PERFORMANCE BASED ASSESSMENT

FOR A PROPOSED DUAL OCCUPANCY AND SHED

AT 101 CLEMENTS ROAD, EAST GRESFORD NSW 2311

Prepared by:

Firebird ecoSultants Pty Ltd
ABN – 16 105 985 993

PO Box 354
Newcastle NSW 2300

Mob: 0414 465 990
Ph: 02 4910 3939
Fax: 02 4929 2727
Email: sarah@firebirdeco.com.au

Site Details:	101 Clements Road, East Gresford NSW 2311
Prepared by:	***Sarah Jones B.Env.Sc.,G.Dip.DBPA (Design in Bushfire Prone Areas)*** ***Firebird ecoSultants Pty Ltd*** **A**BN – 16 105 985 993 PO Box 354, Newcastle NSW 2300 M: 0414 465 990 Email: sarah@firebirdeco.com.au T: 02 4910 3939 Fax: 02 4929 2727
Prepared for:	AMC Planning
Reference No.	East Gresford – AMC Planning – June 2025
Document Status Date:	10/06/2025
Author:	William McCallum
First Reviewer:	Azmina Shafie
Second Reviewer:	Sarah Jones

Disclaimer

Legal status: *This report has been prepared as a submission document in support of a Planning Proposal/Development Application to Council and in instances may rely upon information provided by a number of external sources including Councils, State Government Agencies and it is assumed that the information provided was accurate at the time. This report cannot be relied upon for commencement of works or construction until such time as it has been endorsed or otherwise included within the consent conditions issued by Council as part of the DA determination. 4.14 applications (under the Environmental Planning and Assessment Act 1979) and all infill development applications may be referred by Council to the NSW Rural Fire Service for review and concurrence during the DA process. S100B applications under the Rural Fires Act 1997 (subdivisions and Special Fire Protection Purpose Developments), Flame Zone determinations and Alternate Solutions must be referred by Council to the NSW Rural Fire Service for review and receipt of a Bushfire Safety Authority (BSA) or other such recommended conditions from the NSW Rural Fire Service before the consent can be granted. The onus is on the applicant to cross reference this document with any conditions of consent issued by Council or any requirements supplied by the NSW Rural Fire Service following development approval. The onus is on the applicant to provide them to us and request this review. Where any discrepancy between this document and the development approval or the NSW Rural Fire Service requirements is found, the conditions of consent always take precedence until such time as an application to review, amend or vary these conditions is approved.*

Disclaimer: *This report has been prepared with due care and diligence by Firebird EcoSultants Pty Ltd and the statements and opinions contained in this report are given in good faith and in the belief on reasonable grounds that such statements and opinions are correct and not misleading bearing in mind the necessary limitations noted in previous paragraphs. Further, no responsibility is accepted by Firebird ecoSultants Pty. Ltd. or any of its officers or employees for any errors, including errors in data which is supplied by a third party, or which Firebird ecoSultants Pty. Ltd. is required to estimate, or omissions howsoever arising in the preparation of this report, provided that this will not absolve Firebird ecoSultants Pty. Ltd. from liability arising from an opinion expressed recklessly or in bad faith. Any representation, statement of opinion, or advice expressed or implied in this document is made in good faith on the basis that Firebird ecoSultants Pty. Ltd. employees and / or agents are not liable (whether by reason of negligence, lack of care or any other reason) to any person, company or their agents for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement or advice referred to above.*

Executive Summary

A Bushfire Threat Assessment Report (BTA) has been prepared by Firebird ecoSultants Pty Ltd at the request of AMC Planning for a proposed dual occupancy and shed at 101 Clements Road, East Gresford NSW 2311. The report forms part of the supporting documentation for a Development Application (DA) to be submitted to Port Stephens Council (PTS).

The report demonstrates compliance with Planning for Bushfire Protection 2019 (NSW RFS, 2019) and AS3959-2018 Construction of Buildings in Bush Fire Prone Areas.

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the proposal. Recommendations are provided with regard to fuel management, access, provision of emergency services, building protection and construction standards to facilitate an acceptable level of bushfire protection.

In summary, the following is recommended to enable the proposal to meet the relevant legislative requirements for the proposed dual occupancy and shed:

- Assessment in accordance with PBP 2019 has shown that the proposed dual occupancy is to meet the requirements of **BAL-29** for all elevations. This is based on AS3959 (2018) Appendix B – Detailed Method 2 using Grassland fuel loads and a slope of 0 degrees.

- To achieve a Bushfire Attack Level (BAL) of BAL-29, the following land is to be managed as an APZ:

    - North for a distance of 9.9m (up to the property boundary);
    - East and South for a distance of 12m; and
    - West for a distance of 10m

- Assessment in accordance with PBP 2019 has shown that the proposed shed does not have any influence on potential bushfire impacts and the bushfire protection of the building as it is located further than 6m from the habitable building. There are no bushfire protection requirements for Class 10a buildings located more than 6m from a dwelling in bushfire prone areas (section 8.3.2 in PBP 2019).

- The minimum 10,000L static water supply can be provided by the existing dam on site in the event of firefighting operations needing to be undertaken.

- Home owners should prepare a Bush Fire Survival Plan refer to the RFS Websitehttp://www.rfs.nsw.gov.au/file_system/attachments/Attachment_BushFireSurvivalPlan.pdf

I certify the development conforms to the relevant specifications and requirements of Planning for Bushfire Protection 2019

Sarah Jones
B.Env.Sc., G.Dip.DBPA (Design for Bushfire Prone Areas)
FPA BPAD-A Certified Practitioner (Certification Number BPD-26512)
Ecologist / Bushfire Planner

Terms & Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419 -2017	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BCA	Building Code of Australia
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BFPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
BFSA	Bush Fire Safety Authority
CC	Construction Certificate
EPA Act	*NSW Environmental Planning and Assessment Act 1979*
FFDI	Forest Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection 2019
PoM	Plan of Management
DSC	Dungog Shire Council
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation

CONTENTS

1 INTRODUCTION 7

1.1 Site Particulars 7
1.2 Description of the Proposal 9
1.3 Legislative Requirements 9
1.4 Objectives of Assessment 9

2 METHODOLOGY 11

2.1 Vegetation Assessment 11
2.2 Slope Assessment 11

3 SITE ASSESSMENT 12

3.1 Vegetation & Slope Assessment 12

4 BUSHFIRE PROTECTION ASSESSMENT 15

4.1 Asset Protection Zones (APZ) 15

5 DWELLING DESIGN & CONSTRUCTION 17

5.1 Determination of Bushfire Attack Levels 18

6 COMPLIANCE 19

7 CONCLUSION & RECOMMENDATIONS 24

8 BIBLIOGRAPHY 25

APPENDIX A PROPOSED SITE PLANS A-1

APPENDIX B ASSET PROTECTION ZONES B-1

APPENDIX C RADIANT HEAT CALCULATIONS C-2

TABLES

Table 3-1: Vegetation Classification 12
Table 4-1: Recommended APZs for Proposed Dual Occupancy 15
Table 4-1: Determination of Required BALs for Proposed Dual Occupancy 18
Table 6-1: Proposed Dual Occupancy Compliance with Development Standards 19

FIGURES

Figure 1-1: Site Location 8
Figure 1-2: Bushfire Prone Land Map 10
Figure 3-1: Vegetation Map (Nearmaps) 13
Figure 3-2: Slope (Spatial Map Viewer) 14
Figure 4-1 : APZ Map 16

1 INTRODUCTION

A Bushfire Threat Assessment Report (BTA) has been prepared by Firebird ecoSultants Pty Ltd at the request of AMC Planning for a proposed dual occupancy and shed at 101 Clements Road, East Gresford NSW 2311, hereafter referred to as the "site" (refer to Figure 1-1 for site locality). Refer to Appendix A for Proposed Site Plans.

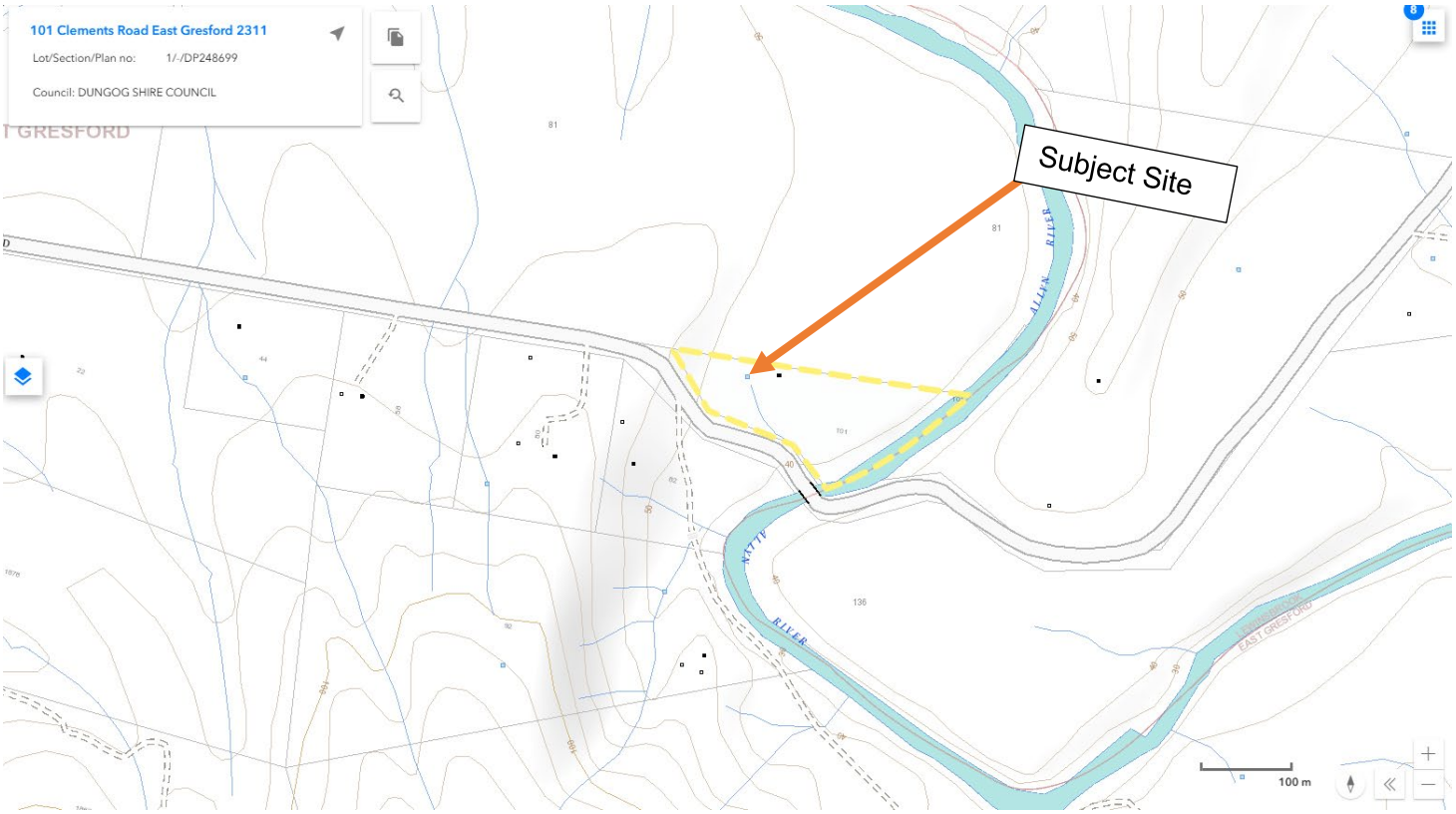
This BTA is suitable for submission with a Development Application (DA) and provides information on measures that will enable the development to comply with 'Planning for Bushfire Protection' (NSW RFS, 2019), hereafter referred to as PBP (RFS, 2019).

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to such a proposal, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the Environmental Planning and Assessment Amendment (Planning for Bushfire Protection) Regulation 2007 and the Rural Fires Amendment Regulation 2007 (RF Amendment Regulation 2007).

1.1 Site Particulars

Locality:	101 Clements Road, East Gresford NSW 2311
Lot/DP:	Lot 1 in DP248699
LGA:	Dungog Shire Council (DSC)
Current Land Use:	Existing Residential Dwelling
Forest Danger Index:	100 FFDI

Figure 1-1: Site Location



1.2 Description of the Proposal

This DA relates to the proposal for a dual occupancy dwelling and shed. Refer to Appendix A for proposed plans.

1.3 Legislative Requirements

The Site has been mapped as Bush Fire Prone Land Map (BFPLM) by DSC.

This report forms part of the supporting documentation for a Development Application (DA) to be submitted to DSC.

This BTA has been prepared using current legislative requirements and associated guidelines for assessment of bushfire protection, these being:

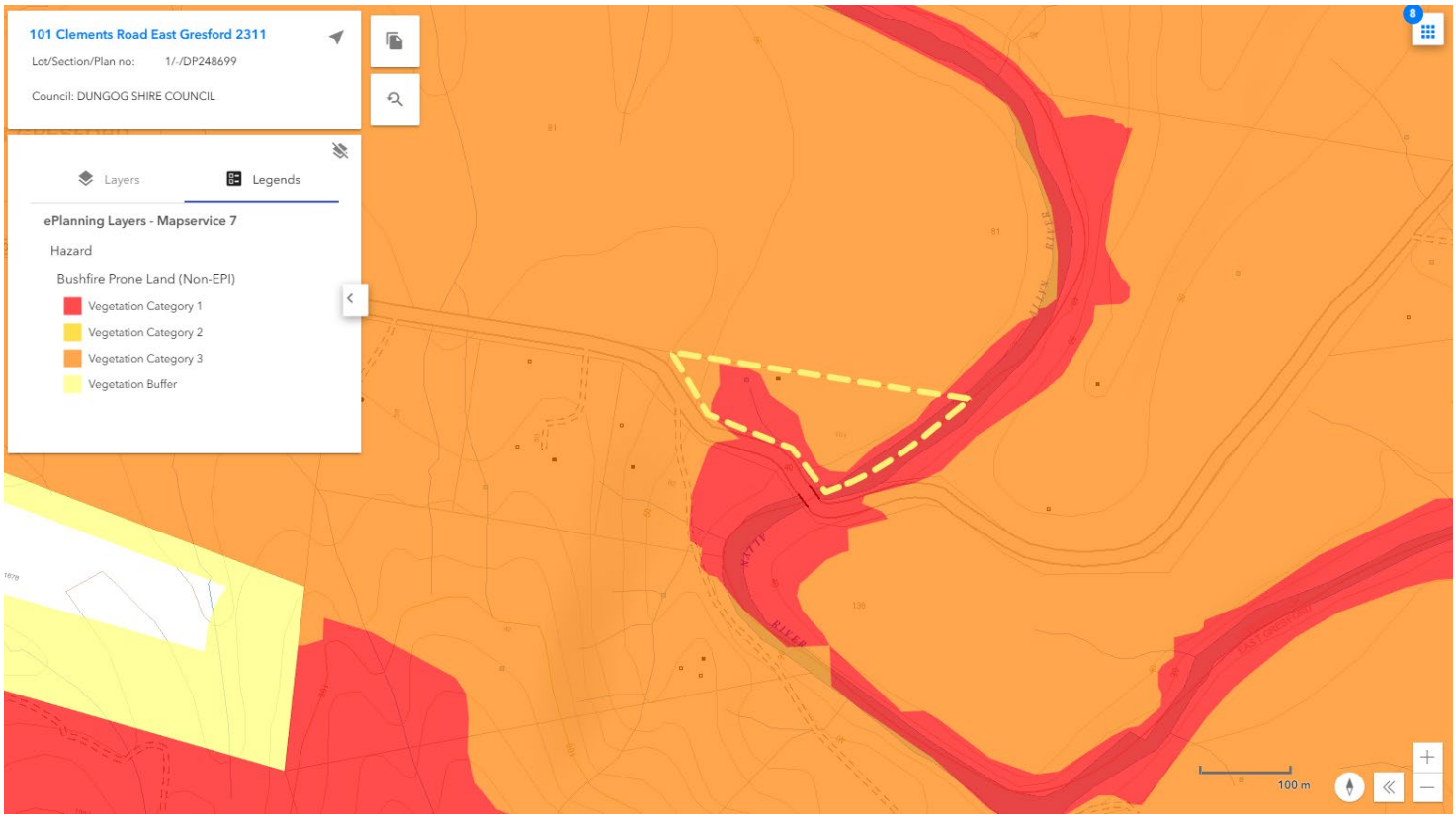
- PBP (RFS, 2019); and
- AS3959-2018 Construction of Buildings in Bushfire Prone Area.

1.4 Objectives of Assessment

This report has been prepared to address the requirements of Clause 44 of the Rural Fires Regulation. This BTA also addresses the six key Bush Fire Protection Measures (BFRMs) in a development assessment context being:

- The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced APZ (and their components being Inner Protection Areas (IPA's) and Outer Protection Areas (OPA's);
- Sitting and design of the proposal;
- Construction standards;
- Appropriate access standards for residents, fire-fighters, emergency workers and those involved in evacuation;
- Adequate water supply and pressure, and utility services; and
- Suitable landscaping, to limit fire spreading to a building.

Figure 1-2: Bushfire Prone Land Map



2 METHODOLOGY

2.1 Vegetation Assessment

Vegetation surveys and vegetation mapping carried out on the site has been undertaken as follows:

- Aerial Photograph Interpretation to map vegetation cover and extent
- Confirmation of the vegetation assemblage typology present.

2.2 Slope Assessment

Slope assessment has been undertaken as follows:

- Aerial Photograph Interpretation in conjunction with analysis of electronic contour maps with a contour interval of 2m.

3 SITE ASSESSMENT

The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2019).

3.1 Vegetation & Slope Assessment

In accordance with PBP (RFS 2019), an assessment of the vegetation over a distance of 140m in all directions from the site was undertaken. Vegetation that may be considered a bushfire hazard was identified in every direction from the site. This assessment is depicted in Table 3-1.

In accordance with PBP (RFS 2019), an assessment of the slope beneath the vegetation considered a bushfire hazard was undertaken and the results are presented in Table 3-1 below.

Table 3-1: Vegetation Classification

Proposed Dual Occupancy		
Direction	**Vegetation Type**	**Slope**
North	Grassland	Flat Ground
East	Forested Wetlands	Flat Ground
South	Forested Wetlands	Flat / cross slope
West	Grassland	Upslope

Note: Northern elevation has been assessed using AS3959-2018 Appendix B-Detailed Method 2. Refer to Appendix C for Radiant Heat Calculations.

Figure 3-1: Vegetation Map (Nearmaps)

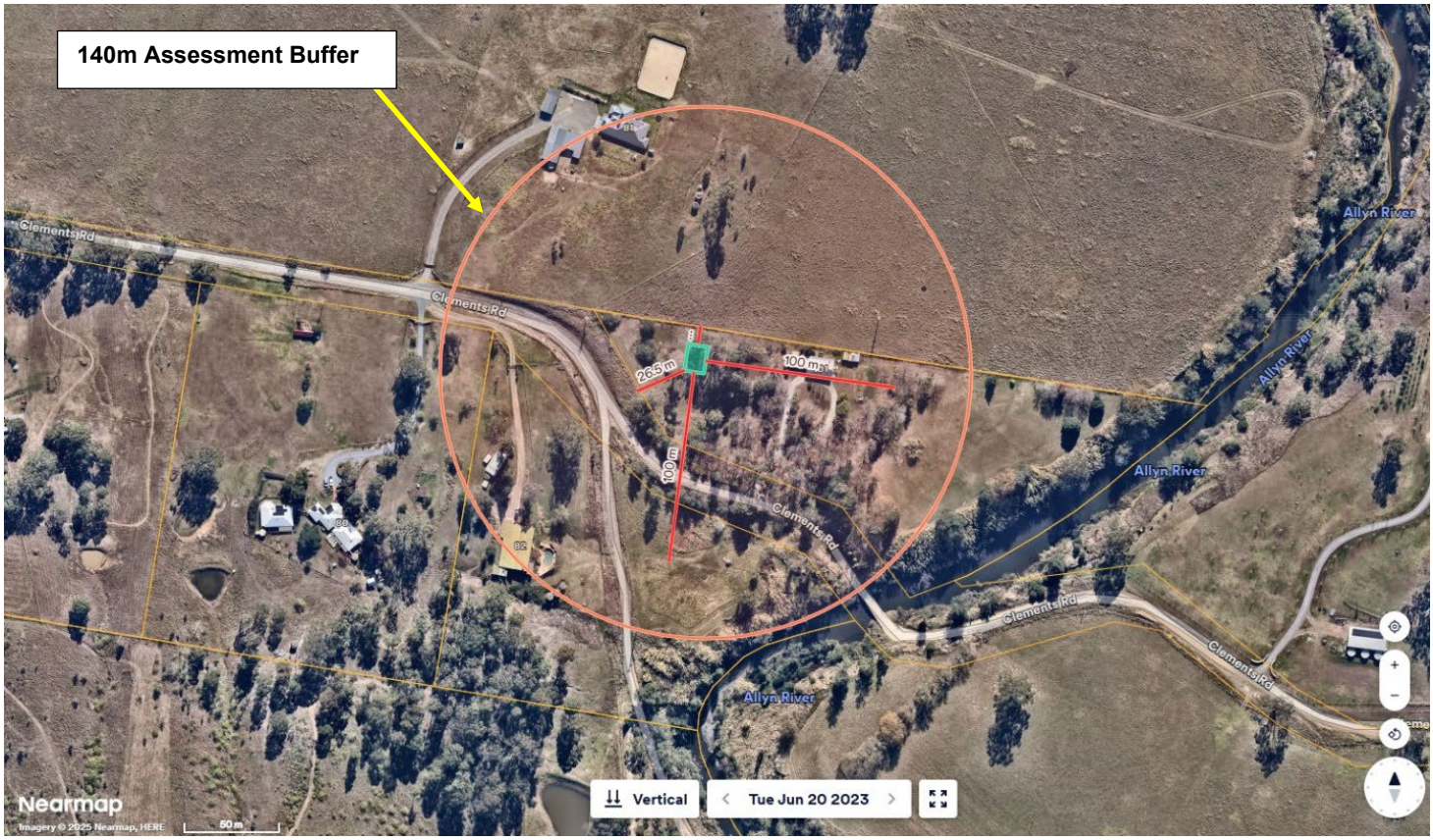


Figure 3-2: Slope (Spatial Map Viewer)

4 BUSHFIRE PROTECTION ASSESSMENT

4.1 Asset Protection Zones (APZ)

The PBP (RFS, 2019) guidelines have been used to determine the widths of the APZs required for habitable buildings within the site using the vegetation and slope data identified in Section 3-1 of this report.

The site lies within Dungog Shire Council Local Government Area and therefore is assessed under an FDI rating of 100. Using the results from the Site Assessment (section 3.1 of this report) the deemed to satisfy APZ requirements for the proposed buildings within the site were determined using Table A1.12.2 in PBP (RFS, 2019). Refer to Table 4-1 for the required APZs for the proposed habitable buildings.

Table 4-1: Recommended APZs for Proposed Dual Occupancy

Direction from Development	Vegetation classified within 140m	Effective Slope (within 100m)	APZ to be provided
North	Grassland	Flat ground (0 degrees)	An APZ of 9.9m to the North is established.
East	Forested Wetlands	Flat ground	An APZ of 12m to the East is established.
South	Forested Wetlands	Flat ground / cross slope	An APZ of 12m to the South is established.
West	Grassland	Upslope	An APZ of 10m to the West is established.

Note: APZ of 9.9m to the North is based on AS3959-2018 Appendix B-Detailed Method 2. Refer to Appendix C for Radiant Heat Calculations.

Figure 4-1 : APZ Map

5 DWELLING DESIGN & CONSTRUCTION

Building design and the materials used for construction of future dwellings should be chosen based on the information contained within AS3959-2018, and accordingly the designer / architect should be made aware of this recommendation. It may be necessary to have dwelling plans checked by the architect involved to ensure that the proposed dwellings meet the relevant Bushfire Attack Level (BAL) as detailed in AS3959-2018.

The determinations of the appropriate BAL are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the construction level is derived by assessing the:

- Relevant FFDI = 100
- Flame temperature
- Slope
- Vegetation classification; and
- Building location.

The following BAL, based on heat flux exposure thresholds, are used in the standard:

(a) **BAL – LOW** The risk is considered to be **VERY LOW**

There is insufficient risk to warrant any specific construction requirements but there are still some risks.

(b) **BAL – 12.5** The risk is considered to be **LOW**

There is a risk of ember attack.

The construction elements are expected to be exposed to a heat flux not greater than 12.5 k/m^2.

(c) **BAL – 19** The risk is considered to be **MODERATE**

There is a risk of ember attack and burning debris ignited by wind borne embers and a likelihood of exposure to radiant heat.

The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m^2.

(d) **BAL-29** The risk is considered to be **HIGH**

There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.

The construction elements are expected to be exposed to a heat flux no greater than 29 kW/m^2.

(e) **BAL-40** The risk is considered to be **VERY HIGH**

There is much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux no greater than 40 kW/m^2.

(f) **BAL-FZ** The risk is considered to be **EXTREME**

There is an extremely high risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux greater than 40 kW/m^2.

5.1 Determination of Bushfire Attack Levels

Using a FFDI of 100, the information relating to vegetation and slope was applied to Table A1.12.5 of PBP 2019 to determine the appropriate BAL ratings. The results from this bush fire risk assessment are detailed below in Table 4-1–Bush Fire Attack Assessment.

Table 4-1: Determination of Required BALs for Proposed Dual Occupancy

Vegetation Type & Direction	Separation Distance from vegetation	Bushfire Attack Level (BAL)	Construction Section
Grassland to the North	>9.9m (refer to Appendix C)	BAL-29	Sect 3 & 7 of AS3959
Forested Wetlands to the East	>12m	BAL-29	Sect 3 & 7 of AS3959
Forested Wetlands to the South	>12m	BAL-29	Sect 3 & 7 of AS3959
Grassland to the West	>10m	BAL-29	Sect 3 & 7 of AS3959

Given the information in Table 4-1 above, the proposed dual occupancy has been assessed as **BAL-29** for the all elevations. This is based on AS3959 (2018) Appendix B – Detailed Method 2. Using Grassland fuel loads and a slope of 0 degrees. Refer to Appendix C.

6 COMPLIANCE

The proposal is for a dual occupancy therefore development standards apply. Table 6-1 details compliance with Development Standards for Infill Development.

Table 6-1: Proposed Dual Occupancy Compliance with Development Standards

Acceptable Solutions	Performance Criteria	Compliance
ASSET PROTECTION ZONES		
〉 an APZ is provided in accordance with Table A1.12.2 or A1.12.3 in Appendix 1.	〉 APZs are provided commensurate with the construction of the building; and 〉 A defendable space is provided.	**Complies with Performance Criteria –** An APZ of 9.9m is established to the North. Assessment in accordance with PBP 2019 has shown that the proposed dual occupancy is to meet the requirements of **BAL-29** for all elevations. This is based on AS3959 (2018) Appendix B – Detailed Method 2. Using Grassland fuel loads and a slope of 0 degrees to the North. All other elevations are able to comply with Table A1.12.5 in PBP 2019.
〉 APZs are managed in accordance with the requirements of Appendix 4 of PBP.	〉 APZs are managed and maintained to prevent the spread of a fire to the building.	**Complies with Acceptable Solution –** the APZ is to be managed to the requirements of PBP Appendix 4 (summarised in Appendix B here)
〉 APZs are wholly within the boundaries of the development site. 〉 APZ are located on lands with a slope less than 18 degrees.	〉 the APZ is provided in perpetuity. 〉 APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	**Complies with Acceptable Solution –** The APZ occurs entirely within the site. APZs occur on lands with a slope of less than 18 degrees.
〉 property access roads are two-wheel drive, all- weather roads.	〉 firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	**Complies with Acceptable Solution –** the site has direct access to Clements Road.

〉 the capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes), bridges and causeways are to clearly indicate load rating.	〉 the capacity of access roads is adequate for firefighting vehicles.	**Complies with Acceptable Solution –** Road access is adequate for emergency vehicles.
〉 hydrants are provided in accordance with the relevant clauses of AS 2419.1:2017; 〉 There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	〉 there is appropriate access to water supply.	**Complies with Acceptable Solution –** A 10,000L static water supply is available on site in the form of a dam that will be able to dedicate water for firefighting purposes.
〉 at least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road; 〉 There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	〉 firefighting vehicles can access the dwelling and exit the property safely.	**N/A** – the site is adjacent to Clements Road and as such has an unobstructed path <70m long

WATER SUPPLIES		
〉 reticulated water is to be provided to the development, where available; and 〉 a static water supply is provided where no reticulated water is available.	〉 an adequate water supply is provided for firefighting purposes.	**Complies with Acceptable Solution –** static water supply is existing on site in the form of a dam with sufficient capacity to dedicate to firefighting purposes.
〉 fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2017; 〉 hydrants are not located within any road carriageway; and 〉 reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	〉 water supplies are located at regular intervals; and 〉 the water supply is accessible and reliable for firefighting operations.	**Complies with Acceptable Solution** – static water supply is existing on site in the form of a dam with sufficient capacity to dedicate to firefighting purposes.
〉 fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2017.	〉 flows and pressure are appropriate.	**N/A**
〉 all above-ground water service pipes external to the building are metal, including and up to any taps.	〉 the integrity of the water supply is maintained.	**Complies with Acceptable Solution –** All above ground pipes will meet the specifications of the acceptable solution
〉 where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 5.3d.	〉 a static water supply is provided for firefighting purposes in areas where reticulated water is not available.	**Complies with Acceptable Solution –** static water supply is existing on site in the form of a dam with sufficient capacity to dedicate to firefighting purposes.

ELECTRICTY SERVICES		
〉 where practicable, electrical transmission lines are underground; and 〉 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	〉 location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	**Complies with Acceptable Solution** – Electrical services to the site will meet the requirements of the acceptable solution
GAS SERVICES		
〉 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.	〉 location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	**Complies with Acceptable Solution** – Gas services to the site will meet the requirements of the acceptable solution

CONSTRUCTION STANDARDS		
〉 BAL is determined in accordance with Tables A1.12.5 to A1.12.7; and 〉 construction provided in accordance with the NCC and as modified by section 7.5 (please see advice on construction in the flame zone).	〉 the proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.	**Complies with performance criteria –** The proposed dual occupancy has been assessed as BAL-29 from all elevations based on AS3959 (2018) Appendix B – Detailed Method 2. Refer to Appendix C of this report for Bushfire Attack Assessment Report.
〉 fencing and gates are constructed in accordance with section 7.6.	〉 proposed fences and gates are designed to minimise the spread of bush fire.	**Can Comply –** Fencing on site will meet the requirements of the acceptable solution
〉 Class 10a buildings are constructed in accordance with section 8.3.2.	〉 proposed Class 10a buildings are designed to minimise the spread of bush fire.	**Complies with Acceptable Solution –** proposed shed is a class 10a structure and will be constructed in accordance with s8.3.2.
LANDSCAPING		
〉 compliance with the NSW RFS 'Asset protection zone standards' (see Appendix 4); 〉 a clear area of low-cut lawn or pavement is maintained adjacent to the house; 〉 fencing is constructed in accordance with section 7.6; and 〉 trees and shrubs are located so that: ○ the branches will not overhang the roof; ○ the tree canopy is not continuous; and ○ any proposed windbreak is located on the elevation from which fires are likely to approach.	〉 landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	**Complies with Acceptable Solution –** the site is to be managed to the requirements of PBP Appendix 4 (summarised in Appendix B here)

7 CONCLUSION & RECOMMENDATIONS

In summary, a Bushfire Risk Assessment has been undertaken for a proposed dual occupancy & shed at 101 Clements Road, East Gresford NSW 2311. The report forms part of the supporting documentation for a Development Application (DA) to be submitted to PTS.

If the recommendations contained within this report are duly considered and incorporated, it is considered that the fire hazard present is containable to a level necessary to provide an adequate level of protection to life and property of the dual occupancy residency. In summary, the following is recommended to enable the proposal to meet the relevant legislative requirements:

- Assessment in accordance with PBP 2019 has shown that the proposed dual occupancy is to meet the requirements of **BAL-29** for all elevations. This is based on AS3959 (2018) Appendix B – Detailed Method 2 using Grassland fuel loads and a slope of 0 degrees.

- To achieve a Bushfire Attack Level (BAL) of BAL-29, the following land is to be managed as an APZ:

  - North for a distance of 9.9m (up to the property boundary);
  - East and South for a distance of 12m; and
  - West for a distance of 10m

- Assessment in accordance with PBP 2019 has shown that the proposed shed does not have any influence on potential bushfire impacts and the bushfire protection of the building as it is located further than 6m from the habitable building. There are no bushfire protection requirements for Class 10a buildings located more than 6m from a dwelling in bushfire prone areas (section 8.3.2 in PBP 2019).

- The minimum 10,000L static water supply can be provided by the existing dam on site in the event of firefighting operations needing to be undertaken.

- Home owners should prepare a Bush Fire Survival Plan refer to the RFS Website http://www.rfs.nsw.gov.au/file_system/attachments/Attachment_BushFireSurvivalPlan.pdf

Provided the recommendations stated above are implemented in full, Firebird ecoSultants Pty Ltd is of the opinion that the proposed development is able to meet the aims and objectives of PBP (RFS, 2019).

8 BIBLIOGRAPHY

Department of Bush Fire Services (undated). *Bush Fire Readiness Checklist.*

NSWFB (1988). *Hazard Reduction for the Protection of Buildings in Bushland Areas.* New South Wales Fire Brigades.

NSW Rural Fire Service (1997). *Bush Fire Protection for New and Existing Rural Properties.* September 1997, NSW Government.

NSW Rural Fire Service (2006). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

NSW Rural Fire Service (2019). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

NSW Rural Fire Service (2005). Standards for Asset Protection Zones. NSW Rural Fire Service.

NSW Rural Fire Service (2002). *Circular 16/2002: Amendments to the Rural Fires Act 1997 – hazard reduction and planning requirements.*

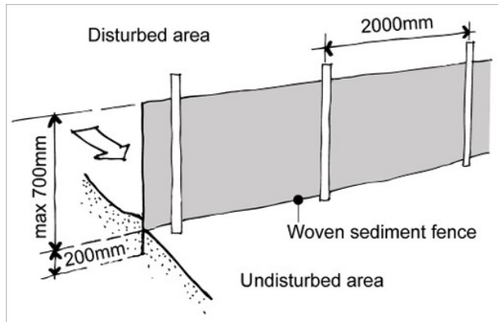
Planning NSW & NSW Rural Fire Service (2001). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

Ramsay, GC and Dawkins, D (1993). *Building in Bushfire-prone Areas – Information and Advice.* CSIRO and Standards Australia.

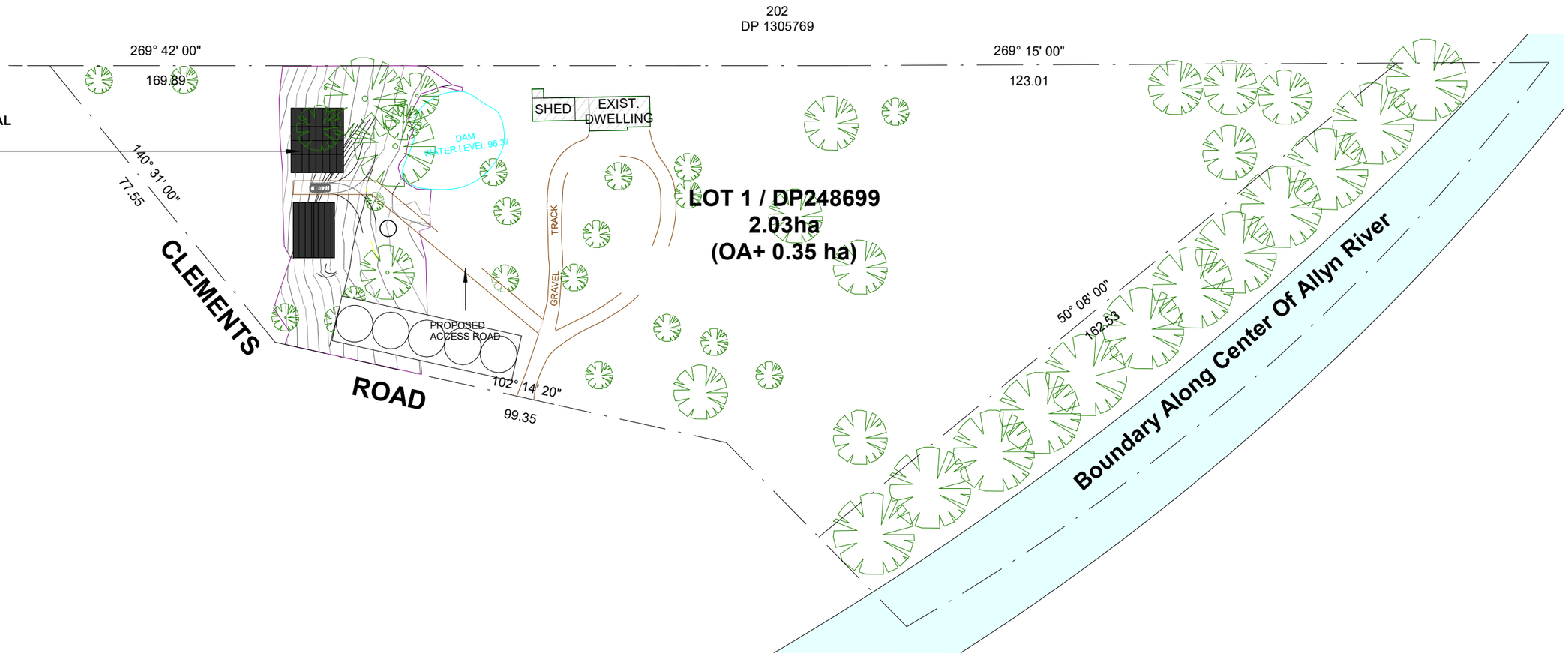
Rural Fires and Environmental Assessment Legislation Amendment Act 2002.

Standards Australia (2018). *AS 3959 – 2018: Construction of Buildings in Bushfire-prone Areas.*

APPENDIX A PROPOSED SITE PLANS



EROSION AND SEDIMENT CONTROL PLANS

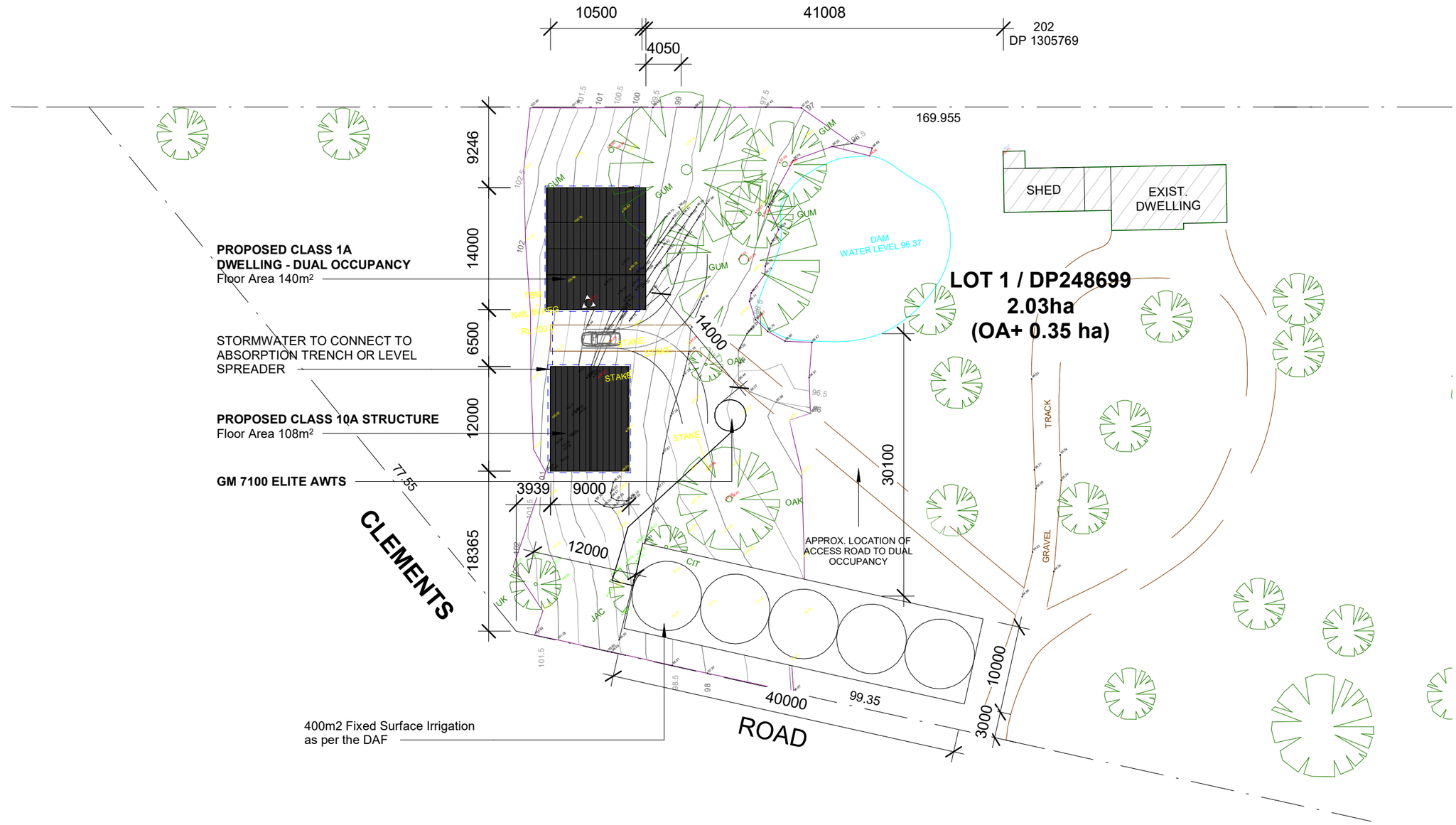


DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

1 Site Plan

1 : 1000

	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
AMC PLANNING SOLUTIONS		DUNGOG SHIRE COUNCIL	DAVID & JENNY HUGO	PROPOSED CLASS 1A DWELLING - DUAL OCCUPANCY & 10A STRUCTURE LOT 1 / DP248699 101 CLEMENTS ROAD, EAST GRESFORD	19/03/2025	DR01 - SITE PLAN	1:1000 @ A3 PROJECT NORTH

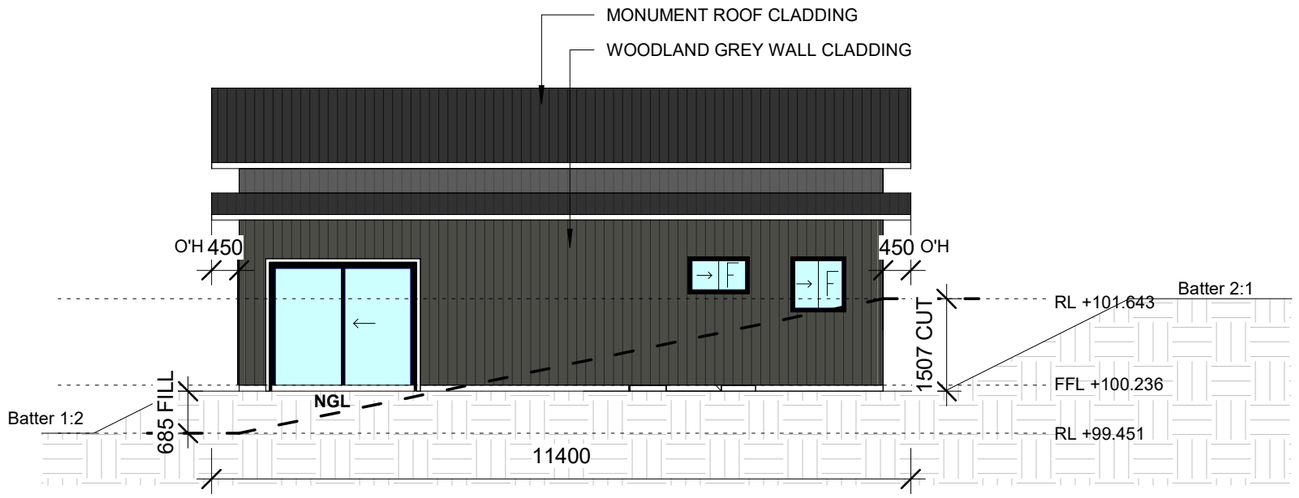


DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

1 Enlarged Site Plan

1 : 500

	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
AMC PLANNING SOLUTIONS		DUNGOG SHIRE COUNCIL	DAVID & JENNY HUGO	PROPOSED CLASS 1A DWELLING - DUAL OCCUPANCY & 10A STRUCTURE LOT 1 / DP248699 101 CLEMENTS ROAD, EAST GRESFORD	19/03/2025	DR02 - ENLARGED SITE PLAN	1:500 @ A3 PROJECT NORTH



1 Class 1a North Elevation

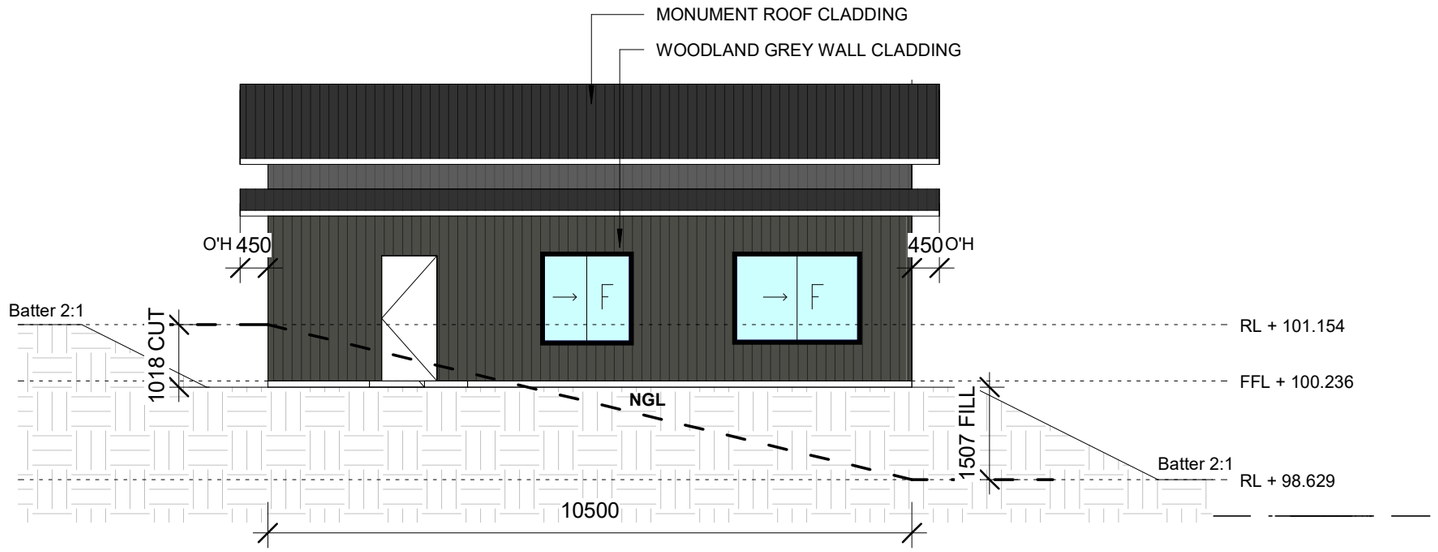
1 : 100

2 Class 1a East Elevation

1 : 100

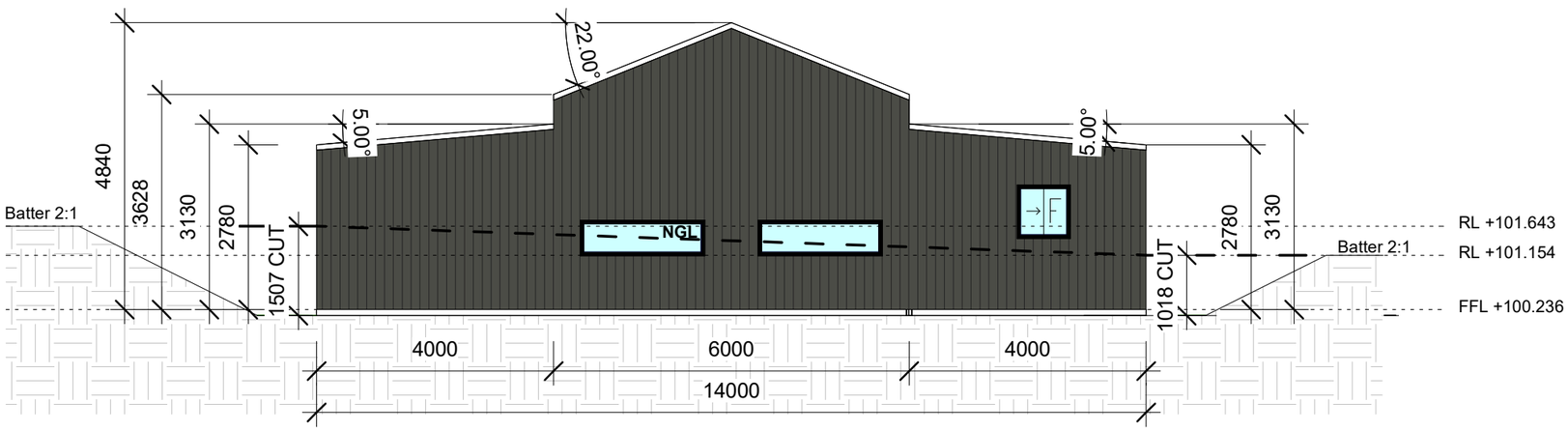
DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
AMC PLANNING SOLUTIONS		DUNGOG SHIRE COUNCIL	DAVID & JENNY HUGO	PROPOSED CLASS 1A DWELLING - DUAL OCCUPANCY & 10A STRUCTURE LOT 1 / DP248699 101 CLEMENTS ROAD, EAST GRESFORD	19/03/2025	DR04 - NORTH & EAST ELEVATION	1:100 @ A3 PROJECT NORTH



1 Class 1a South Elevation

1 : 100

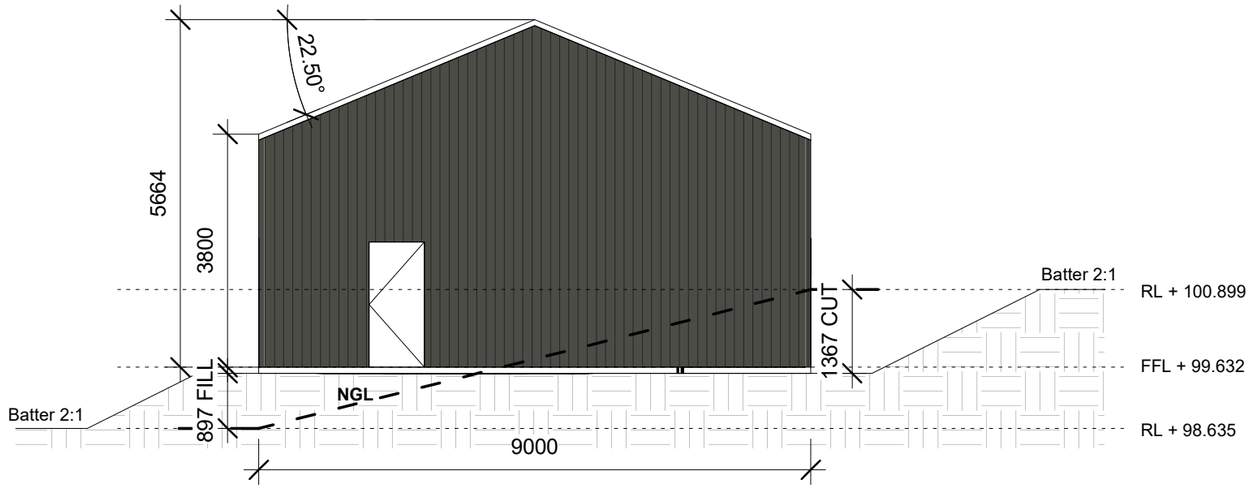


2 Class 1a West Elevation

1 : 100

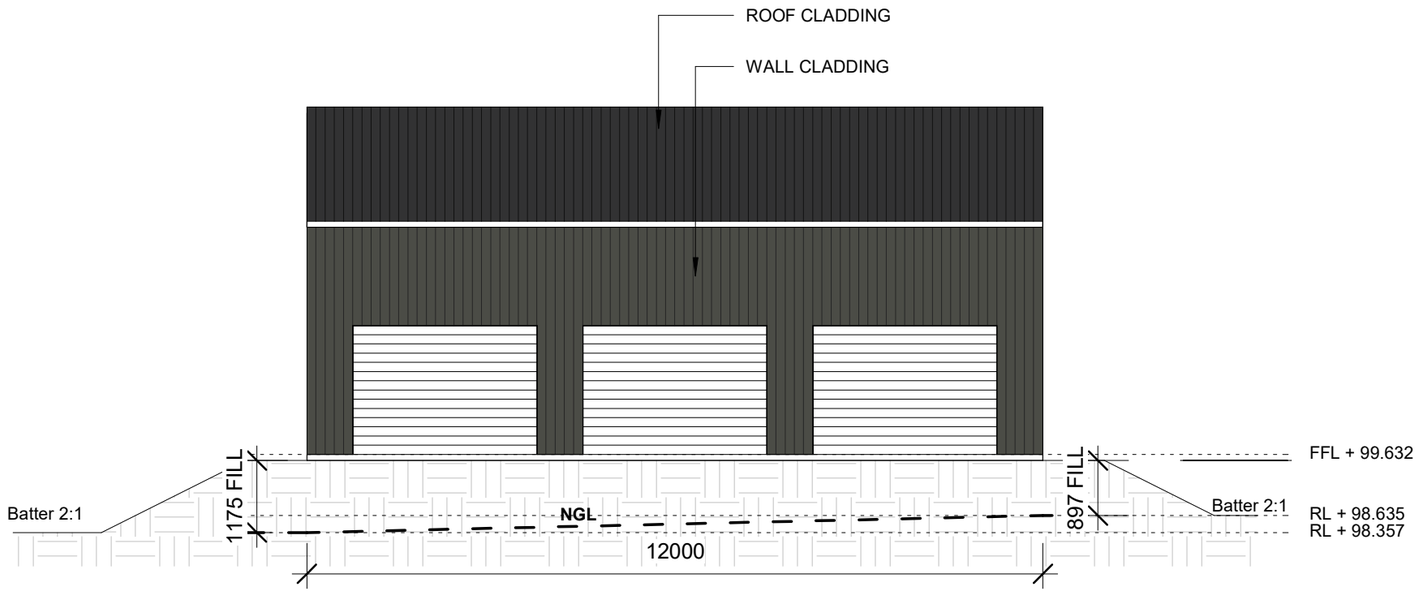
	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
AMC PLANNING SOLUTIONS		DUNGOG SHIRE COUNCIL	DAVID & JENNY HUGO	PROPOSED CLASS 1A DWELLING - DUAL OCCUPANCY & 10A STRUCTURE LOT 1 / DP248699 101 CLEMENTS ROAD, EAST GRESFORD	19/03/2025	DR05 - SOUTH & WEST ELEVATION	1:100 @ A3 PROJECT NORTH

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE



1 Class 10a North Elevation

1 : 100

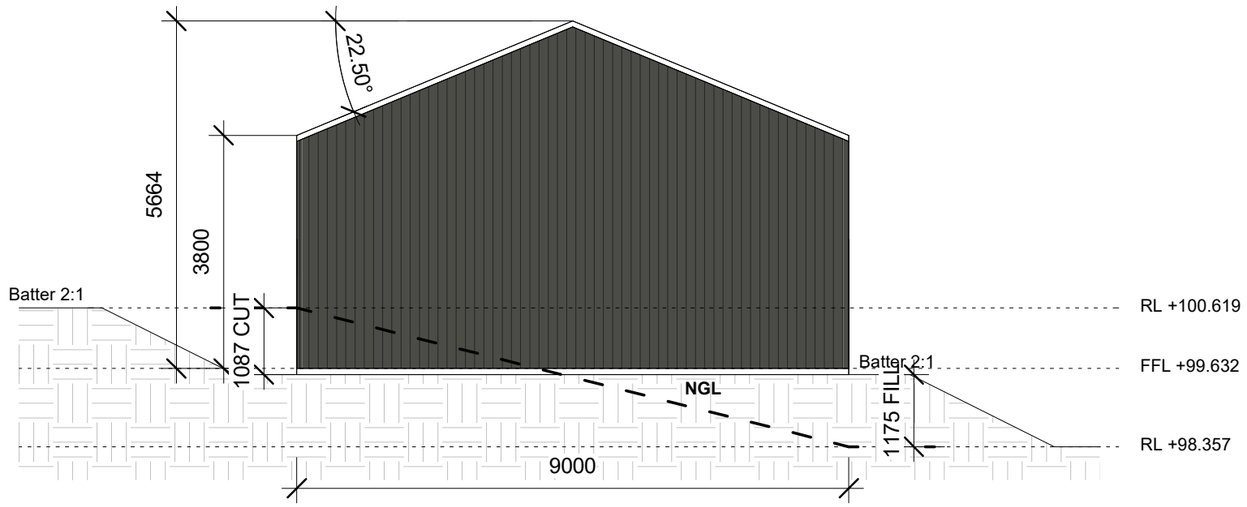


2 Class 10a East Elevation

1 : 100

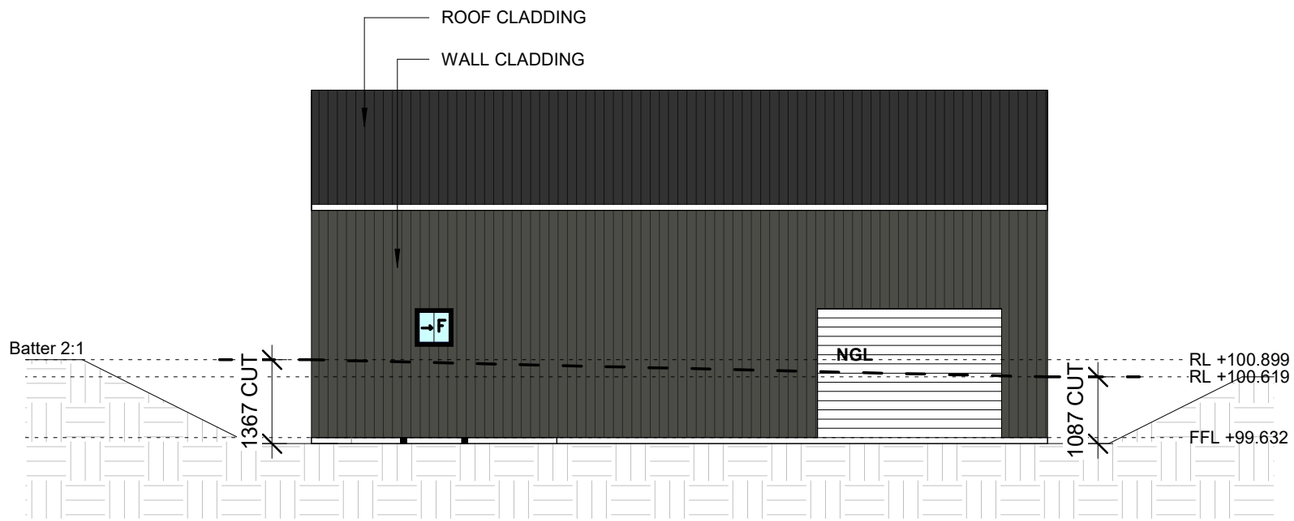
	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
AMC PLANNING SOLUTIONS		DUNGOG SHIRE COUNCIL	DAVID & JENNY HUGO	PROPOSED CLASS 1A DWELLING - DUAL OCCUPANCY & 10A STRUCTURE LOT 1 / DP248699 101 CLEMENTS ROAD, EAST GRESFORD	19/03/2025	DR09 - CLASS 10A ELEVATION PLAN	1:100 @ A3 PROJECT NORTH

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE



1 Class 10a South Elevation

1 : 100



2 Class 10a West Elevation

1 : 100

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
AMC PLANNING SOLUTIONS		DUNGOG SHIRE COUNCIL	DAVID & JENNY HUGO	PROPOSED CLASS 1A DWELLING - DUAL OCCUPANCY & 10A STRUCTURE LOT 1 / DP248699 101 CLEMENTS ROAD, EAST GRESFORD	19/03/2025	DR010 - CLASS 10A ELEVATION PLAN	1:100 @ A3 PROJECT NORTH

APPENDIX B ASSET PROTECTION ZONES

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

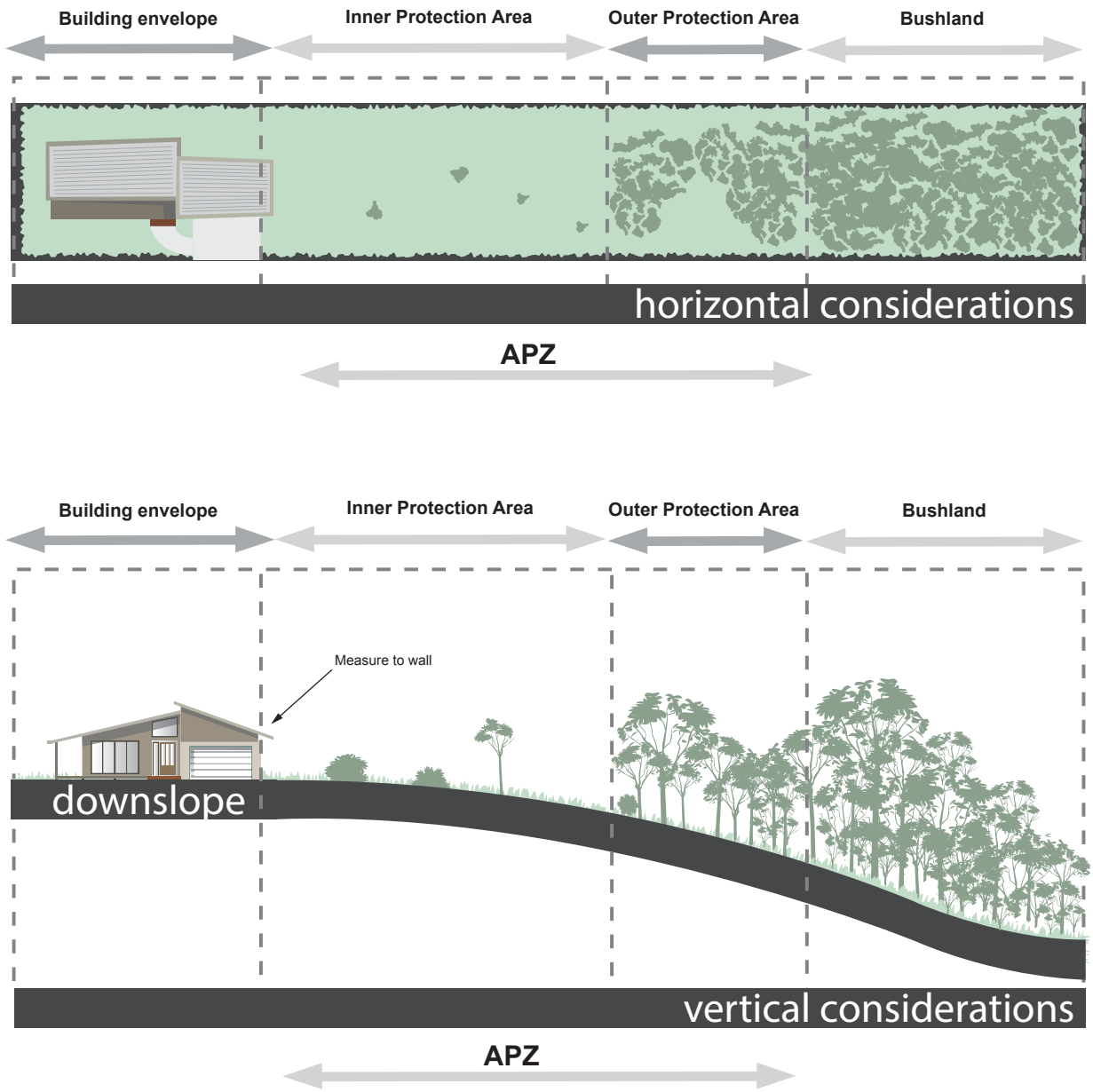
- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

Figure A4.1

Typical Inner and Outer Protection Areas.



A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

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 should be provided;
- 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.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

APPENDIX C RADIANT HEAT CALCULATIONS

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 3/06/2025 **Assessment Date:** 3/06/2025

Site Street Address: 101 Clements Road, East Gresford

Assessor: Sarah Jones; Firebird ecoSultants Pty Ltd

Local Government Area: Dungog **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: vegetation

Vegetation Information

Vegetation Type:	Grassland		
Vegetation Group:	Grassland		
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
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 Degrees	**Site Slope Type:**	Level
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	9.9

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 29	**Peak Elevation of Receiver(m):**	3.88
Radiant Heat(kW/m2):	28.82	**Flame Angle (degrees):**	64
Flame Length(m):	8.63	**Maximum View Factor:**	0.435
Rate Of Spread (km/h):	16.9	**Inner Protection Area(m):**	10
Transmissivity:	0.871	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	52390		