:00pm Monday to Friday, and between 7:00am and 1:00pm Saturdays. No work shall be undertaken on Sundays or public holidays. With these controls there would not be significant adverse impacts on the noise amenity of local residents.

3.7 TRAFFIC

The site is located at the end of Survey Street, Lennox Head. The additional traffic generated by construction workers and the delivery of machines and materials is not expected to significantly impact on the existing traffic flows or the existing residents in the area.

Parking for construction workers would be provided on the site.

Signage would be erected to notify local residents of the construction work.