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Our Ref: LFA18020_ TSA RFI response
Your Ref: TSA-RFI-000104

28 February 2019

TO: Susan Folliott TSA
C/Andrew Thompson

Email: Andrew.Thompson@greencap.com.au

ATT: Susan Folliott & Andrew Thompson

Response to TSA-RFI-000104 - Request for additional information DPE

DPE has raised a number of points concerning the bushfire report prescriptions. These are discussed as follows:

DPE Comment:
The bushfire report states that a 50m APZ would be needed. The building maintains a 67m APZ on the northern side. The submitted documentation identifies a maximum setback of 43 metres from the main hospital building to the western boundary of adjoining lot 3 DP 828298.

Response:

Figure 4. The Project Site and surrounding landuse. The vegetation of concern is the Swamp Sclerophyll Forest to the north of the Project Site this vegetation is considered the hazardous vegetation and is classified as Forested Wetland -- Coastal Swamp Forest

Figure A. Extract from Fig. 4 of the Bushfire Assessment Report

The Bushfire Assessment Report, follows the prescriptions of both PBP 2006 and the Pre- Release PBP 2018 and identifies the vegetation considered to be the classified hazard (refer to Fig. 4 in the Bushfire Assessment Report as reproduced in Fig. A). The land immediately west of the site was assessed as 'Rural- Managed Vegetation'; this applies to the commercial nursery on Lot 6 DP 727425 and the cleared portions of Lot 3 DP828298 immediately to the west of the hospital site.

The remainder and vegetated portion of Lot 3 DP828298 was classified as the Hazard (as shown in Fig. A). APZs are accordingly not required from the land considered "managed". To date, the RFS have not disagreed with this assessment. The Bushfire Assessment Report does not prescribe anywhere that an APZ of 43m has been proposed on the north-western side adjoining mapped vegetation. The report states that '*A 50m wide setback (APZ) from the classified vegetation edge within the Project Site to the proposed building (or buildings) will be required as shown in Fig. 5. This APZ has been reflected in the Masterplan design shown on Appendix A*.' In addition, provision was also made to accommodate a 67m wide APZ. The 43m setback identify by DPE is simply the setback that has been implemented by the team designing the hospital, but is not an APZ. The following Fig. B shows the implementation of the 50 and 67m APZ in respect to the identified hazard. It can be seen in Fig. B that ample allowance was made in the consideration of what constitutes the hazard and that the neighbouring land to the north west corner of the hospital is cleared and has been cleared since at least 2003. This point will be discussed in more detail as follows.

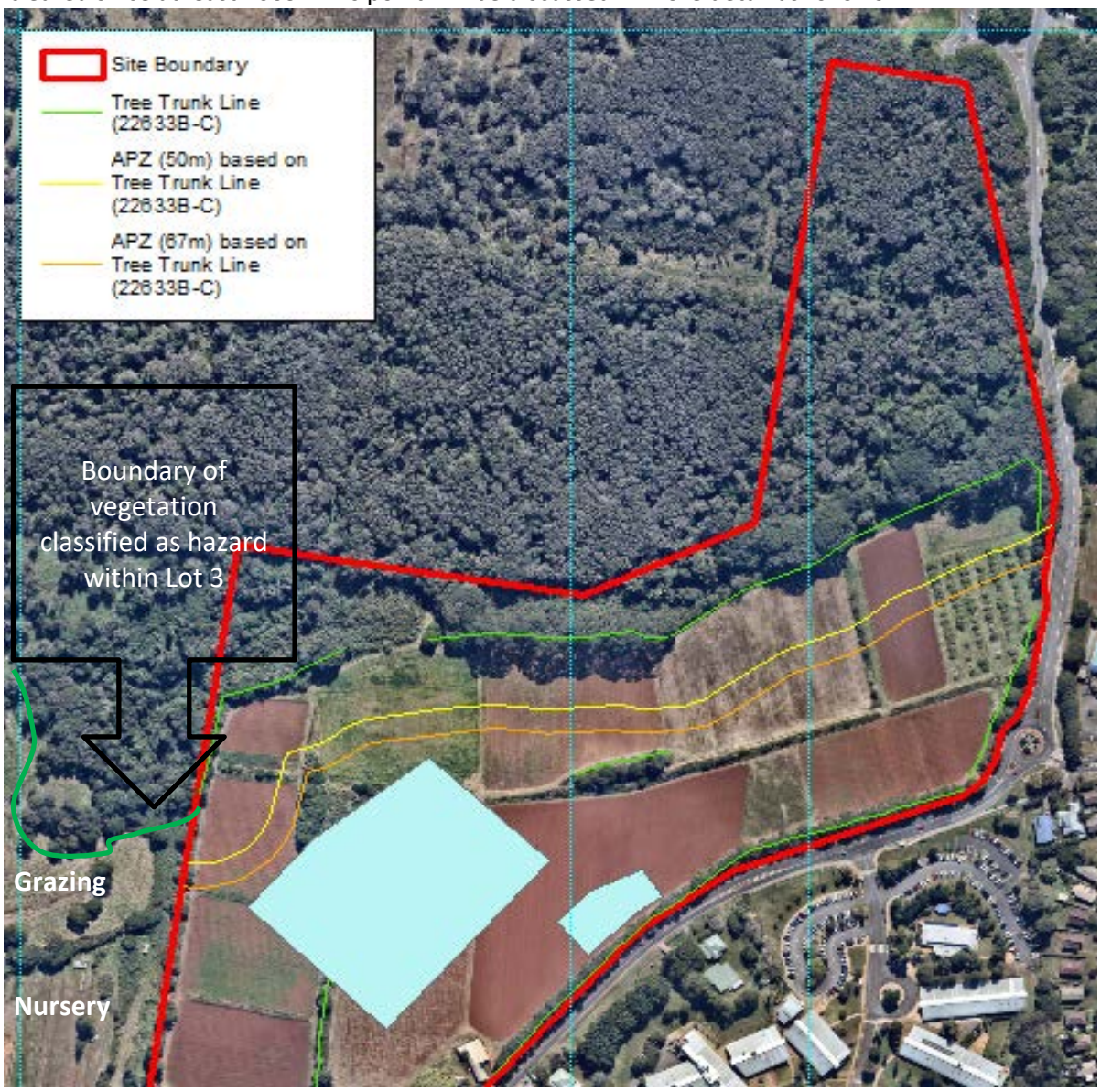


Figure B. Implementation of the 50 and 67m APZ in respect to the identified hazard, which includes the vegetated portion of Lot 3, while the cleared portion of Lot 3 where considered as 'rural managed vegetation'

DPE Comment:

The vegetation on adjoining lot 3 to the north-west is part mapped Coastal Wetlands under the Coastal Management SEPP and it could be considered as an unmanaged wetlands vegetation formation (if revegetated in the future).

Response:

Appendix C of Tweed Valley Hospital Agricultural Impact Assessment identifies the land on Lot 3 DP828298 as 'Grazing modified pasture' and Lot 3 DP828298 is included in the Cudgen Plateau - State Significant Farmland (see Fig. C extracted from Appendix C). Similarly, Lot 3 DP828298 is mapped as Strategic Agricultural Land Map -Sheet STA_057 (source: State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007).

Figure C. Extract from Appendix C of Tweed Valley Hospital Agricultural Impact Assessment- The whole of Lot 3 landuse is deemed to be 'Grazing modified pasture'

Notably Lot 3 DP828298 has been predominantly cleared since at least 2003 and has remained as such until this day, and the clearing pre-dates gazetting of the current Coastal SEPP layer on this lot. (The previously gazetted SEPP14 mapping dated 13/3/2000 did not occur at all on this lot or the hospital lot. In fact the Coastal SEPP layer in question only became gazetted on this lot and the hospital site on the 3/4/2018). Historical evidence of the clearing on Lot 3 sourced from Google Earth is detailed in Appendix A.

Based on Tweed Shire Council LEP mapping, Lot 3 DP828298 includes zones under both the TLEP 2000 and TLEP 2014, with a large area noted as 'defer' and no zone identified for this area under either LEP. The mapping as shown on Fig. D shows the zones or deferred matters applicable to this lot (light blue boundary).

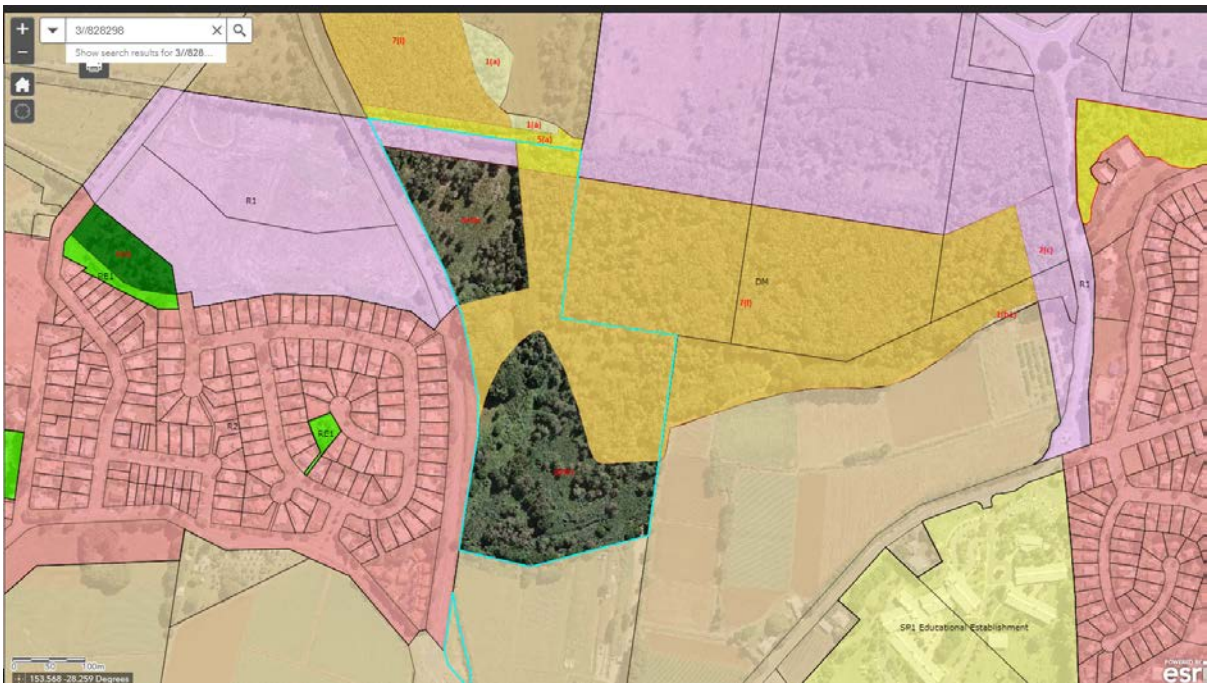


Figure D. TLEP 2000

- 7(l) Environmental Protection (Habitat)
- 5(a) Special Uses (Drainage Reserve)
- 'Defer'.

TLEP 2014

- R1 General Residential
- DM (Deferred Matter)

Figure E. Tweed council mapping also shows the south eastern and south western portions of Lot 3 (light blue boundary) as 'Farmland Protection project'

Additionally, the Tweed Council Shire (TSC) mapping identifies the south eastern and south western portions of Lot 3 DP828298 as 'Farmland Protection project' as shown on Fig. E (the lot in question is bound by light blue line). In subsequent layer this same portion of the site (i.e. Farmland Protection) is deemed as 'Arable land suitable for regular cultivation of crops'. Given this information, it would be unreasonable to assume that this land would change from its current land use.

Despite the fact that the land may be mapped as Coastal SEPP (since April 2018), current mapping (eg. TSC mapping shown on Fig. E, Appendix C of Tweed Valley Hospital Agricultural Impact Assessment shown on Fig. C) as well as the clearing history (refer to Appendix A) indicates that Lot 3 is identified for rural agriculture and the landuse is accordingly identified as grazing/cultivation.

In fact the site has been used for broadscale agricultural for many years and this use would be protected under the existing use rights provisions of the EP&A Act notwithstanding the introduction of the Coastal SEPP and/or any new future zoning of the site that may seek to prohibit broadscale agriculture.

In summary, the evidence that is available to date indicates that the portion of the Lot 3 DP828298 immediately west of the hospital site is cleared, and current and future land use are identified as grazing/ cropping. However, the vegetated portion of the Lot 3 DP828298 was correctly identified as the potential Hazard and appropriate APZs prescribed in the Bushfire Assessment report.

If all of Lot 3 DP828298 were to be revegetated to Forested Wetlands as opposed to the current rural landuse where it is currently cleared, it would also increase the bushfire hazard to the existing subdivision immediately adjacent to the west of the Coastal SEPP area. In addition, it would have an impact on the Hospital building footprint by pushing the required APZ further south along the western boundary. This impact is shown on Fig. F (refer to Fig. B for comparison).

Figure F. Showing impact of hospital building footprint if APZ is extend to account for potential revegetation of the cleared portions of Lot 3

DPE comments:
RFS have advised that the proposed development should be designed so that entry or exit point to the hospital building, including service delivery areas, are not exposed to more than 10k/W of radiant heat exposure.

Response:
The bushfire report states what the internal access road requirements should be (refer to s. 3.2.2) and provided the following summary statement:

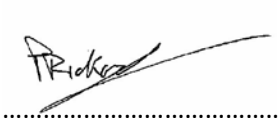
> As part of the SSD Stage 2, the proposed hospital design will need to demonstrate compliance with the measures prescribed in Table 1 and the applicable guidance principles. Nevertheless, it is purported that internal access arrangements for the hospital as shown on the Masterplan (Appendix A) provides for the following:
>
> - several entry and exit points
> - all internal roads are two-wheel drive, sealed, all-weather roads
> - roads are predominantly through roads
>
> Accordingly, final design should be able comply with intent of measures, which is:
> ***To provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area.***

Thus a detailed assessment of whether 'entry or exit point to the hospital building, including service delivery areas, are not exposed to more than 10kW of radiant heat exposure' has not yet been undertaken. The masterplan does not provide distances or dimensions to be able to undertake this assessment. Nevertheless, neither entry or exit points as shown on the master plan currently, would be exposed to more than 10 kW/m^2 of radiant heat exposure as the south western and eastern

entry/exit points are respectively ~280m and ~165m away from the hazard (even if Lot 3 DP828298 were to be revegetated to Forested Wetlands).

The only unknown component in regard to the RFS comment is the proposed location of the service delivery areas. A service yard is identified on the masterplan, which would appear to be impacted if the land on Lot 3 DP828298 immediately to the west (currently cleared and used for grazing or the like) were to be revegetated to Forested Wetlands. We have not been provided with the distance between the service yard and the western boundary. However, using the Newcastle Consulting Bushfire Attack Calculator a distance of 49 m from the western boundary to the western side of the service yard would be required to achieve no more that more than 10kW (i.e. 9.95 kW/m^2) of radiant heat exposure. The Calculator report, which also provides calculations for the entry/exit point is reproduced on Appendix B.

Regards,



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Paola Rickard
Senior Environmental Planner/ Project Manager
LFA Managing Partner

Appendix A - Google Earth Historical Aerials

The following images, sourced from Google Earth from 2008 to 2017, document the clearing history pertinent to Lot 3 DP828298 (approximated boundary of lot represented by white dashed line).


16.12.2012
Write a description for your map.
Legend
Feature 1
Google Earth
100 m
N


07.11.2013
Write a description for your map.
Legend
Feature 1
Google Earth
100 m
N


22.07.2014
Write a description for your map.
Legend
Feature 1
Google Earth
100 m
N


01.06.2015
Write a description for your map.
Legend
Feature 1
Google Earth
100 m
N


18.07.2017
Write a description for your map.
Legend
Feature 1
Google Earth
100 m
N

Appendix B - Newcastle Consulting Bushfire Attack Calculator

NBC Bushfire Attack Assessment Report V2.1

AS3959 (2009) Appendix B - Detailed Method 2

Printed: 25/02/2019 **Assessment Date:** 20/09/2018

Site Street Address:	771 Cudgen Road, Cudgen		
Assessor:	Mr Admin; admin		
Local Government Area:	Tweed	**Alpine Area:**	No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description: North to eastern entry

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	25	**Overall Fuel Load(t/ha):**	35

Site Information

Site Slope:	13 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	165

Fire Inputs

Veg./Flame Width(m):	100	**Flame Temp(K)**	1090

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	80

Program Outputs

Category of Attack:	VERY LOW	**Peak Elevation of Receiver(m):**	0
Level of Construction:	BAL LOW	**Fire Intensity(kW/m):**	43400
Radiant Heat(kW/m2):	1.07	**Flame Angle (degrees):**	97
Flame Length(m):	19.8	**Maximum View Factor:**	0.021
Rate Of Spread (km/h):	2.4	**Inner Protection Area(m):**	130
Transmissivity:	0.68	**Outer Protection Area(m):**	35

Run Description: North west to SW entry

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	25	**Overall Fuel Load(t/ha):**	35

Site Information

Site Slope:	13 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	280

Fire Inputs

Veg./Flame Width(m):	100	**Flame Temp(K)**	1090

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	80

Program Outputs

Category of Attack:	VERY LOW	**Peak Elevation of Receiver(m):**	0
Level of Construction:	BAL LOW	**Fire Intensity(kW/m):**	43400
Radiant Heat(kW/m2):	0.38	**Flame Angle (degrees):**	99
Flame Length(m):	19.8	**Maximum View Factor:**	0.007
Rate Of Spread (km/h):	2.4	**Inner Protection Area(m):**	220
Transmissivity:	0.668	**Outer Protection Area(m):**	60

Run Description: west to service yard

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	25	**Overall Fuel Load(t/ha):**	35

Site Information

Site Slope:	13 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	49

Fire Inputs

Veg./Flame Width(m):	100	**Flame Temp(K)**	1090

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	80

Program Outputs

Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	0
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	43400
Radiant Heat(kW/m2):	9.54	**Flame Angle (degrees):**	87
Flame Length(m):	19.8	**Maximum View Factor:**	0.163
Rate Of Spread (km/h):	2.4	**Inner Protection Area(m):**	35
Transmissivity:	0.77	**Outer Protection Area(m):**	14