NARRABRI FISH FARM - AQUACULTURE, CAFE, AMENITIES BLOCK, CAMPING GROUND & FARM STAY DEVELOPMENT

261 TUPPIARI ROAD, JACKS CREEK - LOT 4324 IN DP814332

DEVELOPMENT APPLICATION

BUSHFIRE ASSESSMENT REPORT

DATE: MARCH 2020

PREPARED FOR:
Narrabri Fish Farm

PREPARED BY:
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This Statement of Environmental Effects report has been prepared by our office to accompany a council application. To the best of our knowledge, the content of this statement is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
APZ	ASSET PROTECTION ZONE
AS3959:2018	CONSTRUCTION OF BUILDINGS IN BUSHFIRE PRONE AREAS
BAL	BUSHFIRE ATTACK LEVEL
EP&A ACT	ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1997
FFDI	FIRE DANGER INDEX
GUIDELINE	*NSW RURAL FIRE SERVICE, NOVEMBER 2019, PLANNING FOR BUSH FIRE PROTECTION: A GUIDE FOR COUNCIL, PLANNERS, FIRE AUTHORITIES AND DEVELOPERS, NSW RURAL FIRE SERVICE*.
IPA	INNER PROTECTION AREA
LGA	LOCAL GOVERNMENT AREA
NCC	NATIONAL CONSTRUCTION CODE
RF ACT	RURAL FIRE ACT
SFPP	SPECIAL FIRE PROTECTION PURPOSE DEVELOPMENT

1. INTRODUCTION

A development application has been lodged with Narrabri Shire Council for a staged development which includes addition and alteration to the hatchery, creation of a primitive camping area, installation of farm stay accommodation cabins, addition and alterations to the Fish on Café, construction of a new amenities block and addition and alteration to barbecue and picnic area on Lot 4324 in DP814332. The property is known as Narrabri Fish Farm, 261 Tuppiari Road, Jacks Creek. The majority of the property is utilised for aquaculture with an area of native woodland vegetation around the development site. The subject site has a total area of approximately 100 hectares.

The subject site has been identified as Bushfire Prone Land in the Narrabri LGA.

The purpose of this report is to assess the bushfire risk to the proposed development and to determine the required bushfire protection measures for the development, while having regard to the development potential, site characteristics and protection of the environment. This report draws on the requirements of the NSW Rural Fire Service outlined in the following publication:

NSW Rural Fire Service, November 2019, Planning for bush fire protection: A guide for Council, Planners, Fire Authorities and Developers, NSW Rural Fire Service.

This document is hereby referred to in this report as **the guideline**. The proposed development is considered to be a special fire protection purpose development as defined by this guideline.

1.1 PROPERTY DESCRIPTION AND TYPE OF DEVELOPMENT

Application Name:	Rick & Sharmaine Cunningham
Property Address:	261 Tuppiari Road, Jacks Creek
Local Government Area:	Narrabri
Title Description:	Lot 4324 in DP814332
Zoning:	RU1 Primary Production
Type of Development:	The proposed development has six parts described as follows: <u>STAGE 1</u> Construction of a new amenities block; and <u>STAGE 2</u> Addition and alterations to the Fish on Café; <u>STAGE 3</u> Additions and alterations to the hatchery building; Creation of a primitive camping area; Placement of transportable Cabins for accommodation; Addition and alterations to the BBQ and picnic area. Plans attached to this report describe the proposed development.

1.2 SUBJECT SITE:

As outlined in section 1 of this report, the subject site is in the Jack's Creek locality. The property is approximately 9.3 kilometres south of Narrabri and approximately 25 kilometres North West of Baan Baa.
Figure 1 shows the property in context with the surrounding area.

Figure 1: Property Context

1.3 GENERAL SITE DESCRIPTION

The subject site is utilised for primary production purposes as a aquaculture fish breeding farm. There are a number of existing structures on the property along with outbuildings and farm infrastructure. The infrastructure area is located on the edge of a woodland forest area. Access to the property is via Tuppiari Road. There is no change to the existing access arrangements as part of this development.

2. LEGAL FRAMEWORK

The proposed development site has been mapped a bushfire prone land in Narrabri Shire. **Figure 2** shows the proposed development areas on the bushfire map for this site.

The Environmental Planning and Assessment Act 1997 (EP&A Act) and the Rural Fires Act (RF Act) provides the legal framework for development assessments in NSW. The planning for bushfire protection guideline provides the foundation for the application of bush fire protection measures which are appropriate to the bush fire hazard at a site. Development on land which is mapped as bushfire prone is integrated development and requires the consent of the Rural Fire Service.

Any building work on bushfire prone land must comply with the National Construction Code (NCC) and *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas, or the National Association of Steel framed housing (2014) Steel framed construction in Bushfire Prone Areas.*

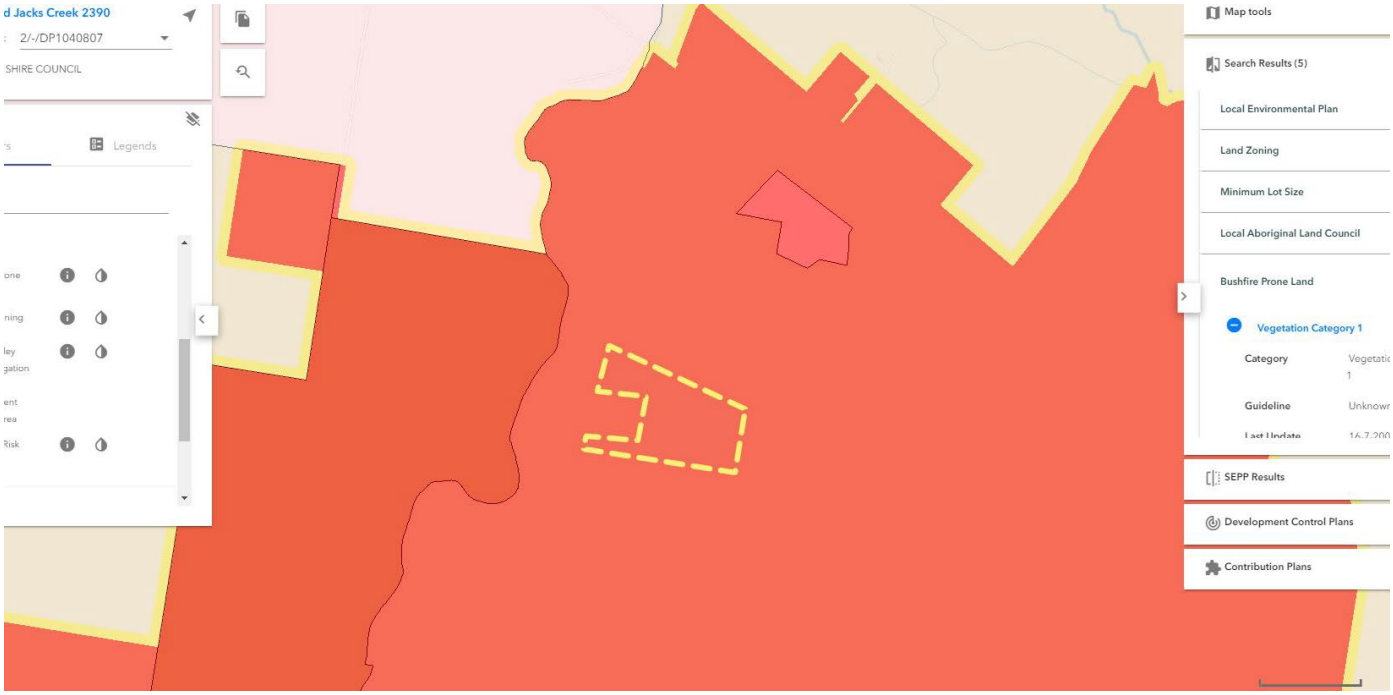

Figure 2: Bushfire Prone Land Mapping (EPlanning)

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development can be described in six components over three stages being:

Stage 1:
Construction of a new amenities block;

Stage 2:
Addition and alterations to the Fish on Café;

Stage 3:
Additions and alterations to the hatchery building;
Creation of a primitive camping area;
Placement of two transportable Cabins for farm stay accommodation;
Addition and alterations to the BBQ and picnic area

Plans of the development are appended to this report.

Figure 3 shows the location of each of the above mentioned components of the development within the site.

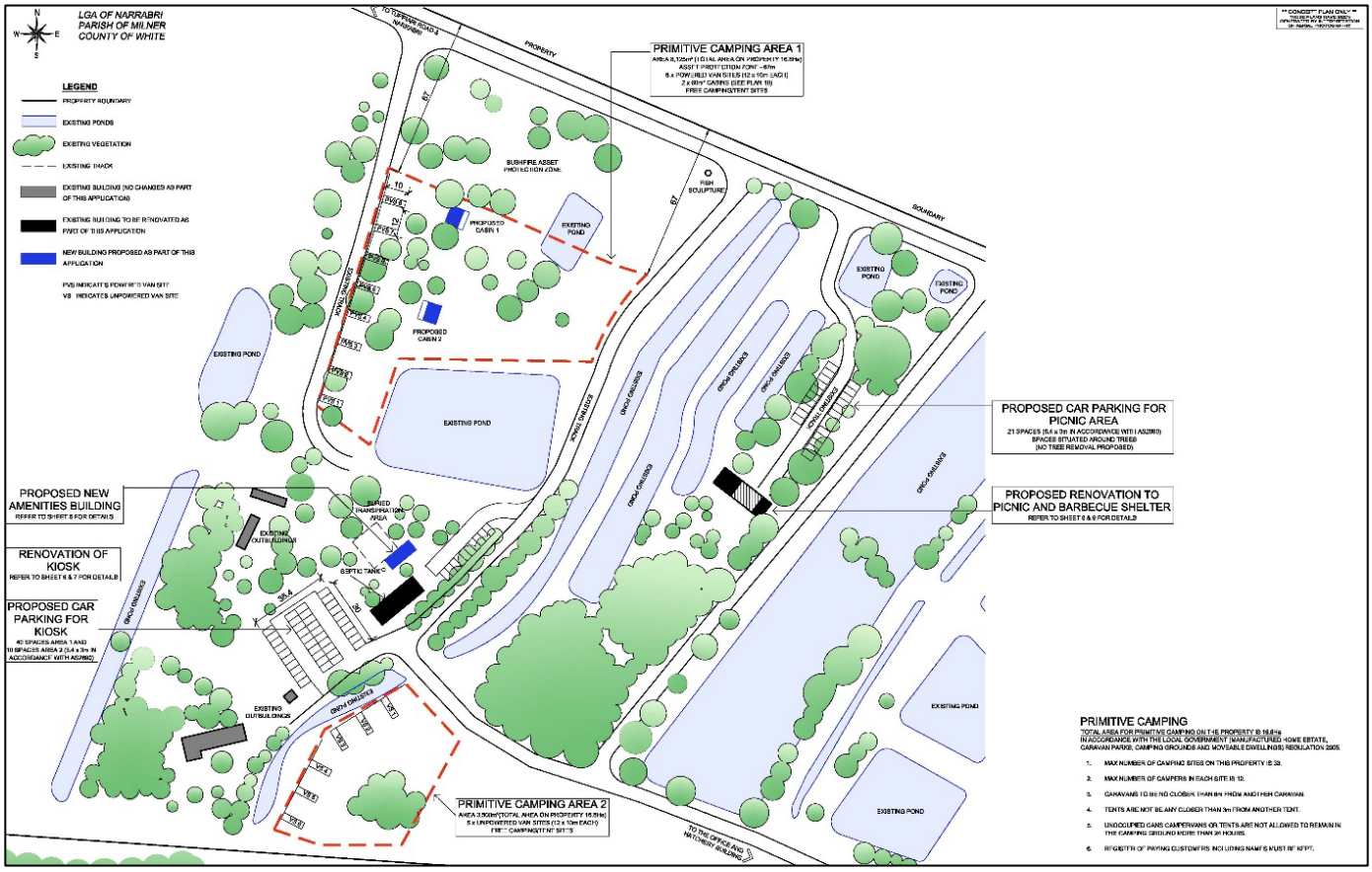

Figure 3: Proposed Development Plans

The proposed development is considered to be a special fire protection purpose development (SFPP) as outlined in the guideline.

3.1 THREATENED SPECIES

We are not aware of any detailed flora and fauna studies that have been carried out on the site. The vegetation assessment for the site identified PCT 398 on the subject site which is not associated with any threated ecological communities.

There are no requirements for this development under the Biodiversity Conservation Act.

3.2 ABORIGINAL OBJECTS OR PLACES

As part of the statement of environmental effects a search of the Office of Heritage and Environment Aboriginal Heritage Information Management System (AHIMS) for Lot 4324 in DP814332 has shown that there are no aboriginal sites recorded in or near the above location.

4. BUSHFIRE THREAT ASSESSMENT

This assessment applies to the proposed development outlined in section 3 of this report and the whole of the property described as the subject site in section 1.1 of this report. It also applies to the area 140 metres beyond the property boundary in accordance with the guideline as this surrounding land might contribute to a potential bushfire risk at the site.

The assessment includes review of the slope of the site and existing vegetation cover around the infrastructure and development area to calculate the required asset protection zone.

The site is located in agricultural land in the Jack's Creek locality. Part of the property contains dry sclerophyll forest and the remainder of the property is utilised for Aquaculture with a number of water dams on the site. Topographic mapping in **Figure 5** illustrates the slope and terrain of the site.

The document planning for Bush Fire Protection, 2019 defines bush fire prone area as:

"an area of land that can support bush fire or is likely to be subject to bush fire attack, as designated on a bushfire prone land map."

The dry sclerophyll Forest vegetation on and adjoining the site warrants bush fire attack consideration.

In accordance with the guidelines this report aims to provide recommendations to minimise impacts on property from the threat of bush fire, while having due regard to development potential, onsite amenities and protection of the environment.

The report places emphasis on the following:

- Provision of safe operational access to the property so occupants leaving, and fire fighters/rescuers accessing the property can do so in relative safety.
- The provision of adequate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition.
- Provide defendable spaces around buildings to afford occupants adequate protection from exposure to bush fire;

- Recommend ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zones (APZ) and

- Ensure utility services are adequate to meet the needs of fire fighters.

The guidelines require an assessment of the slope of the land over a distance of at least 100 metres in all directions from the building line and the class of vegetation within the site. These aspects are outlined in section 4.1 to 4.5 of this report.

4.1 VEGETATION ASSESSMENT

The vegetation on the site is Dry Sclerophyll Forest (shrubby sub-formation). The density of vegetation varies greatly across the site, as shown in **Figure 1** (Aerial Photo).

A site assessment was carried out by Kathryn Yigman, Registered Landscape Architect with a Masters in Environmental Management on 10 March 2021. This assessment covered both the development site and areas outside the development site. The vegetation has been assessed both on the ground and by utilising desktop analysis of SEED Mapping. We have determined the site vegetation meets the regional vegetation community outlined in **Table 1** and distribution shown in **Figure 4**.

Table 1: Vegetation Site Assessment

Regional Vegetation Community	Vegetation Formation	Vegetation Class
PCT 398 – Narrow leaved ironbark, white cypress pine, Buloke tall open forest	Western Slopes Dry Sclerophyll Forest (Shrubby sub-formation)	Wester Slopes Dry Sclerophyll Forests.

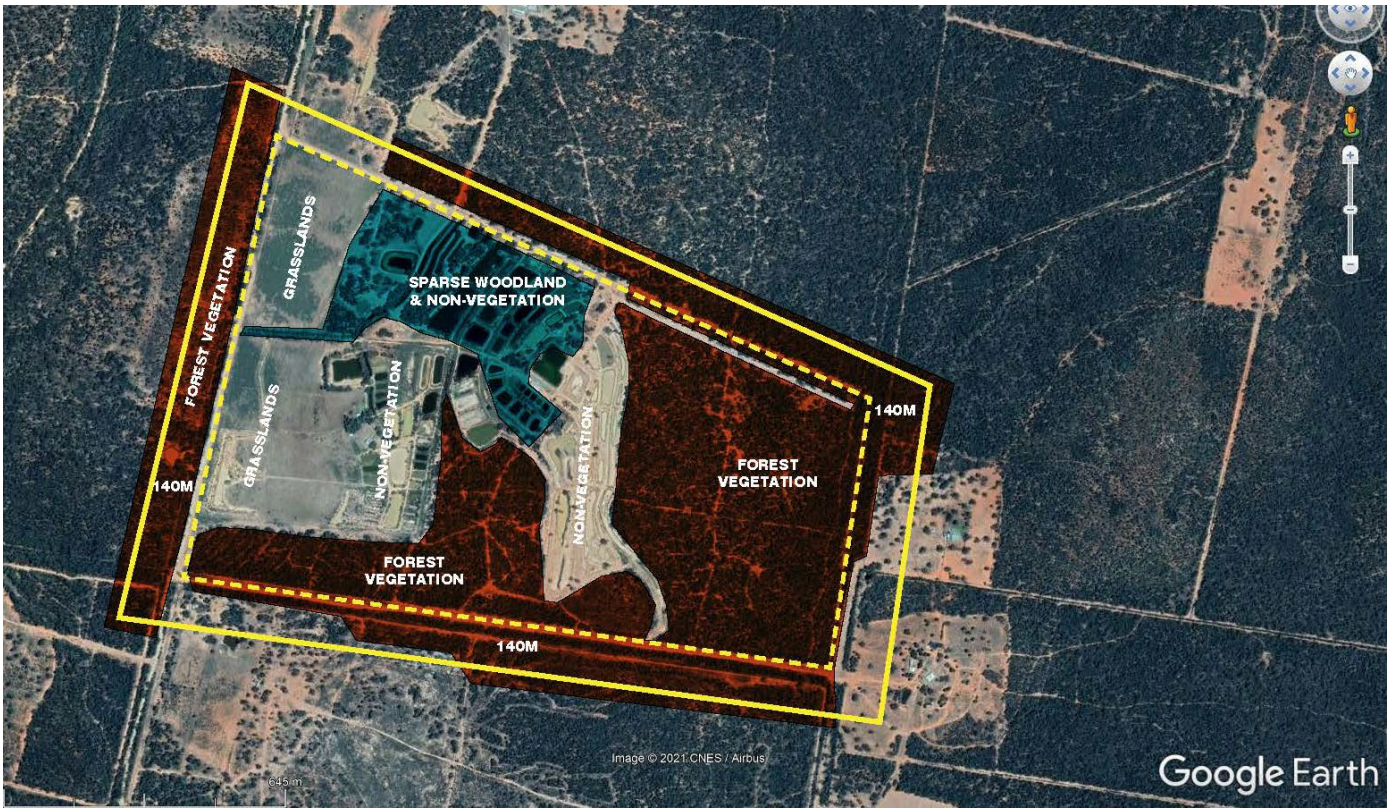

Figure 4: Regional Vegetation Communities Mapping and Aerial photo showing vegetation

The vegetation classification for an area of 140 metres from each development is described as PCT 398 and Site Photographs in **Figure 5** show typical photos of the vegetation on the site.

Figure 5: Site Photographs

4.2 SLOPE ASSESSMENT

A slope analysis has been undertaken and determined in review of site data gathered and topographical map Narrabri (8837-S) 1:50,000 2017 edition GeoPDF.

The topography of the site can be described as evenly graded plains falling to the east into Jack's Creek Catchment. **Table 3** shows the slope calculations for an area of 100 metres around each development site and **Figure 6** is the topography of the site showing the slope of the land.

Table 2: Slope Analysis

Development Name	Slope calculated from Topographic mapping	SLOPE CLASSIFICATION ADOPTED
Development Area	1 in 37.5 metres <2 degrees Upslope	**UPSLOPE**

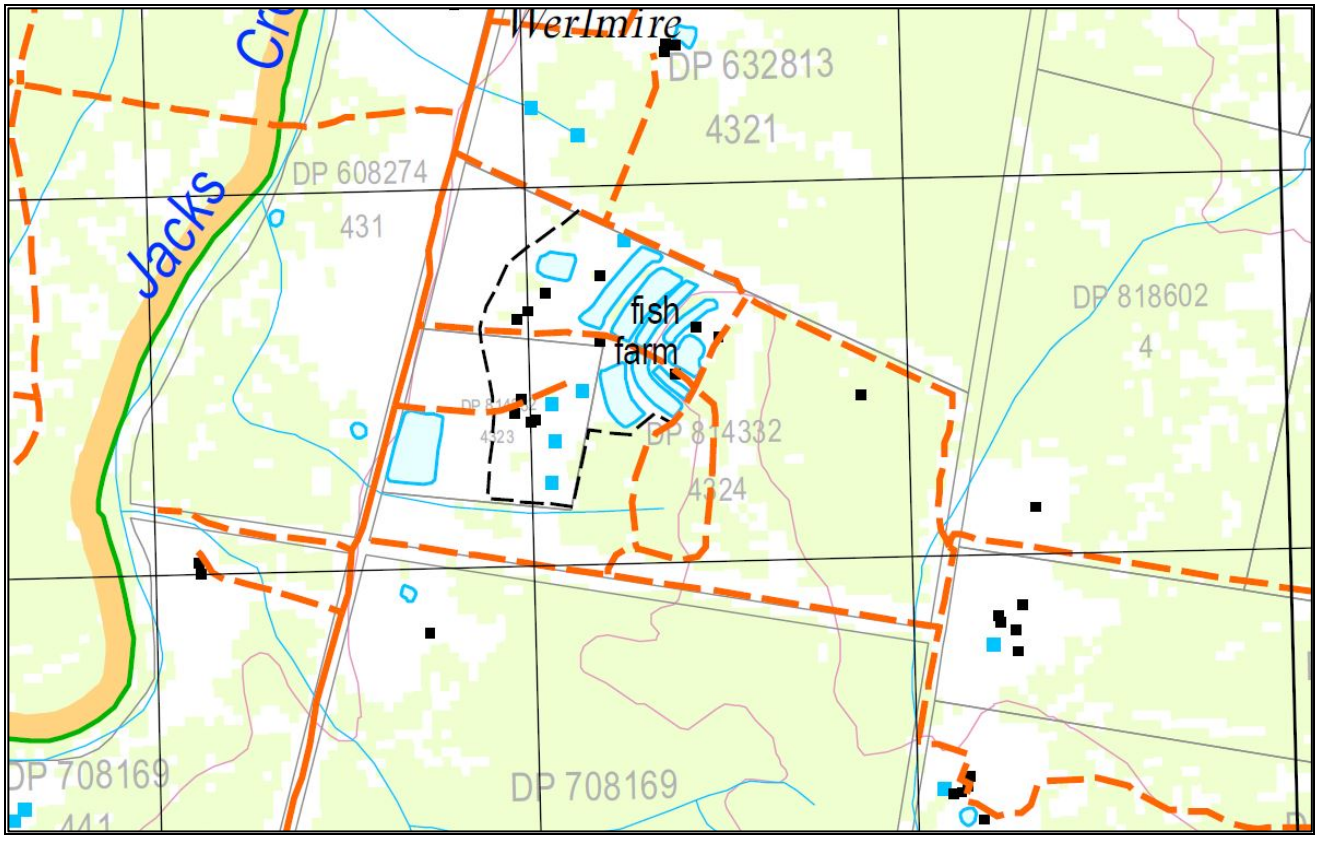

Figure 6: Slope Analysis on Narrabri (8837-S) topographic maps

4.4 FIRE DANGER INDEX

The subject site is located in the Narrabri Shire Council local government area. The guideline specifies a relevant fire danger index (FDI) based on Local Government areas and the relevant index for Narrabri Shire is 80

4.5 ASSET PROTECTION ZONE DETERMINATIONS

The Asset Protection Zone (APZ) is the buffer zone between the bushfire hazard and the buildings and is designed to minimise the presence of fuels potential radiant heat, flame, smoke and ember attack, which could become involved in a fire. The APZ is calculated using the vegetation type, slope and nature of the development.

As outlined previously the development is classified as a special fire protection purpose development (SFPP) and APZ for this type of development is larger than residential development because of the characteristics of occupants. A lower radiant heat threshold is required in order to allow occupants and emergency services to operate in support of the most at-risk members of the public.

The minimum APZ around all existing buildings is outlined in **Table 4** and shown in the appended plans titled Narrabri Fish Farm Bushfire Assessment Plan. These asset protection zones have been determined from table A1.12.1 minimum APZ for SFPP (10kw/m^2, 1200K) from the guideline

Table 3: Narrabri Fish Farm APZ

Vegetation Type	Upslope/flat APZ
Forest	67m (all sides)

For farm stay accommodation the guideline allows a variation to the SFPP development APZ for buildings that will not be exposed to radiant heat level exceeding 29kWm^2 (1090K).

Table 5 is a copy of table A1.7 from the guideline. It provides radiant heat flux exposure and appropriate Bushfire Attack Level (BAL) the heat flux exposure less than 29kWm^2 applicable is >19<29 with a BAL of 29.

Heat Flux Exposure	Description	AS3959-2009 Construction Level
N/A	Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements	Bush Fire Attack Level – Low (BAL-LOW)
≤ 12.5	Attack by burning debris is significant with radiant heat (not greater than 12.5kW/m^2). Radiant heat is unlikely to threaten building elements (e.g. Unscreened glass). Specific construction requirements for ember protection and accumulated debris are warranted.	Bush Fire Attack Level – 12.5 (BAL - 12.5)
>12.5 ≤ 19	Attack by burning debris is significant with radiant heat levels (not greater than 19kW/m^2) threatening some building elements (screened glass). Specific construction requirements for embers and radiant heat are warranted.	Bush Fire Attack Level – 19 (BAL - 19)
>19 ≤ 29	Attack by burning debris is significant and radiant heat levels (not greater than 29 kW/m^2) threaten building integrity. Specific construction requirements for ember and higher radiant heat are warranted. Some flame contact is possible.	Bush Fire Attack Level – 29 (BAL - 29)
>29 ≤ 40	Radiant heat levels and flame contact likely to significantly threaten building integrity and result in significant risk to residents who are unlikely to be adequately protected.	Bush Fire Attack Level – 40 (BAL – 40)
>40	Significant radiant heat and significant higher likelihood of flame contact from the fire front will threaten building integrity and result in significant risk to residents.	Bush Fire Attack Level – Flame Zone (BAL - FZ)

Table 4: Radiant heat flux exposure and appropriate BAL

The guideline table A1.12.6 outlines determination of BAL for residential development in an FFDI of 80. This outlines that for a BAL of 12.5 in upslope Forest vegetation 40 – 100 metres from the vegetation, which applies to the farm stay buildings at this site. The distance to the forest vegetation must not be less than 40 metres from the building.

We consider the forest vegetation to start at the property boundary which is 74m from the proposed cabin, within the subject site in the camping ground the landscape is being maintained with grass regularly mowed and kept less than 100mm and trees pruned to provide separation and coverage at less than 30%. If the BAL was to be determined using table A1.12.6 of the guideline and this distance to the vegetation hazard the BAL would be 12.5. Thus the SFPP APZ variation can be applied to this development.

The variation states that an APZ is proposed in accordance with table A1.12.2 of A1.12.3 of Appendix 1 in the guideline around the entire building. We have applied table A1.12.3 as this applies to FFDI 80. **Table 6** outlines the required APZ.

Table 5: Farm Stay Accommodation APZ

Development Name	Vegetation Type	Upslope APZ	Downslope APZ
Cabin/Farm Stay accommodation	Dry Sclerophyll Forest	20m	25m

For the primitive camping ground the asset protection zone has been calculated in accordance with SFPP Development table A1.12.1. **Table 7** outlines the required APZ

Table 6: Camping Area 3 APZ

Development Name	Vegetation Type	Upslope APZ
Camping Area 3	Dry Sclerophyll Forest	67m All Sides

Note Downslope is not applicable as it is grasslands or separated by a water pond

These asset protection zones are also shown in the appended Narrabri Fish Farm Bushfire Assessment Plan.

The guideline requires vegetation management within the APZ so that existing vegetation does not provide a path for the spread of fire to the building either from the ground level or through the tree canopy.

When managed regularly and correctly the APZ acts to reduce the risk of:

- Direct flame contact on the building
- Damage to the building asset from intense radiant heat; and
- Ember attack

In woodland vegetation areas, including the subject site, the entire asset protection zone is made up of an Inner Protection Area (IPA). The IPA is the area closest to the building and the defendable space. Vegetation in an IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

The guideline describes an IPA as typically being the curtilage around the building, consisting of a mown lawn and well-maintained gardens.

Table 8 outlines the requirements for establishing and maintaining IPAs in accordance with the guideline. It is expected that the landowner establish these principles at the site and maintains them in perpetuity.

Table 7: Maintenance of Inner Protection Area of APZ

	Maintenance requirements
TREES	• tree canopy cover should be less than 15% at maturity; • trees at maturity should not touch or overhang the building; • lower limbs should be removed up to a height of 2m above the ground; • tree canopies should be separated by 2 to 5m; and • preference should be given to smooth barked and evergreen trees.
SHRUBS	• create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings; • shrubs should not be located under trees; • shrubs should not form more than 10% ground cover; and • clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
GRASS	• grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and • leaves and vegetation debris should be removed.

It is considered that generally current vegetation around the development ground meets the IPA requirements.

It is recommended that existing vegetation around other buildings on the site is also reviewed and maintained as an IPA in accordance with the requirements outlined above.

5. BUSHFIRE PROTECTION MEASURES FOR SPECIAL FIRE PROTECTION PURPOSE DEVELOPMENT

The proposed development meets the Special Fire Protection Purpose Development (SFPP) and the guideline states that the nature of this type of development means occupants may be more vulnerable to bush fire attack for one or more of the following reasons:

- they may be less aware in relation to bush fire impacts;
- they may have reduced capacity to evaluate risk and respond adequately to the bush fire threat;
- they may present operational difficulties for evacuation and or management;
- they may be more vulnerable to stress and anxiety arising from bush fire threat and smoke;
- there may be significant communication barriers; supervision during a bush fire may be difficult; and
- they may be unfamiliar with the area.

The guideline outlines specific objectives for SFPP development in recognition that this type of development may have more reliance on the provisions of an APZ and emergency management.

The objectives for SFPP development outlined in the Guideline are:

- minimise levels of radiant heat, localize smoke and ember attack through increased APZ, building design and siting;
- provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;
- ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and

- ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.

In complying with the bushfire protection measures outlined in the guideline this development complies with the objectives for SFPP development outlined above.

The guidelines contain a number of objectives for new developments within existing SFPP development. These objectives are:

- provide an appropriate defendable space;
- site the building in a location which ensures appropriate separation from the hazard to minimise potential for material ignition;
- provide a better bush fire protection outcome for existing buildings;
- new buildings should be located as far from the hazard as possible and should not be extended towards or situated closer to the hazard than the existing buildings (unless they can comply with section 6.8);
- ensure there is no increase in bush fire management and maintenance responsibility on adjoining land owners without their written confirmation;
- ensure building design and construction enhances the chances of occupant and building survival; and
- provide for safe emergency evacuation procedures including capacity of existing infrastructure (such as roads).

The proposed development responds to these specific objectives in the following ways:

- The development provides and APZ in accordance with the guidelines for SFPP and acceptable variation for farm stay buildings;
- The APZs will be actively managed by the land owners.
- The APZ is completely within the Springfield property and the development will not result in any increased bush fire management and maintenance responsibilities of adjoining land holder.
- The development will provide for safe emergency evacuation procedures as outlined in the Bushfire emergency management and evacuation plan

Sections 5.1 to 5.4 assess the development against the performance criteria for SFPP in the guideline.

The proposed development meets the following tourism use definitions:

> ***Primitive camping*** *– Primitive camping is generally more remote from urban areas, and is defined as having only a limited range of facilities. This is covered by the Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005. The NSW RFS discourages the use of primitive camp grounds in high risk and isolated bush fire prone areas during periods of elevated bush fire danger.*
>
> ***Bed and breakfast and farmstay accommodation***
> *It is assumed that there is a manager on site who is aware of the bush fire risk and appropriate emergency response procedures and due to the low occupancy rates, the resources and time required for emergency evacuation are reduced. The potential for informed emergency evacuation decisions is therefore improved. As such, the setback and construction requirements of BAL-29 can be applied.*

The proposed café, amenities block and picnic area is classified as a public assembly building under the guideline. The guideline states that public assembly buildings are not defined by SFPP but still require referral to the NSW RFS. The guideline requires buildings used for public assembly with a floor area greater than 500m^2 to be considered under SFPP due to the evacuation challenges presented by large number of occupants. The floor area of the remaining buildings are as follows: Café – 125m^2, Amenities Block 74.5m^2 and Picnic Shelter 115.2m^2 and therefore none of these buildings require specific assessment under the guideline.

5.1 ASSET PROTECTION ZONES

Asset protection zones are intended to provide a suitable building design, construction and sufficient space to ensure radiant heat levels do not exceed critical limits for firefighters and other emergency service personnel undertaking operations, including supporting or evacuating occupants. The required APZs for the site are outlined in section 4.5 of the report.

Table 8 outlines the guideline performance criteria, acceptable solutions and site application in accordance with the guideline

Table 8: Asset Protection Zone Performance Criteria Table

	Performance Criteria	Acceptable Solution	Description of Application to this Development	Summary
ASSET PROTECTION ZONES	**The intent may be achieved where:**			
	Radiant heat levels of greater than 10kW/m^2 will not be experienced on any part of the building	The building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1	Asset Protection zoned outlined in section 4.5 of this report will apply to the development	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised	APZs are located on lands with a slope less than 18 degrees	The greatest slope measured at the site was 2 degrees	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	APZs are managed and maintained to prevent the spread of fire to the building The APZ is provided in perpetuity	▪ The APZ is managed in accordance with the requirements of Appendix 4 of this document, and is wholly within the boundaries of the development site; ▪ APZ are wholly within the boundaries of the development site; and ▪ Other structures located within the APZ need to be located further than 6m from the refuge building.	The management requirements for the APZ are outlined in section 4.5 of this report. APZs are entirely within the property boundary. Refuge buildings and areas are nominated in the emergency management and evacuation plan. There are more than 6m from any structures	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	VARIATIONS			
	Camping and primitive camping: No performance criteria applicable	N/A	The subject site does include a primitive camping ground which will comply with the above performance criteria	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	Bed and breakfast and farm stay: The building will not be exposed to radiant heat	An APZ is provided in accordance with Tables A1.12.2 or A1.12.3 in Appendix 1 of this	The subject site includes a farm stay building. An APZ has been determined	☒ Acceptable solution achieved ☐ Performance solution proposed

	levels exceeding 29kW/m^2 (1090K)	document around the entire building or structure	in accordance with table A1.12.3 for FFDI 80 has been proposed in section 4.5 of this report. .	☐ N/A to development
	Ecotourism: Radiant heat levels of greater than 10kW/m^2 (1200K) are not experienced by emergency service personnel and occupants during firefighting and emergency management around a building on site that can be used as a refuge	An APZ is provided in accordance with Table A1.12.1 in Appendix 1 of this document around the entire refuge building or structure	N/a	☐ Acceptable solution achieved ☐ Performance solution proposed ☒ N/A to development
	Manufactured home estates: APZs achieve radiant heat levels that are commensurate with the construction standard for the proposed dwellings	▪ An APZ in accordance with Table A1.12.1 in Appendix 1 of this document is provided to all new dwellings; or ▪ An APZ in accordance with Table A1.12.2 or A1.12.3 in Appendix 1 of this document is provided where it is demonstrated that all new dwellings will be constructed in accordance with BAL-29	N/a	☐ Acceptable solution achieved ☐ Performance solution proposed ☒ N/A to development
LANDSCAPING	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions	▪ Landscaping is in accordance with Appendix 4; and ▪ Fencing is constructed in accordance with section 7.6	Some pruning of vegetation around the farm stay building and primitive camping is required to meet the landscaping requirements. These are outlined in section 4.5 of this report. No new fencing is proposed	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
CONSTRUCTION STANDARDS	The proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact.	A construction level of BAL-12.5 under AS 3959 or NASH Standard and section 7.5 of PBP is applied	BAL 12.5 construction requirements are required for the farm stay buildings.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	VARIATIONS			
	Camping and primitive camping: No performance criteria applicable	N/A		☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	Bed and breakfast and farm stay: The proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact	Construction is applied in accordance with Appendix 1 of PBP.	As noted above	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

	Ecotourism: Radiant heat levels of greater than 10kW/m2 (1200K) are not experienced by emergency service personnel and occupants during firefighting and emergency management around a building on site that can be used as a refuge	An APZ is provided in accordance with Table A1.12.1 in Appendix 1 of this document around the entire refuge building or structure	N/a	☐ Acceptable solution achieved ☐ Performance solution proposed ☒ N/A to development
	Manufactured home estates: APZs achieve radiant heat levels that are commensurate with the construction standard for the proposed dwellings	▪ An APZ in accordance with Table A1.12.1 in Appendix 1 of this document is provided to all new dwellings; or ▪ An APZ in accordance with Table A1.12.2 or A1.12.3 in Appendix 1 of this document is provided where it is demonstrated that all new dwellings will be constructed in accordance with BAL-29.	N/a	☐ Acceptable solution achieved ☐ Performance solution proposed ☒ N/A to development
	Ecotourism: Occupants of the ecotourism facility are provided with appropriate shelter in the event of a bush fire.	▪ A refuge building is provided; ▪ The refuge building must have sufficient space for all occupants and comply with the occupancy levels permissible for that structure; and ▪ The refuge building must be constructed to BAL-12.5 or greater in accordance with AS 3959 or NASH Standard and 7.5 of PBP	N/a	☐ Acceptable solution achieved ☐ Performance solution proposed ☒ N/A to development

5.2 ACCESS

Access roads are to be provided to enable safe access and egress to the site when attempting to leave the area and emergency service personnel arriving at the site to undertake firefighting operations.

The subject site has access from Tuppiari Road. Tuppiari Road is of gravel formation and generally used as a local property access route. This road has good sight distance to the east and west. **Figure 7** provides photographs showing the sight distance and character of this access. The property entry is signposted for easy identification.

Figure 7: Tuppiari Road Sight Line Photos at Property Access

The guideline defines a perimeter road as a road being located on the outer extremity of a local area or subdivision and usually runs parallel to the bush land interface. The perimeter road provides a space to conduct active firefighting operations and hazard reduction activities. The performance criteria for a camping ground or the farm stay does not outline that a perimeter road is required and access is to meet property access road criteria. The subject site has an existing gravel perimeter road around the entire property as shown on the appended bushfire assessment plan.

As the development site is more than 200 metres from the adjoining roads two exits have been nominated. Both exits are via Tuppiari Road.

Appendix 3 of the guideline outlines the requirements for emergency services vehicle access to the property.

Vertical Clearance

The guideline requires a vertical clearance to an unobstructed height of 4 metres above all access ways including clearance from vegetation, archways, gateways and overhanging structures. **Figure 8** shows the minimum vertical clearance requirements.

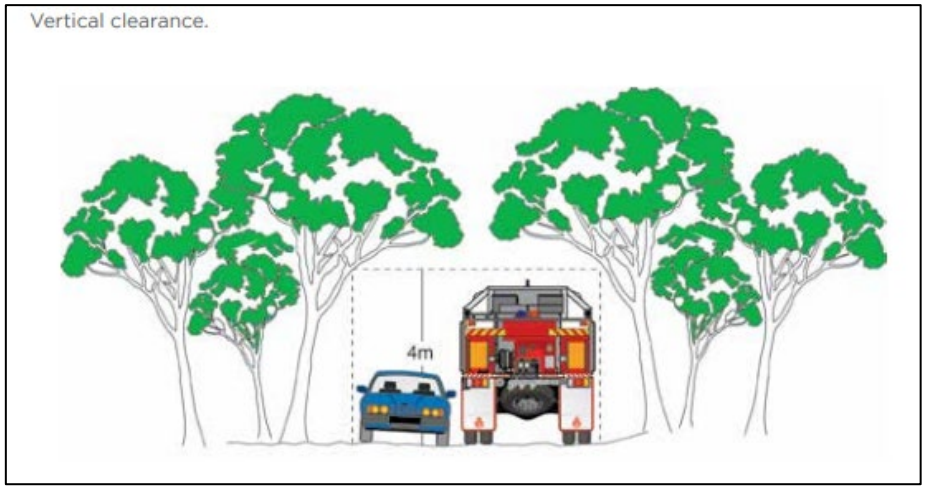

Figure 8: Vertical Clearance (RFS PBP, 2019)

Vehicle turning requirements

Table 9 outlines the minimum curve radius for turning vehicles. Carriageways should be constructed using these minimum swept paths and as demonstrated in **Figure 9**.

Table 9: Minimum Swept Path (RFS PBP, 2019)

Curve Radius (inside edge in metres)	Swept Path (metres width)
<40	4.0
40-69	3.0
70-100	2.7
>100	2.5

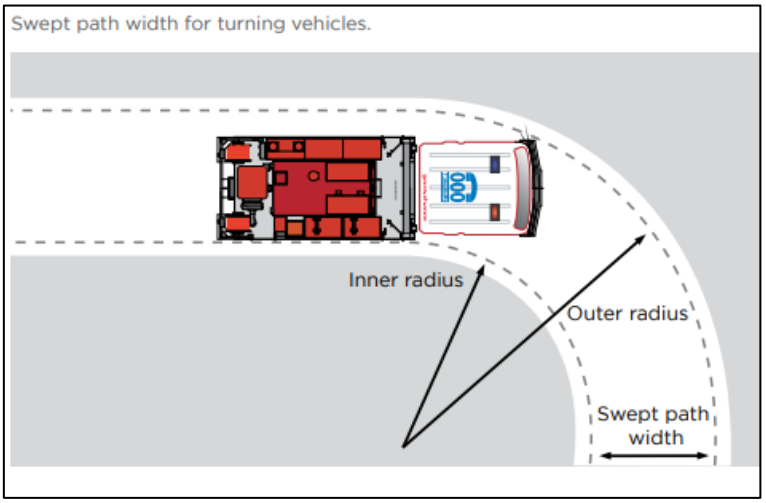

Figure 9: Swept Path Width for turning vehicles (RFS PBP, 2019)

Vehicle Turning Head Requirements

Dead ends that are longer than 200 metres must be provided with a turning head area that avoids multipoint turns. The turning head is to be maintained as a 'No Parking' areas. The minimum turning radius shall be in

accordance with the minimum swept path outlines in **Table 9**. The multi-turning options which the NSW RFS will consider are shown in **Figure 10.** Generally all areas have access to a looped road. It is proposed to construct a Type C turning head adjacent to the hatchery building as shown in the Bushfire Assessment Plan. This turning head provides opportunity for emergency vehicle to turn and exit the property or proceed around the perimeter road.

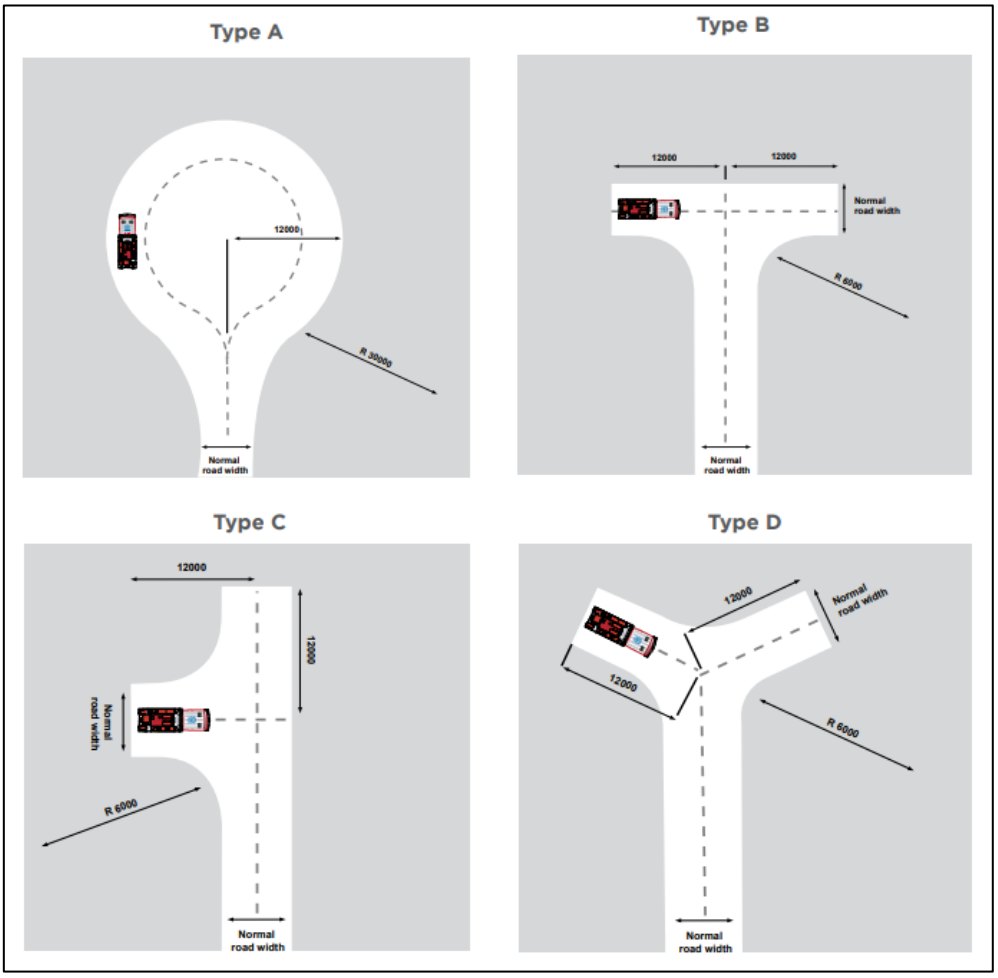

Figure 10: Multi-point turning options (RFS PBP, 2019)

Passing Bays

Passing bays are required at 200 metre intervals at the subject site.

The construction of passing bays, where required, shall be 20 metres in length and provide a minimum trafficable width at the passing point of 6 metres.

Parking

Parking can create a pinch point in required access. The location of parking should be carefully considered to ensure fire appliance access is unimpeded. Proposed parking has an aisle width of 6 metres to allow emergency vehicle passage. There are also alternative internal property access roads which contain no parking at the site.

Property Access

The existing property access is 4 metres wide. This access meets the minimum width of 4 metres specified in the guidelines.

Table 10 outlines the guideline performance criteria, acceptable solutions and site application in accordance with the guideline

Table 10: Access Performance Criteria Table

	Performance Criteria	Acceptable Solution	Description of Application to this Development	Summary
ACCESS	**The intent may be achieved where:**			
	firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	• SFPP access roads are two-wheel drive, all-weather roads; • access is provided to all structures; • traffic management devices are constructed to not prohibit access by emergency services vehicles; • access roads must provide suitable turning areas in accordance with Appendix 3; and • one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	All roads are constructed from gravel providing all weather access There is road access to all structures There are no traffic management devices at the site. It is proposed to construct a circle in accordance with type C in the guideline at the hatchery building which provides a bushfire refuge. There are no one-way roads or hydrants.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	VARIATIONS			
	Camping area 1: Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	access is provided in accordance with the property access requirements of Table 5.3b.	Existing Access to the primitive camping ground meets the requirements of table 5.3b in the guideline	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	Camping area 2: Firefighting vehicles are provided with safe, all-weather access to structures.	access is provided in accordance with the property access requirements of Table 5.3b.	Existing Access to the camping ground meets the requirements of table 5.3b in the guideline	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	Ecotourism: Fire fighting vehicles are provided with safe, all-weather access to the proposed refuge building.	• vehicular access is provided to the refuge building from a public road in accordance with property access requirements of Table 5.3b; • accommodation is within 100m of the refuge building; and • pedestrian paths from accommodation to the refuge building/s are provided and clearly signposted.	N/a	☐ Acceptable solution achieved ☐ Performance solution proposed ☒ N/A to development
	The capacity of access roads is adequate for firefighting vehicles.	the capacity of road surfaces and any bridges/causeways is sufficient to carry fully	There are no bridges/causeways on the property and it is assumed that	☒ Acceptable solution achieved ☐ Performance solution proposed

		loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	the surrounding public road infrastructure meets this requirement as it is utilised by heavy vehicles.	☐ N/A to development
	There is appropriate access to water supply.	▪ hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; ▪ hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005; and ▪ there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available.	The subject site is not in a reticulated water area and there are no hydrants on the site. There is suitable access within 4m of the static water supply.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
PERIMETER ROADS	Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	▪ there are two way sealed roads; ▪ minimum 8m carriageway width kerb to kerb; ▪ parking is provided outside of the carriageway width; ▪ hydrants are to be located clear of parking areas; ▪ there are through roads, and these are linked to the internal road system at an interval of no greater than 500m; curves of roads have a minimum inner radius of 6m; the maximum grade road is 15 degrees and average grade of not more than 10 degrees; ▪ the road crossfall does not exceed 3 degrees; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	It is proposed to utilise an existing gravel property road as the perimeter road. It runs around the full extent of the property and along the front of the café, camping and amenities buildings. This road is generally 4-5m wide but there is clear space exceeding 8m in all locations. The road meets the vertical clearance requirements.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

NON - PERIMETER ROADS	Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.	▪ minimum 5.5m carriageway width kerb to kerb; ▪ parking is provided outside of the carriageway width; ▪ hydrants are located clear of parking areas; ▪ there are through roads, and ▪ these are linked to the internal road system at an interval of no greater than 500m; ▪ curves of roads have a minimum inner radius of 6m; ▪ the maximum grade road is 15 degrees and average grade of not more than 10 degrees; ▪ the road crossfall does not exceed 3 degrees; and ▪ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	There are no kerbs at the subject site. existing roads are proposed to be utilised. This road is generally 4-5m wide but there is clear space exceeding 8m in all locations. Curves have a minimum inner radius exceeding 6m. The roads meet the vertical clearance requirements.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

5.3 SERVICES – WATER, GAS & ELECTRICITY

This section of the report outlines the provision of adequate services at the development site. An adequate supply of water is essential for fire fighting purposes and the location of gas and electricity needs to be considered and located so as not to contribute to the risk of fire or impeded firefighting efforts.

Table 11 outlines the guideline performance criteria, acceptable solutions and site application in accordance with the guideline

Table 11: Services - Water, Gas and Electricity Performance Criteria

	Performance Criteria	**Acceptable Solution**	**Description of Application to this Development**	**Summary**
WATER SUPPLIES	**The intent may be achieved where:**			
	An adequate water supply for firefighting purposed is installed and maintained	▪ reticulated water is to be provided to the development, where available; or ▪ A 10,000 litres minimum static water supply for firefighting purposed is provided for each occupied building where no reticulated water is available	The subject site is not located in a reticulated water supply area. There are a large number of dams on the site which are	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

			filled with reliable bore water. The total capacity of available water is well in excess of 10,000 Litres.	
	VARIATIONS			
	Caravan and camping grounds: An adequate water supply for firefighting purposes is installed and maintained **Primitive camping:** An adequate water supply for firefighting purposes is installed and maintained	Either a reticulated water supply is provided or a 10,000 litres minimum water supply on site.	The camping on the site is considered to be primitive camping. The above-mentioned water supply at is in close proximity to the camping area and meets the guideline.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	▪ Water supplies are located at regular intervals ▪ The water supply is accessible and reliable for firefighting operations	▪ Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005; ▪ Hydrants are not located within any road carriageway; and ▪ Reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads.	N/a as the site is not in a reticulated water area.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	Flows and pressure are appropriate	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005	N/a as the site is not in a reticulated water area.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	The integrity of the water supply is maintained	All above-ground water service pipes external to the building are metal, including an up to any taps	Site complies	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

	Water supplies are adequate in areas where reticulated water is not available	▪ A connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; a 65mm Storz outlet with a ball valve is fitted to the outlet; ▪ Ball valve and pipes are adequate for water flow and are metal; ▪ Supply pipes from tank to ball valve have the same bore size to ensure flow volume; ▪ Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank; ▪ A hardened ground surface for truck access is supplied within 4m of the access hole; ▪ Above-ground tanks are manufactured from concrete or metal; ▪ Raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959); ▪ Unobstructed access is provided at all times; tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and ▪ Underground tanks are clearly marked, ▪ All exposed water pipes external to the building are metal, including any fittings; ▪ Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; Any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and ▪ Fire hose reels are constructed in accordance with AS/NZS 1221:1997 *Fire hose reels*, and installed in accordance with the relevant clauses of	• There are water dams located throughout the property in close proximity to all buildings around the site. • There are no water storage tanks on site and therefore no requirement for Storz outlets. • The bore pumping equipment is located near the hatchery building. This equipment is shielded with corrugated iron from nearby trees. • The pump is located at the bore outside the bushfire prone area. • There are no hose reels at the development site.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

ELECTRICITY SERVICES	Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings	▪ Where practicable, electrical transmission lines are underground; ▪ Where overhead, electrical transmission lines are proposed as follows: • Lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and • No part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 *Guideline for Managing Vegetation Near Power Lines*	• All new electricity lines for powered camp sites and buildings will be laud underground. • Vegetation is to be maintained around existing overhead power lines in accordance with the guideline with grass regularly mowed around poles and trees pruned to meet the clearance requirements.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
GAS SERVICES	Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of building	▪ Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used; ▪ All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; ▪ Connections to and from gas cylinders are metal; ▪ If gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion; ▪ Polymer-sheathed flexible gas supply lines to gas metres adjacent to buildings are not to be used; and ▪ Above-ground gas service pipes external to the building are metal, including and up to any outlets.	The only gas supply at the site is portable gas cylinders at the Barbecue shelter. These gas cylinders are to be shielded using metal. All connections are to be of metal construction.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

5.4 EMERGENCY MANAGEMENT PLANNING

	Performance Criteria	Acceptable Solution	Description of Application to this Development	Summary
EMERGENCY MANAGEMENT	**The intent may be achieved where:**			
	A Bush Fire Emergency Management and Evacuation Plan is prepared	▪ Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: • The NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*; • *NSW RFS Schools Program Guide;* • Australian Standard AS 3745:2010 *Planning for emergencies in facilities*; and Australian Standard AS 4083:2010 *Planning for emergencies – Health care facilities* (where applicable). ▪ The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants. Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.	A bushfire emergency management and evacuation plan has been prepared for this site and is appended to this application.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development
	VARIATIONS			
	Caravan and camping grounds: A Bush Fire Emergency Management and Evacuation Plan is prepared **Primitive camping:** A Bush Fire Emergency Management and Evacuation Plan is prepared **Ecotourism:** A Bush Fire Emergency Management and Evacuation Plan is prepared	▪ a Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management* and Evacuation *Plan*, and AS 3745:2010; ▪ for proposals in isolated or remote areas which involve large travel distances through bush fire prone vegetation, the following issues should be determined and addressed: • the amount of travel likely to be generated during an emergency evacuation;	A bushfire emergency management and evacuation plan is attached to this report.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

		• the capacity of the broader road network to facilitate safe emergency evacuation; • limitations/constraints inherent in the road system; • and management of potential traffic conflicts (such as emergency vehicles versus evacuating members of the public). ▪ the Bush Fire Emergency Management and Evacuation Plan must consider a mechanism for the early relocation of occupants on days when adverse fire weather is notified or adverse fire activity occurs in the local government area in which the development operates. Note: A copy of the Bush Fire Emergency Management and Evacuation Plan shall be provided to the Local Emergency Management Committee for its information prior to occupation of the development.		
	▪ appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan.	▪ an Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual; and ▪ detailed plans of all emergency assembly areas including on site and off-site arrangements as stated in AS 3745:2010 are clearly displayed, and an annually emergency evacuation is conducted.	Refer to the bushfire emergency management and evacuation plan is attached to this report.	☒ Acceptable solution achieved ☐ Performance solution proposed ☐ N/A to development

6. NARRABRI FISH FARM BUSHFIRE ASSESSMENT PLAN

We have prepared the site plan below to demonstrate the recommendations outlined in this report.

PRIMARY EXIT FROM THE SITE

OVERALL SITE PLAN
LOT 4324 DP 814332
SCALE 1:5000 @ A1

SEE DETAIL 1

SEE DETAIL 2

ROAD

TUPPIARI

LOOPED PERIMETER ROAD

LOT 4323
DP 814332
RUN UNDER SAME FISH FARM OPERATION

LOT 4324
DP 814332

ALTERNATIVE EXIT FROM THE SITE

LEGEND
- PROPERTY BOUNDARY
- EXISTING PONDS
- EXISTING VEGETATION
- EXISTING TRACK
- EXISTING BUILDING (NO CHANGES AS PART OF THIS APPLICATION)
- EXISTING BUILDING TO BE RENOVATED AS PART OF THIS APPLICATION
- NEW BUILDING PROPOSED AS PART OF THIS APPLICATION
- PRIMITIVE CAMPING AREA

PVS INDICATES POWERED VAN SITE
VS INDICATES UNPOWERED VAN SITE

- ASSET PROTECTION ZONE TO BE MAINTAINED IN ACCORDANCE WITH REPORT
- PRIMARY ACEESS ROAD

DETAILED PLAN 1
SCALE 1:1000 @ A1

N W E S

** CONCEPT PLAN ONLY **
THESE PLANS HAVE BEEN GENERATED BY INTERPRETATION OF AERIAL PHOTOGRAPHY

LGA OF NARRABRI
PARISH OF MILNER
COUNTY OF WHITE

PRIMITIVE CAMPING AREA 1
AREA 8,125m² (TOTAL AREA ON PROPERTY 16.8Ha)
ASSET PROTECTION ZONE - 67m
8 x POWERED VAN SITES (12 x 10m EACH)
2 x 60m² CABINS (SEE PLAN 10)
FREE CAMPING/TENT SITES

PROPOSED RENOVATION TO PICNIC AND BARBECUE SHELTER
REFER TO SHEET 8 & 9 FOR DETAILS

APZ 67m

PROPOSED NEW AMENITIES BUILDING
REFER TO SHEET 3 FOR DETAILS

RENOVATION OF KIOSK
REFER TO SHEET 4 & 5 FOR DETAILS

35.4

80

PRIMITIVE CAMPING AREA 2
AREA 3,500m²(TOTAL AREA ON PROPERTY 16.8Ha)
6 x UNPOWERED VAN SITES (12 x 10m EACH)
FREE CAMPING/TENT SITES

ONSITE OPEN SPACE REFUGE AREA

LOT 4324
DP 814332

LOT 4323
DP 814332
RUN UNDER SAME FISH FARM OPERATION
THEREFORE APZ CAN BE MAINTAINED

DETAILED PLAN 2
SCALE 1:1000 @ A1

APZ 67m

HATCHERY BUILDING
PROPOSED MEZZANINE STORAGE TO EXISTING BUILDING REFER TO PLANS AND ELEVATIONS ON SHEETS 6 & 7

ONSITE REFUGE BUILDING

PROPOSED STAGING
STAGE 1:
NEW AMENITIES BUILDING

STAGE 2:
RENOVATION OF KIOSK & ASSOCIATED PARKING AREA

STAGE 3:
POWERED CAMP SITES & PRIMITIVE CAMPING UPGRADE
INSTALLATION OF TRANSPORTABLE CABINS
RENOVATION OF PICNIC & BBQ SHELTER
MEZZANINE FLOOR TO HATCHERY

Issue	Date	Description
-	-	-

THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE NARRABRI FISH FARM 261 TUPPIARI ROAD, NARRABRI BUSHFIRE ASSESSMENT REPORT

10 00 10 20 30 40 50 60 70 80 90 100 1:1000

50 00 100 200 300 400 450 1:5000

Stewart Surveys
Local people Local knowledge
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Project	NARRABRI FISH ON CAFE AND FARMSTAY 261 TUPPIARI ROAD, NARRABRI	
Title	BUSHFIRE ASSESSMENT PLAN	
Date	MARCH 2021	Job No. 5495
Drawing number	1 of 1	Issue A
	DRAWING SHEET SIZE = A1	

7. CONCLUSION

This report is provided at the development application stage for a special fire protection purpose development being a café, amenities block, addition to hatchery building and additions to picnic and barbecue shelter, primitive camping ground and farm stay accommodation. The report applies provisions for development and maintenance of asset protection zones, provision and maintenance of access and provision of adequate water supply for fire fighting purposes. The application of these criteria can be implemented with effectiveness and minimal disturbance to the existing environment.

The proposed development is considered to meet the acceptable solutions outlined in the Planning for Bushfire Protection, 2019 Guideline.

The guidelines note that *'no development in a bushfire prone area can be guaranteed to be entirely safe from bushfire'* and therefore the adoption of these recommendations does not guarantee the protection of life and assets in intense bushfire situations. The recommendations are made to provide an acceptable level of protection from bushfires.

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