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2010/AF 166

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M.G L2458

Memorandum

BELLINGEN SHIRE COUNCIL
16 NOV 2010
*

Date: 15/11/10

To: The General Manager -

Address: Bellingen Shire Council
Bellingen

Attention: Melanie Green

From: Denis Atkinson

Project Name:

Transmitted by:

- ☐ Mail
- ☐ Courier
- ☑ Hand
- ☐ Collected
- ☐

Job No: 08024

Remarks: Re: DA No 2010/138 - 383 Waterfall Way Fernmount.

Further to Councils letter and subsequent email from Melanie Green we provide the attached reports from Enginuity Design Pty Ltd. Car parking for cabins 6 & 7 would be on the relevant contour to provide level pedestrian access to the cabins. Parking for cabin 18 would be between and behind cabins 12 & 13 to allow level access to cabin 18.

Yours faithfully

Authorised :

Enginuity Design Pty Ltd

Civil and Environmental Engineering Consultants

ACN 104 355 606 ABN 73 104 355 606

169 Plantation Road
P.O Box 107
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Phone 02 6655 0141
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enginuity.design@bigpond.com

Denis Atkinson Planning
PO Box 247
BELLINGEN NSW 2454

J/N : 28123

11th November 2010

Attention : Mr Denis Atkinson

Dear Denis

Perrys Tourist Development – Waterfall Way, Fernmount
Additional Information on Proposed Access Roads

Introduction

A Development Application has been submitted to Bellingen Council by Denis Atkinson Planning for a proposed tourist development at 383 Waterfall Way, Fernmount, comprising 18 cabins, a conference centre, and ancillary works.

Council has requested additional information on the proposed access roads for the development, including:

- Extent of earthworks required for the access roads;
- Proposed method for crossing the gully with the bushfire trail.

Enginuity Design has prepared this additional information, as requested by Denis Atkinson Planning.

Description of Access Roads

The proposed onsite access for the tourist development will comprise:

- 550 metres of access road from Waterfall Way to the conference centre;
- Two cul-de-sacs serving the two clusters of holiday cabins; and
- A bushfire trail linking the two cul-de-sac heads.

The proposed width of the access road and cul-de-sacs will be 6.5 metres wide with 1.0 metre shoulders on either side, so as to comply with the requirements of the *Bushfire Hazard Assessment Report*. The width of the proposed fire trail will be 2.7 metres wide.

Earthworks Requirements for Access Roads

The proposed access roads will primarily follow the ridgelines of the hills within the property. An existing farm track has been previously constructed along these ridges.

Due to the main access road being generally located along the ridgeline, the access road can be constructed with negligible cut and fill requirements and, hence, earthworks will be minimal.

The cul-de-sacs generally run straight down the hillslopes to service the cabins, rather than across the slopes of the hill. This will also ensure that there are negligible cut and fill requirements and, hence, earthworks for the cul-de-sacs will be similarly minimal.

The bushfire trail joins the cul-de-sac heads, and runs across the lower sidelopes. However, the bushfire trail is only narrow (i.e. 2.7 metre width) and, hence, only limited cut and fill earthworks will be required to construct the trail.

In summary, it is considered that the earthworks requirements for the access roads associated with the development are minimal. This is due to the careful placement of the access roads within the site, so construction can be easily carried out without significant and expensive earthworks being incurred.

Gully Crossing for Bushfire Trail

The bushfire trail will cross the gully immediately downslope of the conference centre.

It is proposed to install a 375 mm piped culvert for the crossing of the gully. This will enable the unimpeded flow of water down the gully to the low-lying backplain area.

I trust I have satisfactorily addressed your immediate requirements regarding these issues. If you have any further queries, please do not hesitate to contact me on (02) 6655 0141.

Yours faithfully

Richard Green
Project Engineer

Enginuity Design Pty Ltd

Civil and Environmental Engineering Consultants

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Denis Atkinson Planning
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J/N : 28123

10th November 2010

Attention : Mr Denis Atkinson

Dear Denis

Perrys Tourist Development – Waterfall Way, Fernmount
Additional Information on Proposed Dam Enlargement

Introduction

A Development Application has been submitted to Bellingen Council by Denis Atkinson Planning for a proposed tourist development at 383 Waterfall Way, Fernmount, comprising 18 cabins, a conference centre, and ancillary works.

The enlargement of an existing onsite dam was included as part of the proposed development. Council has requested additional information on the proposed enlargement of the dam, including:

- More detail on the design of the dam, including works to be carried out;
- An assessment on the potential acid sulfate soil (ASS) impacts from undertaking the works on the dam; and
- A cross-section drawing of the dam.

Enginuity Design has prepared this additional information, as requested by Denis Atkinson Planning.

Description of Existing Dam

A small existing dam is located immediately north-east of Cabin 5 within the proposed tourist development.

The dam is located where the toe of the drainage line (between the spur ridges) discharges onto the broad low-lying backplain area associated with Connells Creek. The dam is fed both by surface water runoff from the immediate catchment (which discharges into the drainage line), and by a small seepage spring at the toe of drainage line.

The existing dam has been formed by excavating material from the backplain area, and using the material to create a low dam wall of about 0.5 metre height. The dam is approximately 250 m^2 in area, with an estimated standing water depth of 1.0 metre and freeboard of 0.5 metre.

Description of Proposed Dam

It is proposed to enlarge the existing dam by forming a new higher dam wall 15 – 20 metres to the east of the existing dam. The new dam wall would be approximately 1.5 metres in height, and would be formed by excavating up to 2.0 metre depth of insitu backplain material within the new dam area. The finished area of the dam is estimated to be less than 2000 m^2, with a standing water depth of approximately 3.0 metres, and a freeboard of 0.5 metres.

A cross-section profile of the dam is provided in the attached figure.

Field Investigation

Richard Green from Enginuity Design visited the site on Wednesday 10/11/2010 to assess the underlying soil profile within the enlarged dam area.

Due to recent rain, a machine (e.g. backhoe) was not able to access the area, as it was waterlogged. Instead a hand auger was used to drill a borehole and assess the soil profile.

The borehole was augered approximately 10 metres to the east of the existing dam wall, on the low-lying, flat backplain area, equidistant from the ridge spurs on either side of the backplain. This location was considered to be just inside the proposed dam wall, and suitable for providing an indication on whether there was likely to be ASS at the dam site.

The soil profile logged comprised:

• 0 – 300 mm	Black silty topsoil – vegetative matter (from grasses), saturated
• 300 – 700 mm	Dark grey clayey silt – saturated
• 700 – 1400 mm	Grey silty clay with yellow mottles – wet, soft
• 1400 – 1800 mm	Light grey silty clay with orange-red mottles – moist and stiff, with moisture decreasing and stiffness increasing with depth; some quartz gravel (< 1cm diameter) encountered at 1500 mm and 1800 mm depth

Due to the increasing stiffness of the clay with depth, and the quartz gravel encountered at 1800 mm depth, the hand auger was rejected and the borehole could not be drilled to greater depths.

The soil type encountered between 1400 and 1800 mm was typical of the deeper clays found on the lower slopes of the Pine Creek Soil Landscape Unit. The overlying soils between 300 and 1400 mm appeared to be colluvial deposits associated with the hillwash from the adjoining hills.

No actual or potential ASS were intersected in the borehole.

Soil Landscape Units

Review of the *Soil Landscape Mapping for Dorrigo (DLWC, 1996)* shows:

- The low-lying backplain areas at the site are mapped as the Charlemont Soil Landscape Unit;
- The adjoining hills are mapped as the Pine Creek Soil Landscape Unit.

The Charlemont Soil Landscape Unit comprises the broad low-lying swamps on the floodplains and backplains along intertidal reaches of the Bellinger River and its tributaries. The topography is defined as low-lying level to slightly undulating swamp and backplain, with occasional drainage lines. The soils comprise Holocene peats, muds and clayey alluvium, overlying Holocene and Pleistocene fluvial and estuarine muds and clays.

Acid sulfate soils associated with marine / estuarine deposits can be encountered within the Charlemont Soil Landscape Unit. These ASS are an olive black mottled silty clay, typically found at depth (> 2.0 metres) within the deeper profiled areas of the backplains and backswamps.

The Pine Creek Soil Landscape Unit comprises rolling low hills to hills formed from the slates and siltstones of the Nambucca Beds. The soils typically comprise Brown Earths, Yellow Earths, Brown Podzolics and Yellow Podzolics formed from the weathering of the phyllite bedrock.

Discussion on Soil Landscapes

The proposed enlarged dam will be located on the fringe of the backplain, where the backplain adjoins the toe of the surrounding low hills.

The backplain area at the subject dam site is a finger of the main floodplain associated with Connells Creek. The backplain finger has formed between the two spur ridges which run in an easterly direction towards Connells Creek, away from the main north-south ridgeline of the local hills.

The soils associated with the backplain areas (i.e. the Charlemont Soil Landscape Unit) are more recently deposited materials, which have been placed and built up over the older underlying landscape associated with the adjoining hills (i.e. the Charlemont backplain soils have been deposited and formed over the ancient creeks and gullies of the older Pine Creek Soil Landscape Unit).

In particular, where the backplain areas are located close to the adjoining hills, the Pine Creek soil types can be found relatively close to the surface, having been buried by only a shallow depth of backplain soils. Under these circumstances, the backplain soils are more typically associated with colluvial hillwash from the adjoining hills, rather than the deeper estuarine deposits which may be associated with ASS.

The soil profile logged during the recently drilled borehole within the enlarged dam area confirmed that the Pine Creek soil types are located relatively close to the surface (approx 1.4 metre) in the dam area, implying that the backplain soils at this location are both shallow and colluvial in nature and, hence, unlikely to be associated with ASS (which are found where the backplain soil profile is significantly deeper).

Risk of ASS

Based on the assessment of the site topography at the location of the proposed enlarged dam, and as confirmed by the soil profile of the recently drilled borehole at the dam site, it is considered unlikely that ASS are located within the extents of the proposed enlarged dam.

In addition, the proposed limited depth of excavation (< 2.0 metres) to form the dam will also minimise any potential exposure of ASS, if they do happen to occur at the subject location.

The risk of ASS exposure from the construction of the enlarged dam is therefore considered negligible.

Mitigation Measures

Although ASS are not expected to be encountered at the subject dam site, the following mitigation measures are proposed as a precautionary measure, in case ASS do happen to be intersected:

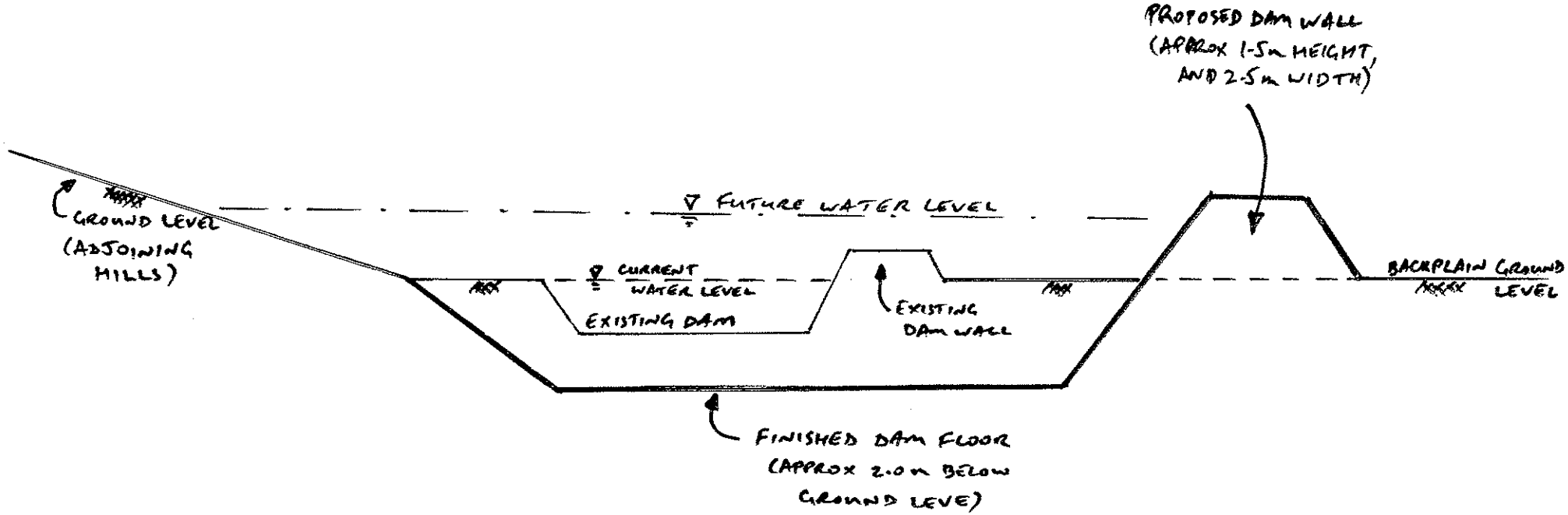
- Excavation works on the dam are to cease if ASS are encountered;
- A detailed assessment, comprising boreholes and/or test pits is to be carried out to determine the areal extent and depth of the ASS;
- Depending on the quantities of ASS found, the project engineer will resolve whether to:
  - Cease excavating any deeper (and hence not disturb or expose the ASS); or
  - Continue with the excavation of the dam floor, but suitably treat and dispose any exposed ASS on site, in accordance with standard practises (e.g. line treatment within a bunded area, until neutralisation is completed, and then spreading the treated soils thinly over pastured areas).

I trust I have satisfactorily addressed your immediate requirements regarding the construction of the enlarged dam. If you have any further queries, please do not hesitate to contact me on (02) 6655 0141.

Yours faithfully

Richard Green
Project Engineer

Attached : Figure of dam cross-section



PERRYS TOURIST DEVELOPMENT

PROPOSED DAM ENLARGEMENT

TYPICAL CROSS-SECTION

All communications to be addressed to:

Headquarters
15 Carter Street
Lidcombe NSW 2141

Headquarters
Locked Bag 17
Granville NSW 2142

Telephone: 8741 5175
Facsimile: 8741 5433
e-mail: development.assessment@rfs.nsw.gov.au

The General Manager
Bellingen Shire Council
PO Box 117
Bellingen NSW 2454

Your Ref: 2010/DA-138
Our Ref: D10/1390
DA10080371561 MM
ID:71561/65949/5

ATTENTION: Ms Melanie Green

24 November 2010

Dear Ms Green

Integrated Development for A//184353 383 Waterfall Way Fernmount 2454

I refer to your letter dated 26 July 2010 seeking general terms of approval for the above Integrated Development in accordance with Section 91 of the 'Environmental Planning and Assessment Act 1979'.

This response is to be deemed a bush fire safety authority as required under section 100B of the 'Rural Fires Act 1997' and is issued subject to the following numbered conditions:

Asset Protection Zones

The intent of measures is to provide sufficient space and maintain reduced fuel loads so as to ensure radiant heat levels of buildings are below critical limits and to prevent direct flame contact with a building. To achieve this, the following conditions shall apply:

1. At the commencement of building works and in perpetuity Asset Protection Zones are to be provided in accordance with the plan prepared by REG Walters & Partners, referenced 08106-01 dated 08.12.08 and shall be managed as outlined within section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'.

2. At the commencement of building works and in perpetuity the areas identified as 'Remnant Regrowth Scrub to be Managed as APZ Rainforest & Feature Landscaping' identified on the plan prepared by REG Walters & Partners, referenced 08106-01 dated 08.12.08 are to be managed as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'.

3. At the commencement of building works and in perpetuity a 10 metre Asset Protection Zone is to be established around proposed Cabins 2, 3, 4, 5, 6, 7, 15, 16, 17 and 18 and shall be managed as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'.

Water and Utilites

The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building. To achieve this, the following conditions shall apply:

4. Water, electricity and gas are to comply with sections 4.1.3 and 4.2.7 of 'Planning for Bush Fire Protection 2006'.

Access

The intent of measures for internal roads is to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area. To achieve this, the following conditions shall apply:

5. Internal roads shall comply with section 4.2.7 of Planning for Bush Fire Protection 2006 with the exception that a 6.5 metre carriageway within an 8 metre wide road corridor is considered acceptable.

Evacuation and Emergency Management

The intent of measures is to provide suitable emergency and evacuation (and relocation) arrangements for occupants of special fire protection purpose developments. To achieve this, the following conditions shall apply:

6. Arrangements for emergency and evacuation are to comply with section 4.2.7 of 'Planning for Bush Fire Protection 2006'.

7. A mechanism for the closure of the facility or offsite relocation of occupants on days of a total fire ban or adverse fire activity is to be provided.

Design and Construction

The intent of measures is that buildings are designed and constructed to withstand the potential impacts of bush fire attack. To achieve this, the following conditions shall apply:

8. New construction on proposed Cabins 1, 2, 3, 6, 16, 17 and 18 shall comply with section 5 (BAL 12.5) Australian Standard AS3959-2009 'Construction of buildings in bush fire-prone areas' and section A3.7 Addendum Appendix 3 of 'Planning for Bush Fire Protection'.

9. New construction on proposed Cabins 8, 9, 10 and 15 shall comply with section 6 (BAL 19) Australian Standard AS3959-2009 'Construction of buildings in bush fire-prone areas' and section A3.7 Addendum Appendix 3 of 'Planning for Bush Fire Protection'.

10. New construction on proposed Cabins 11, 12, 13, 14 and the Conference Centre shall comply with section 7 (BAL 29) Australian Standard AS3959-2009 'Construction of buildings in bush fire-prone areas' and section A3.7 Addendum Appendix 3 of 'Planning for Bush Fire Protection'.

General Advice – consent authority to note

This BFSA is based on the expert advice of Steve Ellis as detailed in the Bushfire Hazard Assessment Report dated 19.12.2008 and the additional information dated 02.10.2010 and is issued on the provision that the application is for an Eco-toursim development and that the Eco Certification Program preprared by Tanya Perry dated August 2010 will be implemented once the development begins operation.

For any queries regarding this correspondence please contact Michael Murrell on 8741 5175.

Yours sincerely

Corey Shackleton
A/Team Leader Development Assessment and Planning

The RFS has made getting information easier. For general information on 'Planning for Bush Fire Protection, 2006' , visit the RFS web page at www.rfs.nsw.gov.au and search under 'Planning for Bush Fire Protection, 2006'.