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Addendum to Flooding Assessment

MP06_0034

Preferred Project Report

Department of Planning issue no.5

Proposed Tourist and Commercial Development Goodnight Island and Greenwell Point

P0601331JC14_v1
June 2009

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



INTRODUCTION

Martens & Associates Pty Ltd (Martens) were briefed to respond to key issue number 5, in the Department of Planning (DoP) report (dated 17 December, 2008) for the proposed Tourist and Commercial Development at Goodnight Island and Greenwell Point.

This report will form part of the Preferred Project Report (PPR) as an addendum to the Flooding Risk Management Plan (FRMP - P0601331JR07_v3, August 2007) carried out by Martens.

A review was conducted by WMA Water (WMA) on behalf of DoP, of the FRMP. In light of that review, DoP requested the following additional information in relation to flooding and evacuation on Goodnight Island and 76 & 84 Greenwell Point Rd:

- 1. The proponent must demonstrate that there is no significant increase in the total population isolated at Greenwell Point during floods and thereby increasing the existing burden on the SES.*
- 2. The existing house at 84 Greenwell Point Rd must have its habitable floor at or above the FPL.*
- 3. All basement car parks must be protected from inundation until at least the FPL and preferably to a higher level with an alternative access available should inundation occur.*
- 4. The proposed earthen bund at 84 Greenwell Point is an unacceptable form of flood protection as it can be relatively easily modified or eroded.*
- 5. The use of flood proof doors at 76 Greenwell Point Rd is not failsafe. For a new development the risk of inundation must be 'designed out' and not rely upon implementation of measures during an actual flood.*
- 6. Any evacuation strategy (from basement car parks or from Greenwell Point itself) cannot be relied upon as a damage minimisation strategy due to the lack of adequate warning time.*
- 7. The use of an evacuation plan or flood awareness program is supported, however these measures cannot be relied upon to reduce the level of flood risk or flood damages.*
- 8. The proponent needs to demonstrate how a proposed boat access area at Greenwell Point and at Orient Point, for use in flood evacuation, can be achieved on land outside its ownership.*
- 9. The proponent needs to demonstrate that the proposed boat access from Goodnight Island during a flood can be relied upon. An alternative is to develop a strategy that relies upon not evacuating from the Island during a flood.*

10. The proponent needs to provide further details regarding the definition of high hazard flood areas and the appropriateness of the proposed development in flood liable areas.

11. The proponent has not considered the possible impact of climate change on flood levels...impact on climate change provided'

Discussions have been conducted with WMA Water (Richard Dewar) regarding the above points. Subsequently, our response is provided in the following sections.

Point 1:

Greenwell Point maintains a population of approximately 1,300 permanent residents (ABS census data, 2006), although the site is subject to intensive tourism, notably during the summer months. The village is also a centre for employment in the fishing and oyster farming industry. Whilst no ABS data are available for the increase in tourist population, discussion with local residents anecdotally suggest that 40% population growth occurs in summer due to tourism (short and long term). Peak population in summer is therefore around 1,820 persons.

It is worth noting that during flood periods, communities at Orient Point and Culburra Beach are also potentially isolated for 1-2 days during a 1% AEP flood event. These villages maintain permanent populations of 3,400 (ABS Census, 2006), with summer populations estimated to be 4,800. Total population serviced by the SES during a 1% AEP flood event during peak periods is therefore around 6,600 people. At 100% capacity, which could occur during summer peak periods, the 76 and 84 Greenwell Point Rd and Goodnight Island developments could increase temporary population by approximately 150 people. This represents an increase of 2.3%. Our comments on this are as follows:

- The percentage increase is very small and will not result in an unreasonable increase in burden to the SES.
- The increased population will not be residential. All will be essentially visitors that will be managed by trained staff at the resort sites. This means that in the event of an evacuation is required, resort staff will provide responsible management and co-ordination in the event of an evacuation, or provide the decision to stay if evacuation not possible or required (see Point 6 below).
- All guests will be provided with flood evacuation information during their induction to the resort sites.
- During a 1% flood, Greenwell Point and Goodnight Island will not need to be evacuated. There will be adequate high ground and supplies to ensure guests do not need to evacuate.
- All resort sites will be staffed by persons trained in first aid to ensure basic medical assistance can be provided to all guests should this be required.

- All resort sites maintain access by boat from the river if such access is required.

In summary, it is clear that the resort sites will not be a drain on SES services. In fact, the reverse is likely to be true, given that the Greenwell Point sites in particular, provide a place of refuge and food for the local community should this need arise. There is likely to be a neutral impact on the SES burden in the local area if the resort is built.

Point 2:

The existing house is not part of the development proposal. Subsequently, changes to the existing habitable floor level are not warranted.

Point 3:

Previous FPL was 3.7 mAHD. This has been increased by 600mm to 4.3 mAHD to account for sea level rise. New plans have been prepared which show all entrances to basement carparks are protected from inundation up to the FPL. Refer to the revised plans (plan numbers 2006-01 | MP05C-MP07C and 2006-01 | MP13C) provided by the projects architects.

Point 4:

Earthen bund has been removed from the development proposal as it is no longer required as a form of flood protection.

Point 5:

Flood proof doors have been removed from the proposal as they are no longer required as a form of flood protection. All basement carpark entrances are above the FPL of 4.3 mAHD.

Point 6:

All resort sites are located above the 1% AEP FPL (which includes 500mm freeboard and 600mm sea level rise allowance). There is no need to evacuate any buildings during a flood. 1 week's supply of food and medical provisions will be provided at the resort for use during flood events.

Point 7:

Point 7 in the DoP letter is commentary. This has been rectified in point 3 above.

Point 8:

During a flood event, boat access is achieved on land outside the ownership of the applicant in various ways including, for example:

- 1) Public wharf on Orient Point.
- 2) Public wharf at Greenwell Point.

These are noted on Figure 1, below.

Figure 1: Aerial showing location of public wharfs in relation to Goodnight Island.

It is noted that wharves should not be used as an egress / access point during times of high wind or large swell. Consequently, it is proposed that patrons and staff of the island will stay on the Island during times of significant flooding (see point 9 below).

Point 9:

During a significant flood, it is recommended that patrons and staff on Goodnight Island stay on the Island until flood waters recede. Emergency provisions for the duration of a flood (minimum 1 week supply) are to be stored on the Island in case of flood. We note there is no need to evacuate during a flood and that the 1% AEP flood has duration of < 3 days (Lower Shoalhaven Flood Study). We note that during a flood there will be little inconvenience to guests at the resort.

Point 10:

High hydraulic hazard areas are defined as having a VD product > 0.4 or depth of flow >1.0m. All other areas below the 1% AEP flood level are considered low hazard. Reference to the Lower Shoalhaven River Flood Study (1990) shows the area around 76 to 84 Greenwell Point Rd will have velocities of 0.1 - 0.59m/s during the 1% AEP flood event. For the purposes of VD assessment, we have assumed 0.5m/s across the entire site.

Figure 2 shows low and high hazard areas with respect to the proposed development and existing site conditions. We note that all building entry points are above the FPL.

Point 11:

New plans are provided (plan numbers 2006-01 | MP05C-MP07C and 2006-01 | MP13C) that comply with the FPL which has been raised by 600mm to account for climate change.



Martens & Associates Pty Ltd ABN 85 070 240 890

Environment | Water | Wastewater | Geotechnical | Civil | Management

Drawn:	JSF
Approved:	DMM
Date:	16 / 06 / 2009
Scale:	N/A

Site Aerial Showing Location of Public Wharfs in relation to Goodnight Island

Drawing No:

FIGURE 1

Job No: P0601331

Martens & Associates Pty Ltd ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	JSF	Site Aerial Showing Flood Hazard Areas	Drawing No:
Approved:	DMM		FIGURE 2
Date:	16 / 06 / 2009		
Scale:	N/A		Job No: P0601331