Proposed Subdivision 610 Seaham Road, Nelsons Plains

Flood Access Study

Portree Park Pty Ltd

Revision: 1
Version Date: 18 December 2018

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Revision	Description	Author		Review		Approved	
1	Original Issue	SH	26.11.18	SH	26.11.18	SH	18.12.18

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1. Background

This flood access study is to support a planning proposal to rezone Lot 1 on DP 1191203 from RU1 Primary Production to R5 Large Lot Residential, refer Figure 1.

The rezoning proposal, if approved, will permit the subdivision of the parent lot into approximately 58 rural lifestyle lots of minimum area 5,000m^2, refer Figure 2 for a concept plan.

The site is not identified in the Port Stephens Flood Hazard Map 2016 as having a flood hazard, however, it is noted that clause B5.3 of the PSDCP 2014 suggests the following for *All (Flood) hazard categories:*

> *New residential development on land which becomes an island during a flood event must provide flood refuge.*

Notwithstanding that the site is not in a land identified as having a flood hazard category, Council has indicated a merit-based principle that flood access to the site should be considered at the rezoning stage to confirm any future requirements.

2. Site Description

The subject land is Lot 1 on DP 1191203, known as 610 Seaham Road, Nelsons Plains. It is generally elevated from the surrounding land, lying at a crest on Seaham Road. Adjacent land to the east has direct river frontage with the Williams River, approximately 7 river km upstream of the Hunter River Confluence. The adjacent floodplain is also in the zone of influence of the Hunter River.

Vegetation is sparse commensurate with its former grazing use. The northern boundary of the site is adjoined by existing rural lifestyle lots of Sophia Jane Drive.

Primary access to the site will be off Seaham Road. While the site is not affected by flooding, it is noted that Seaham Road connects to the wider road network at low points at the Brandy Hill Drive intersection, a low point on Hinton Road and the Hunter River Floodplain further to the south of the site.

Council has noted that these low points may render access to the site impassable in times of peak flood.

3. Available data

The following available information was utilised in the preparation of this study:

- Williams River Flood Study Report BMT WBM 2009
- Port Stephens Flood Hazard Maps 2016
- PSLEP 2013
- PSDCP 2014
- Site Survey and proposed Development layout –LeMotte Group
- Survey of intersection of Seaham Road and Brandy Hill Drive, Delfs Lascelles Surveyors

§ NSW Floodplain Development Manual 2005.

4. Flood environment

The available information was reviewed to determine flood extents and time of inundation, refer Figure 3. The following information is pertinent:

§ The intersection of Brandy Hill Drive and Seaham road is inundated in a to a depth of 200mm in a 2% AEP event, and 600mm in a 1% AEP event.

§ Figure L1 of the Floodplain Development Manual indicates that vehicles may become unstable at a depth of 300mm for floodwaters at 0 m/s velocity.

§ Based on hydrographs reported for Raymond Terrace, the response time of the catchment is around 2 days. (It takes 2 days from the start of rise of the river to reach peak flood levels).

§ Similarly, time of inundation is around 2 days. It is noted that the 1978 flood event exhibited two, two-day peaks approximately 1 day apart.

§ Small areas on the site are affected by the Probable Maximum Flood (PMF), however, for the development pattern shown, no single individual lot would be wholly inundated in the PMF.

5. Discussion

The site is not affected by the 1% AEP flood, however the principles of flood risk management as outlined in the Floodplain Development Manual 2005 indicate that the full extent of flood risk should be managed. This means up to and including the PMF but differing responses are appropriate for different flood conditions.

5.1 Risk to property

Generally, risk to property is managed up to the flood planning event, which is normally the 1% AEP event. The full extent of the site is above the 1% AEP flood line of 4.8m AHD and accordingly, risk to property is inherently managed and no further discussion is required.

5.2 Risk to life

Part of the site is affected by the PMF flood level of 9.8m AHD (refer Figs 2 and 3) and risk to life is generally considered up to the PMF. It is noted that the site would become isolated (an island) in the PMF flood.

The Floodplain Development Manual Risk provides a number of strategies to manage risk to life, principally, evacuation ***or*** on-site refuge.

It is acknowledged that on site refuge is the preferred management strategy for small catchments with small response times and associated fast rates of rise where warning times

are likely to be short or non-existent. It is also noted that the Port Stephens DCP provides only for onsite refuge where land becomes an island during a flood event. In the case of the site where a very rare event (rarer than 2% AEP) would "cause the land to become an island" there are a number of mitigating circumstances:

- The Williams River catchment is substantially large with an associated long response time and therefore adequate warning time exists to permit evacuation prior to the site being cut off.
- Where residents choose to stay (against the advice of the emergency response agency), there is sufficient land on the site to provide on site refuge on flood free ground that incorporates convenient access which:
  - is a route that is fail safe, plainly evident and self directing
  - is situated above the PMF
  - can cater for the number of persons that could reasonably be expected to be on site
  - by its nature is able to withstand hydraulic loading due to flood events up to the PMF

  Emergency lighting would normally apply to short term on site refuge associated with buildings. In the case of the site, should power be cut off in a flood event, emergency lighting could be provided by the (potentially hundreds of) vehicles that would likely be trapped on the site as well.
- Further, separate and specialised constructed on-site refuge would not be required as future buildings would be flood free in the PMF and would therefore provide inherent flood refuge.

6. Conclusion

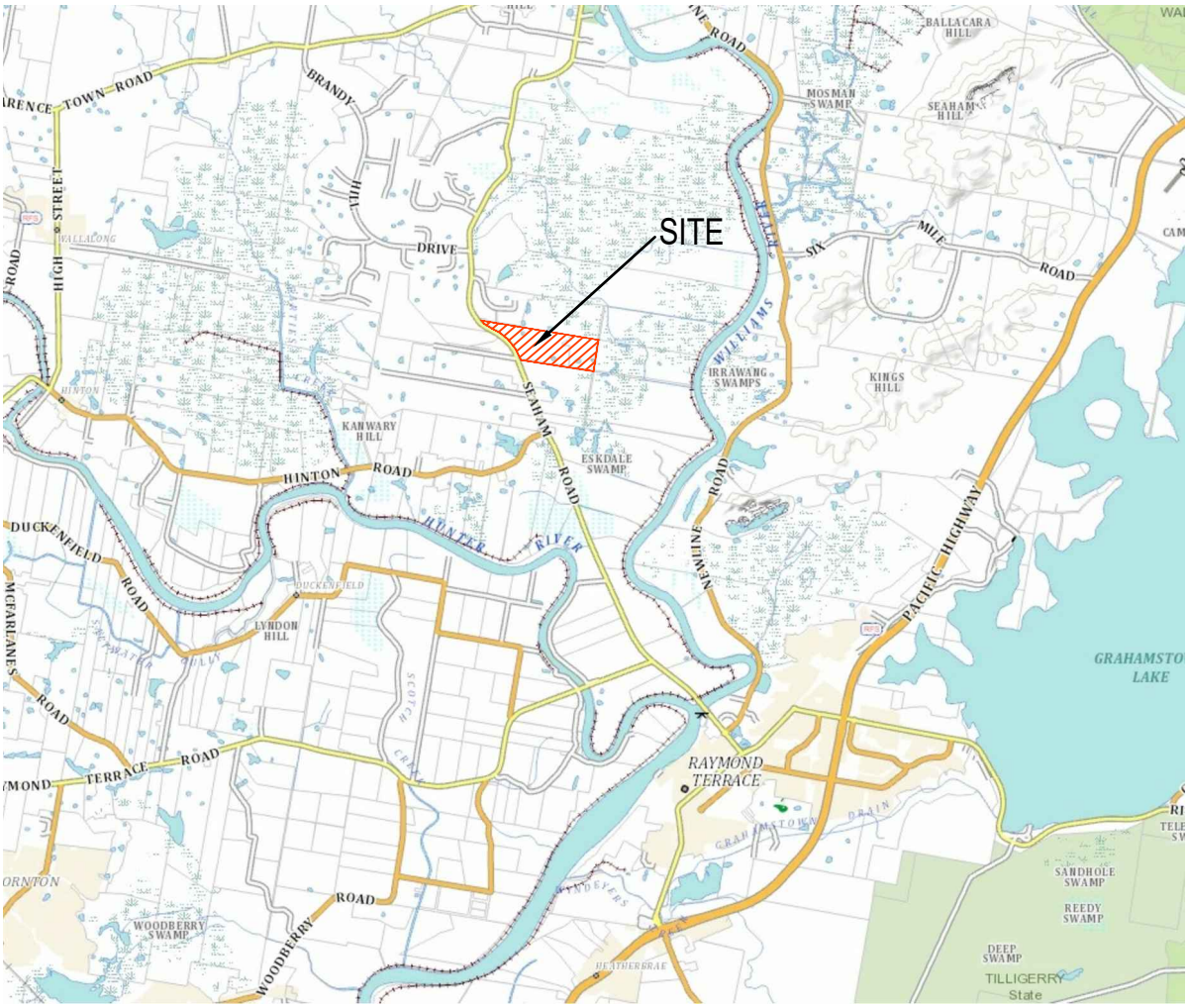
Flood risk for large lot residential development can be appropriately managed within the strategic guidelines provided by the Stage Government in the Floodplain Development Manual 2000.

Approval of the planning proposal is recommended.

Figures

Client: PORTREE PARK PTY LTD
Project: FLOOD ACCESS STUDY
Location: 610 SEAHAM ROAD, NELSONS PLAINS

DWG REF: 18312C dF01 r1 DATE: 23.11.18



NOT TO SCALE

LOCALITY PLAN

FIGURE 1

SEAHAM

NOONGAH ROAD

ROAD

PMF EXTENT
9.8m AHD

Number	Radius	Arc Length
51	15	23.56
52	68.5	37.14
53	68.5	34.46
54	15	23.56
55	51.5	53.83
56	6	9.425
57	6	9.425
58	68.5	52.255
59	51.5	39.285

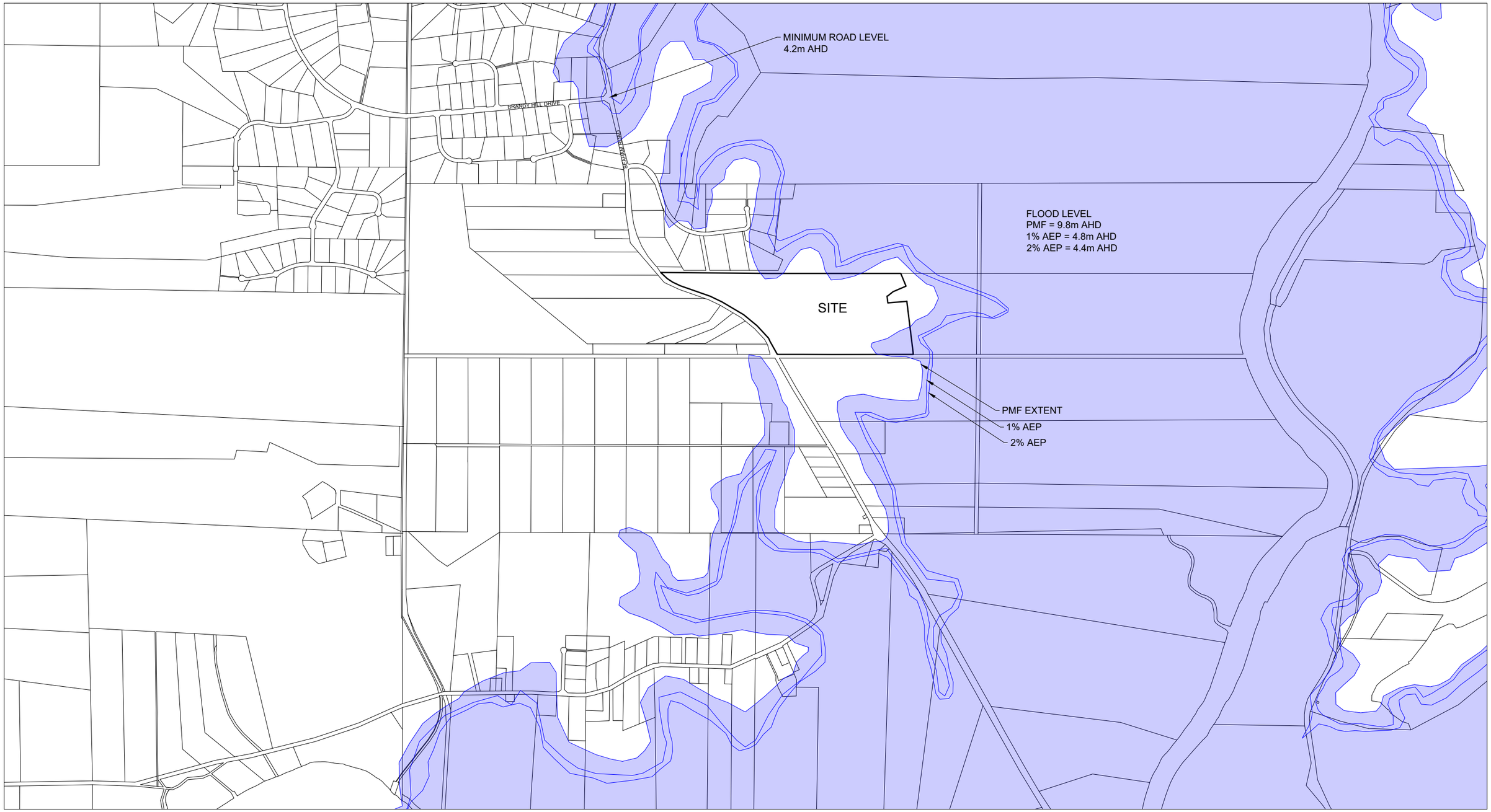
BUILDING SITE
(MIN 760m²)

(A) RIGHT OF ACCESS 8 WIDE (DP 1191203)
(B) EASEMENT FOR ELECTRICITY PURPOSES 10 WIDE (DP 1191203)
(C) EASEMENT TO DRAIN WATER VARIABLE WIDTH (DP 1191203)
(D) EASEMENT FOR WATER SUPPLY OVER EXISTING

FIGURE 2
SITE PLAN

1:5000 0 100 200 300m

DWG REF: 18312C dF02 r1 DATE: 23.11.18



LEGEND

BMT FLOOD STUDY IDENTIFIED PMF FLOOD EXTENT

FIGURE 3
FLOOD EXTENTS

1:20000 0 400 800 1200m

DWG REF: 18312C dF03 r1 DATE: 5.12.18