

## **Bush Fire Assessment Report**

in relation to the proposed pet food production facility

at:



**Parent Lot 2 DP 1197299, proposed Lot 209 DP**

**Unregistered**

**91 Gardiner Street Rutherford**

**(subject site)**

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## Document Tracking

Item	Detail
Project Name	Bush Fire Assessment Report, proposed pet food production facility in a lot to be created in a future subdivision (by others)
Project Address	Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford
Client Name	SPF Diana Australia Pty Ltd
Project Number	J21/0069
Plan Reference	Plans by Bell Architecture Pty Ltd numbered SK-0009 revision S5 dated 03/02/2022
Prepared by	Catherine Gorrie
Approved by	Catherine Gorrie

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## Document Control

Version	Primary Author	Description	Date Completed
1	Laura Richards	Draft	18/02/2022
2	Catherine Gorrie	Final	24/03/2022
3	Catherine Gorrie	Final, minor revision	14/04/2022

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*NOTE: This bush fire assessment shall remain valid for 12 months from the date of issue.*

## Executive Summary


Bushfire Consulting Services was commissioned by SPF Diana Australia Pty Ltd to provide a bush fire assessment for a pet food production facility at Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford. The subject site is mapped as designated bush fire prone land by Maitland City Council and is located within 100 metres of bush fire prone (hazardous) vegetation.

The proposal is a form of “other non-residential” development and, as such, this report makes recommendations in accordance with the aim and objectives of Chapter 1 and 8 of the NSW RFS document *‘Planning for Bush Fire Protection’* (PBP) (NSWRFS 2019). The recommendations address these objectives including:

- afford buildings and their occupants protection from exposure to a bush fire
- provide for a defensible space to be located around buildings
- provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings
- ensure that appropriate operational access and egress for emergency service personnel and occupants is available
- provide for ongoing management and maintenance of BPMs, and
- ensure that utility services are adequate to meet the needs of firefighters.
- Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation
- Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development
- Provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building
- Provide for the storage of hazardous materials away from the hazard wherever possible

Where all recommendations are implemented, the report concludes that the proposal can comply with the aim and objectives of PBP.

## Compliance Summary

This Assessment has been Certified by: Catherine Gorrie BPAD-Level 3 Accredited Practitioner FPAA Cert No: BPAD20751	
Does this development comply with the aim and objectives of PBP?	Yes
Is referral to the NSW Rural Fire Service (RFS) required?	Yes

## List of Abbreviations

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2018, <i>Construction of Buildings in Bushfire Prone Areas</i>
BAL	Bushfire Attack Level
BPAD	Bushfire Planning and Design (Accreditation Scheme)
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Maitland City Council
DA	Development Application
DEM	Digital Elevation Model
EP&A Act	<i>Environmental Planning and Assessment Act – 1979</i>
FDI	Fire Danger Index
FPAA	Fire Protection Association of Australia
IPA	Inner Protection Area
kW/m <sup>2</sup>	Kilowatts per metre squared
LiDAR	Light Detection and Ranging
LPMA	Land & Property Management Authority
NCC	National Construction Code
PBP	<i>Planning for Bush Fire Protection 2019</i>
RF Act	<i>Rural Fires Act – 1997</i>
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SIX	Spatial Information Exchange
SWS	Static Water Supply

## 1. Introduction

This report has been commissioned by SPF Diana Australia Pty Ltd to provide a bush fire assessment for a pet food production facility at Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford.

The subject property is “bushfire prone land” as per the local Council bushfire prone land map (Figure 4) as defined by section 10.3 (s10.3) of the *Environmental Planning & Assessment Act* (EP&A) 1979 and therefore the requirements stipulated by legislation apply to any new development on the site.

The applicant intends to lodge a Development Application (DA) with Maitland City Council under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). As the development proposal would be categorised as a ‘livestock processing industry’ under Clause 22 of Schedule 3 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regs), this proposal is ‘designated development’, and it would also require an Environment Protection Licence from the NSW Environment Protection Authority (EPA).

*Planning for Bush Fire Protection 2019* (Chapter 8) describes this type of development as “other non-residential development” and therefore the aim and objectives of Chapter 1 and 8 of PBP are applicable.

The bush fire assessment and recommendations are derived from the Rural Fire Service document *Planning for Bush Fire Protection 2019*.

## 2. Purpose of this Report

The purpose of this report is to provide the owners, the Consent Authority, the Planning Secretary and the Certifier with a description of the proposed development as well as the vegetation type, slope and any other factors influencing the likely bushfire behaviour, sufficient to show that the development will be protected from the likely bushfire threat as outlined in current legislation.

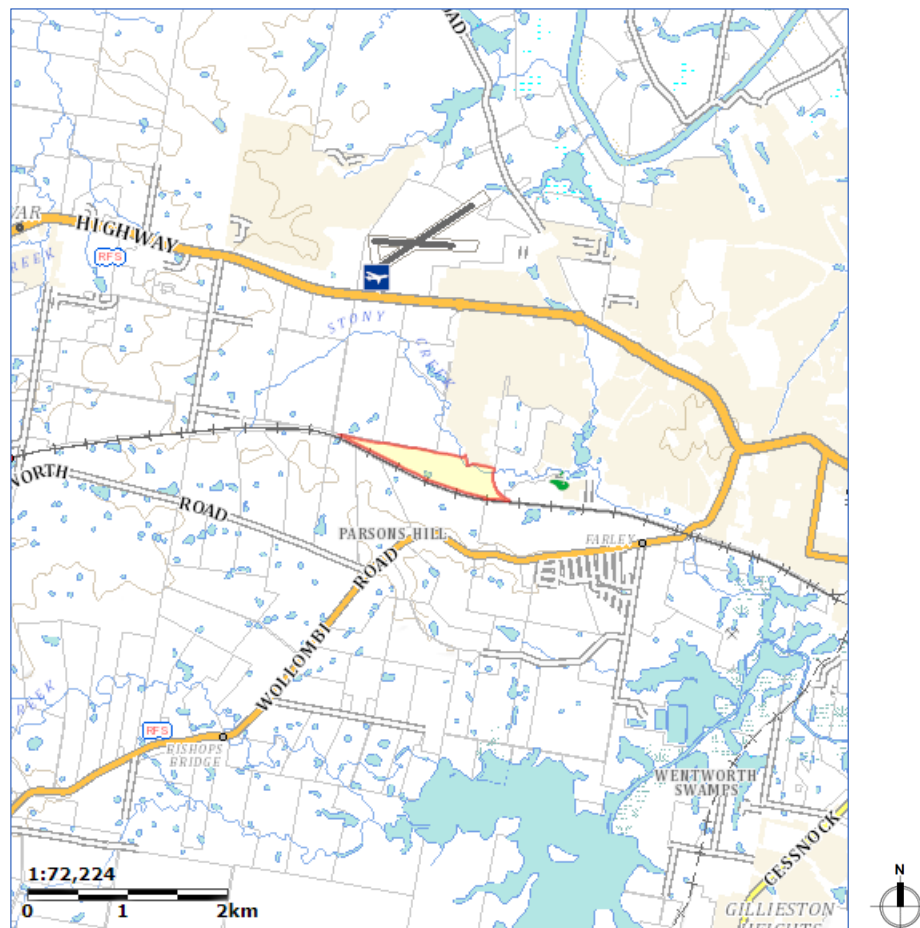


This assessment includes an analysis of the hazard, threat and subsequent risk to the development and provides recommendations that satisfy the aim and objectives of Planning for Bush Fire Protection.

### 3. Location

The site is located and known as Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford. The property is part of the Maitland local government area.

**Figure 1. Location Map. Source: LPMA SIX Viewer (NSW Government 2022a)**



*Parent Lot site location outlined in red*

**Figure 2. Aerial Map. Source: LPMA SIX Viewer (NSW Government 2022a)**



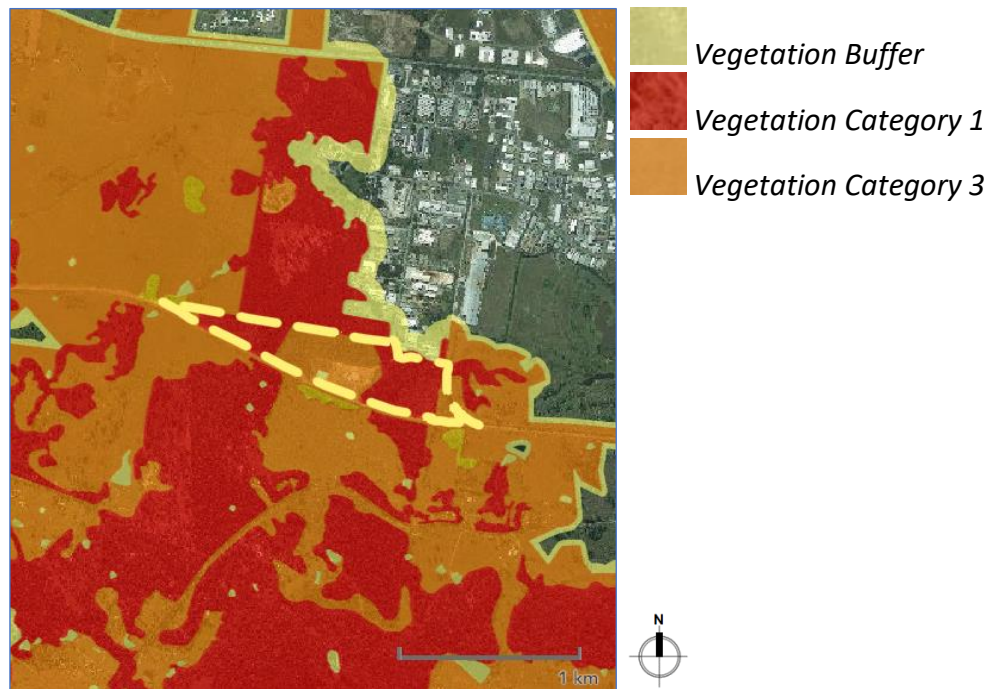
*Parent Lot site location outlined in red*

**Figure 3. Aerial Map. Source: Nearmap with Overlays by BFCS P/L (Aerial Photography Date 3/11/2021)**



*Approximate Parent lot highlighted in yellow, Approximate subject site, proposed Lot 209 within subdivision by others, highlighted in red*

**Figure 4. Bushfire Prone Land Map. Source: NSW Government Planning Portal  
(NSW Government 2022b)**



*Parent Lot site location outlined in yellow*

## 4. Property Description

The property is comprised of Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford, with the subject site covering approximately 2.3ha in area (Figure 3). The site forms part of a proposed community title subdivision that will soon be lodged with Maitland City Council. It is bounded by private allotments to the approximate north, east and northwest, Gardiner Street to the approximate north and Main Northern Railway to the approximate south. It is currently vacant land.

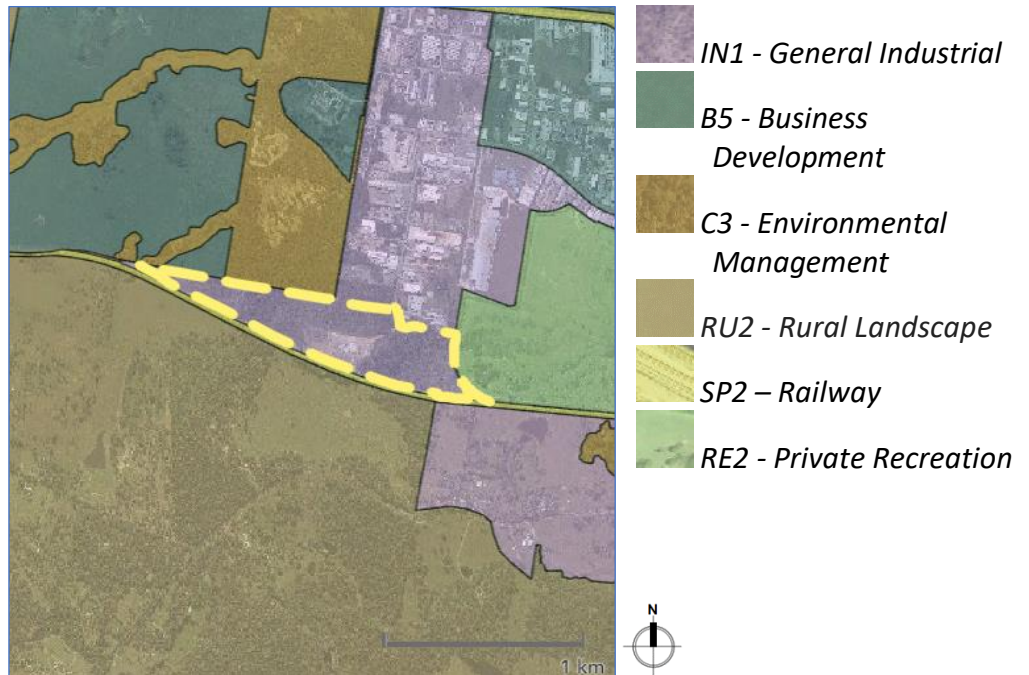
### 4.1 Zoning

The land is zoned IN1: General Industrial under Maitland Local Environmental Plan 2011. Adjacent lands to the northeast are similarly zoned. Adjacent lands to the northwest are zoned B5 - Business Development and C3 - Environmental Management, lands to the east are zoned RE2 - Private Recreation, lands to the south are zoned SP2 – Railway (Figure 4).



Figure 5. Zoning Map. Source: NSW Government Planning Viewer

(NSW Government 2022b)



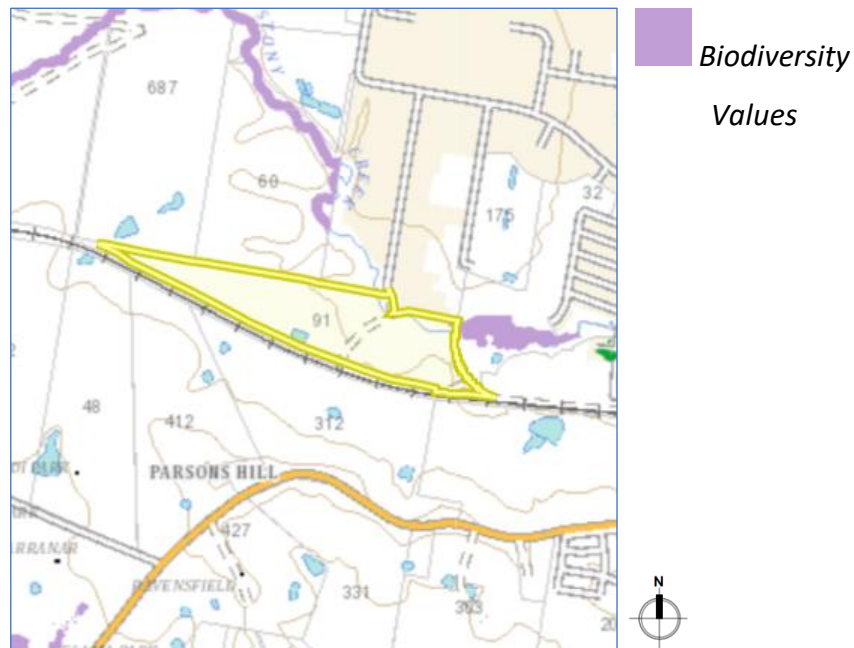
Parent lot location outlined in yellow

## 4.2 Biodiversity Values

A search of the NSW Office of Environment and Heritage's Biodiversity Values Map has been carried out which indicates land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*. The development, including the required APZs and access are wholly located outside the mapped area, and an expert consultant has been engaged to carry out a study of any impacts applicable.

**Figure 6: Biodiversity Values Map: NSW Office of Environment and Heritage**

<https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap>



*Site location outlined in yellow*

*Areas mapped in purple indicate land with high values*

### 4.3 The Proposal

The proposed development constitutes a 'livestock processing industry', being for a pet food ingredient manufacturing facility. Meat from off-site meat production facilities and/or abattoirs will be delivered to the site, where it is then processed into a protein based liquid for off-site pet food production. The product is sold as a wholesale liquid to pet food producers to be made into kibbles and other forms of pet food. It is anticipated that the total liquid ingredient production capacity of the facility will be up to 25,000 tonnes per annum.

The proposed development seeks construction of a two storey building including the following elements:

Ground floor: Production area – where meat is processed and cooked, Ancillary areas including warehousing, mechanical plant, laboratories control room, staff breakout rooms, amenities, loading and unloading, 40x car parking spaces and 4x heavy vehicle parking spaces  
Office space, Amenities

First floor: Plantroom

In terms of the NCC, the classification of the building is Class 5, 7a, 7b and 8.

## 5. Site Assessment

Bushfire Consulting Services Pty Ltd attended the site on 1 February 2022. The assessment relates to the new development shown in the site plans (reference Appendix 1 below). The NSW Spatial Services mapping website has also been used as a reference (NSW Government 2021a), and *'Ocean Shores to Desert Dunes'* by David Keith (Keith 2004), in determining the vegetation type.

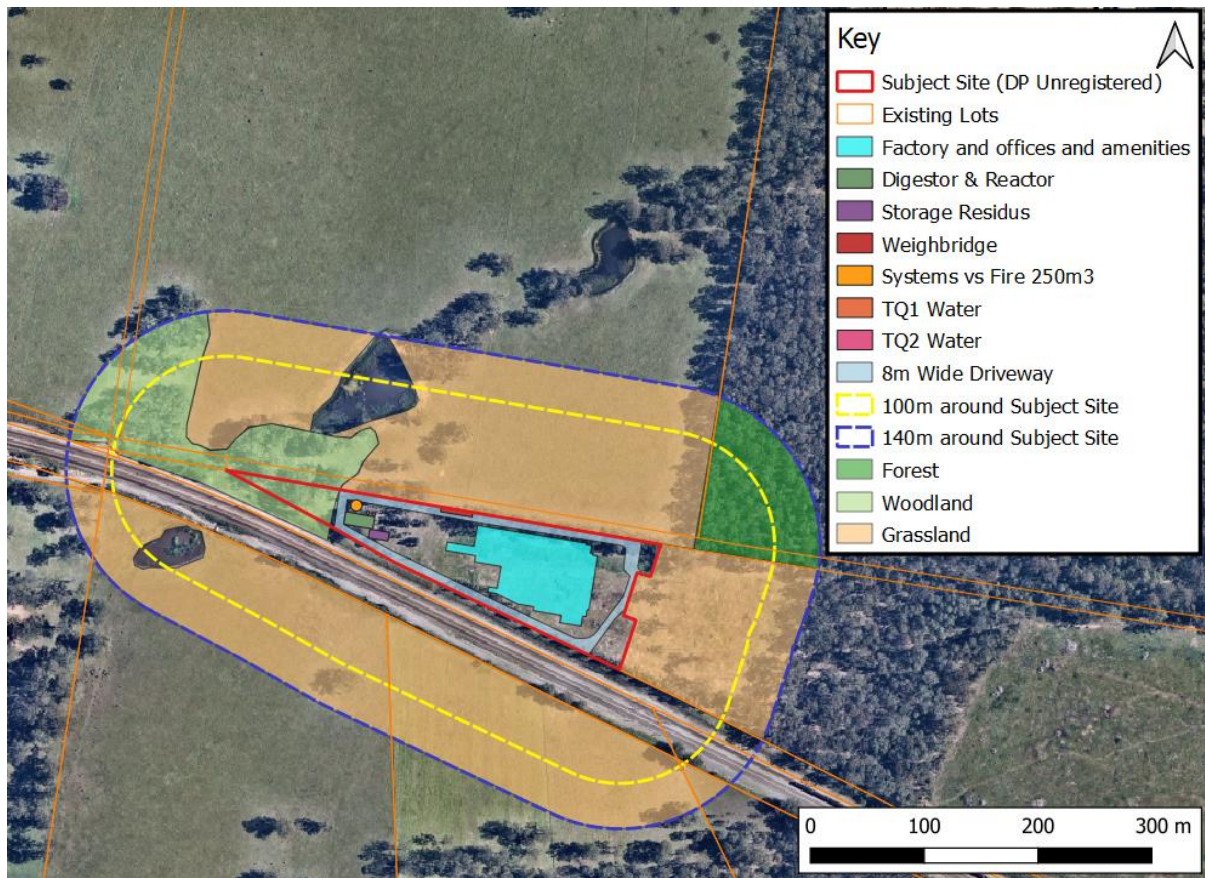
## 6. Bush Fire Attack Assessment

### 6.1 Determine Vegetation Formations

The hazardous vegetation formations for each aspect of the development within 140m of the asset have been identified according to Keith (2004). The bushfire threat emanates from bushland located to the north, south and west of the proposal, with land to the east constituting of future managed land, as the proposed subdivision progresses. In the interim, the hazard to the east is considered as Grassland. The hazard is external to the subject site boundaries.

Based on a site visit and determination of vegetation formation using the Keith (2004) Identification Key, the primary bushland vegetation having the potential to affect the subject building is most representative of Grassland to the north, east and south, Woodland to the northwest and Forest to the northeast.

**Figure 7. Hazardous vegetation affecting the subject building. Source: NearMap (2022) with overlays by BFCS P/L. Aerial Photography date: 3/11/2021**



*Subject site outlined in red. Vegetation was assessed to a distance of 140m from the subject building*

## 6.2 The effective slope

The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the level of radiant heat flux. The effective slope of the land from the new building for a distance of 100m is derived from a site assessment combined with the most detailed contour data available. The slope is then categorised into one of following classes, relative to the location of the hazard:

- all upslope vegetation (considered 0 degrees)
- >0 to 5 degrees downslope vegetation
- >5 degrees to 10 degrees downslope vegetation
- >10 degrees to 15 degrees downslope vegetation, and
- >15 degrees to 20 degrees downslope vegetation.

1m DEM data is sourced from NSW Spatial Services which is captured using LiDAR and has a horizontal accuracy of 0.3m and vertical accuracy of 0.8m at 95%.

The effective slope has been measured manually on site over a distance of 100m from the proposed development where accessible, under the classified vegetation community constituting the hazard. The slope was found to be consistent with the topographical information from NSW Spatial Services LiDAR data.

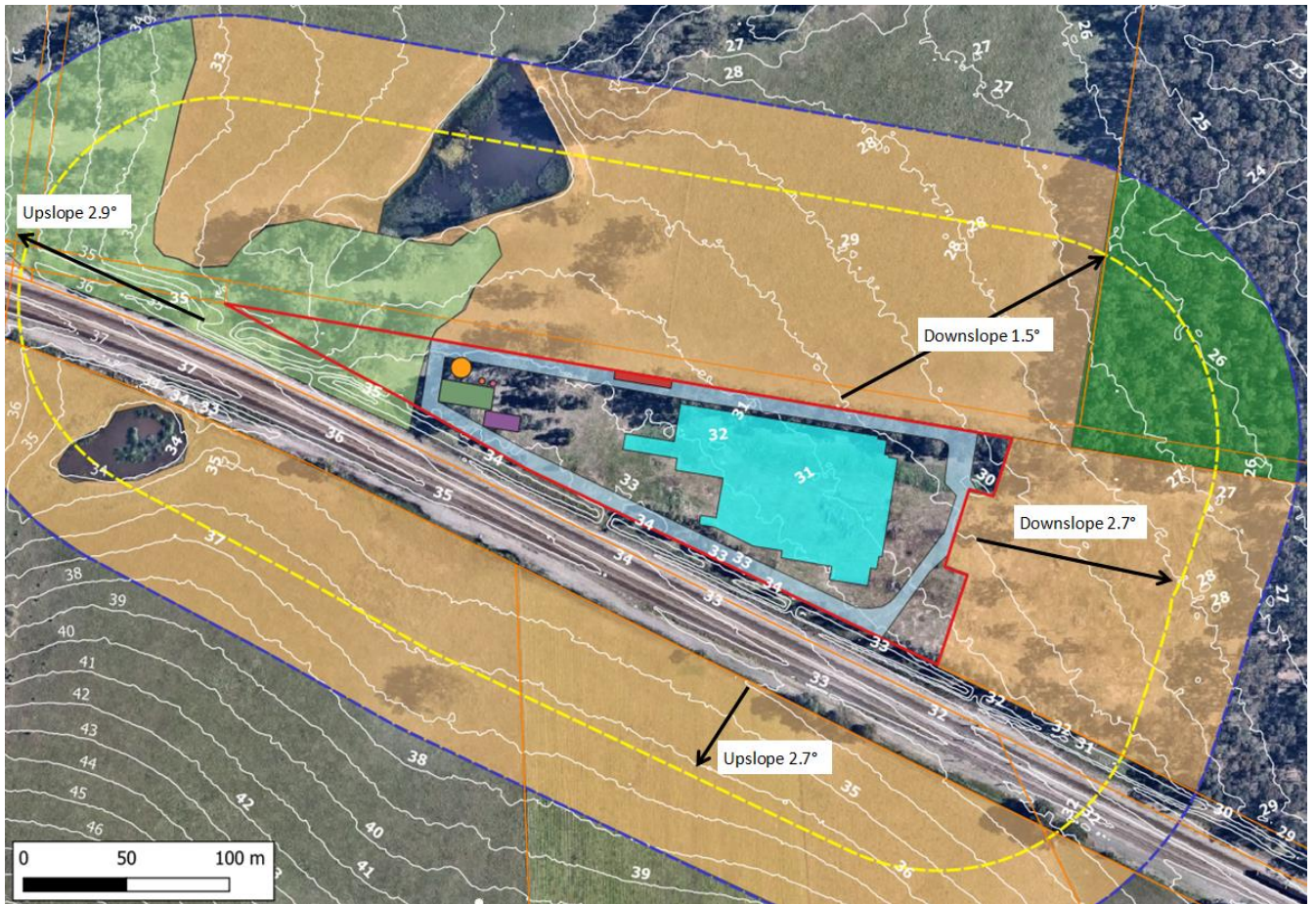
Direction from Building Footprint	Slope Description
North	Downslope 1.5°
East	Downslope 2.7°
South	Upslope 2.7°
West	Upslope 2.9°

*Site Slope North to South =  $((30-33)/101.7) \times 1/\tan = \text{Upslope } 1.7^\circ$*

*Site Slope East to West =  $((32-35)/278.6) \times 1/\tan = \text{Upslope } 0.6^\circ$*



**Figure 8. Slope Diagram. Source: NearMap (2021) and LiDAR (NSW Government 2022a)  
with overlays by BFCs P/L: Aerial Photography Date: 3/11/2021**



**Key**

- Subject Site (Unregistered)
- Existing Lots
- Factory and offices and amenities
- Digester & Reactor
- Storage Residus
- Weighbridge
- Systems vs Fire 250m<sup>3</sup>
- TQ1 Water
- TQ2 Water
- 8m Wide Driveway
- 100m around Subject Site
- 140m around Subject Site
- 1m Contours
- Forest
- Woodland
- Grassland

**Slopes**

Northeast  $((30-26)/147.9) \times 1/\tan = \text{Downslope } 1.5^\circ$

East  $((30-28)/97.5) \times 1/\tan = \text{Downslope } 2.7^\circ$

South  $((34-36)/43) \times 1/\tan = \text{Upslope } 2.7^\circ$

West  $((31-36)/100) \times 1/\tan = \text{Upslope } 2.9^\circ$

## 7. Fire Weather

The development is located in the Maitland City Council area, a part of the Greater Hunter Region, which has a Fire Danger Index of 100.

## 8. Relevant objectives of PBP

The objectives for buildings of Class 5-8 are outlined in PBP Chapter 1 and 8

Objective	Comment
Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation	Can Comply, the lot is to have access to Gardiner Road, following completion of the proposed community title subdivision. Gardiner Road is a public road. Internal access provides a minimum road width of approximately 8m, with hard surfaces around the development, sufficient for fire trucks and other emergency vehicles to enter and egress the lot in a forwards direction. Suitable access for fire-fighting vehicles and evacuation is proposed
Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development	Can Comply, the need to formulate an emergency evacuation plan is suggested. To do so, occupants can complete a Bush Fire Safety Plan on the NSW RFS Website <a href="http://www.rfs.nsw.gov.au/">http://www.rfs.nsw.gov.au/</a> under publications / bushfire safety
Provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building	Can Comply, the development includes provision of 250KL water tank, Fire Pump House and Booster (Design to be confirmed) which exceeds PBP requirements for a fire fighting water supply. The tank is located on a hardened ground surface for truck access, within 4m of the access hole. The tank is to be concrete or metal and all exposed water pipes external to the building are to be metal, including any fittings, above-ground water storage tanks shall be of concrete or metal

Objective	Comment
Provide adequate services (cont'd)	<p>Hydrants are to be provided in accordance with the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning, and be located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.</p> <p>Where practical, electrical transmission lines are underground</p> <p>If applicable, reticulated or bottled gas is installed and maintained in accordance with <i>AS/NZS 1596:2014 - The storage and handling of LP Gas</i>, 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, polymer-sheathed flexible gas supply lines are not used, and above-ground gas service pipes are metal, including and up to any outlets</p>
Provide for the storage of hazardous materials away from the hazard wherever possible	Can comply, as wherever possible, the storage of hazardous materials will be away from the hazard

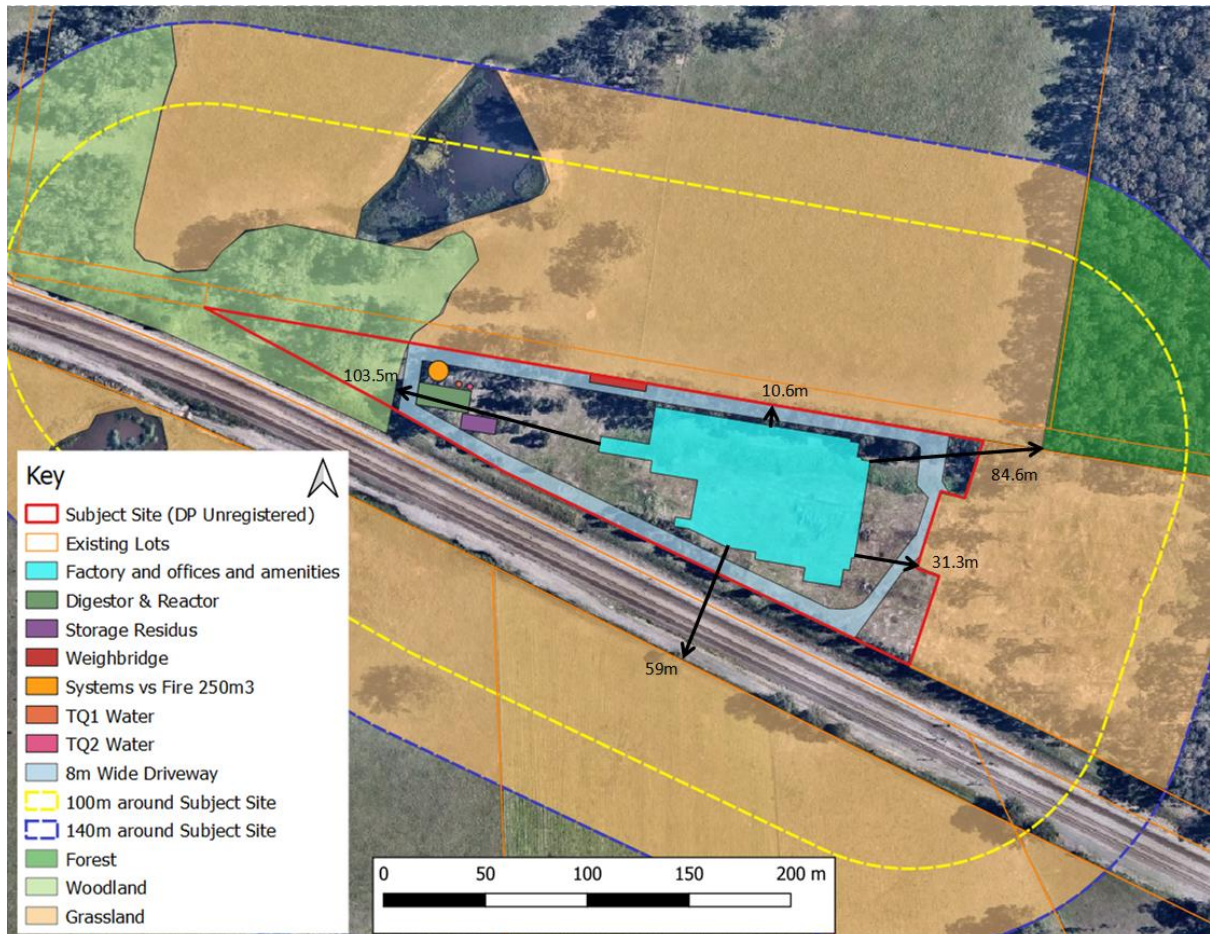
## 9. Objectives of Chapter 1

Objective	Comment
Afford buildings and their occupants protection from exposure to a bush fire	The building is separated from the hazard by a minimum of 10.6m to the north, except the weighbridge, which adjoins the northern lot boundary. Those structures located at least 10.6m from the northern lot boundary are separated from the hazard by sufficient distance of 10.6m, which affords buildings and their occupants protection from exposure to a bush fire
Provide for a defensible space to be located around buildings	A defensible space of at least 8m is proposed around the building, which meets the requirements of PBP
Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings	Direct flame contact on the building is not anticipated, see below, except for the weighbridge
Ensure that appropriate operational access and egress for emergency service personnel and occupants is available	Can comply as road widths, curvatures and grades and swept paths enable appropriate operational access and egress for emergency service personnel and occupants
Provide for ongoing management and maintenance of BPMs, and	Normal property maintenance will ensure that BPMs are maintained
ensure that utility services are adequate to meet the needs of firefighters	Can comply, see above



To ensure that flame contact is not anticipated, the relevant FFDI, vegetation formation and effective slope are matched using the Detailed Method of Determining the Bushfire Attack Level (Method 2, Appendix B of AS3959-2018, Newcastle Bush Fire Attack Assessor V4.1).

**Figure 9. Distance to Hazard Diagram. Source: NearMap (2021) and LiDAR (NSW Government 2022a) with overlays by BFCs P/L: Aerial Photography Date: 3/11/2021**



Adapted from Table A1.12.2 of PBP - Minimum distances for APZs – residential development, FFDI 100 areas (<29kW/m<sup>2</sup>, 1090K) and the Detailed Method of Determining the Bushfire Attack Level (Method 2, Appendix B of AS3959-2018, Newcastle Bush Fire Attack Assessor V4.1

Aspect	Distance from hazard	Vegetation Classification	Slope Under Classified Vegetation	Anticipated Radiant Heat (kW/m <sup>2</sup> )
North	10.6m	Grassland	Downslope 1.5°	27.93
Northeast	84.6m	Forest	Downslope 1.5°	23.36
East	31.3m	Grassland	Downslope 2.7°	8.61
South	59m	Grassland	Upslope 2.7°	2.94
West	>100m	N/A	N/A	N/A

*Site Slope North to South = ((30-33)/101.7) x 1/tan = Upslope 1.7°*

*Site Slope East to West = ((32-35)/278.6) x 1/tan = Upslope 0.6°*

Therefore, in all directions there is no direct flame contact anticipated (except for the Weighbridge which can be constructed to AS3959-2018 sections 3 and 9 BAL Flame Zone).

## 9.8 Identify Construction Requirements

The NCC does not provide for any bush fire specific performance requirements for these particular classes of buildings. The general fire safety construction provisions of the NCC are taken as acceptable solutions, and AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions for this non-residential proposal. However, where direct flame contact cannot be demonstrated, AS3959 is applied to construction (the weighbridge).

## 10. Recommendations

The following recommendations are made for the bushfire measures for the proposed pet food production facility at Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford, and are based upon the relevant provisions of the NSW Rural Fire Service Guideline entitled *Planning for Bush Fire Protection 2019*.

### 1. Asset Protection Zones

At the commencement of the development, and in perpetuity, the site shall be managed as an Inner Protection Area (IPA) Asset Protection Zone except the western portion nominated on the plans as "Existing Landscaping", as outlined in PBP 2019 Appendix 4.

#### Trees

- 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 ground
- canopies should be separated by 2 to 5m
- 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
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation

#### Grass

- should be kept mown (as a guide grass should be kept to no more than 100mm in height)
- leaves and vegetation debris should be removed.

### 2. Construction Standards

New construction of the Weighbridge only, shall comply with Sections 3 and 9 (BAL Flame Zone) of AS3959-2018 '*Construction of buildings in bush fire-prone areas*', as varied by the applicable additional construction requirements of PBP section 7.5

### 3. Water Supply

A 20,000 litre static water supply is to be available for fire fighting purposes and suitable fittings sufficient to enable fire fighting. The tank is located on a hardened ground surface for truck access, within 4m of the access hole. The tank is to be concrete or metal and all exposed water pipes external to the building are metal, including any fittings. Above-ground water storage tanks shall be of concrete or metal.

### 4. Hydrants

Hydrants are to be provided in accordance with the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning, and be located outside of parking reserves and road carriageways to ensure accessibility to water for fire suppression.

### 5. Electricity and Gas Services

Where practicable, electrical transmission lines are underground.

Where applicable, 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.

Polymer-sheathed flexible gas supply lines are not used, and above-ground gas service pipes are metal, including and up to any outlets.

### 6. Storage of Hazardous Materials

Wherever possible, the storage of hazardous materials will be away from the hazard.

### 7. Emergency and Evacuation Planning

The need to formulate an emergency evacuation plan is suggested. To do so, occupants can complete a Bush Fire Safety Plan on the NSW RFS Website <http://www.rfs.nsw.gov.au/> under publications / bushfire safety.



## 11. Summary

This report consists of a bush fire assessment for the proposed pet food production facility at proposed Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford. The report concludes that the proposed development is on designated bushfire prone land and the legislative requirements for development in bushfire prone areas are applicable.

This report has considered all the elements of bushfire attack and finds that the development satisfies the aim and objectives of 'Planning for Bush Fire Protection' 2019, subject to implementation of the recommendations made by this report.

*Notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains and although the standard is designed to improve the performance of such buildings, there can be no guarantee because of the variable nature of bushfires that any one building will withstand bushfire attack on every occasion.*

*This report is a bush fire assessment that provides the required information to assist local Council and the Rural Fire Service in determining compliance in accordance with Planning for Bush Fire Protection. The local Council is the final consenting authority and the construction of the building must comply with the recommendations included in the Council's conditions of consent.*



**Catherine Gorrie**



(a person who is recognised by the NSW Rural Fire Service as a suitably qualified consultant in bush fire risk assessment)

**Accredited Bushfire Planning and Design Practitioner**

Fire Protection Association Australia BPAD-Level 3 (BPAD 20751)

Grad Dip Bushfire Protection (UWS 2010)

Diploma Environmental Health & Building Surveying (TAFE 2005)

Corporate Bronze Member Fire Protection Association Australia

Bushfire Consulting Services Pty Ltd

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## 12. References

Keith D 2004, *Ocean Shores to Desert Dunes, the Native Vegetation of NSW and the ACT*, Department of Environment and Conservation, Sydney

NearMap 2022, *NearMap Photomap Aerial Imagery*, NearMap Australia, Barrangaroo, NSW

NSW Government 2022a, *NSW Spatial Services*, NSW Department of Finance, Services and Innovation.

NSW Government 2022b, *NSW Planning Portal*, NSW Department of Planning and Environment.

NSW Government 2022c, *Biodiversity Values Map*, NSW Department of Environment and Heritage.

NSW RFS 2019, *Planning for Bush Fire Protection*, NSW Rural Fire Service, Sydney.

Standards Australia 2018, *Australian Standard AS 3959-2018 'Construction of Buildings in Bushfire Prone Areas'*, SAI Global, Australia.

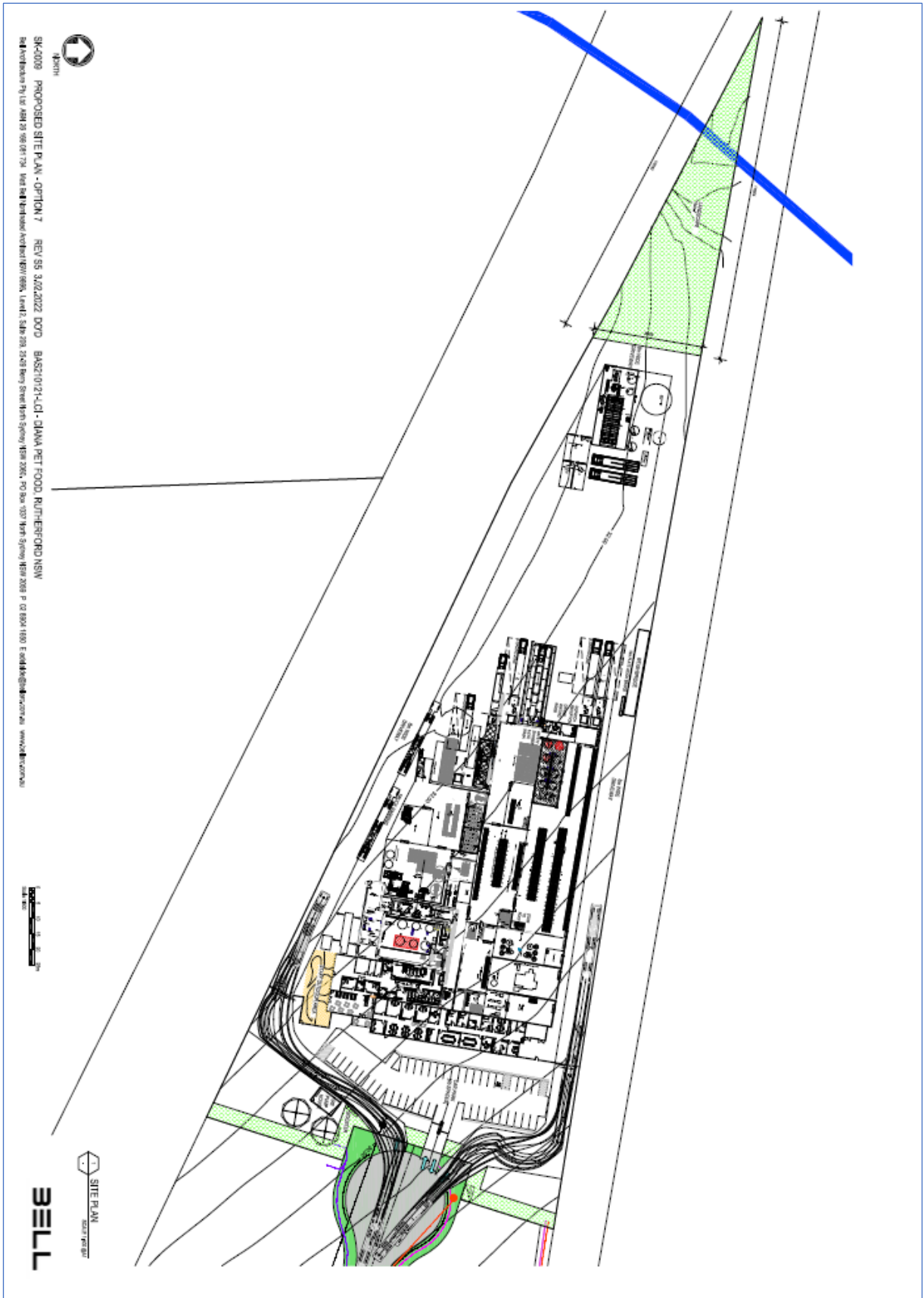
## 13. Legislation

*Environmental Planning & Assessment Act 1979*

*Rural Fires Act 1997*

*Rural Fires Regulation 2013*

# Appendix 1 - Site Plan



## Appendix 2 – Photos of Site and Surrounds

Source: BFCS P/L 01/02/2022



*Existing site access from Gardiner Street*



*Subject site, view south westward from near the centre of the site*





*Forest hazard to the northeast and grassland hazard toward the north*



*View westward inside the subject site boundary showing trees that will be removed as part of the proposal*



*Typical hazard to north comprising Grassland with occasional isolated trees*



*View westward from approximate mid point of the northern lot boundary*





*View toward the western end of the subject site, which is to remain undisturbed*



*View toward railway line from near the centre of the southern lot boundary*

## Appendix 3 – Bushfire Risk Assessment Certificate

This form is completed by a recognized consultant in bushfire risk assessment in accordance with section s4.14 of the *Environmental Planning and Assessment Act 1979 No 203*

PROPERTY ADDRESS:	Parent Lot 2 DP 1197299, proposed Lot 209 DP Unregistered, 91 Gardiner Street Rutherford
DESCRIPTION OF PROPOSAL:	Pet food production facility
PLAN REFERENCE: (relied upon in report preparation)	Plans by Bell Architecture Pty Ltd numbered SK-0009 revision S5 dated 03/02/2022
DOES THE PROPOSAL RELY ON ALTERNATE SOLUTIONS:	YES <input type="radio"/> <b>NO</b> <input checked="" type="radio"/> (Circle the relevant response)  (If YES the application is to be referred to NSW RFS for assessment.)

I, Catherine Gorrie, of Bushfire Consulting Services Pty Ltd, have carried out a bushfire risk assessment on the above mentioned proposal and property. A detailed Bushfire Assessment Report is attached which includes the submission requirements set out in Appendix 2 of Planning for Bushfire Protection 2019 together with recommendations as to how the relevant aim and objectives are to be achieved.

REPORT REFERENCE:	J22/0069
REPORT DATE:	18/02/2022
CERTIFICATION NO/ACCREDITED SCHEME:	BPAD-Level 3 Accredited Practitioner FPAA Cert No: BPAD20751

Note: this certificate must be completed and signed by a person recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment in accordance with s4.14 of the *EP&A Act 1979 No 203*.

\*\*\*\*\*



I hereby certify, in accordance with Section 4.14 of the Environmental Planning and Assessment Act 1979 No 203:

That I am a person recognised by the NSW Rural Fire Service as a qualified consultant in bushfire risk assessment; and

That subject to the recommendations contained in the attached Bushfire Risk Assessment Report the proposed development conforms to the relevant specifications and requirements\*.

\* The relevant specifications and requirements being; specifications and requirements of the document entitled Planning for Bush Fire Protection prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and any other document as prescribed by Section s4.14 of the Environmental Planning and Assessment Act 1979 No 203.

I am aware that the bush fire assessment report, prepared for the above mentioned site is to be submitted in support of a development application for this site and will be relied upon by Council as the basis for ensuring that the bushfire risk management aspects of the proposed development have been addressed in accordance with Planning for Bush Fire Protection 2019.

Attachments:

- Bush Fire Risk Assessment Certificate
- Recommendations
- Statement of vegetation impact in relation to APZ



SIGNATURE:

DATE: 24/03/2022

## Appendix 4 -Method 2 Calculations



### NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 18/02/2022

Assessment Date: 18/02/2022

Site Street Address: 91 Gardiner Street, Rutherford

Assessor: Catherine Gorrie; Bushfire Consulting Services Pty Ltd

Local Government Area: Maitland

Alpine Area: No

#### Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001/Vesta/Catchpole

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: East

#### Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 2.7 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

#### Site Information

Site Slope 0.6 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m) Default

APZ/Separation(m): 31.3

#### 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: 130

#### Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 4.34

Radiant Heat(kW/m<sup>2</sup>): 8.61

Flame Angle (degrees): 81

Flame Length(m): 9.47

Maximum View Factor: 0.141

Rate Of Spread (km/h): 20.36

Inner Protection Area(m): 31

Transmissivity: 0.804

Outer Protection Area(m): 0

Fire Intensity(kW/m): 63119

<b>Run Description:</b>	North		
<b><u>Vegetation Information</u></b>			
<b>Vegetation Type:</b>	Grassland		
<b>Vegetation Group:</b>	Grassland		
<b>Vegetation Slope:</b>	1.5 Degrees	<b>Vegetation Slope Type:</b>	Downslope
<b>Surface Fuel Load(t/ha):</b>	6	<b>Overall Fuel Load(t/ha):</b>	6
<b>Vegetation Height(m):</b>	0	Only Applicable to Shrub/Scrub and Vesta	
<b><u>Site Information</u></b>			
<b>Site Slope</b>	1.7 Degrees	<b>Site Slope Type:</b>	Downslope
<b>Elevation of Receiver(m)</b>	Default	<b>APZ/Separation(m):</b>	10.6
<b><u>Fire Inputs</u></b>			
<b>Veg./Flame Width(m):</b>	100	<b>Flame Temp(K):</b>	1090
<b><u>Calculation Parameters</u></b>			
<b>Flame Emissivity:</b>	95	<b>Relative Humidity(%):</b>	25
<b>Heat of Combustion(kJ/kg)</b>	18600	<b>Ambient Temp(K):</b>	308
<b>Moisture Factor:</b>	5	<b>FDI:</b>	130
<b><u>Program Outputs</u></b>			
<b>Level of Construction:</b>	BAL 29	<b>Peak Elevation of Receiver(m):</b>	3.83
<b>Radiant Heat(kW/m2):</b>	27.93	<b>Flame Angle (degrees):</b>	66
<b>Flame Length(m):</b>	9.09	<b>Maximum View Factor:</b>	0.423
<b>Rate Of Spread (km/h):</b>	18.74	<b>Inner Protection Area(m):</b>	11
<b>Transmissivity:</b>	0.869	<b>Outer Protection Area(m):</b>	0
<b>Fire Intensity(kW/m):</b>	58103		

<b>Run Description:</b>	Northeast		
<b><u>Vegetation Information</u></b>			
<b>Vegetation Type:</b>	Forest (including Coastal Swamp Forest)		
<b>Vegetation Group:</b>	Forest and Woodland		
<b>Vegetation Slope:</b>	1.5 Degrees	<b>Vegetation Slope Type:</b>	Downslope
<b>Surface Fuel Load(t/ha):</b>	22	<b>Overall Fuel Load(t/ha):</b>	36.1
<b>Vegetation Height(m):</b>	2	Only Applicable to Shrub/Scrub and Vesta	
<b><u>Site Information</u></b>			
<b>Site Slope</b>	1.7 Degrees	<b>Site Slope Type:</b>	Downslope
<b>Elevation of Receiver(m)</b>	Default	<b>APZ/Separation(m):</b>	84.6
<b><u>Fire Inputs</u></b>			
<b>Veg./Flame Width(m):</b>	100	<b>Flame Temp(K):</b>	1090
<b><u>Calculation Parameters</u></b>			
<b>Flame Emissivity:</b>	95	<b>Relative Humidity(%):</b>	25
<b>Heat of Combustion(kJ/kg)</b>	18600	<b>Ambient Temp(K):</b>	308
<b>Moisture Factor:</b>	5	<b>FDI:</b>	100
<b><u>Program Outputs</u></b>			
<b>Level of Construction:</b>	BAL 12.5	<b>Peak Elevation of Receiver(m):</b>	8.94
<b>Radiant Heat(kW/m<sup>2</sup>):</b>	4.81	<b>Flame Angle (degrees):</b>	79
<b>Flame Length(m):</b>	23.36	<b>Maximum View Factor:</b>	0.086
<b>Rate Of Spread (km/h):</b>	2.93	<b>Inner Protection Area(m):</b>	55
<b>Transmissivity:</b>	0.735	<b>Outer Protection Area(m):</b>	30
<b>Fire Intensity(kW/m):</b>	54610		

<b>Run Description:</b>	South		
<b><u>Vegetation Information</u></b>			
<b>Vegetation Type:</b>	Grassland		
<b>Vegetation Group:</b>	Grassland		
<b>Vegetation Slope:</b>	2.7 Degrees	<b>Vegetation Slope Type:</b>	Upslope
<b>Surface Fuel Load(t/ha):</b>	6	<b>Overall Fuel Load(t/ha):</b>	6
<b>Vegetation Height(m):</b>	0	Only Applicable to Shrub/Scrub and Vesta	
<b><u>Site Information</u></b>			
<b>Site Slope</b>	1.7 Degrees	<b>Site Slope Type:</b>	Upslope
<b>Elevation of Receiver(m)</b>	Default	<b>APZ/Separation(m):</b>	59
<b><u>Fire Inputs</u></b>			
<b>Veg./Flame Width(m):</b>	100	<b>Flame Temp(K):</b>	1090
<b><u>Calculation Parameters</u></b>			
<b>Flame Emissivity:</b>	95	<b>Relative Humidity(%):</b>	25
<b>Heat of Combustion(kJ/kg)</b>	18600	<b>Ambient Temp(K):</b>	308
<b>Moisture Factor:</b>	5	<b>FDI:</b>	130
<b><u>Program Outputs</u></b>			
<b>Level of Construction:</b>	BAL 12.5	<b>Peak Elevation of Receiver(m):</b>	5.65
<b>Radiant Heat(kW/m2):</b>	2.94	<b>Flame Angle (degrees):</b>	82
<b>Flame Length(m):</b>	7.86	<b>Maximum View Factor:</b>	0.051
<b>Rate Of Spread (km/h):</b>	14.03	<b>Inner Protection Area(m):</b>	59
<b>Transmissivity:</b>	0.757	<b>Outer Protection Area(m):</b>	0
<b>Fire Intensity(kW/m):</b>	43485		